



2020

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# Sunnyvale Active Transportation Plan

JUNE 2020



## Acknowledgments

### ELECTED OFFICIALS

Larry Klein, Mayor

Nancy Smith, Vice Mayor

Gustav Larson, Councilmember

Glenn Hendricks, Councilmember

Russ Melton, Councilmember

Michael S. Goldman, Councilmember

Mason Fong, Councilmember

### CITY OF SUNNYVALE

Lillian Tsang, Principal Transportation Engineer

Ralph Garcia, Senior Transportation Engineer

Dennis Ng, Transportation and Traffic Manager

Norma O'Connell, Safe Routes to School Coordinator

### SUNNYVALE BICYCLE AND PEDESTRIAN ADVISORY COMMISSION

Richard Mehlinger, Chair

John Cordes, Vice Chair

Arwen Davé

Daniel Hafeman

Leia Mehlman

Timothy Oey

Scott Swail

### ALTA PLANNING + DESIGN

Brett Hondorp, Principal-in-Charge

Jeffrey Knowles, Project Manager

Beth Martin, Senior Planner

Libby Nachman, Senior Planner

Nick Aguilera, Planner

Lisa Schroer, GIS Analyst

Aaron Fraint, Data Scientist

### KIMLEY-HORN

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# Chapter 1: Introduction and Background

**The purpose of the 2020 Sunnyvale Active Transportation Plan is to create a safe, connected, and efficient citywide active transportation network.** The Plan lays out policies, infrastructure projects, and supporting programs, as well as identifies funding sources and implementation priorities.

Sunnyvale residents and workers are increasingly interested in bicycling and walking as a safe and convenient mode of transportation to get where they need to go. Some students bike or walk through Sunnyvale neighborhoods to reach their schools. Residents and people from all over the Bay Area commute to Sunnyvale on Caltrain, VTA buses and light rail, and often times bike the “last mile” to their Silicon Valley employer. Families are biking and walking to run errands, visit the library, or spend the afternoon on the John W. Christian Greenbelt to Lakewood Park.

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The recommendations within this Active Transportation Plan were developed through engagement with Sunnyvale community members and stakeholders, along with a technical analysis of walking and biking needs across the city.

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# Plan Contents

**Chapter 1, Introduction**, lays out the purpose of the 2020 Sunnyvale Active Transportation Plan.

**Chapter 2, Existing Conditions**, places the plan in the wider context of Sunnyvale's transportation and land use planning efforts as it relates to active transportation.

**Chapter 3, Outreach**, outlines how the project team consulted with Sunnyvale residents and community members to guide the vision and recommendations in this plan.

**Chapter 4, Bicycle Plan**, describes bicycling needs in the city, defines the Plan's bicycling goals, and outlines the citywide bicycle infrastructure and programmatic recommendations.

**Chapter 5, Pedestrian Plan**, describes pedestrian needs in the city, defines the Plan's pedestrian goals, and outlines the citywide pedestrian infrastructure and programmatic recommendations.

**Chapter 6, Safe Routes to School Plan**, identifies barriers to accessing local schools by walking or bicycling in the city and outlines recommendations at the 21 public schools serving Sunnyvale students.

**Appendices**, provides additional documentation on the project recommendations, prioritization results, and outreach materials.

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# What's New in This Plan?

This plan updates Sunnyvale's 2006 Bicycle Plan, 2007 Pedestrian Safety and Opportunities Study, and 2012 Comprehensive School Traffic Study. In the past 14 years, new innovations in bicycle infrastructure design have been approved by the California Department of Transportation (Caltrans) and implemented throughout California. The Federal Highway Administration (FHWA) has developed new pedestrian measures tied to improving the safety of people walking. Across the country, different campaigns and movements, such as [Vision Zero](#), [Complete Streets](#), and [Safe Routes to School \(SRTS\)](#) have gained traction and focus on implementing more safety improvements for all ages and abilities to bike and walk.

The Active Transportation Plan addresses the needs of people walking and biking separately, acknowledging unique barriers and implementation challenges to each mode. In addition, this plan has a separate focus on SRTS, prioritizing biking and walking safety along students' path to school. Thus, the Active Transportation Plan is organized into three sections: the Bicycle Plan (Chapter 4), the Pedestrian Plan (Chapter 5), and the SRTS Plan (Chapter 6).

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# Glossary

**Vision Zero:** Vision Zero is a strategy to eliminate all traffic fatalities and severe injuries, while increasing safe, healthy and equitable mobility for all.

**Complete Streets:** Streets that are planned, designed and operated for safe mobility for all users including pedestrians, bicyclists, motorists, and transit users of all ages and abilities.

**Safe Routes to School (SRTS):** Safe Routes to School is an initiative to make it safe, convenient, and fun for children to walk and bicycle to and from schools.

# Relationship to Other Plans

Sunnyvale's General Plan guides the long-term physical development of the City and sets out a vision for transportation where:

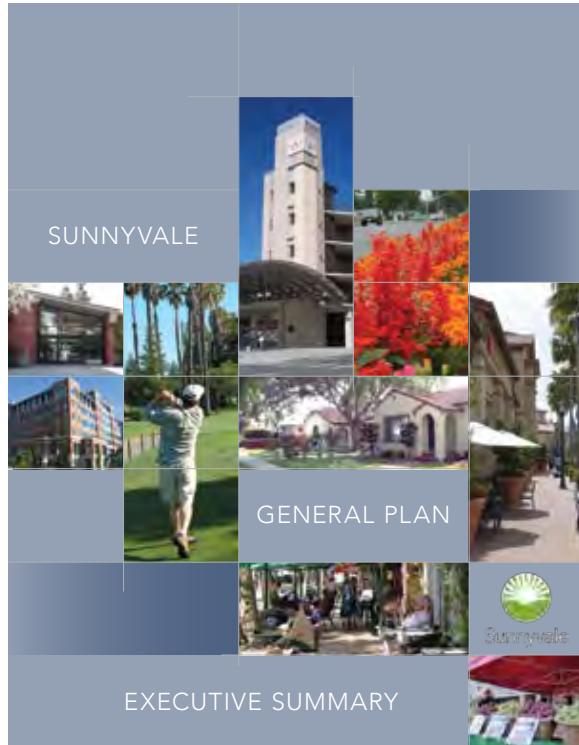
*An effective multimodal transportation system offers the community a variety of transportation modes for local travel...and favors accommodation of alternative modes to the automobile as a means to enhance efficient transit use, bicycling and walking...*

This Active Transportation Plan helps the City realize this complete streets vision along with implementing goals, policies and recommendations adopted through complementary city planning efforts such as: Peery Park (2016), Moffett Park (ongoing), Lawrence Station (ongoing), Downtown (ongoing), Lakeside (2015), and El Camino Real (ongoing) Specific/Area Plans.

In addition, the Active Transportation Plan dovetails off of the City's Vision Zero Plan (adopted in 2019), setting the long-term goal to eliminate traffic fatalities and serious injuries on Sunnyvale's streets.

The ATP is also strengthened by the City's Climate Action Playbook (2019), which targets reducing vehicle miles traveled per person by 20% by 2030 and 25% by 2050.

The City's Green Stormwater Infrastructure Plan (2019) also informs this plan. Green infrastructure, such as bioretention plantings and pervious pavements can be integrated within walking and biking facilities.



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# Chapter 2: Existing Conditions

## Demographics

Sunnyvale is home to 156,503 residents with a similarly low population density to neighboring South Bay cities. In addition to local residents, Sunnyvale attracts more than 80,000 employees each workday, as notable large office and research facilities such as LinkedIn, Google and Lockheed Martin are located within the City.

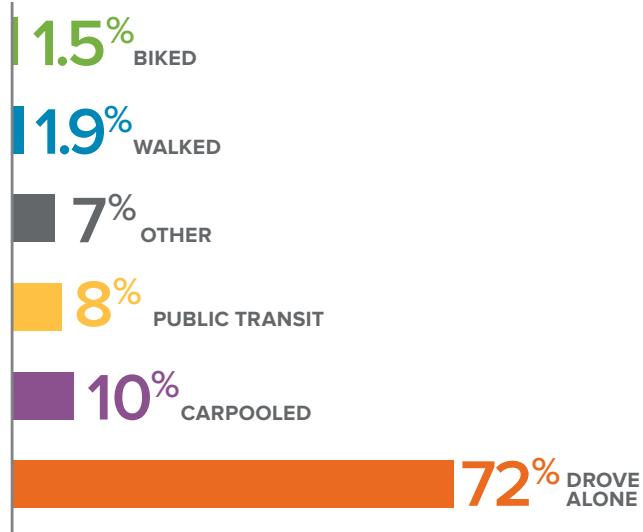
The median age of Sunnyvale residents is 35.6 years, which reflects the median age of other South Bay cities. Children and young adults under the age of 24 account for approximately 28 percent of the City's total population. The largest 10-year age group is those aged 25-34 years, which represent over 21 percent of the city's total population. 12 percent of Sunnyvale residents are aged 65 and over.

## Commute Trends

Almost three-quarters of Sunnyvale's residents commute to work by driving alone (see Figure 1).<sup>1</sup> These numbers can likely be attributed to the City's low-density development and zoning patterns, as well as personal preferences. Currently 1.5 percent of residents report bicycling as their primary mode of transportation to work. Similarly, 1.9 percent of residents report walking as their primary mode of transportation to work.

It should be noted that this data does not account for commuters with multiple modes of travel to and from work, such as commuters that ride a bicycle to a Caltrain station before transferring to Caltrain for the remainder of their trip. In these surveys, such trips would be counted as a transit trip. In addition, the census data fails to capture people who commute by walk or bicycle only one or two days per week. Consequently, it is understood that the number of actual commuter walking and biking trips is higher than what is represented through census numbers.

**Figure 1: Sunnyvale Commute Travel Modes**



<sup>1</sup> U.S. Census Bureau; American Community Survey, 2017 American Community Survey five-year estimates

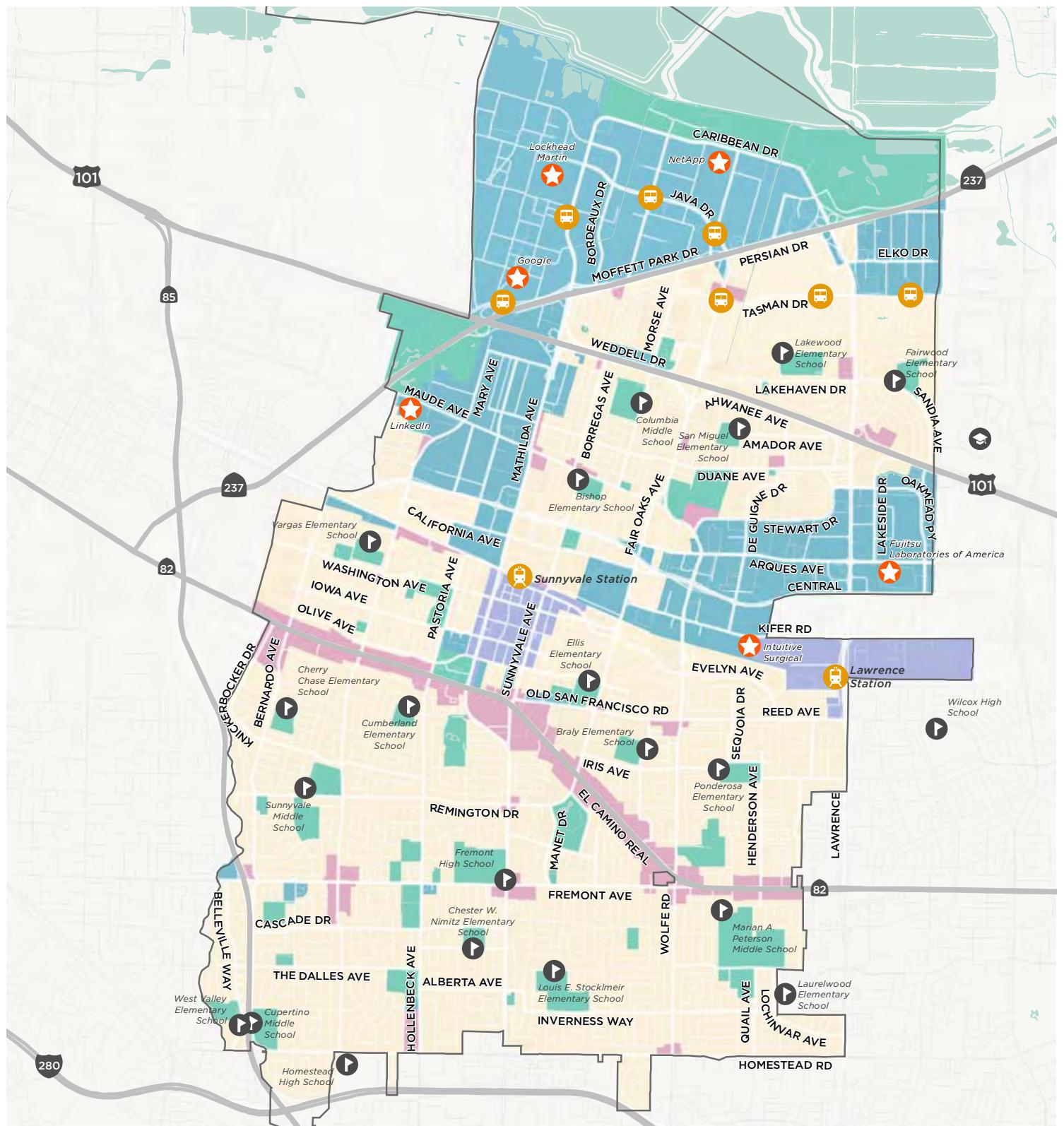
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## Land Use and Major Destinations

Sunnyvale's current land use is a mix of residential, commercial, industrial, and office park land use types (Map 1). Residential areas are the most prevalent land use type, accounting for approximately 45 percent of the total land area. These areas are located primarily in the southern half of the City, south of the Caltrain rail line, as well in northern Sunnyvale between US Highway 101 and State Route 237. Sunnyvale's office parks and industrial areas are generally confined to the northern half of the city.

Sunnyvale contains a variety of employment, retail, and recreational destinations, (Map 1). Office parks and research facilities such as Moffett Park, Peery Park, and East-Central Sunnyvale are important employment centers. These destinations are often located near transit stations or next to highways. The city's popular recreational and shopping destinations include Murphy Avenue, Downtown Sunnyvale, El Camino Real, Baylands Park, Twin Creeks Fields, the Sunnyvale Farmers Market, and the Bay Trail.

The distinct and separated land uses in Sunnyvale presents a challenge to encouraging people to take trips by biking and walking as opposed to automobile. However, the current land use pattern underlies the importance of creating comfortable and connected walking and biking facilities, and promoting future development that includes a mix of uses.



**Map 1. Project Area**

#### Land Use

- |                     |                   |
|---------------------|-------------------|
| Commercial          | Public Facility   |
| Office / Industrial | Transit Mixed Use |
| Residential         |                   |

#### Major Destinations

- |                    |                 |
|--------------------|-----------------|
| Major Employer     | Mission College |
| Caltrain Station   | Public School   |
| Light Rail Station | City Boundary   |



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## Transit

Sunnyvale is served by the Santa Clara Valley Transit Authority (VTA) light rail and buses and the Caltrain Commuter Rail.

Located in northern Sunnyvale, six VTA light rail stations provide access to office parks for those commuting from outside of the city. Though light rail stations are generally located in non-residential areas, they can be used to travel to other areas in the greater San Jose region. In addition to the rail line, VTA bus routes provide access within Sunnyvale. VTA operates three high-frequency bus lines through Sunnyvale, two lines on El Camino Real, and one on Mathilda Avenue/Sunnyvale-Saratoga Road.

The Caltrain rail line runs east-west through central Sunnyvale. Two commuter stations are located within the City, including downtown Sunnyvale Station and Lawrence Station near the Sunnyvale-Santa Clara border. Both stations are surrounded by either existing or proposed high-density mixed-use areas. Bicycle connections and linkages are especially important in these areas.

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## Existing Bicycle Network

Sunnyvale's existing bike network is made up of shared use paths, separated bikeways, buffered bike lanes, bike lanes, and bike routes (Table 1). The City does not currently have any Class IIIB Bicycle Boulevards, which is a low stress facility appropriate for local streets. See the descriptions below to understand how these terms will be used throughout this plan.

Sunnyvale's current bicycle network has approximately 90 miles of designated lanes, routes, and paths. These are recorded within this Plan as centerline miles. Bike lanes are the most common facility type, making up 54.5 miles of the total network. Shared-use paths are the next most common facility type (18.0 miles), followed by on-street bike routes (12.6 miles) and buffered bike lanes (4.4 miles).

**Table 1. Existing Bikeway Network**

Facility Type	Mileage
Class I Shared-Use Path	18.0 miles
Class II Bicycle Lane	54.5 miles
Class IIB Buffered Bicycle Lane	4.4 miles
Class III Bicycle Route	12.6 miles
Class IIIB Bicycle Boulevard	0 miles
Class IV Separated Bikeway	0.4 miles
<b>Complete Network</b>	<b>89.9 miles</b>

# Bicycle Facility Types



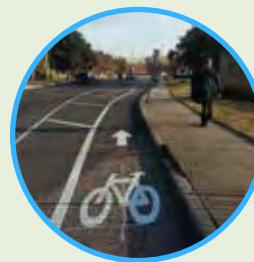
## CLASS I **Shared-Use Path**

- Paths completely separated from motor vehicle traffic used by people walking and biking.
- Comfortable for people of all ages and abilities.
- Typically located immediately adjacent and parallel to a roadway or in its own independent right-of-way, such as within a park or along a body of water.



## CLASS II **Bicycle Lane**

- A dedicated lane for bicycle travel adjacent to traffic.
- A painted white line separates the bicycle lane from motor vehicle traffic.



## CLASS IIB **Buffered Bicycle Lane**

- A dedicated lane for bicycle travel separated from vehicle traffic by a painted buffer.
- The buffer provides additional comfort for users by providing space from motor vehicles or parked cars.



## CLASS III **Bicycle Route**

- A signed bike route that people biking share with motor vehicles.
- Can include pavement markings.
- Comfortable facility for more confident bicyclists.
- Recommended when space for a bike lane may not be feasible.



## CLASS IIIB **Bicycle Boulevard**

- Calm, local streets where bicyclists have priority but share roadway space with motor vehicles.
- Shared roadway bicycle markings on the pavement as well as traffic calming features such as speed humps and traffic diverters keep these streets more comfortable for bicyclists.
- Comfortable facility for bicyclists with wider range of abilities.



## CLASS IV **Separated Bikeway**

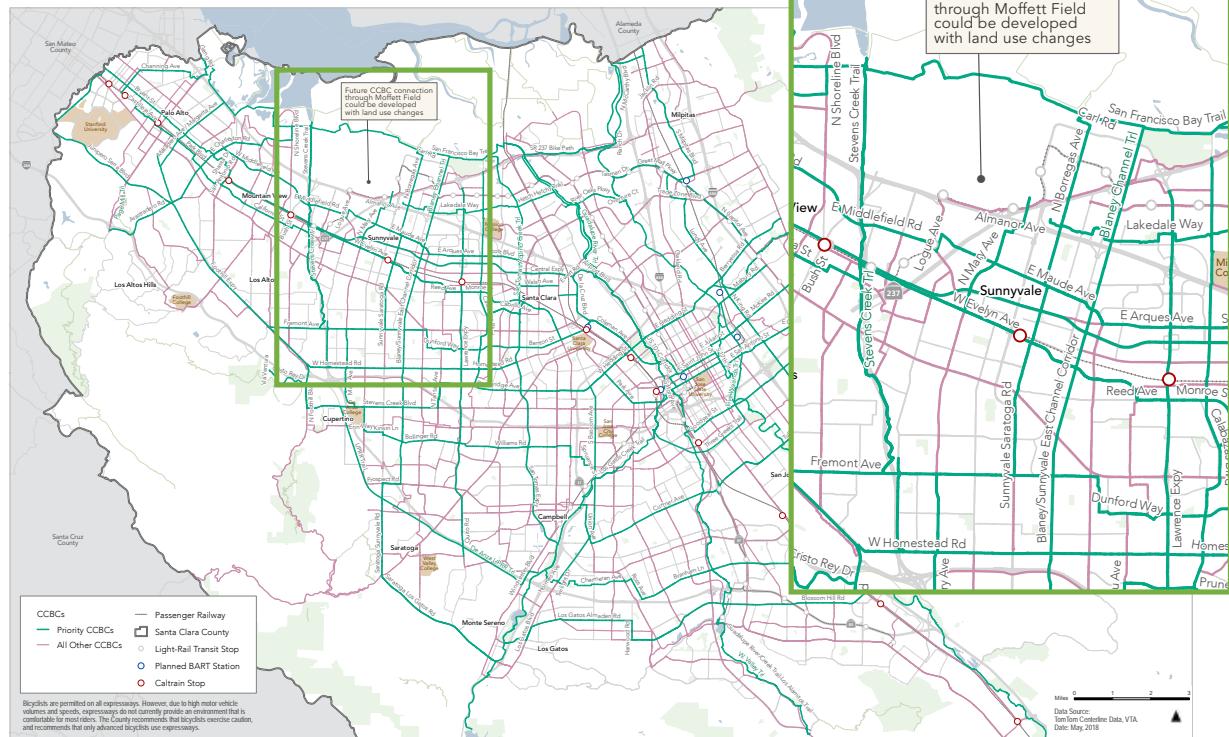
- An on-street bikeway separated from motor vehicle traffic by a curb, median, planters, parking delineators, or other physical barrier.

Bike lanes on higher-speed arterial roadways make up the majority of Sunnyvale's existing bicycle network (Map 2). This facility type caters to more advanced bicyclists and is often not suitable for less experienced riders. Though the current network provides basic connectivity within the City, the network could benefit from more comfortable bikeway connections.

Santa Clara Valley Transportation Authority (VTA) adopted an updated Countywide Bicycle Plan in May 2018, laying out a vision for approximately 950 miles of Cross-County Bicycle Corridors (CCBC), many within Sunnyvale. In Santa Clara County, bicycles are allowed on all county expressways, such as Lawrence Expressway and Central Expressway, which have wide shoulders.

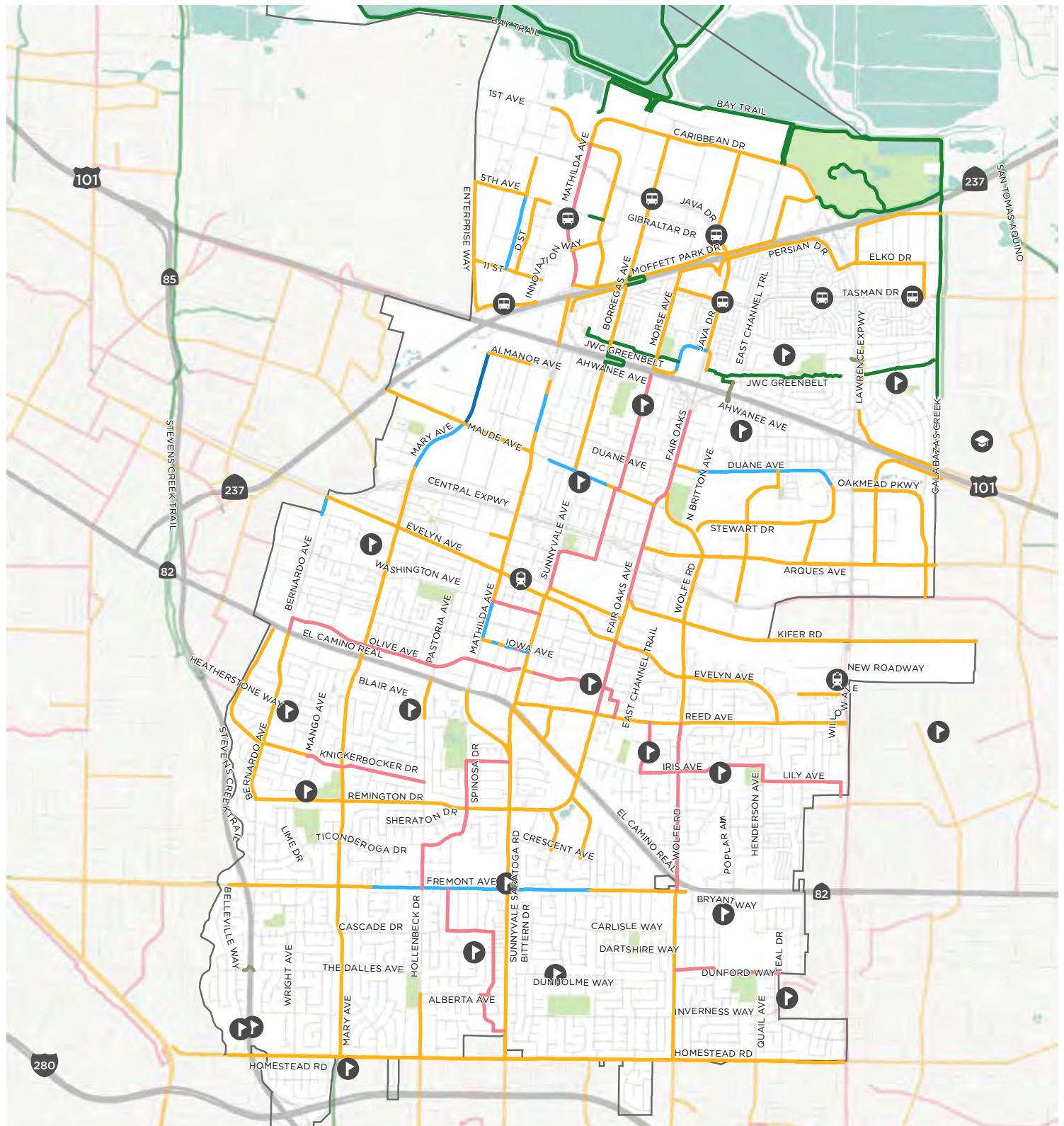
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## VTA-identified Priority Cross County Bikeway Corridors



## Shared-Use Paths

Sunnyvale's existing trail network is primarily located north of Highway 101. The John W. Christian Greenbelt, San Francisco Bay Trail, and the Calabazas Creek Trail along the Sunnyvale-Santa Clara border provide both local and regional connectivity. The John W. Christian Greenbelt is a local paved trail that provides east-west connections. The trail offers low-stress accessibility to parks, neighborhoods, and retail nodes as well as Lakewood Elementary School. On a more regional scale, the Bay Trail runs east-west along Sunnyvale's northern waterfront. The trail traverses Baylands Park, connecting users to neighboring cities such as Mountain View and Santa Clara, as well as other cities in the region.



**Map 2. Existing Bicycle Network**

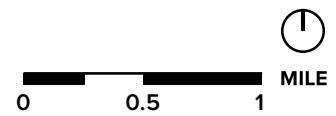
#### Existing Bikeways

- Class I Shared-Use Path
- Class II Bicycle Lane
- Class IIB Buffered Bicycle Lane
- Class III Bicycle Route
- Class IV Separated Bikeway
- Pedestrian Bridge (Walk Bike)

#### Boundaries + Destinations

- ▶ Public School
- ▶ Park
- ▶ Caltrain Station
- ▶ City Boundary
- ▶ Light Rail Station
- ▶ Mission College

\*\*Homestead Rd offers part-time bicycle lanes.

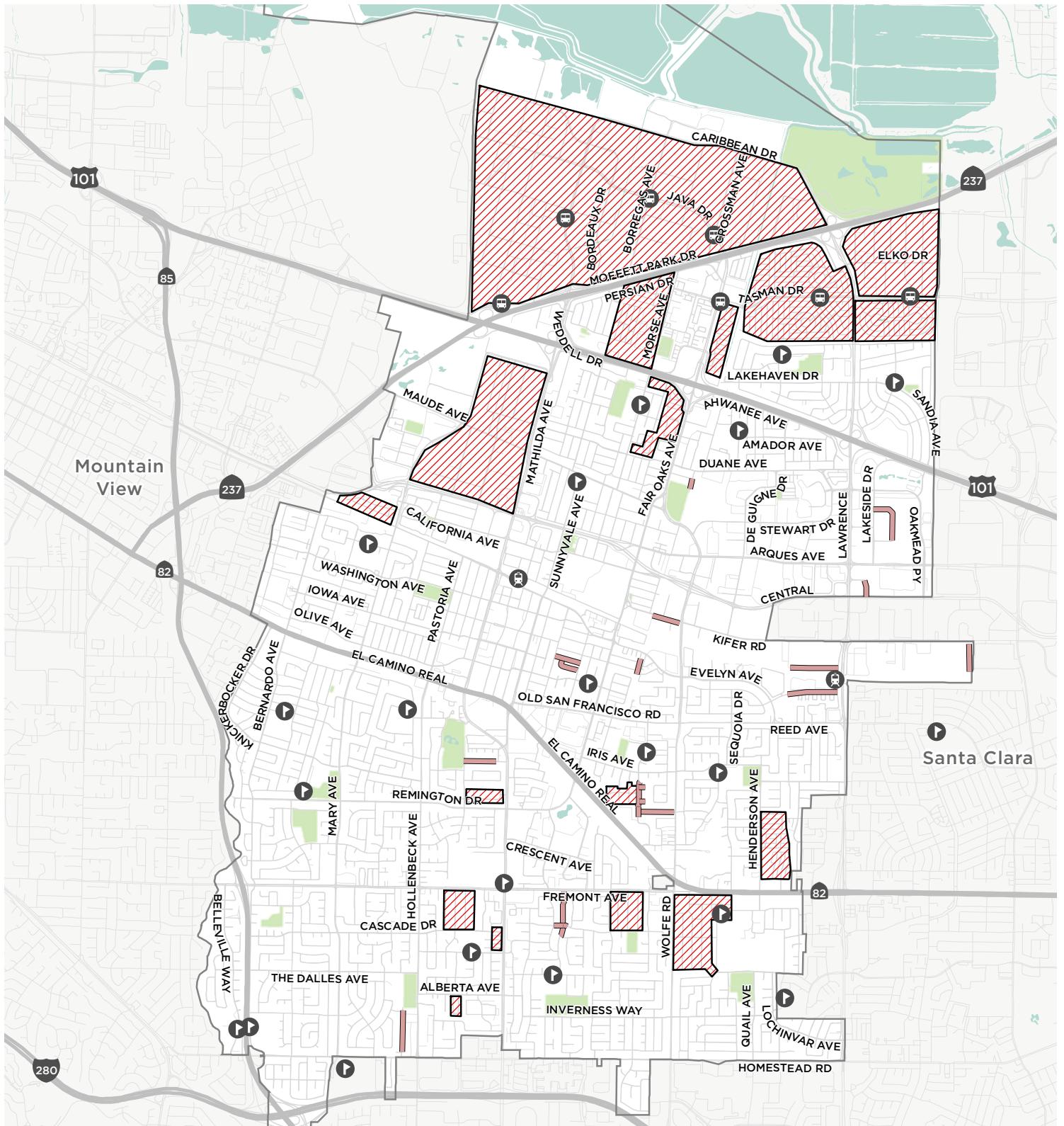


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## Existing Pedestrian Network

The majority of Sunnyvale's street network is equipped with complete sidewalks. In addition to this network, there are 18 miles of shared pedestrian and bicyclist paths.

Sidewalk widths tend to widen along higher-speed roadways and throughout the downtown area, creating a more comfortable environment for pedestrians. Residential areas and streets surrounding Downtown Sunnyvale Caltrain Station also generally have good sidewalk coverage. Areas with gaps in the sidewalk network include several blocks south of Fremont Ave. as well as surrounding some of the office parks, areas with private streets, and formerly unincorporated county pockets (Map 3).



**Map 3. Pedestrian Connectivity**

#### Missing Sidewalks

— Missing Sidewalk

▨ Areas with Missing Sidewalks or Sidewalk Gaps

#### Boundaries + Destinations

► Public School

▢ Park

● Caltrain Station

▢ City Boundary

● VTA Light Rail Station



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# Existing Safe Routes to School Program

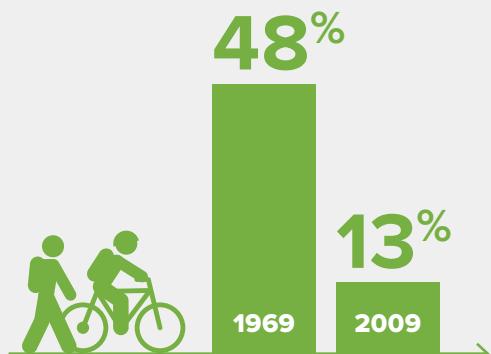
Sunnyvale Safe Routes to School (SRTS) supports families walking, bicycling, and carpooling to school. SRTS activities make it safer, easier, and more fun for families to walk and bike to school, improving their health, well-being, and safety. The goal of Sunnyvale SRTS is to help Sunnyvale residents to arrive at the 21 public schools safely. These 21 public schools are in four school districts, and they are located in Sunnyvale, Cupertino and Santa Clara. The City of Sunnyvale supports children and families in walking and bicycling to school through safety education, fun events, and traffic safety improvements around schools.

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SRTS programs involve the 6 Es, which are a variety of activities and events that make it easier, safer and more fun to walk, bike, and bus to school. These activities depend on partnerships among agencies, school staff, teachers, students, parent volunteers, community members, and law enforcement.

- **Equity:** Incorporating equity considerations to reach all populations by including communities of various races and ethnicities addressing the needs of children, and reaching low-income communities.
- **Education:** Classes and activities that provide students and families with bicycle, pedestrian, and traffic safety skills, and information about the benefits of bicycling and walking and the positive impacts these activities have on personal health and the environment.
- **Encouragement:** Events and activities that spark families' interest in walking and bicycling to school, with programs that reward participation.
- **Engineering:** Street infrastructure improvements (signage, crosswalks, signals, etc.) designed to improve the safety of people walking, bicycling, and driving along school routes.
- **Enforcement:** Strategies to deter unsafe behaviors of people driving, walking, and bicycling, and encourage all road users to obey traffic laws and share the road safely around schools and on school routes.
- **Evaluation:** Evaluating the projects and programs of each of the other "E's" helps to track progress and determine which programs and projects are most effective.

## THE TREND



The percentage of children walking or biking to school has **dropped precipitously within one generation.**

Nearly one-third of Sunnyvale 5th and 7th grade students did not score in the “Healthy Fitness Zone” during physical fitness testing during the 2018-2019 school year.\*



Roads near schools are congested, **decreasing safety and air quality** for children.

## KIDS WHO WALK OR BIKE TO SCHOOL



Arrive energized and are able to **function** at school



Get most of the recommended 60 minutes of **daily physical activity** during the trip to and from school



Are likely to be more **physically active**



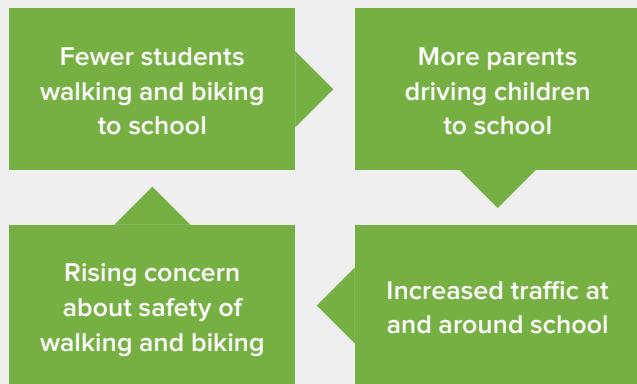
Demonstrate **improved test scores and better school performance**\*\*



Are **less likely** to suffer from depression and anxiety

## SAFETY CONCERN FEEDBACK LOOP

The Safety Concerns Feedback Loop illustrates a reactive cycle that occurs when more parents drive their children to school instead of using active modes such as biking and walking.



\*Source: CA Department of Education, 2018-19 California Physical Fitness Report

\*\*More information, including primary sources, can be found at <http://guide.saferoutesinfo.org>

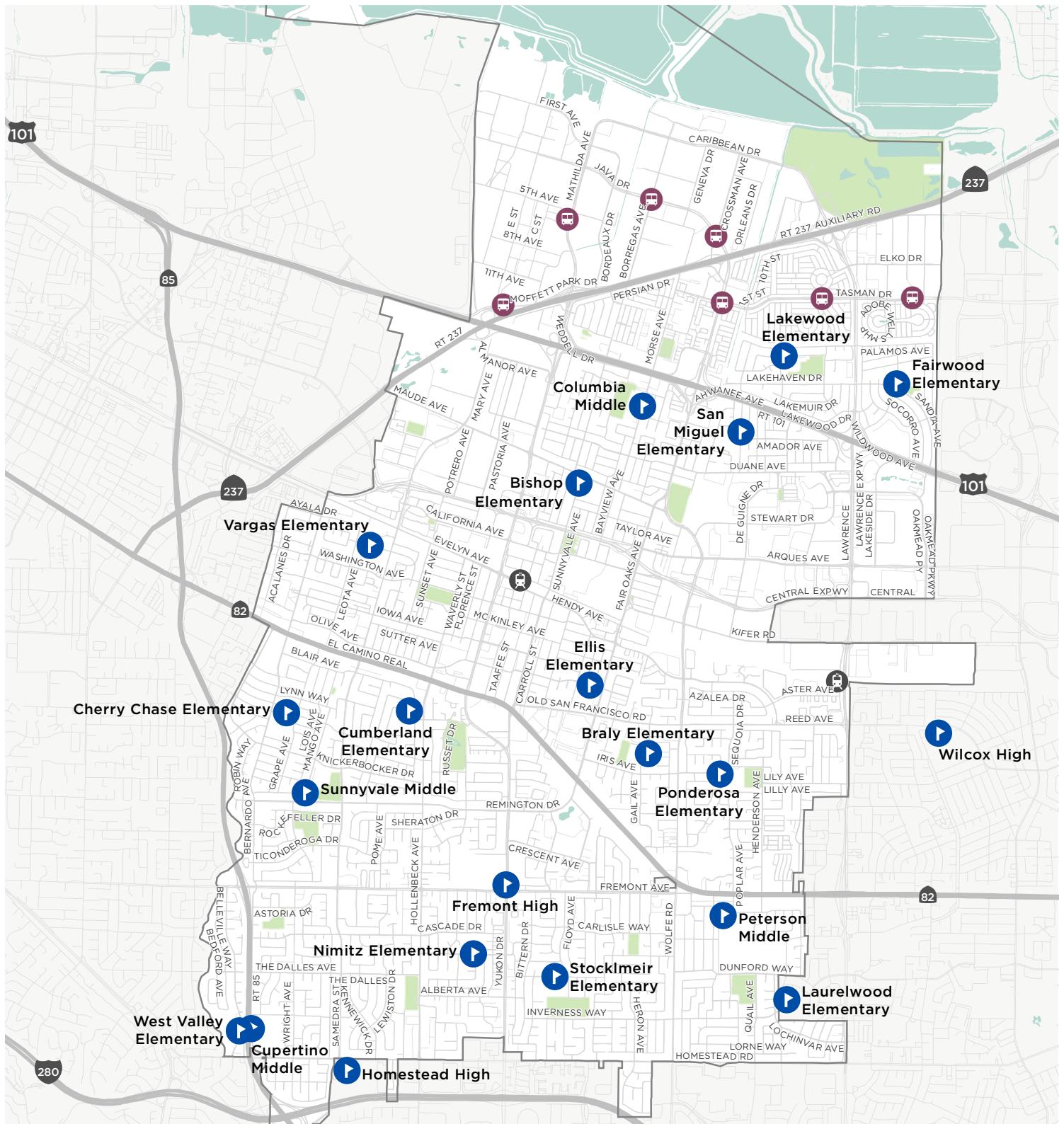
## Schools Participating in Sunnyvale Safe Routes to School

Currently, Sunnyvale SRTS serves 21 public schools, representing four school districts in Sunnyvale, Cupertino, and Santa Clara. The schools are shown in Map 4 and listed in Table 2.

**Table 2. Public Schools participating in Sunnyvale SRTS Program by school district.**

District	Schools
<b>Sunnyvale School District</b>	Bishop Elementary Cherry Chase Elementary Columbia Middle Cumberland Elementary Ellis Elementary Fairwood Elementary Lakewood Elementary San Miguel Elementary Sunnyvale Middle Vargas Elementary
<b>Santa Clara Unified School District</b>	Braly Elementary Laurelwood Elementary* Peterson Middle Ponderosa Elementary Wilcox High*
<b>Cupertino Unified School District</b>	Cupertino Middle Nimitz Elementary Stocklmeir Elementary West Valley Elementary
<b>Fremont Union High School District</b>	Fremont High Homestead High*

\*School is outside Sunnyvale City limits.



## Map 4. Public Schools

- Public School
  - Caltrain Station
  - VTA Light Rail Station
  - Parks
  - City Boundary
- 0 0.5 1 MILE

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# Existing Programs and Policies

Bicycle, walking, and SRTS-focused programs provide education and encouragement for residents. Many of the existing programs are funded through the SRTS program and aimed at school aged children, however a number of partnering agencies and organizations provide support for adults.

## Sunnyvale Safe Routes to School Program

Since 2018, the City of Sunnyvale has funded Sunnyvale's SRTS program that encourages school-aged children to walk and bicycle to school through infrastructure improvements, enforcement, safety education, and outreach. The City funds a SRTS Coordinator position through the Department of Public Safety. The program offers two citywide bicycle rodeos annually that provide support, materials, and education around bicycle safety. These events include bike inspections and repairs, helmet fitting, bike safety courses, and other bicycle-related events.

### REGIONAL

Regional programs provide resources that can be utilized by any city in the San Francisco Bay Area. The City of Sunnyvale has participated in the following regional programs.

### Spare the Air Youth Program

The San Francisco Bay Area's Regional Planning Organization, the Metropolitan Transportation Commission (MTC), organizes a SRTS group of SRTS providers from around the region. The Technical Advisory Committee meets quarterly, in person in San Francisco with a remote option. The meetings are a good place to meet other practitioners, learn about other local programs, and connect with funding opportunities.

### BikeMobile

The Bay Area BikeMobile hosts bicycle repair clinics at schools, libraries, recreation centers, and community events across the San Francisco Bay Area. At these events, participants are engaged in a hands-on repair process so that they may be more confident in making future repairs on their own. Additionally, BikeMobile promotes safe riding, teaches beginners how to ride without training wheels, and gives away refurbished bicycles. Because BikeMobile is offered through Spare the Air Youth and MTC, it is a free resource to the public that focuses on low-income communities that often do not have access to professional bike repair.

### COUNTYWIDE

The County of Santa Clara Public Health Department formerly ran the Sunnyvale SRTS program. After transitioning the program to the City in August 2017, the County's role has been limited to collecting hand tally data and publicizing Walk & Bike to School Week each fall.

### CITYWIDE

Community Service Officer Norma O'Connell is the City's SRTS Coordinator. Officer O'Connell works with 21 public schools and four districts serving Sunnyvale students to provide a variety of SRTS activities.

### **Sunnyvale SRTS Collaborative**

In 2008, the Santa Clara County Public Health Department began providing SRTS programming to a majority of schools in Sunnyvale. To assist, the Public Health Department convened a group of stakeholders to create the Sunnyvale SRTS Collaborative, which coordinated efforts across the City and provided overall direction for the program. The Collaborative also identified infrastructure needs, and worked with the City of Sunnyvale to establish a SRTS Program Coordinator position within the Department of Public Safety. Since the hiring of Officer O'Connell, the group has taken on independent projects and meets monthly on a volunteer basis.

### **Sunnyvale SRTS Task Force**

Coordinated by Officer O'Connell, the Sunnyvale SRTS Task Force meets twice a year at the beginning and end of the school year to coordinate activities across the City. The Task Force is comprised of school district representatives and school representatives. Prior to the 2018-2019 school year, the Task Force met on a quarterly basis.

### **Community Education about SRTS**

Officer O'Connell conducts targeted outreach to educate the community on the Sunnyvale SRTS program. She presents at Parent-Teacher Association (PTA) meetings, meets one-on-one with school principals, and provides public presentations about the program.

### **Citywide Rodeos and Helmet Fittings**

The City offers two citywide bicycle rodeos and helmet fittings each year. A bicycle rodeo is a bicycle safety event in which children practice various on-bicycle skills and learn bicycle safety tips. Any child in Sunnyvale

is welcome to attend these events and participate in a bicycle rodeo or be fitted with a helmet.

### **Monthly Safe Routes to School Newsletter**

Monthly newsletters are emailed to all public elementary, middle, and high schools in Sunnyvale with traffic tips, safety information for people walking and bicycling, and upcoming SRTS events. The newsletters are distributed by a designated person at each school, such as a parent SRTS coordinator, the principal, or the school secretary.

### **Bicycle Rodeo Kits**

Beginning in August 2017, the City has offered Bike Rodeo Kits to all schools with detailed instructions on how to conduct a bike rodeo and all the necessary supplies. While they remain popular with families and schools, many schools have expressed a desire for rodeos to be offered during school hours, which they were when the program was run by the County.

### **Bicycling and Walking Safety Assemblies**

Assemblies presented by Officer O'Connell have been offered to all elementary schools by request since August 2018. The assemblies provide bicycling and walking safety tips to students in grades K-5. While there is no limit to the number of schools that can host an assembly, three schools have participated as of December 2019.

### **Helmet Fittings and Distributions**

Any school can request a helmet fitting and distribution event. Both the school-based helmet events and the citywide helmet events were funded by a CA Office of Traffic Safety (OTS) grant that has been renewed for a second year.

## **Targeted Enforcement Activities**

The City provides multiple enforcement services to support safe and legal driving around schools. In some instances, the City has taken videos of traffic to share with schools and educate families and students on unsafe behaviors. The City has also provided a pedestrian decoy, who crosses the street in an effort to educate drivers who fail to yield. When requested by schools, the City can provide traffic enforcement to manage specific illegal behaviors, such as U-turns and failing to yield. In some cases, the officers write citations, while at other times the officers provide a warning in order to educate the driver.

## **Teen Traffic Diversion Classes**

These classes are held at the Department of Public Safety headquarters and discuss topics such as bicycle helmet safety, distracted driving, pedestrian safety, and common vehicle code violations. Helmet fittings are often included as well. Students are cited to attend diversion classes during targeted observations near high schools.

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## **Travel Tallies**

The City conducts travel tallies twice a year at each school (October and May). Teachers in each classroom get a head count of how many students walk, bicycle, carpool, or drive to school. Tallies are then compiled and returned to the City. Sunnyvale does not currently implement parent surveys.

## **Walk and Bike to School Week and Bike to School Day**

Every year during the second week of October (International Walk and Bike to School Week) and the second Thursday in May (Bike to School Day), schools participate in events and activities in support of kids

walking and biking to school, including bike trains and walking school buses. These activities can be leveraged in conjunction with City bicycling and walking infrastructure awareness and promotion.

## **Sunnyvale-Cupertino Cycling Club**

The Sunnyvale-Cupertino Cycling Club is a non-profit group of bicycle advocates and riders who host weekly group rides for varying skill levels and work with local advocacy groups, such as the Silicon Valley Bicycle Coalition, to improve bicycling conditions in Sunnyvale and the larger region.

## **Smart Cycling Training**

The Santa Clara Valley Transportation Authority (VTA) and the Santa Clara County Public Health Department intend to offer bicycle safety courses in the near future. Designed for bicyclists high-school age or older, the course includes in-class and on-bike training.

## **Pedestrian Safety for Older Adults**

In November 2018, a Public Safety Officer and a Public Safety Lieutenant held a “train the trainer” class in collaboration with the Sunnyvale Senior Center. Nine community volunteers and four staff members were trained to present the National Highway Traffic Safety Administration-developed “Pedestrian Safety for Older Adults” curriculum. Between November 2018 and August 2019, three public workshops were held serving about 45 Sunnyvale residents. Feedback from the program was very positive and it may be continued into the future.

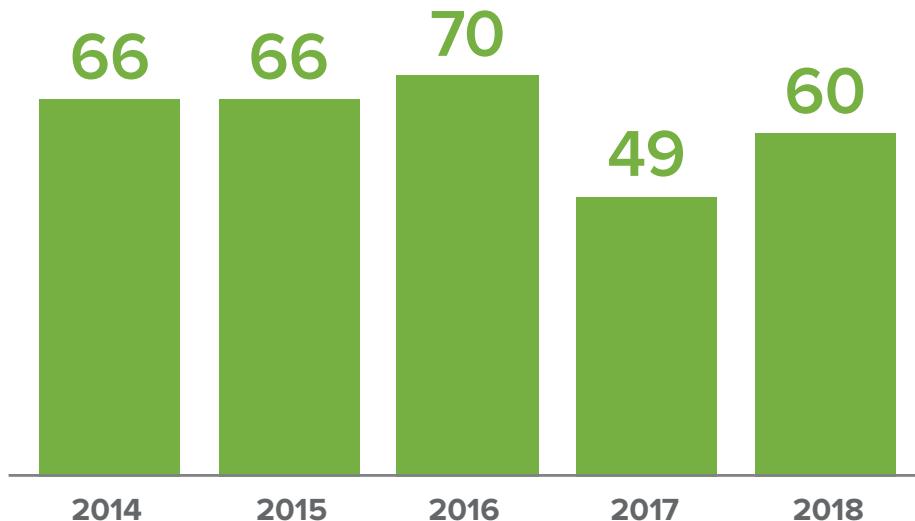
# Active Transportation Safety

Bicycle and pedestrian-related collision data can provide insight into specific locations and roadways that tend to have higher rates of collisions. This analysis uses collision data acquired from UC Berkeley's Transportation Injury Mapping Systems (TIMS) between the dates of 1/1/2014 and 12/31/2018 to determine high-level collision trends and areas with a history of frequent collisions. The data was also validated against the locally-collected Crossroads datasets provided by the City for the same time period. It is important to note that this analysis relies on reported collisions, but not all collisions involving people walking and biking are reported.

## Bicycle Safety

A total of 307 bicycle-related collisions were reported in Sunnyvale during the study period, with an average of 62 collisions per year. Collisions per year did not tend to notably fluctuate year-to-year as shown in Figure 2. Bicycle-related collisions were most likely to result in either ‘Other Visible Injury’ or “Complaint of Pain,” although seven percent resulted in a fatality or severe injury. Figure 3 below shows collision severity type percentages.

**Figure 2. Annual Bicycle Collisions**



## COLLISION TRENDS

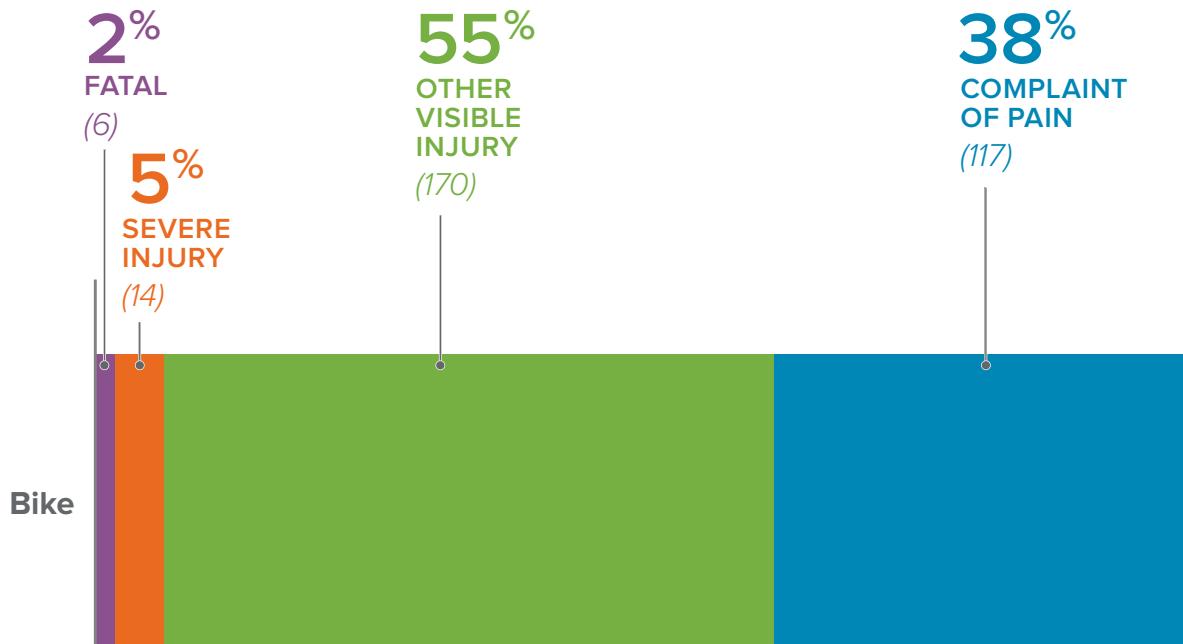
Bicycle-related collision locations are shown on Map 5. Key takeaways from the analysis include:

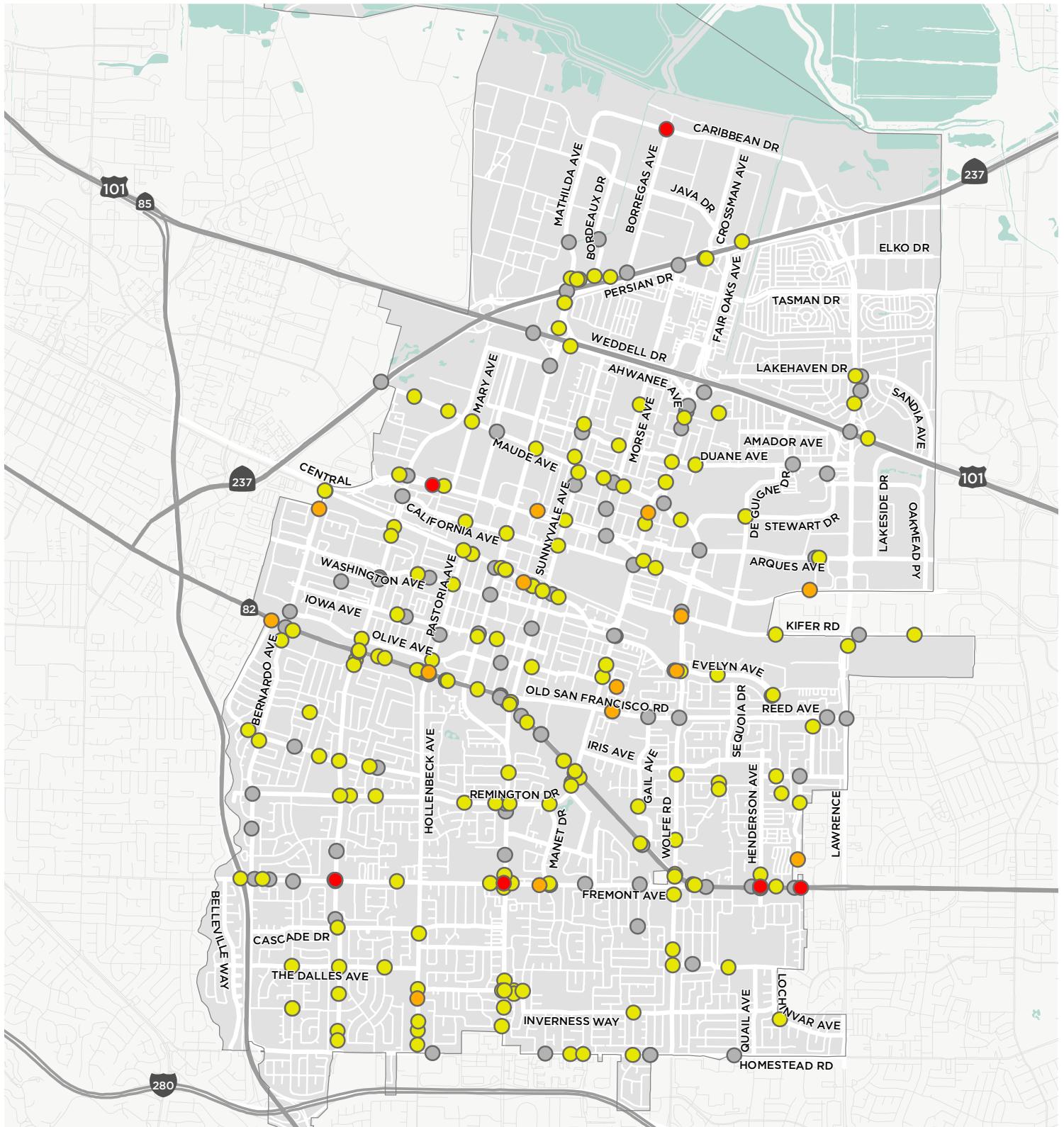
- **65 percent of bicycle-related collisions** occurred on higher-speed roadways, including arterials, county expressways and state highways
- **59 percent of bicycle-related collisions** occurred on roadways with bicycle lanes
- **Four of six total fatalities** during the study period occurred on Fremont Ave. and El Camino Real
- **The three most frequent bicycle collision factors** include improper turning (90 total), automobile right-of-way violations (76 total), and unsafe speeds (26 total)
- Motorists were determined to be at fault in **69 percent of bicycle-related collisions**

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Figure 3. Severity of Collisions





## Map 5. Bicycle Safety

Bicycle-Related Collisions by Severity 2014 - 2018  
 (307 Total Collisions During Study Period)

- Fatality (6)
- Severe Injury (14)
- Minor Injury (170)
- Complaint of Pain (117)

0 0.5 1 MILE

City Boundary

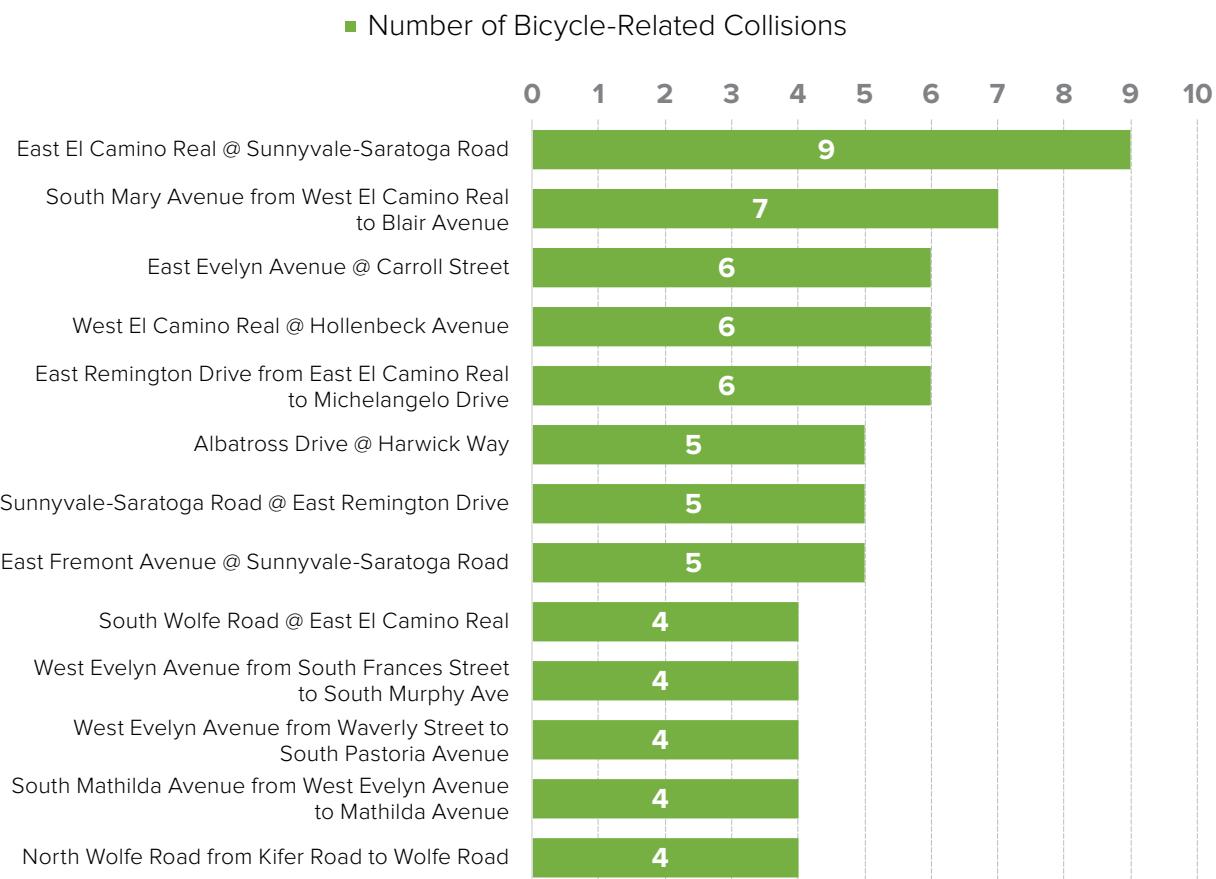


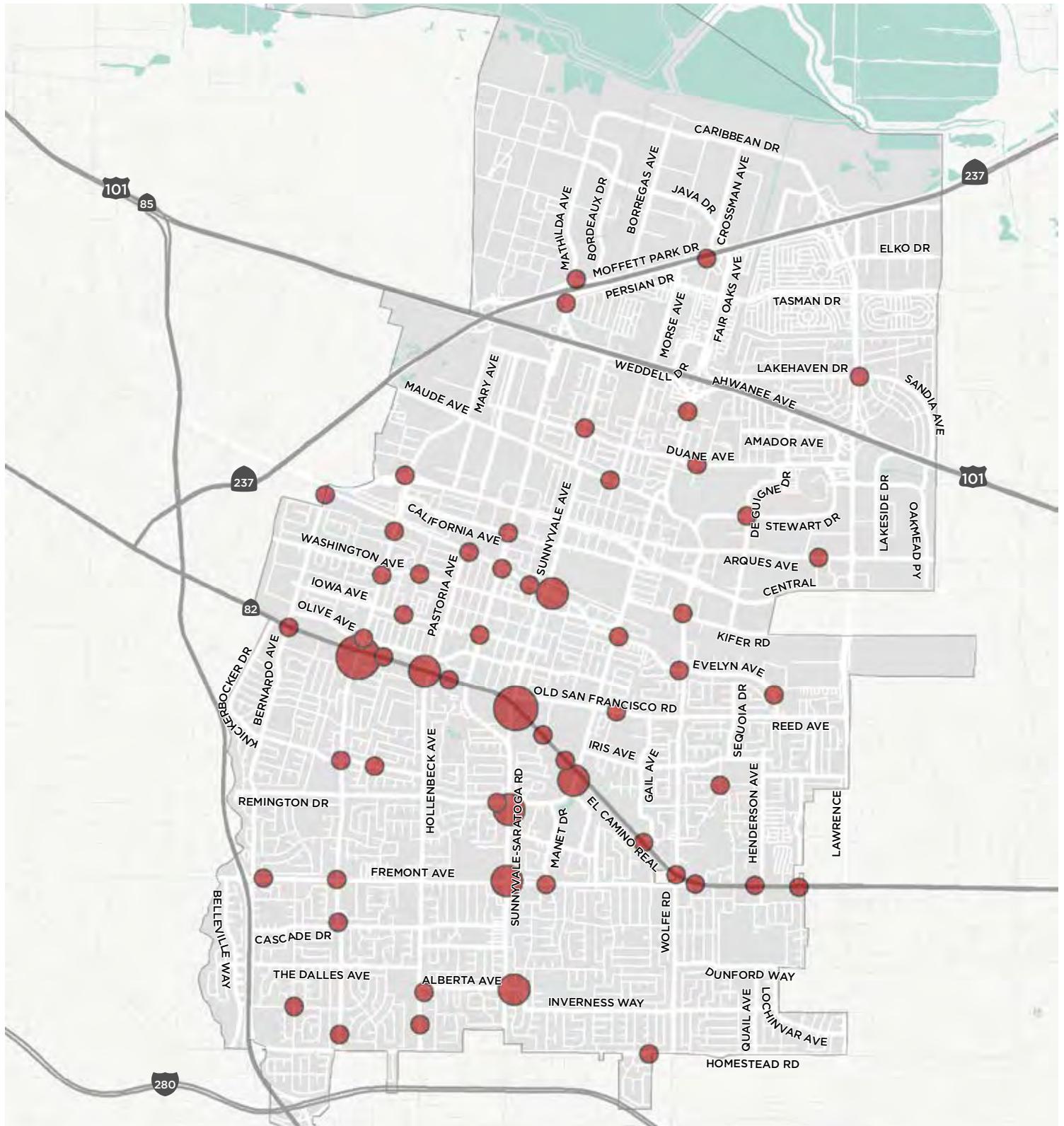
## HOTSPOT ANALYSIS

Using a spatial cluster analysis, locations with two or more bicycle collisions within a 300-foot radius were identified (Map 6). These locations reveal areas within Sunnyvale where bicycle collisions have a history of occurring.

- Top results of the hotspot analysis are shown in Figure 4. Thirteen locations were determined to have four or more collisions. Key takeaways from the analysis include:
  - » Seven intersections and six corridors in Sunnyvale experienced four or more bicycle-related collisions during the study period
  - » The intersection of El Camino Real and Sunnyvale-Saratoga Road is the most frequent bicycle collision location. Nine collisions occurred during the study period.
  - » Collision hotspots are clustered along El Camino Real and Evelyn Ave.

**Figure 4. Locations with 4+ Bicycle-Related Collisions (2014-2018)**





## Map 6. Bicycle Safety

Hotspots with 2 or More Bicycle-Related Collisions (2014 - 2018)



City Boundary

- 2 - 4
- 5 - 6
- 7 - 9



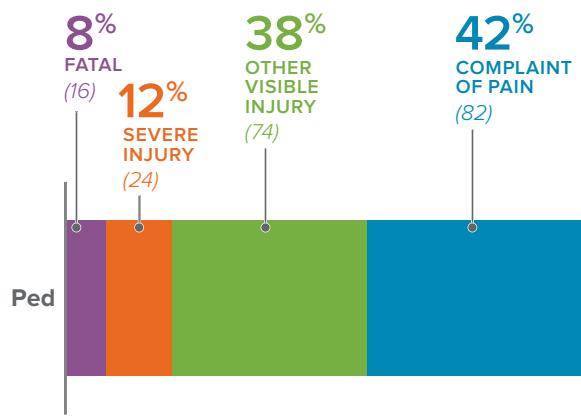
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## Pedestrian Safety

Pedestrian-related collision data can provide insight into specific locations and roadways that tend to have higher rates of collisions. This analysis uses collision data acquired from UC Berkeley's Transportation Injury Mapping Systems (TIMS) between the dates of 1/1/2014 and 12/31/2018 to determine high-level collision trends and areas with a history of frequent collisions. The data was also validated against the locally-collected Crossroads datasets provided by the City for the same time period.

A total of 196 pedestrian-related collisions were reported in Sunnyvale during the study period, with an average of 40 collisions per year. Unlike bicycle collisions, pedestrian collisions did notably fluctuate, for example, from 33 collisions in 2017 to 51 in 2018. The last year of data, 2018, had the highest number of reported collisions during the study period. Pedestrian-related collisions were most likely to result in either "Other Visible Injury" or "Complaint of Pain." Fifteen percent of collisions resulted in fatality or severe injury. Figure 5 below shows collision severity type percentages.

**Figure 5. Severity of Pedestrian Collisions**

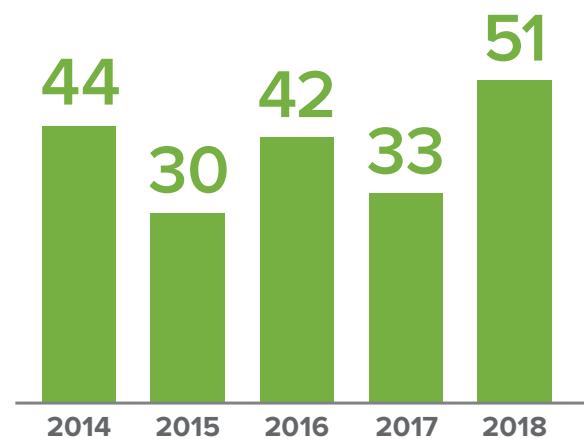


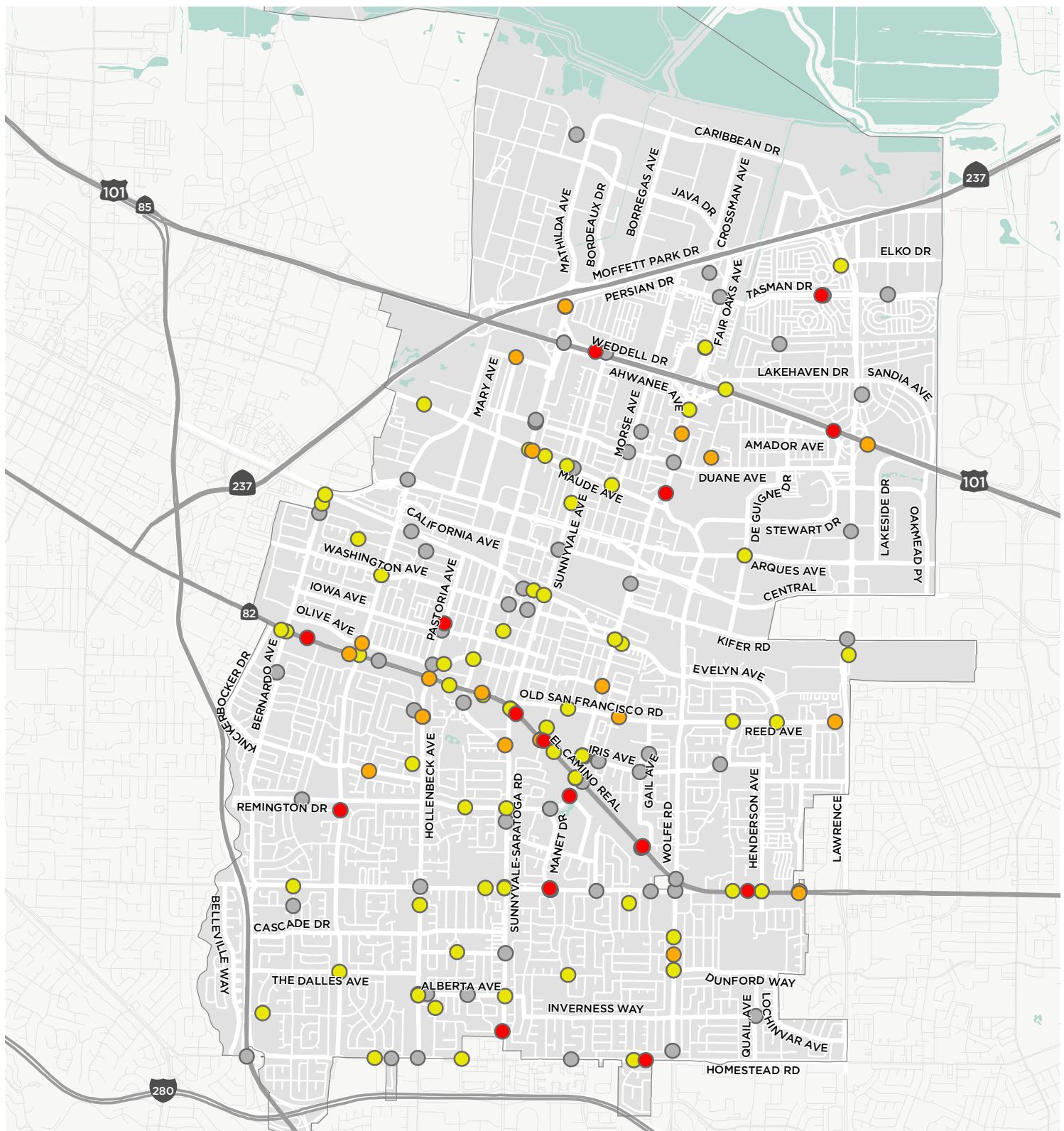
## COLLISION TRENDS

Pedestrian-related collision locations are shown on Map 7. Key takeaways from the analysis include:

- Collisions tend to happen at intersections.
- One in five pedestrian collisions occurred on El Camino Real.
- Sixteen fatalities occurred during the study period. Of these, 13 collisions were on higher-speed roadways including arterials, county expressways and state highways.
- Forty-one percent of pedestrian-related collisions occurred in residential areas.
- Motorists were determined to be at fault in 77 percent of pedestrian-related collisions.
- The most common collision factor when motorists are determined at fault occurred when a driver failed to yield to a pedestrian (88 percent).

**Figure 6. Annual Pedestrian Collisions**





## Map 7. Pedestrian Safety

Pedestrian-Related Collisions by Severity 2014 - 2018       City Boundary  
 (196 Total Collisions During Study Period)

- Fatality (16)
- Severe Injury (24)
- Minor Injury (74)
- Complaint of Pain (82)



0      0.5      1      MILE

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# Chapter 3: Outreach

Engaging the Sunnyvale community has been a priority for the City's current active transportation planning efforts. Since this project kicked off in April 2019, a variety of outreach opportunities were used to seek input from diverse Sunnyvale residents and community members.

The project team engaged stakeholders throughout the development of the Active Transportation Plan in order to:

- **Understand Walking and Biking Needs**
  - Sunnyvale residents weighed in on current barriers to biking and walking, and what destinations and routes could be made more bikeable and walkable. This information helped the project team develop an understanding of the needs and gaps of the citywide network.
- **Develop a Vision for Active Transportation in the City** – Stakeholders across different groups weighed in on the vision, policies and objectives for the Plan, guiding the high-level direction of the Plan.
- **Refine Draft Recommendations** – The City presented the draft bicycle, pedestrian, and SRTS recommendations developed through the process. Stakeholders and the public helped the City clarify these recommendations, and identified additional areas for improvement.



## PUBLIC MEETINGS

- One Community Workshop
- One Webinar
- Three Mobile Workshops
- Two Biking Tours
- Two Walking Tours
- Twenty-one School Walking Audits



## STAKEHOLDER MEETINGS

- Six Bicycle and Pedestrian Advisory Commission Meetings
- Five Focus Groups
- School District Meetings
- One Meeting with Neighboring Jurisdictions
- One City Council Meeting



## ONLINE INPUT

- Interactive Mapping Tool
- Online Survey
- Online Public Draft Plan Comment Tool
- City Website and Social Media

# City of Sunnyvale Active Transportation Plan

What did you like about this area?



Members of the public give feedback after the Crosstown Biking Tour

## Public Outreach

The City held community workshops, mobile workshops, focus groups, and walking and bike tours during the existing conditions and recommendation phases of the Plan development. Additionally, the City's commissions and committees were updated and consulted at key milestones throughout the development process.

### APRIL - MAY 2019 School Walk Audits

Twenty-one school walk audits were performed in April and May 2019. Walk audits were scheduled for either arrival or dismissal with either the school principal or school administrative assistant and were coordinated with Officer Norma O'Connell, the Sunnyvale SRTS Coordinator. After confirming the date and time for the audit, Officer O'Connell and school staff would issue an invitation to parents and school district staff to join the audit. Audits brought together a combination of school staff, parents, school district staff (when available), City staff, and transportation planning and engineering consultants.

### APRIL 18, 2019

#### BPAC Meeting #1

The project team presented the Active Transportation planning process to the Bicycle and Pedestrian Advisory Commission (BPAC) at the start of the process. BPAC members provided feedback on the direction of the plan, and their key objectives.

### MAY 5, 2019

#### Fit and Fun Festival Mobile Workshop

The project team hosted a mobile workshop at the Fit and Fun Festival at the onset of the process to announce the start of the Plan, and to listen to people's initial feedback on barriers to biking and walking in Sunnyvale.

### MAY 7, 2019

#### Bike to Work Day Mobile Workshop

Hosted at Plaza Del Sol, project team members talked to people as part of the Bike to Work day and to record initial feedback on barriers to biking and walking in Sunnyvale.



Public feedback collected at Bike to Work Day

**MAY 15, 2019****Teen Advisory Committee Meeting**

The project team met with the Teen Advisory Committee to help the City understand barriers preventing youth from walking or riding a bike in Sunnyvale.

**JUNE 10, 2019****Senior Center Advisory Committee**

This focus group asked participants how they usually get to the senior center, and what were their priority issues regarding walking and biking.

**JUNE 10, 2019****Advisory Committee On Accessibility Focus Groups**

This focus group asked participants what their key concerns are for improving the accessibility of walking and biking for people with disabilities.

**AUGUST 3, 2019****Crosstown Biking Tour**

Biking tour participants explored new opportunities for bike infrastructure on Evelyn Ave., Mary Ave., Remington Ave., and South Fair Oaks Ave.

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**AUGUST 6, 2019****Moffett Park Biking Tour**

Biking tour participants explored the pedestrian and bicycle overcrossings of Highway 101 and Highway 237 and looked at other connections to employment centers in the Moffett Park Area.



### AUGUST 6, 2019 **El Camino Real Walking Tour**

Walking tour participants started at Peterson Middle School and explored improving walking and biking safety along and across El Camino Real between Poplar Ave. and Helen Ave.

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### AUGUST 9, 2019 **Fair Oaks Park Walking Tour**

Walking tour participants explored walking and biking comfort and connections around Fair Oaks Park.

### AUGUST 15, 2019 **BPAC Meeting #2**

BPAC members convened for a study session, reviewing and providing feedback on the existing conditions and needs analysis.



### SEPTEMBER 14, 2019 **State of the City Mobile Workshop**

The project team held a mobile workshop at the State of the City event, alerting attendees to the City's ongoing active transportation planning efforts

### SEPTEMBER 30, 2019 **Moffett Park Business Group Focus Group**

This focus group asked participants of the Moffett Park Business Group about their company's current commute patterns, goals for commuting, and barriers to walking and biking in the Moffett Park area.

### OCTOBER 9, 2019 **General Business Group Focus Group**

A focus group open to all businesses in Sunnyvale solicited feedback from both small and large companies. Focus group participants highlighted their company's goals for walking and biking, and shared key commuting challenges for their employees.

**OCTOBER 19, 2019****BPAC Meeting #3**

BPAC members discussed and provided feedback on the Draft Vision, Goals and Policies for the Active Transportation Plan.

**DECEMBER 5, 2019****Draft Recommendations  
Community Workshop**

Over 70 residents and community members attended this community workshop to provide feedback on the draft recommendations developed as part of the three Active Transportation plans.

**DECEMBER 19, 2019****BPAC Meeting #4**

BPAC members provided feedback on the draft recommendations, and outlined additional routes and areas that the project team should explore for further improvements.

**FEBRUARY/MARCH 2020****Meetings with School Districts**

The City met with staff from Sunnyvale School District, Fremont Union High School School District, Santa Clara Unified School District, and Cupertino Unified School district to review Safe Routes to School improvements.

**MARCH 10, 2020****Meeting with Neighboring Jurisdictions**

Staff from neighboring jurisdictions and coordinating agencies met to review and provide feedback on the Public Draft Plan.

**MARCH 12, 2020****Draft Plan Webinar**

This webinar provided an overview of the Active Transportation Draft Plan and how members of the public could provide input.

**APRIL 16, 2020****BPAC Meeting # 5**

BPAC members reviewed and provided input on the Public Draft Plan.

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**JUNE 18, 2020****BPAC Meeting #6**

BPAC members will meet to take an action on whether to recommend City Council to adopt the Final Active Transportation Plan.

**JULY 2020****City Council Meeting**

City staff will bring the Active Transportation Plan for City Council Adoption.

## Online Outreach

Online outreach was an important component of this plan development. In order to give community members the opportunity to provide input on their own time and schedule, the project team distributed an online survey and collected feedback via an online map to reach even more people in Sunnyvale.

### ONLINE SURVEY

The City of Sunnyvale distributed an online survey to gather input on walking and bicycling challenges, preferences, and opportunities throughout Sunnyvale. The 21-question survey was made available online and advertised at mobile workshops and through City email notifications. The survey was open between September and October 2019 and received 944 responses. These responses informed the city's understanding of the public's current bicycling patterns as well as barriers to bicycling in Sunnyvale.

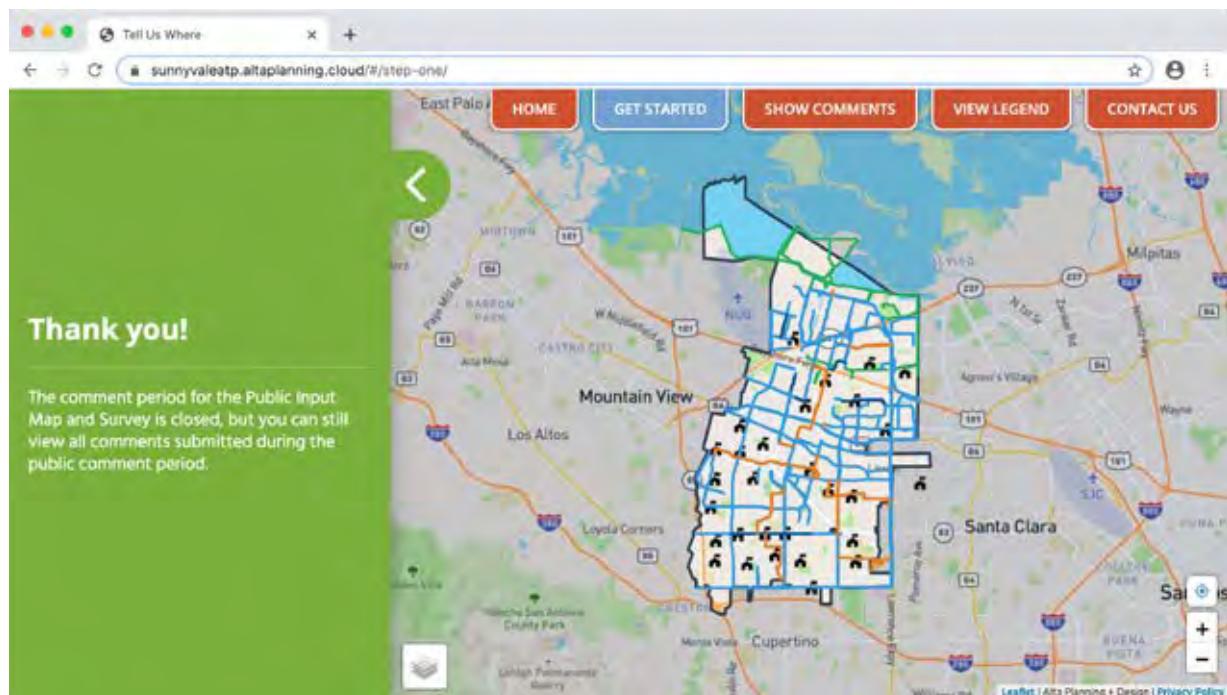
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### ONLINE MAP

An online map gave people in Sunnyvale the chance to share where they currently walk and bike and where they would like to walk and bike in the future. People also identified barriers to using active modes in the city.

People also identified barriers to bicycling in the city. The online map received 821 individual comments between September and October 2019. This feedback shaped the development of the active transportation network and spot improvement recommendations in this Plan.

#### Example of Sunnyvale's online map.



## Key themes from the Community Survey:

### DESIRE TO WALK AND BIKE MORE

Whether it's for work, errands, or recreation, people in Sunnyvale want to walk and bike more than they do now. Nine out of ten survey respondents responded that they would like to walk and bike more than they do today.

### SAFETY CONCERNs

Safety was a widely identified barrier to bicycling in Sunnyvale. Survey respondents said that safer streets and dedicated bicycle infrastructure would encourage them to walk and bicycle more often.

“I don’t feel comfortable biking in our neighborhood with my kids. I can’t bike on the sidewalks with them and I am not comfortable having my kids bike on roads. Only paths or protected bike lanes are okay for my family. Our street has a bike lane, but that isn’t good enough for kids.”

—Survey Respondent

### TRAILS/SHARED-USE PATHS AND SEPARATED BIKE LANES AS MOST DESIRABLE FACILITY TYPE

Trails/separated paths and separated bike lanes were identified as the top two most-comfortable bike facilities by survey respondents. Shared travel lanes were identified as the least comfortable bike facility.

### IMPORTANCE OF A CONNECTED, CONTINUOUS BICYCLE NETWORK

Survey respondents said that it is important for them to have reliable, continuous routes if they are going to bike in Sunnyvale. People expressed frustration about gaps in the existing bicycle network.

“It’s very hard to commit to cycling or walking when there is no predictability about walking or bicycling infrastructure.”

—Survey Respondent

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### CONNECTING KEY DESTINATIONS

Survey respondents said that it is important to be able to walk and bike to important destinations such as work, restaurants, shopping areas, schools, and parks in Sunnyvale.

“My bike commute is a relatively safe route, but I don’t have the same options for retail, grocery, restaurants.”

—Survey Respondent

## SUPPORTING THE BICYCLE NETWORK WITH OTHER BICYCLE INFRASTRUCTURE

People in Sunnyvale expressed the necessity of bicycle infrastructure that complements the bicycle network, such as more secure bicycle parking throughout the city.

“[I’d like to see] safer and more prevalent bike racks. When I’ve cycled before with kids to McDonalds or Zanotto’s, there are no good places to lock up my bike and I’m nervous about leaving the bikes locked up outside for any length of time.”

—Survey Respondent

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## DESIRE FOR A MORE COMFORTABLE PEDESTRIAN NETWORK

Survey respondents identified complete sidewalk networks, slower vehicle speeds, and more comfortable streetscape design elements as parts of a pedestrian network that would encourage them to walk more.

“[I’d like to see] wider sidewalks next to businesses, more amenities like pocket parks and coffee kiosks, shade, places to sit and rest.”

—Survey respondent

## WALKING SERVES MANY NEEDS

Walking infrastructure in Sunnyvale helps people complete a wide variety of trips. Nearly half of all survey respondents take a walk for their health and recreation at least once a week. In addition to walking for recreation, people in Sunnyvale are walking to work, to school, and while running errands.

## What We Heard

Across all of our outreach efforts, we heard:

### Focus on Creek Trails

Overall, people use and appreciate nearby creek trails, such as the Stevens Creek Trail and Calabazas Creek Trail. Creek trails are seen as important walking and bicycle connections that allow people to travel long distances away from the stress and air pollution of cars. People want to see improved connections and access points to existing creek trails. In addition, many advocated for new and extended trail segments, such as the Stevens Creek Trail extension, and the East Channel Trail.

### Design Protected Bikeways on Arterials

High speeds and high volumes of cars were consistently reported as being a deterrent to bicycling on Sunnyvale roads. People identified a number of arterials as providing the shortest, most direct route to their destination, but don't feel safe biking on these streets. Facilities without physical separation from cars were reported as insufficient bike facilities for these roadways.

### Increase Bicycle Priority at Intersections

Across the city, people reported intersections that did not prioritize their bicycle travel. This included intersections that did not detect bicycles, signal timing that was too short to let bicyclists cross, or travel configurations that left people biking feeling unprotected as they crossed the intersection.

### Encouraging Biking and Walking can Improve Commuting Options

Many see bicycle and pedestrian infrastructure improvements as key to encouraging bicycling commuting in Sunnyvale. As Sunnyvale continues to add more jobs and more housing within its boundaries, encouraging bicycle commuting is seen as a key tactic to help people get around.

### Prioritize Student Routes

City investment in bicycle and pedestrian infrastructure should prioritize routes used by students getting to and from school. Many identified routes and intersections used by students at Cupertino Middle School, Peterson Middle School, and Fremont High School, as needing improvements and enhancements.

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# Chapter 4:

# Bicycle Plan





## Bikeway Needs

The needs of people bicycling within Sunnyvale are diverse and dependent on an individual's level of experience, comfort, and transportation needs. To understand the needs of people bicycling in Sunnyvale, this chapter examines a Bicycle Level of Traffic Stress analysis to identify locations within the existing street network that may attract or deter people from riding bicycles.

The chapter outlines three common barriers that lead to gaps in the citywide bikeway network, including:

- Limited highway crossings for bicycles restrict direct bicycle trips
- Existing bikeways on arterial roadways are unsuitable for all ages and abilities
- Bike facilities end before the intersection

The findings of the needs analysis support a four-pronged strategy for building a comprehensive low-stress bicycle network in Sunnyvale. The four strategies include:

1. Make it Comfortable and Connected
2. Make it Local
3. Fill in the Network
4. Focus on the Intersections

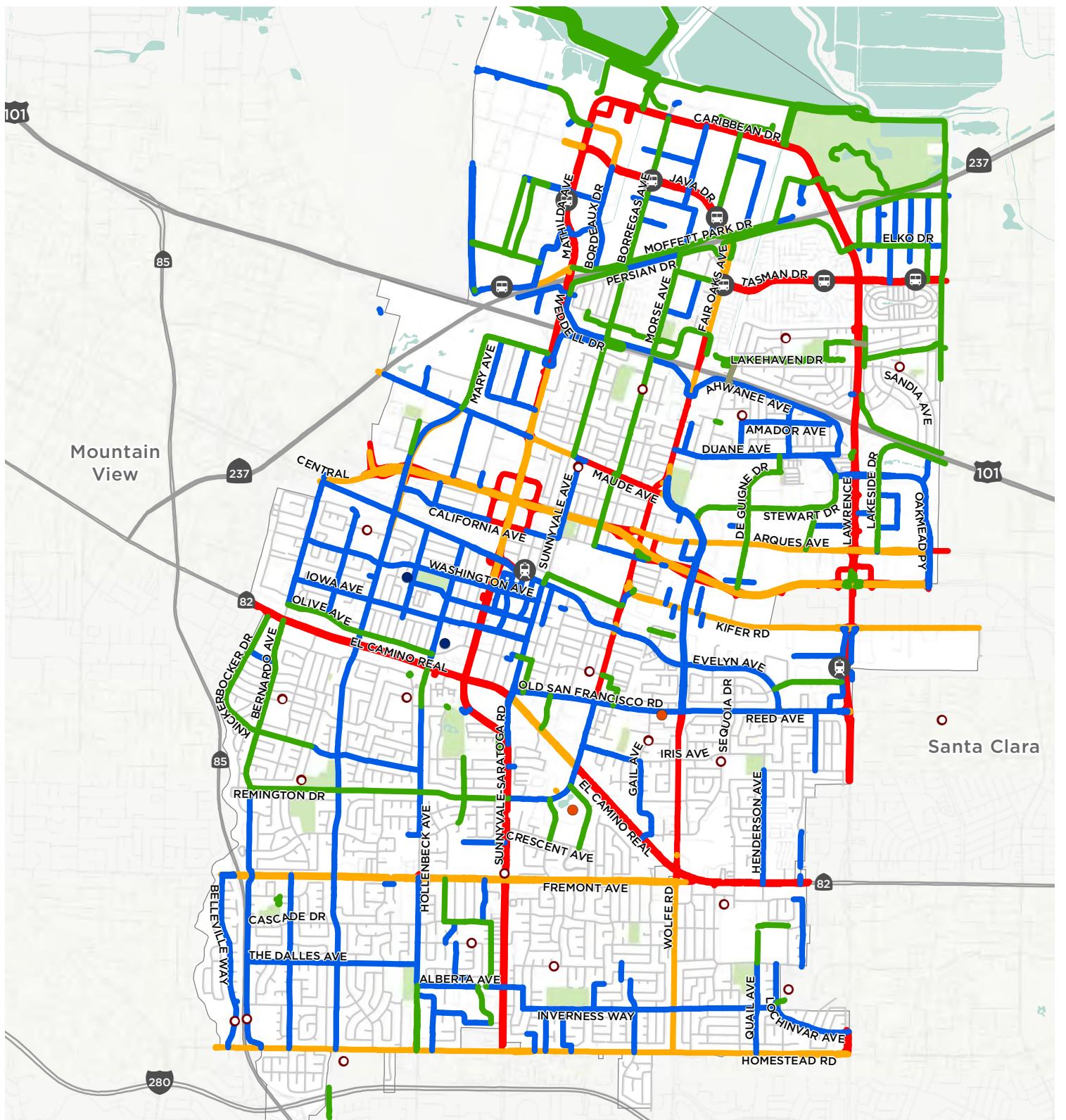
## Bicycle Level of Traffic Stress

Bicycle Level of Traffic Stress (BLTS) analysis quantifies perceived stress levels when biking along Sunnyvale's roadways and paths. The less stressful—and therefore more comfortable—a bicycle facility is, the wider its appeal to a broader segment of the population. The analysis uses roadway network data, including number of lanes, posted speed limit, and presence of existing bikeway facilities to determine bicyclist comfort level. BPAC's feedback were incorporated into the BLTS to account for locations where terrain, high vehicle speeds, and challenging crossings decreased people's comfort.

The BLTS analysis quantifies stress levels when riding along Sunnyvale's roadways and paths, using the following four levels and the types of riders that would feel comfortable riding on that particular road.

- LTS 1: All Ages and Abilities
- LTS 2: Average Adult
- LTS 3: Confident Adult
- LTS 4: Fearless Adult

As shown in Map 8, neighborhood streets that carry relatively little vehicular traffic and have slower vehicle speeds are considered LTS 1 and are considered suitable for people of all ages and abilities. Multi-use trails, like the Bay Trail, are also considered LTS 1. Collector and arterial streets without separated bicycle facilities, such as Sunnyvale Saratoga Rd., are considered LTS 3 or 4, and are only suitable for confident or fearless adult riders.



**Map 8. Bicycle Level of Traffic Stress**

- Level 1 All Ages & Abilities
- Level 1 All Ages and Abilities (Residential)
- Level 2 Average Adult
- Level 3 Confident Adult
- Level 4 Fearless Adult
- Pedestrian Bridge (Walk Bike)

- Public School
- Community Center
- Library
- Caltrain
- VTA Station
- City Boundary





## TYPES OF PEOPLE BIKING

Research indicates that the majority of people in the United States would bicycle if dedicated bicycle facilities were provided. However, only a small percentage of Americans (1-3 percent) are willing to ride if no facilities are provided. This research into how people perceive bicycling as a transportation choice has indicated that most people fall into one of four categories, illustrated below. It's important to note that there is a diversity of bicyclists, including people who have no other means of transportation due to cost of transit, driving, or legally cannot drive. Regardless, the goal should be more comfortable bikeways that serve everyone.



**1-3%**

**STRONG &  
FEARLESS**

Very comfortable and  
willing to ride on streets  
with no designated  
bike facilities



**5-10%**

**ENTHUSIASTIC &  
CONFIDENT**

Very comfortable riding  
but prefer streets with  
designated bike lanes

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45



**50-60%**

**INTERESTED, BUT  
CONCERNED**

Comfortable on trails &  
streets with buffered or  
separated bikeways and  
interested in biking more



**30%**

**NOT CURRENTLY  
INTERESTED**

Physically unable or very  
uncomfortable biking  
even on streets with  
separated bikeways

## Common Barriers

The existing conditions analysis, bolstered by the community engagement feedback, helped the project team identify three roadway conditions in Sunnyvale that act as barriers to bicycle travel, including:

- Limited highway crossings for bicycles restrict direct bicycle trips
- Existing bikeways on arterials are unsuitable for all ages and abilities
- Bike facilities often end before the intersection

### LIMITED HIGHWAY CROSSINGS FOR BICYCLES RESTRICT DIRECT TRIPS

Highway 101, State Route 237, and State Route 85 pass through Sunnyvale, dividing the primarily residential southern part of the city from the northern part of the city where the majority of the employment is located. There is only one dedicated bicycle and pedestrian crossing of both highways at Borregas Avenue. The other crossings at Mathilda Ave., Java Drive/Fair Oaks Ave., and Lawrence Expressway are mixed with vehicular traffic. The shortest crossing distance of Highway 101 using existing roadways is 0.8 miles. For a bicyclist that is not already on a street that will connect across Highway 101, the bicyclist may spend

an additional five or more minutes in order to navigate to one of the crossings.

With the exception of the Java Drive crossing over State Route 237, the other roadway crossings are highway interchanges, typically considered extremely dangerous and unsafe for all bicycling users. This is due to the high speed at which drivers travel when entering and exiting the highways at on- and off-ramps and the “cloverleaf” designs that limit visibility at these interchanges.

### EXISTING BIKEWAYS ON ARTERIAL ROADWAYS ARE UNSUITABLE FOR ALL AGES AND ABILITIES

Arterial roadways are high-capacity urban roadways with 35 mph or greater speed limits. Within Sunnyvale, arterials present the shortest and most direct connections between destinations. As shown in the Level of Stress Analysis, these roadways currently are classified as LTS 3 and LTS 4.

Sunnyvale has over 33 miles of arterials, 27.8 miles (78 percent) of which have bicycle facilities. However, most of the bicycle facilities on these roadways are standard bike lanes (see Table 3), and not suitable for a majority of bicycle users. The majority of bicyclists feel uncomfortable riding on multi-lane, higher speed roadways without a barrier or other form of separation.

**Table 3. Bikeways on Sunnyvale Arterial Roadways**

	Bikeways on Arterials (miles)	Arterials with Bikeway Type (%)
<b>Class I Separated Use Path</b>	0.0 miles	0%
<b>Class II Bike Lanes</b>	23.8 miles	70.6%
<b>Class IIB Buffered Bike Lanes</b>	1.85 miles	2.5%
<b>Class III Bike Routes</b>	1.9 miles	5.2%
<b>Class IV Separated Bikeway*</b>	0.4 miles	0%

\*newly constructed Class IV facilities on Mary Ave are not on a arterial roadway.



## BIKE FACILITIES END BEFORE THE INTERSECTION

The most vehicle-bike conflicts occur at intersections. The National Association of City Transportation Officials (NACTO) reports that in 2017, 43 percent of urban bicyclist fatalities occurred at intersections.<sup>2</sup> There are many roadways throughout Sunnyvale where bike lanes end as riders approach the intersection, leaving the rider more vulnerable. This is especially common for arterial and expressway intersections. Also common are free right-turn lanes or “slip lanes” where bicyclists can feel particularly stressed as drivers often do not look for bicyclists before turning.

## Bikeway Strategies

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The needs analysis within this chapter highlights a number of common barriers across the city that should be addressed to create a comprehensive bikeway network. The following four strategies provide direction on how bikeway recommendations can address these barriers.

<sup>2</sup> Don't Give Up at the Intersection: Designing All Ages and Abilities Bicycle Crossings. NACTO (May 2019)  
<https://nacto.org/publication/urban-bikeway-design-guide/dont-give-up-at-the-intersection/>

**Table 4. Bicycle Network Strategies**

Strategy	Recommendation
<b>Strategy 1: Make it Comfortable and Connected</b>  Class II bicycle lanes are comfortable for some, but most people interested in biking in Sunnyvale would not consider using bike lanes for transportation on busy arterials unless they are physically separated from moving vehicles.	<b>Low Stress Spine Network</b>  A network of bikeway facilities that provide connected, cross-town travel. Where possible, this network provides separation from vehicular traffic, and is made up of trails and separated bikeways.
<b>Strategy 2: Make it Local</b>  There is a need to develop a bike route networks on residential streets to connect people to their local destinations. Community members prefer traveling on low-volume streets when biking shorter distances. This bike route network is important to guide users the last mile or half-mile to home, to schools and parks, and to their local shopping needs.	<b>Bike Route Network</b>  A network of low-stress connections on low volume, low speed residential streets to get residents across neighborhoods and to local destinations. These connections will consist of Class III Bicycle Routes and Class IIIB Bicycle Boulevards with wayfinding signage along residential roads.
<b>Strategy 3: Fill in the Network</b>  Separated or calm bikeways may not be suitable for all roadways. However, providing continuous bikeways creates a connected bicycle network.	<b>Complete Bikeway Network</b>  The complete network will include all bikeway types. Class II Bike Lanes and Class IIIB Buffered Bike Lanes will fill in gaps in the network where other, more preferred bikeway types are unfeasible.
<b>Strategy 4: Focus on the Intersections</b>  A bikeway is only as strong as its weakest link. Wide, unprotected intersections or other challenging bikeway crossings can leave people biking vulnerable to conflict with motor vehicles.	<b>Spot Improvements</b>  A group of identified crossing improvements along the bike network that aim to provide increased comfort at existing intersections and increased access to bicycle undercrossings and overcrossings.



# Vision, Goals, and Metrics

The goals for the Bicycle Plan reflect the priorities expressed by the community throughout the public outreach phase. Discussions with City departments, best practices across the nation, and input from community stakeholders have shaped the proposed strategies and policies intended to help the City achieve these goals.

## Vision Statement

Sunnyvale is a Complete Streets Community where residents and commuters have the choice to bicycle and walk to meet their transportation needs on a connected, comfortable, convenient, safe and efficient network designed for all abilities and ages.

### GOAL 1

#### Leverage community resources to increase interest in bicycling and raise the bicycling mode share from 1.5 percent in 2017 to 5 percent by 2030.

- **Policy 1:** Design a connected, comfortable, convenient, safe and efficient bicycle network.
  - » **Action 1.1:** Utilize design guidelines provided in this document as appropriate as well as guidance from the National Association of City Transportation Officials (NACTO), Santa Clara Valley Transportation Authority (VTA) Bicycle Technical Guidelines, and the most recent state and federal design guidelines to develop on-street and off-street bicycle facilities.

**Table 5. Performance Goals**

Goal	Baseline	Source
Achieve the League of American Bicyclists Bicycle Friendly Silver status by 2030.	Bronze status	League of American Bicyclists
Increase commuter bicycling mode share from 1.5% in 2017 to 5% in 2030 and continue to work toward increasing bicycling mode share in the next 10 years	1.50%	American Community Survey, U.S. Census Bureau
Reduce traffic fatalities and serious injuries by 50% by 2029	61 pedestrian and bicycle related fatality and serious injuries (2014-2018)	Sunnyvale Vision Zero Plan (2019), Sunnyvale Collision Database

- » **Action 1.2:** When possible, install best-practice intersection treatments, such as bike boxes, fully protected intersections, and two-stage left turn lanes to reduce automobile-bicycle conflicts.
- » **Action 1.3:** Continue to install bicycle loop or video detection devices and bicycle detection markings at all intersections.
- » **Action 1.4:** Reconfigure roadways with excess vehicular capacity to accommodate bicycle facilities.
- » **Action 1.5:** Narrow lanes to the City's current standard of 11-foot lanes, or to 10-foot lanes under unique circumstances, to create or expand bicycle facilities. VTA requires 11-foot travel lanes for travel lanes that require bus access.
- » **Action 1.6:** Evaluate opportunity to remove underutilized on-street parking to create or expand bicycle facilities.
- » **Action 1.7:** Overcome bicycling barriers, such as highways, with overcrossings or undercrossings to reduce out-of-way travel.
- » **Action 1.8** Work with online mapping companies to ensure that recommended bicycle routes within City limits are accurate.

- **Policy 2:** Maintain and expand the bicycle parking network throughout Sunnyvale.
  - » **Action 2.1:** Consult, monitor, and continue to implement bicycle parking requirements in new developments according to the City of Sunnyvale Municipal Code 19.46.150.
  - » **Action 2.2:** Amend municipal code 19.46.150 “Bicycle Parking” to eliminate references to the “ribbon weave racks” as substandard bicycle rack design and create a standard detail for a typical “Inverted U” Bicycle Rack with proper placement dimensions.
  - » **Action 2.3:** Utilize bicycle parking design and placement guidelines from best practices listed in the Santa Clara Valley Transportation Authority (VTA) Bicycle Technical Guidelines.
  - » **Action 2.4:** Encourage event organizers to provide and publicize valet bicycle parking at local events.

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## GOAL 2

**Increase education, encouragement, and enforcement to support a bicycle-friendly community**

- **Policy 3:** Support programs, events, and organizations that promote a bicycle-friendly Sunnyvale.
  - » **Action 3.1:** Continue to support and participate in Bike to Work Day and other bike promotion events.
  - » **Action 3.2:** Integrate bicycling encouragement programs into existing municipal programs and events where possible.
  - » **Action 3.3:** Work with employers and business districts within the City of Sunnyvale to increase the effectiveness of employer-based Transportation Demand Management (TDM) programs.
  - » **Action 3.4:** Encourage businesses to apply for Bicycle Friendly Business status with the League of American Bicyclists.
  - » **Action 3.5:** Coordinate implementation of the Bicycle Plan with implementation of the SRTS Plan so that children are encouraged to bicycle to school.



## GOAL 3

Evaluate bicycle planning progress on a regular basis and adapt the City's efforts as needed to increase effectiveness

- **Policy 4:** Develop a system for reporting on progress made on completion of the planned bicycle network.
- » **Action 4.1:** Prepare and present a triennial report on progress made on achieving the goals and implementing the policies of this Plan to the Bicycle and Pedestrian Advisory Commission.
- » **Action 4.2:** Update the Bicycle Plan every ten years.

# Bikeway Recommendations

Built on the needs analysis and public outreach, this section presents the recommended bicycle network for the City of Sunnyvale.

## Low-Stress Spine Network

A network of bikeway facilities that provide connected, cross-town travel. Where possible, this network provides separation from vehicular traffic.

## Bicycle Route Network

A network of low-stress connections on low-volume, low-speed residential streets to get residents across neighborhoods and to local destinations.

## Complete Bikeway Network

A network with all bikeway types to close gap closures in the bikeway network.

## Spot Improvements

Intersection improvements and highway crossing improvements along the bicycle network. Examples of improvements include installation of new traffic control devices, or the redesign of access to existing bicycle or pedestrian undercrossings and overcrossings.

## Low-Stress Spine Network

The **Low-Stress Spine Network** lays out the proposed bikeway facilities that provide connected, cross-town travel (Map 9). For the most part, this network provides separation from vehicular traffic, and is made up of trails, separated, and buffered bikeways. These facilities require tradeoffs such as removing travel lanes, removing on-street parking, obtaining easement, or right of way dedication.

In this network, Sunnyvale Ave./Sunnyvale-Saratoga Ave./Borregas Ave. and the East Channel Trail become key north-south connectors. Roadways such as Evelyn Ave., El Camino Real, and Fremont Ave. will provide east-west connectivity.

### THESE BIKEWAYS MAY LOOK LIKE:

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Map 9. Low Stress Spine Network

Proposed Low Stress Spine Route

#### Existing Facilities

Trail

Existing Pedestrian Bridge (Walk Bike)

Existing Class II Bicycle Lane

#### Boundaries + Destinations

Public School

Park

Sunnyvale Caltrain Station

City Boundary

VTA Light Rail Station

Public School

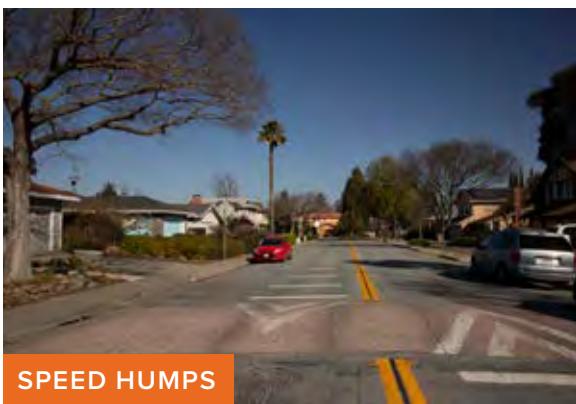
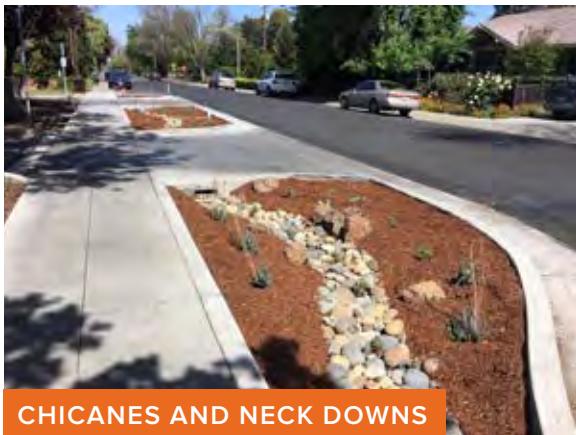


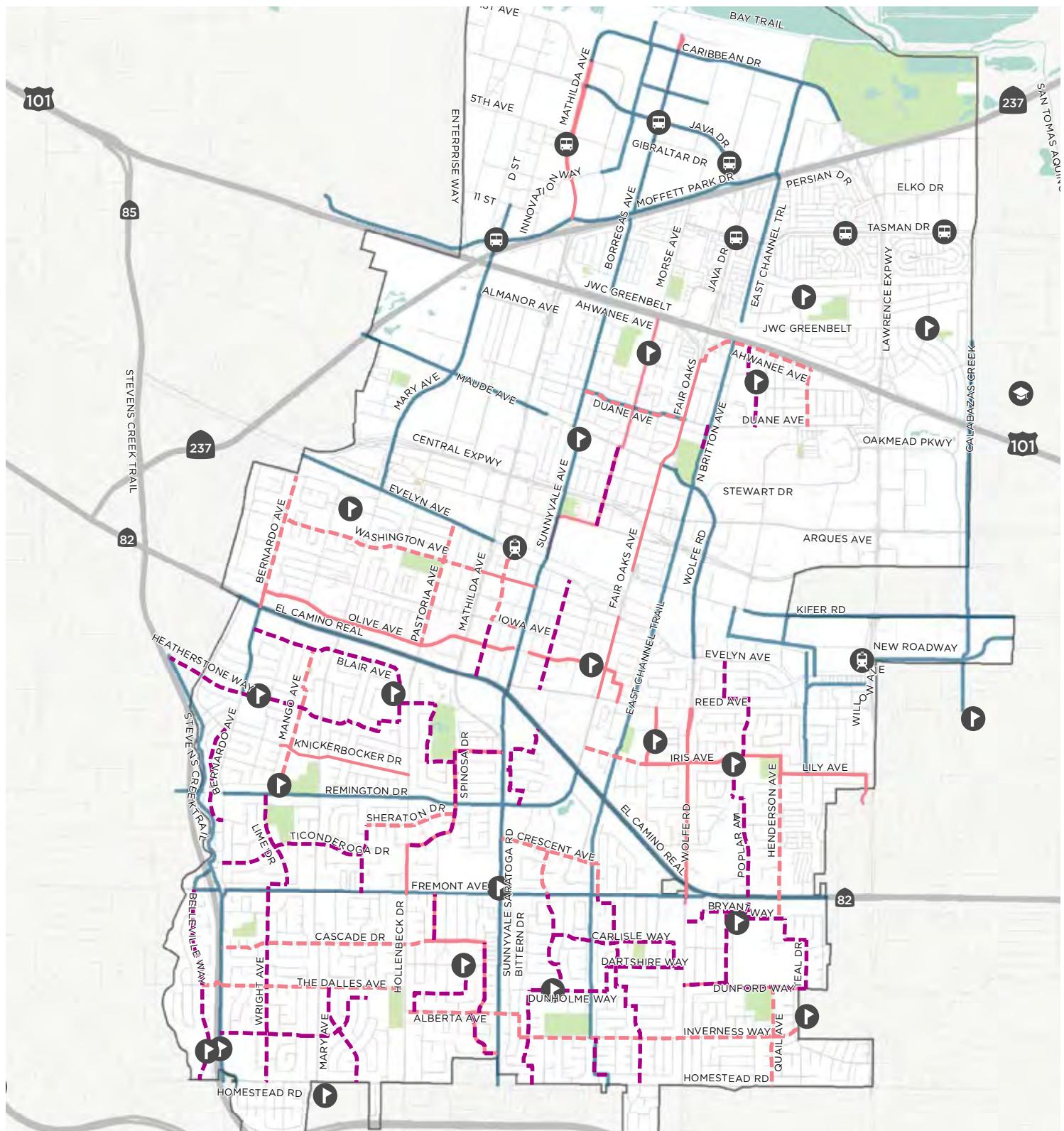
## What is the Bicycle Route Network?

Bicycle routes on residential streets connect people to their local destinations, guiding users across neighborhoods and to places such as home, school, and shopping needs. These connections look to prioritize bike travel and bicycle wayfinding on low-volume, low-speed streets. This network is made up of Class III Bicycle Routes and Class IIIB Bicycle Boulevards. Bicycle Boulevards may include additional traffic calming design (examples shown below). Design features, such as curb extensions, can incorporate green stormwater infrastructure, which uses vegetation for improved stormwater management while also providing urban greening.

### TRAFFIC CALMING MEASURES CAN INCLUDE:

54





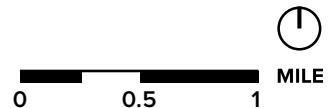
Map 10. Bicycle Route Network

EXISTING PROPOSED

- Class III Bicycle Route
- Class IIIB Bicycle Boulevard
- Proposed Low Stress Spine Route

#### Boundaries + Destinations

- |   |                    |   |                 |
|---|--------------------|---|-----------------|
| ▶ | Public School      | 🎓 | Mission College |
| ▶ | Caltrain Station   | ▶ | Park            |
| ▶ | Light Rail Station | ▶ | City Boundary   |



## Complete Bikeway Network

The **Complete Bikeway Network** shows all existing and proposed bikeways in Sunnyvale. Bikeway mileage for existing, proposed, and full build out are shown in Table 6. Note that proposed bikeways also include converting existing bikeways to different classifications in addition to new bikeways.

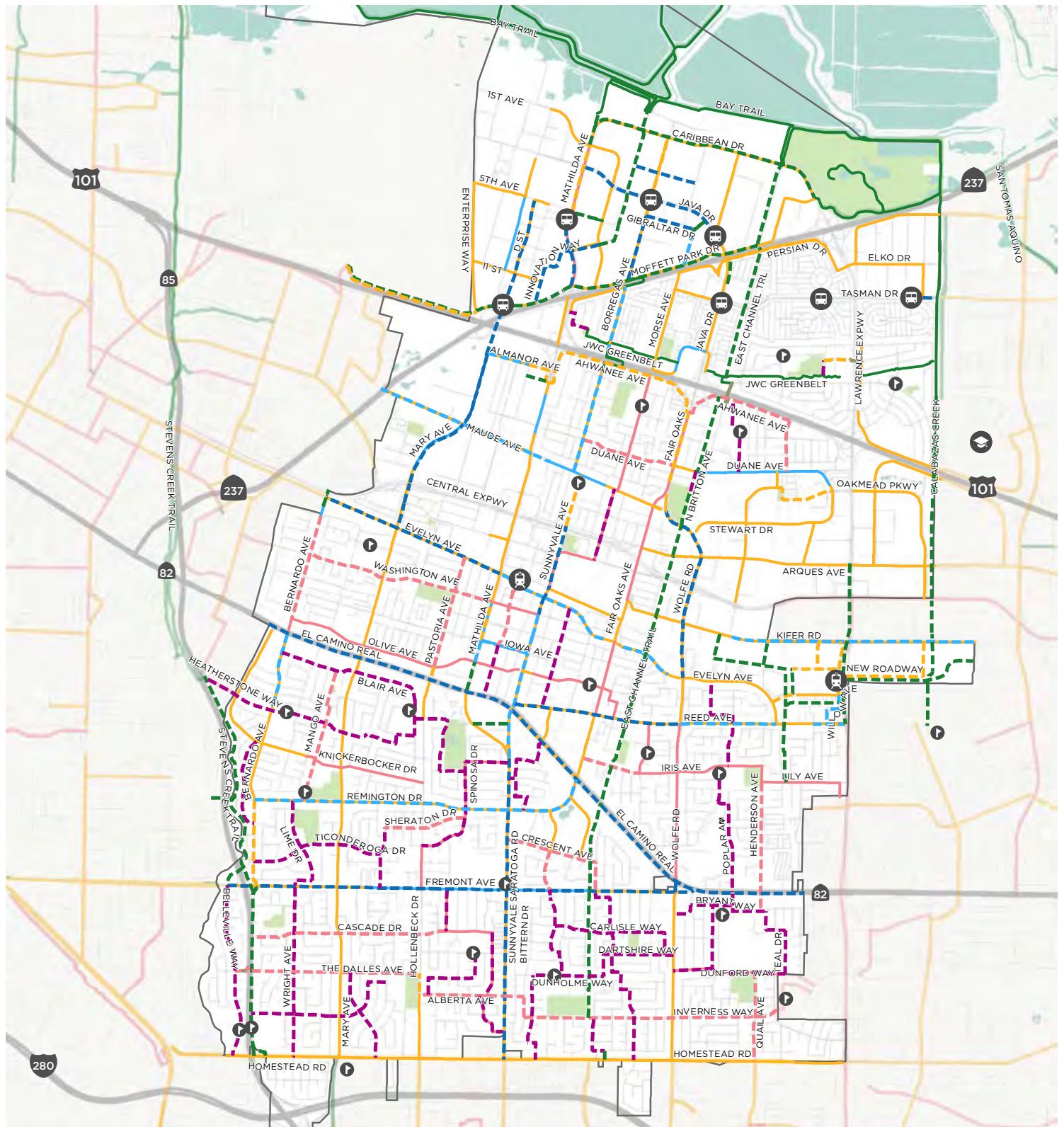
The following pages provide a zoomed in look to the complete network. For more information, see Appendix A: Bicycle Recommendations.

Where Class IV separated bikeways are proposed on roads with bus transit, the City will work with VTA early in the design process to identify how transit customers will be accommodated. This may include building transit islands or modifying the Class IV bikeway to an unprotected facility so the bus can move to the curb.

A note for El Camino Real: The overall recommendation on El Camino Real is a Class IV Separated Bikeway. At locations where public right-of-way is limited or where there are frequent driveways, the City may need to install buffered bicycle lanes. The final configuration will be determined during the redevelopment phase.

**Table 6. Existing and Proposed Bikeway Mileage Totals**

Facility Type	Existing	Proposed	Full Build Out
<b>Class I</b>	18.0	19.7	37.7
<b>Class II</b>	54.5	7.1	43.4
<b>Class IIB</b>	4.4	9.9	12.5
<b>Class III</b>	12.6	12.7	21.6
<b>Class IIIB</b>	0.0	22.2	22.2
<b>Class IV</b>	0.4	17.3	17.7
<b>TOTAL</b>	<b>89.9</b>	<b>88.9</b>	<b>155.1</b>



**Map 11. Complete Bikeway Network**

EXISTING PROPOSED

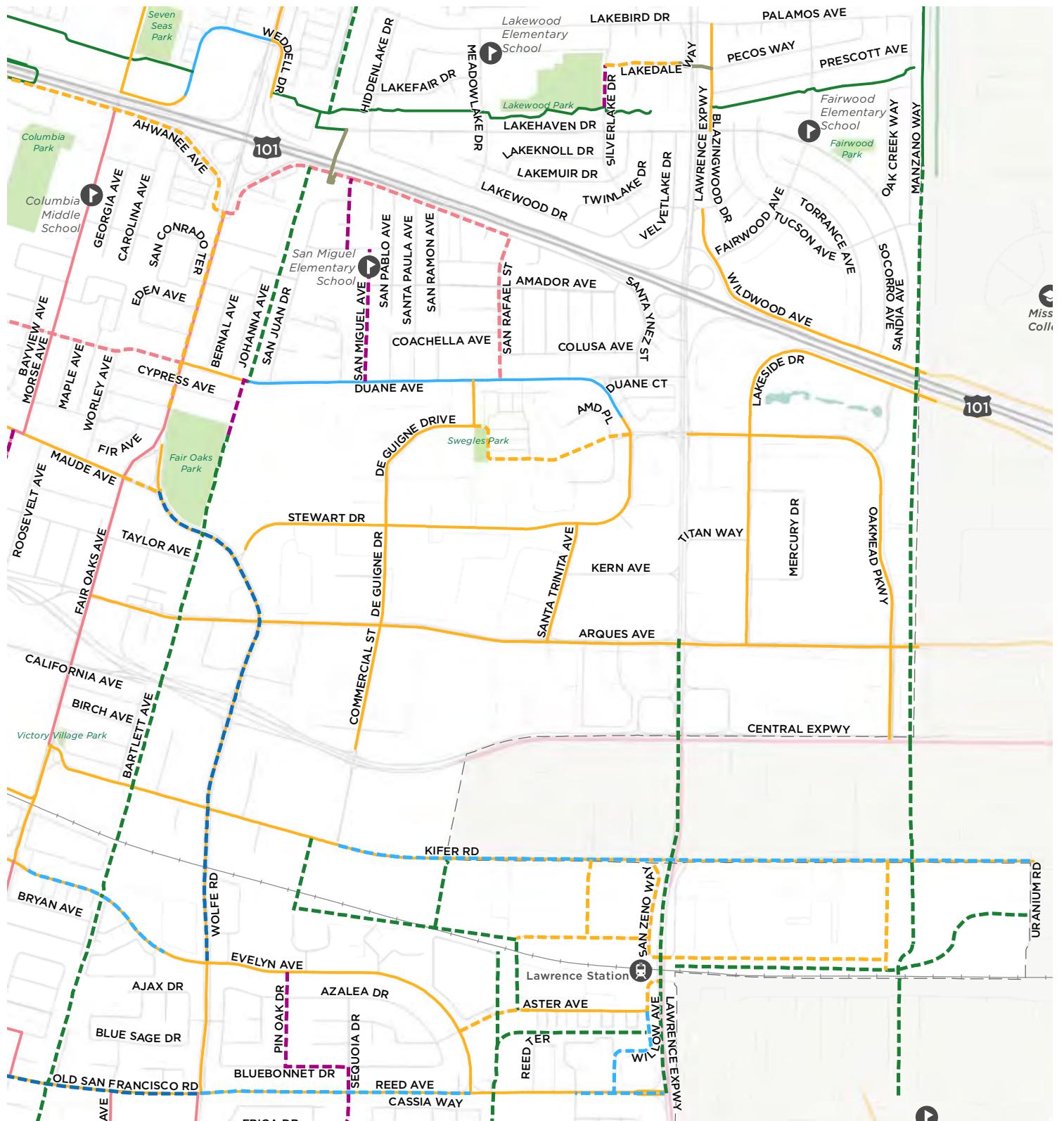
- Class I Shared-Use Path
- Class II Bicycle Lane
- Class IIB Buffered Bicycle Lane
- Class III Bicycle Route
- Class IIIB Bicycle Boulevard
- - - Class IV Separated Bikeway
- Existing Pedestrian Bridge (Walk Bike)

#### Boundaries + Destinations

- Public School
- Park
- Mission College
- City Boundary
- Caltrain Station
- Light Rail Station

\*\*Homestead Rd offers part-time bicycle lanes.

0 0.5 1 MILE



**Map 12. Recommended Bikeways - Central/East Sunnyvale**

EXISTING PROPOSED

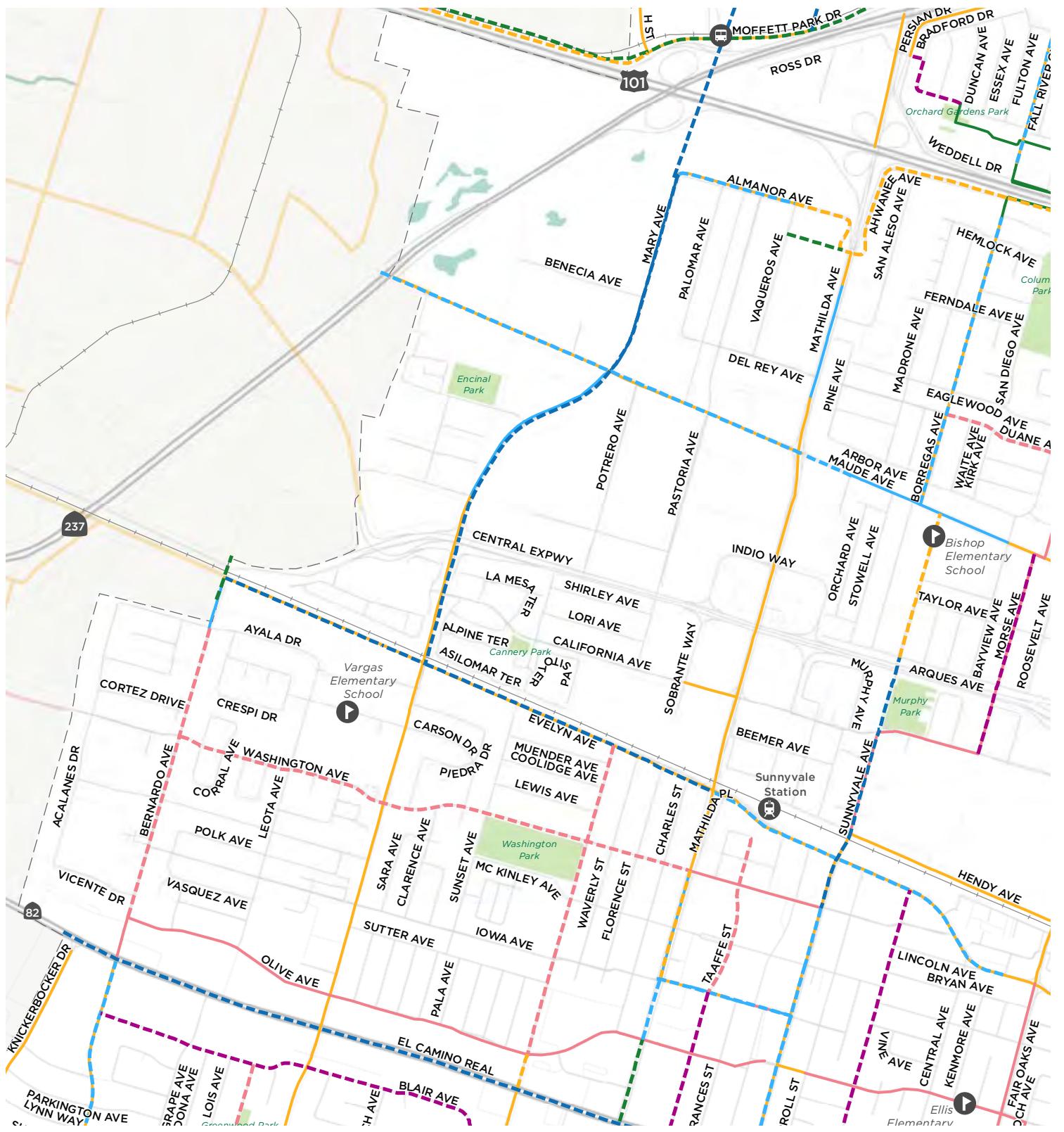
- Class I Shared-Use Path
- Class II Bicycle Lane
- Class IIB Buffered Bicycle Lane
- Class III Bicycle Route
- Class IIIB Bicycle Boulevard
- Class IV Separated Bikeway
- Existing Pedestrian Bridge (Walk Bike)

#### Boundaries + Destinations

- Caltrain Station
- Light Rail Station
- Mission College
- Public School
- Park
- City Boundary

\*\*Homestead Rd offers part-time bicycle lanes.

0 0.25 0.5 MILE



**Map 13. Recommended Bikeways - Central/West Sunnyvale**

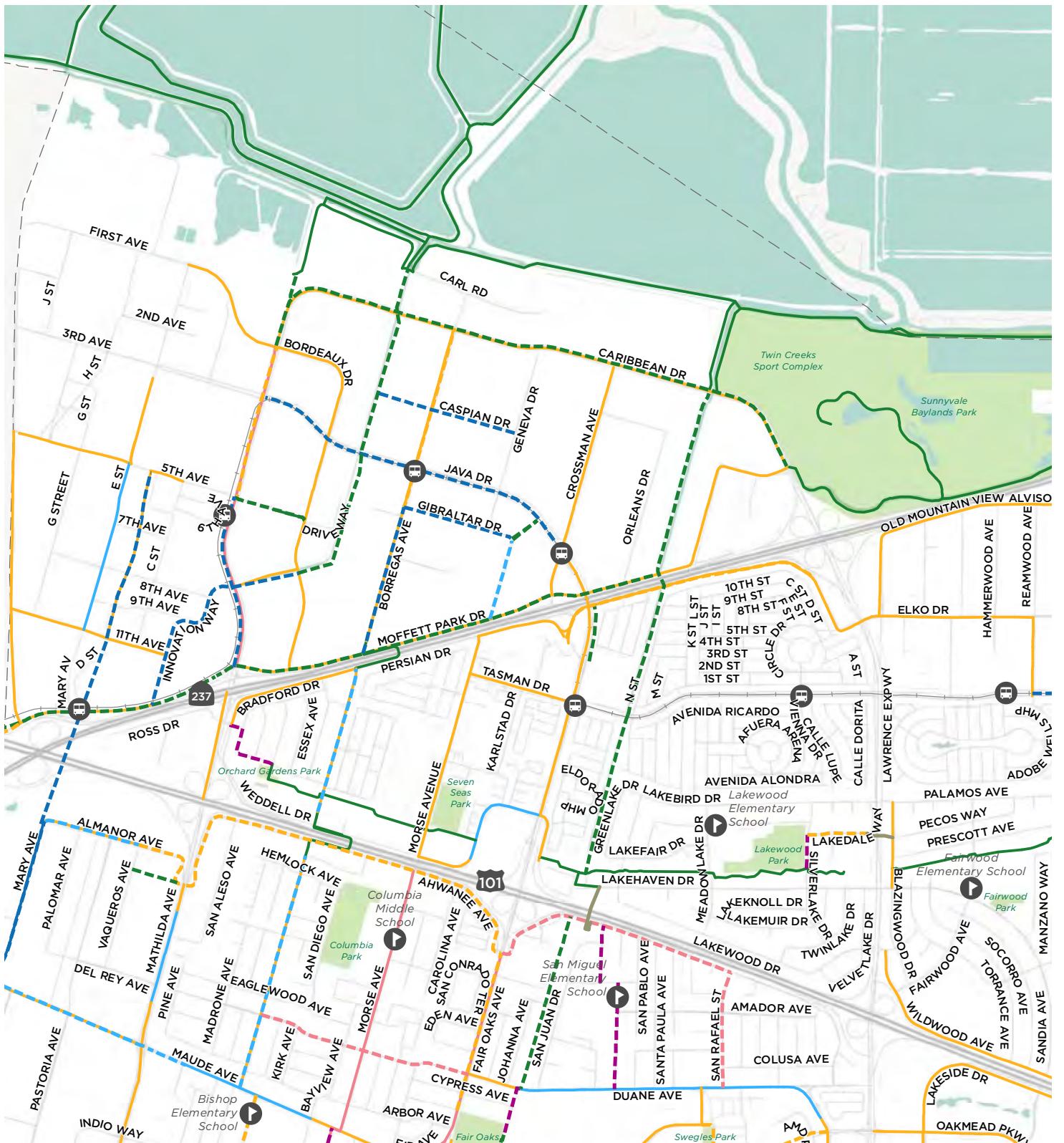
- | EXISTING | PROPOSED                                 |
|----------|--|
| —        | — Class I Shared-Use Path                |
| —        | — Class II Bicycle Lane                  |
| —        | — Class IIB Buffered Bicycle Lane        |
| —        | — Class III Bicycle Route                |
| —        | — Class IIIB Bicycle Boulevard           |
| —        | — Class IV Separated Bikeway             |
| —        | — Existing Pedestrian Bridge (Walk Bike) |

#### Boundaries + Destinations

- Caltrain Station
- Light Rail Station
- City Boundary
- Mission College
- Public School

\*Homestead Rd offers part-time bicycle lanes.





**Map 14. Recommended Bikeways North Sunnyvale**

EXISTING PROPOSED

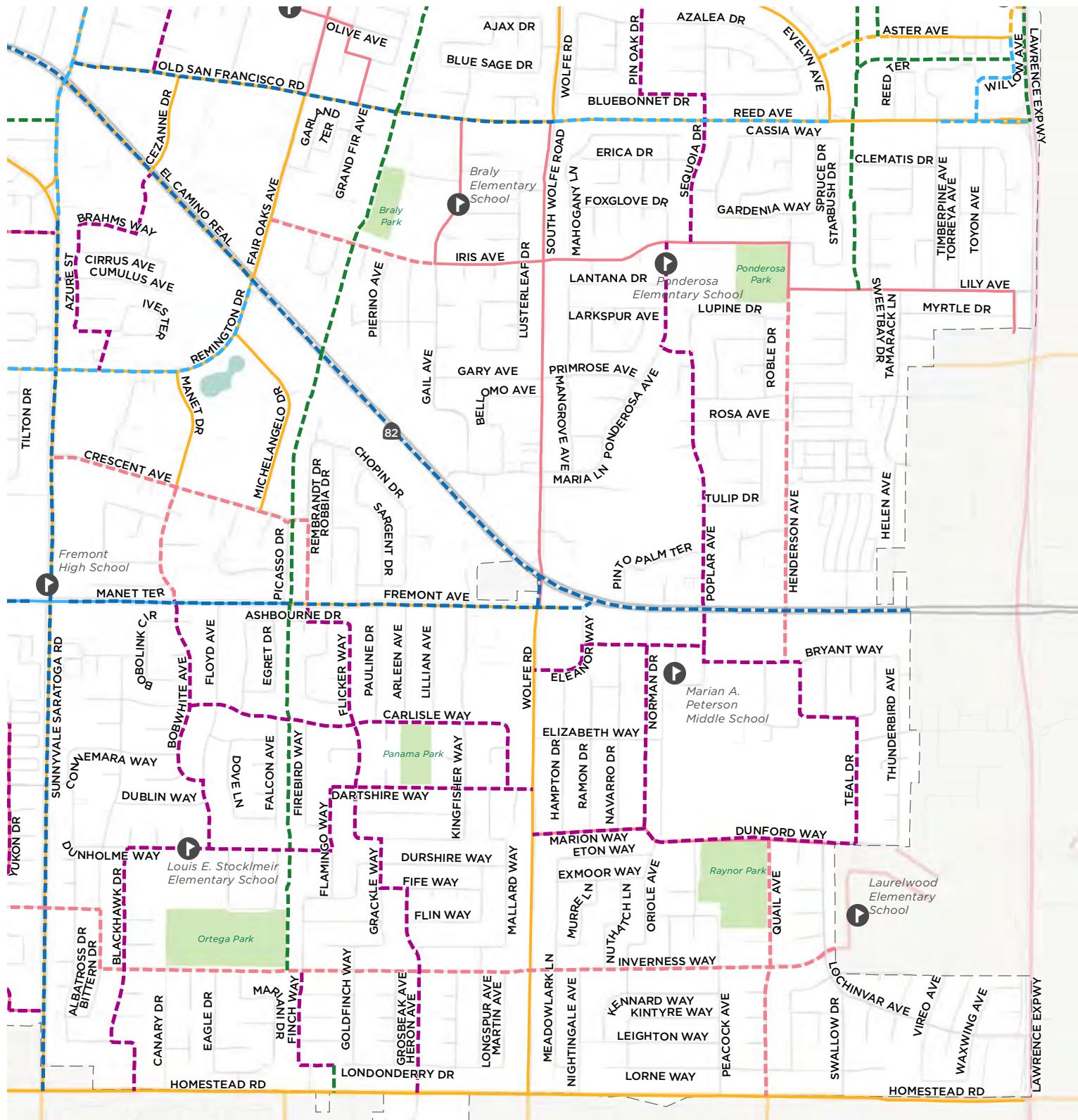
- Class I Shared-Use Path
- Class II Bicycle Lane
- Class IIB Buffered Bicycle Lane
- Class III Bicycle Route
- Class IIIB Bicycle Boulevard
- Class IV Separated Bikeway
- Existing Pedestrian Bridge (Walk Bike)

#### Boundaries + Destinations

- Caltrain Station
- Light Rail Station
- Mission College
- Public School
- Park
- City Boundary

\*\*Homestead Rd offers part-time bicycle lanes.

0 0.25 0.5 MILE



**Map 15. Recommended Bikeways Southeast Sunnyvale**

EXISTING PROPOSED

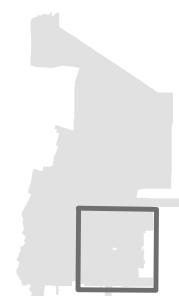
- Class I Shared-Use Path
- Class II Bicycle Lane
- Class IIB Buffered Bicycle Lane
- - - Class III Bicycle Route
- - - Class IIIB Bicycle Boulevard
- - - Class IV Separated Bikeway
- Existing Pedestrian Bridge (Walk Bike)

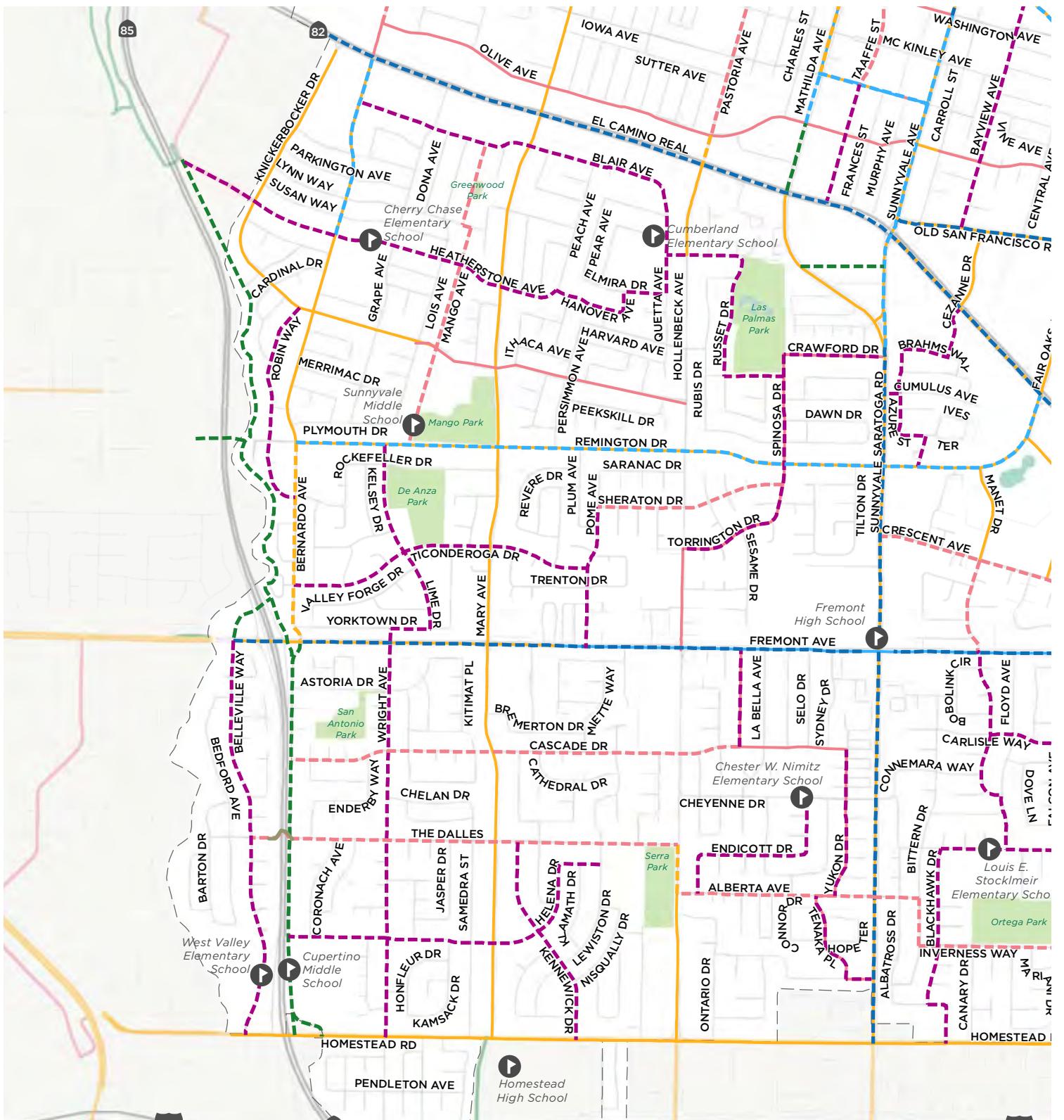
#### Boundaries + Destinations

- Caltrain Station
- Park
- Light Rail Station
- City Boundary
- Mission College
- Public School

\*\*Homestead Rd offers part-time bicycle lanes.

0 0.25 0.5 MILE





**Map 16. Recommended Bikeways Southwest Sunnyvale**

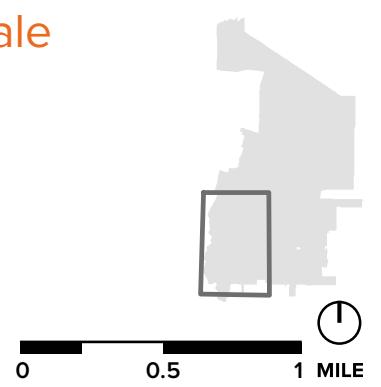
EXISTING PROPOSED

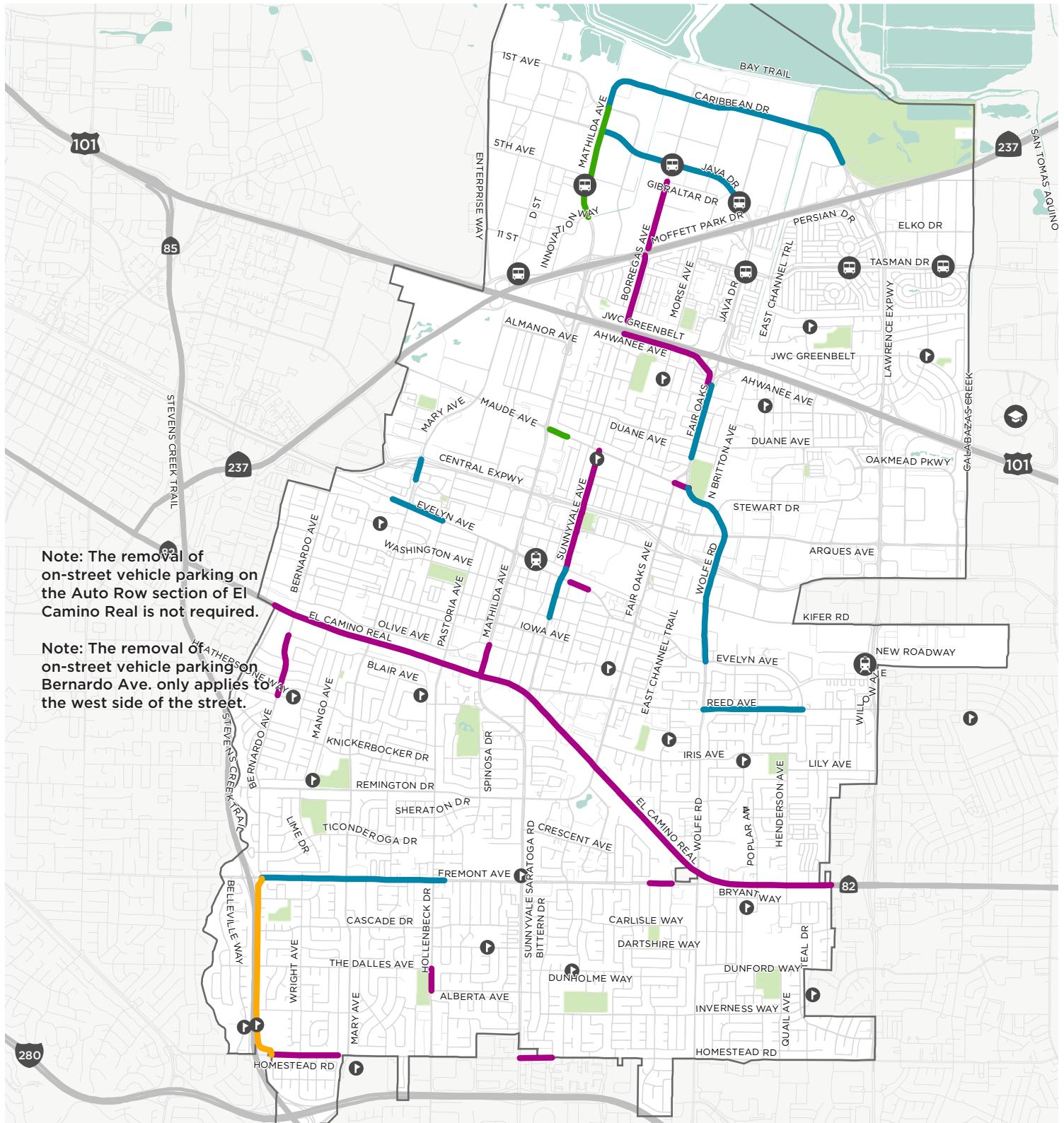
- Class I Shared-Use Path
- Class II Bicycle Lane
- Class IIB Buffered Bicycle Lane
- Class III Bicycle Route
- Class IIIB Bicycle Boulevard
- Class IV Separated Bikeway
- Existing Pedestrian Bridge (Walk Bike)

#### Boundaries + Destinations

- Caltrain Station
- Light Rail Station
- City Boundary
- Mission College
- Public School

\*\*Homestead Rd offers part-time bicycle lanes.





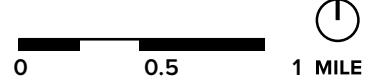
**Map 17. Future Design Considerations  
Roadway Needs for Bicycle Recommendations**

- Roadway Reallocation (Road Diet)
- On-Street Vehicle Parking Removal
- One-Way Roadway Conversion
- Right-of-way Acquisition

Recommendations are considered planning-level, meaning they should be used as a guide when implementing projects. Traffic impact analysis and more detailed design analysis will be required to evaluate specific site conditions and develop designs that reflect conditions, constraints, and public input.

#### Boundaries + Destinations

- |                      |  |
|----------------------|--|
| ● Public School      | [green square] Park                            |
| ● Mission College    | [white square with black border] City Boundary |
| ● Caltrain Station   |  |
| ● Light Rail Station |  |



## Spot Improvements

In addition to safe and connected bikeway segments, a fully functioning bicycle network addresses localized spot issues that would otherwise present network barriers (Map 18). Spot improvements may include:

- Intersections that do not comfortably facilitate travel by bicycle
- Improved access to off-street shared use paths
- Improved design of and access to bicycle grade-separated crossings (overcrossings and undercrossings)

This plan includes 76 spot improvement recommendations in Sunnyvale. These spot improvements were developed alongside the recommendations for the City's bicycle network and reflect public and stakeholder feedback.

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### Protected Intersection



Specific spot improvement recommendations and designs for most of these locations will be developed by the City on a case-by-case basis due to the varied context at each spot location.

- **Crossing improvements** are intersection design strategies to reduce vehicle speeds at intersections, enhance the visibility of people riding bicycles, and protect people on bicycles from automobiles as they move or turn through an intersection. The appropriate design strategies for each intersection depend upon the characteristics of the street crossing. Design strategies when large, arterial roads meet each other require more protection for bicyclists than when a shared-use path crosses a residential street.

Crossing improvements include but are not limited to:

- » **Protected Intersections.** A Dutch-inspired design treatment that is intended to minimize potential conflicts between people biking, driving, and walking at large intersections. Protected intersections provide bicyclists and pedestrians physical separation using vertical elements such as flexible posts or concrete islands to reduce stressful interactions with cars.

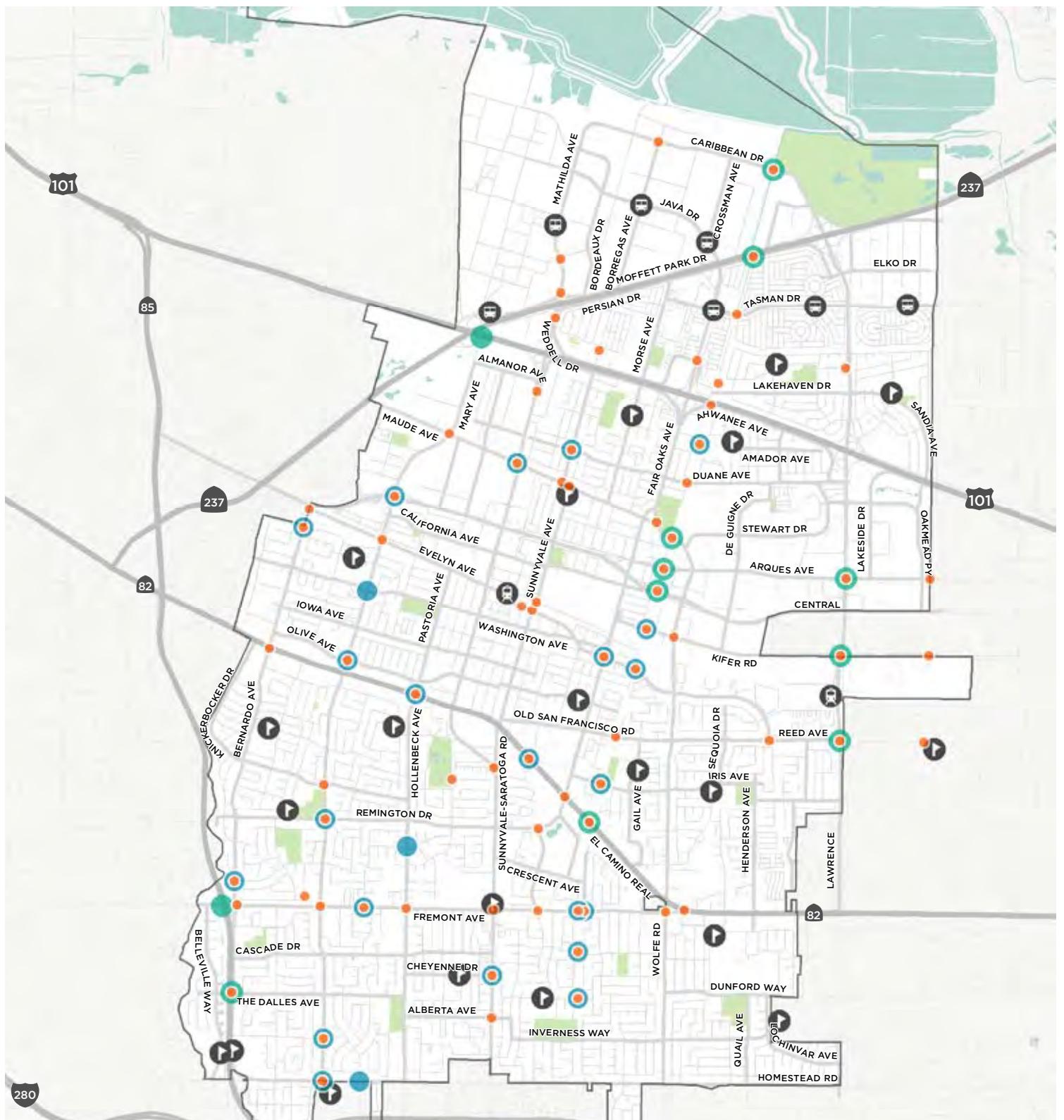


- » **High-intensity Activated Crosswalk (HAWK) Beacon.** Useful at mid-block and unsignalized crossings of multi-lane arterials, a HAWK beacon is distinct from regular traffic signals and constant flash warning beacons because it is only activated by pedestrians when needed. When activated, the HAWK beacon's red signal makes clear the requirement for a complete stop.
- » **Curb Extensions.** Also known as bulbouts, this feature expands the sidewalk and curb seven to eight feet at the corners of intersections. Curb extensions shorten the distance pedestrians need to cross roads, increase pedestrian visible to motorists, and can have a traffic calming effect.
- » **Median Refuge Islands.** Typically areas at the mid-point of a marked crossing that prove a safe waiting space for pedestrians. They minimize pedestrian exposure by allowing pedestrian to cross the roadway in two separate stages.

- » **Bicycle Boxes.** A marked area, typically painted green, at the head of a traffic lane at a signalized intersection that provides bicyclists with visible way to get ahead of queuing traffic during the red signal phase. This can help bicyclists position themselves to turn left instead of mixing with traffic to merge across traffic from the bicycle lane.
- » **Median Diverters.** This treatment restricts vehicles from going straight through an intersection while providing refuge for bicyclists to cross one direction of traffic at a time before proceeding straight.
- » **Traffic Circle.** Also known as mini roundabouts or neighborhood traffic circles, these features include a raised circular island in the middle of intersections on local neighborhood streets with the intention of reducing motor vehicle speeds.



Traffic circles can reduce collision risk and improve traffic flow at intersections.



## Map 18. Bikeway Spot Improvements

- Crossing Improvement
  - Traffic Control Improvement
  - Grade-Separation Improvement

## **Boundaries + Destinations**

-  Caltrain Station
  -  Light Rail Station
  -  Mission College

 Park

 City Boundary

1

A horizontal scale bar representing distance. It features three tick marks labeled '0', '0.5', and '1' at regular intervals along a black line. To the right of the '1' tick mark, the word 'MILE' is printed in capital letters.



- **Traffic control improvements** are design elements and signalization modifications at intersections or crossings that improve the safety and efficiency of crossing movements for all roadway users. Traffic control improvements to improve roadway safety for people biking include but are not limited to:

- » Bicycle Detection Loops, Passive Detection Signal Timing
- » Bicycle Signal Heads
- » Leading Bicycle Intervals (LBIs) and Other Signal Phasing

**Bicycle signal heads allow for dedicated bicycle signal phasing.**



**Bicycle detector loops can be installed in the roadway to trigger traffic signals for bicyclists.**



- **Grade-separation improvements** are sites that will require special attention to design details to keep bike paths and bikeways safe and accessible as they cross through parts of the city with different surface heights, such as overcrossings and undercrossings. At overcrossings (bridges) and undercrossings (tunnels), it is important for the City of Sunnyvale to consider the California Highway Design Manual guidance for entry control along Bicycle Paths (California Highway Design Manual Bikeway Design Criteria 1003.1.17)

More information on bikeway design guidelines can be found in the [National Association of Transportation Official's \(NACTO\) Urban Bikeway Design Guide](#).

More information on design guidelines for protected intersections and signal phasing at intersection crossings can be found in the [NACTO 2019 Publication “Don’t Give Up at the Intersection: Designing All Ages and Abilities Bicycle Crossings”](#).

# Bicycle Parking and Wayfinding

## BICYCLE PARKING

Convenient and secure bicycle parking completes a bicycling network. Bicycle parking can take many different forms, from a simple bicycle rack to a secure locker or gated area. Bicycle parking is available throughout Sunnyvale, but many locations do not provide an adequate amount of bike parking. During the public outreach process, people in Sunnyvale expressed a desire for more bicycle parking in the city.

Bicycle parking can be categorized into short-term and long-term parking. The characteristics and appropriate context for each type of bicycle parking is an important consideration for the City as it installs new bicycle parking.

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### Short-Term Bicycle Parking

Short-term bicycle parking serves people who leave their bicycles for relatively short periods of time, such as shopping, errands, dining, or recreation. Bicycle racks are the most common device for short-term bicycle parking. They provide a high level of convenience and a moderate level of security. The rack types illustrated below and recommended for use in Sunnyvale are consistent with the bicycle parking guidelines outlined in VTA's Bicycle Technical Guidelines. The City may also choose to partner with local artists to design customized bicycle racks that serve as both parking and public art. Where possible, bicycle corrals can be installed to provide higher volumes of bicycle parking in areas of high demand or limited sidewalk space.

### Circular Bicycle Racks



### Inverted U-Rack Bicycle Rack



### Post & Ring Bicycle Racks





Bicycle corrals are suitable for popular destinations. A single bicycle corral can store upwards of 8 bicycles in the same space as a parked automobile while keeping the sidewalk clear for people, seating, landscaping, or other street furniture



### Long-Term Bicycle Parking

Long-term bicycle parking serves people who intend to leave their bicycles for longer periods of time. These facilities can provide a higher level of security and protection from the elements than bicycle racks and are typically found at transit stations, multi-family residential buildings, commercial buildings, and in other areas where people would benefit from a secure place to leave their bicycle for extended periods of time.

### Bicycle cage in the parking garage of a transit facility



Bicycle e-lockers can be accessed through card key or keypad



Bicycle lockers and secure parking areas are common long-term bicycling parking styles. Bicycle lockers vary in design and operation, ranging from keyed lockers that are rented to one individual on an annual or monthly basis to e-lockers that can be reserved in hourly increments and unlocked with a credit card or an access code.

Secure parking areas range in style and operation as well, from bicycle cages or rooms to stations that are controlled by an attendant, card key, or keypad. As electric bicycles grow in popularity, the City should begin to consider the needs of electric bicycle users in any study of the provision of bike parking. The needs of e-bike users are different than other bicyclists. Electric bicycle users need to be able to charge bicycle batteries and also look for enhanced safety/anti-theft parking options. The City should also consider the needs of cargo bike users.

## CITYWIDE BICYCLE PARKING RECOMMENDATIONS

This plan recommends that the City of Sunnyvale expands its bicycle parking as opportunities arise and new development occurs. This plan also recommends programs to install bicycle parking throughout the city, especially in highly trafficked destinations and around transit. This plan also recommends an update to the bike parking ordinance in the City's Municipal Code.

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### Bike Parking Recommendation #1: Bicycle Parking at Caltrain

Caltrain stations in Sunnyvale are direct connections to a strong regional public transportation network. Bicycle parking opportunities at transit opens up new opportunities for people to make the connection between their homes and these transportation systems.

The Sunnyvale Caltrain station currently has four e-lockers. It has one of the highest average bicycle e-locker occupancy rates and the highest number of unique individual users for its e-lockers in the Caltrain network.<sup>3</sup> Lawrence station currently has no e-lockers. The City should work with Caltrain to plan, fund, design, and construct more long-term e-locker bike parking facilities at both Caltrain stations in Sunnyvale. Caltrain's Bicycle Parking Management Plan currently identifies Sunnyvale as a station for additional e-lockers.

<sup>3</sup> [http://www.caltrain.com/Assets/\\_Planning/Bicycle+Access+and+Parking+Plan/Bicycle+Parking+Management+Plan+-+Final.pdf](http://www.caltrain.com/Assets/_Planning/Bicycle+Access+and+Parking+Plan/Bicycle+Parking+Management+Plan+-+Final.pdf)



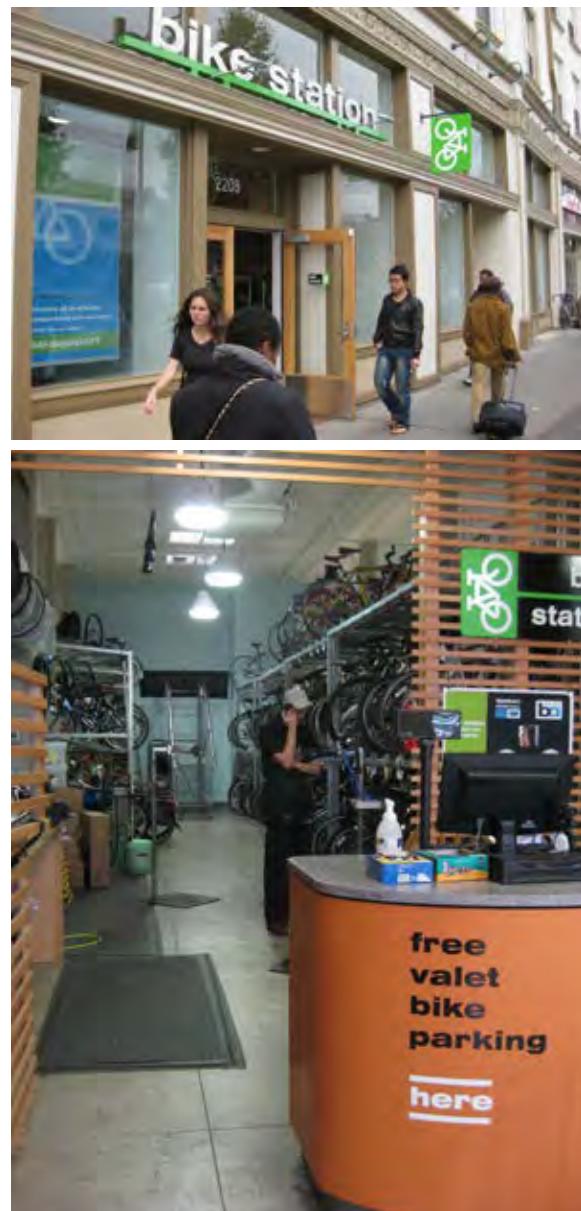
## Bike Parking Recommendation #2: Update the bicycle parking ordinance in the City of Sunnyvale's Municipal Code

Sunnyvale is one of many cities around California that have adopted policies to encourage bicycling through the implementation of bicycle parking. The City of Sunnyvale's Municipal Code defines two different classes of bicycle parking and stipulates the provision of bicycle parking at multi-family developments, non-residential developments, and mixed-use developments.

The current municipal code includes the "ribbon weave" bicycle rack design as an example of bicycle parking (Ordinance 19.46.150). The ribbon weave is no longer considered a best practice for bicycle parking due to its unintuitive design, and should be evaluated for removal from the ordinance. For more information, see VTA's Bicycle Technical Guidelines (2012).

City officials should also consider an update to the bicycle parking minimums established in the municipal code. The guidelines established should reflect the type and quantity of bicycle parking needed in new developments and major renovations.

A bike station in downtown Berkeley, CA



## Wayfinding

A bicycle wayfinding system consists of comprehensive signing and/or pavement markings to guide bicyclists to their destinations. Wayfinding signs direct bicyclists along the existing bicycle network and to important community destinations such as libraries, schools, parks, shopping districts, and civic buildings. Wayfinding is important for people to be able to navigate throughout Sunnyvale. Signs along the bicycle network should indicate the direction of travel, the locations of major destinations, and the time/distance to these destinations along the network.

Sunnyvale currently has three guided bicycle routes, but does not have a consistent wayfinding sign program implemented throughout the rest of the city's bicycle network. This program could serve both wayfinding and safety purposes including:

- Helping to familiarize users with the network
- Helping users identify the best routes to destinations
- Helping users understand travel time and distances to their destinations

### Wayfinding Signage Examples

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Confirmation Sign



Turn Sign



Decision Sign



### **Wayfinding Recommendation: Comprehensive Wayfinding Program**

The City of Sunnyvale can develop and implement a comprehensive wayfinding program for bicyclists, integrating this program with Caltrain stations, downtown wayfinding or branding initiatives, and signage along the Bay Trail and other regional trail systems.

An example of a location in need of wayfinding is along the John W. Christian Trail where the user must deviate from the trail using surface streets to cross Fair Oaks and Lawrence Expressway.

A community-wide bicycle wayfinding program would identify:

- Sign locations
- Sign type - what information should be included and design features
- Key destinations to be highlighted on each sign
- Approximate distance and/or travel time to each destination

## BICYCLE PROGRAMMATIC RECOMMENDATIONS

This section describes recommended bicycle-related programs for the City of Sunnyvale. Additional encouragement and educational bicycle programming for youth can be found in Chapter 6: Safe Routes to School Plan.

### Adult Bicycling Skills Classes

Most adults biking have not received training on safe bicycling practices, the rules of the road, and bicycle handling skills. Bicycling skills classes can address this education gap. With a large planned increase in bicycle infrastructure in the coming years, the City should sponsor and partner with other organizations to provide Adult Bicycle Skills classes as a way to encourage people who are inexperienced or less comfortable biking to try out new facilities.

The League of American Bicyclists offers classes taught by certified instructors. In addition, the Silicon Valley Bicycle Coalition and Santa Clara Valley Transportation Authority offer adult bicycle education classes periodically and at the request of local jurisdictions.

**Recommendation:** This Plan recommends the City support adult bicyclist skills classes.

### Employer-Based Encouragement Programs

Though the City cannot host these programs, it can work with or provide information to employers about commuting by bicycle. Employers can host bicycle classes and participate in Bike to Work Day.

Employers can also set up a National Bike Challenge ([nationalbikechallenge.org](http://nationalbikechallenge.org)) account so that employees can log their hours and set up an internal contest for who logs the most hours.

**Recommendation:** This Plan recommends the City collaborate with employers to implement bicycle related programs.



## Bicycle Friendly Community

The League of American Bicyclists recognizes communities that improve bicycling conditions through education, encouragement, enforcement, and evaluation programs. Communities can achieve diamond, platinum, gold, silver, or bronze status, or an honorary mention. Bicycle-friendliness can indicate that a community is healthy and vibrant.

Like good schools and attractive downtowns, bicycle-friendliness can increase property values, spur business growth, and increase tourism.

Sunnyvale is currently a Bronze-level Bicycle Friendly Community.

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**Recommendation:** This Plan recommends the City reapply for an elevated Bicycle Friendly Community status after implementation of the priority projects and many of the recommended programs identified in this Plan.



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## Bikeway Implementation

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With limited funding, the City of Sunnyvale has to determine how to prioritize the proposed bikeway recommendations.

Some of these prioritized projects can be completed more quickly. For instance, projects with community support and minimal trade-offs can be installed as part of the City's capital improvement funds. Other prioritized projects may be more complex and require additional study, or involve multi-jurisdictional coordination. Even if these projects are prioritized as "high priority", these projects will require the City seeking out additional grant funding opportunities.

The intent of prioritizing projects is to create a strategic list to guide implementation, recognizing budget and staff limitations. Prioritization results are flexible concepts that serve as guidelines. Over time as development occurs or other changes to

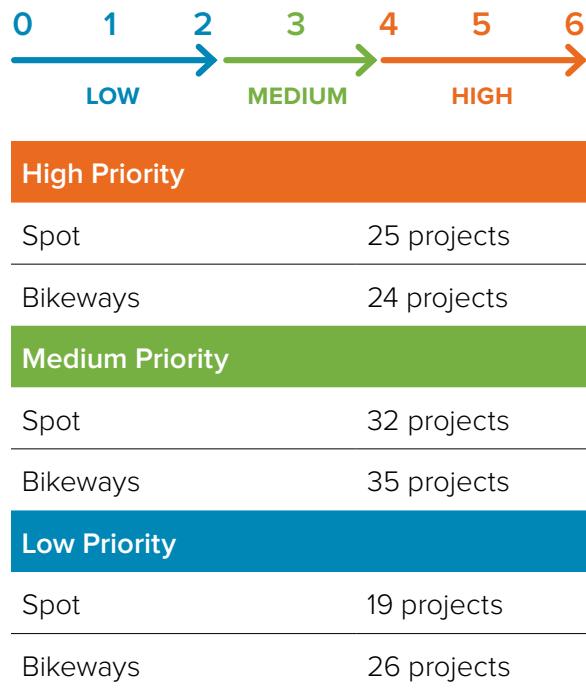
land uses and the transportation network take place, this framework can be used to reevaluate remaining projects and continue pursuing implementation of this Plan. For example, a low priority spot improvement may be completed ahead of a high priority project due to immediate funding opportunities as part of a redevelopment or larger project. A high priority project may require additional study and funding making it take longer to implement.

### Methodology

Recommended projects were evaluated using five criteria that support the vision and goals of the Bicycle Plan. The prioritization process assigns a number between 0 and 6 to all recommendations, based on the criteria outlined in Table 7. The collision reduction criterion is 2 points, correlating to what the project team heard that safety on a roadway is the greatest determinate of whether people will bike there. Based on the frequency of scores, projects will be sorted into high, medium, and low priority categories.

**Table 7. Criteria for Recommendation Prioritization**

Criteria	Measure	Points
<b>Collision Reduction</b>	Projects that are within close proximity (250 feet) of at least one bicycle-related collision.	1
	Projects that provide facilities on the High Injury Network (as developed by the Vision Zero Plan) or provides an alternative route to the High Injury Network.	1
<b>Equity</b>	Projects that are located within a disadvantaged community, as defined by MTC's Community of Concern.	1
<b>Access to Key Destinations</b>	Projects that connect people within 500 feet of a Caltrain station, VTA light rail station, school, trail, or major employment area.	1
<b>Community-Identified Need</b>	Projects that were identified through multiple engagement efforts with unique stakeholders.	1
<b>Cross-Town Connection</b>	Projects that are included as part of the Low-Stress Spine Network.	1

**Table 8. Project Prioritization**

## Priority Bikeway Projects

Projects that score between 4 and 6 are categorized as **high priority**. Projects receiving a score of 3 are categorized as **medium priority**. Projects receiving a score of 2 or less are categorized as **low priority**.

High, medium, and low priority projects can be viewed in the following tables and maps, and a full list of project prioritization scoring can be found in Appendix B.

Rows in the table that are italicized are located outside of the City's public right-of-way and will require coordination with other agencies.

**Table 9. Bicycle Spot Improvement Project Prioritization**

STREET 1	STREET 2	DESIGN	ALSO IN PED PLAN
<b>High Priority</b>			
Bernardo Ave.	Evelyn Ave.	Crossing Improvement	X
Bernardo Ave.	Fremont Ave.	Crossing Improvement	X
Bernardo Ave.	<i>El Camino Real</i>	Crossing Improvement	X
Borregas Ave.	Maude Ave.	Crossing Improvement	X
Borregas Ave.	Duane Ave.	Crossing Improvement and Traffic Control	X
Cezanne Dr.	<i>El Camino Real</i>	Crossing Improvement and Traffic Control	X
<i>East Channel Trail</i>	<i>El Camino Real</i>	<i>Crossing Improvement and Grade Separation</i>	
<i>East Channel Trail</i>	<i>Fremont Ave.</i>	<i>Crossing Improvement and Traffic Control</i>	
<i>East Channel Trail</i>	<i>Duane Ave.</i>	<i>Crossing Improvement</i>	
<i>El Camino Real</i>	<i>Fremont Ave.</i>	<i>Crossing Improvement</i>	X
Evelyn Ave.	Murphy Ave.	Crossing Improvement	X
Mary Ave.	Evelyn Ave.	Crossing Improvement	
Mary Ave.	Fremont Ave.	Crossing Improvement	X
Mary Ave.	Remington Dr.	Crossing Improvement and Traffic Control	
Mary Ave.	Central Expy.	Crossing Improvement and Traffic Control	
Mathilda Ave.	Maude Ave.	Crossing Improvement and Traffic Control	X
Mathilda Ave.	Moffett Park Dr.	Crossing Improvement	
Mathilda Ave.	Ahwani Ave.	Crossing Improvement	
Pastoria Ave.	<i>El Camino Real</i>	Crossing Improvement and Traffic Control	X
Remington Dr.	<i>El Camino Real</i>	Crossing Improvement	
Sunnyvale Ave.	Maude Ave.	Crossing Improvement	X
Sunnyvale Ave.	Evelyn Ave.	Crossing Improvement	X
Sunnyvale-Saratoga Rd.	Fremont Ave.	Crossing Improvement	X
Wolfe Rd.	Kifer Rd.	Crossing Improvement	
Wolfe Rd.	Fremont Ave.	Crossing Improvement	X

Rows in the table that are italicized are located outside of the City's public right-of-way and will require coordination with other agencies



STREET 1	STREET 2	DESIGN	ALSO IN PED PLAN
<b>MEDIUM</b>			
Bernardo Ave.	Ayala Dr.	Crossing Improvement and Traffic Control	
Borregas Ave.	Carribean Dr.	Crossing Improvement	
Borregas Ave.	<b>John W Christian Greenbelt</b>	Crossing Improvement	
<i>East Channel Trail</i>	<i>Old San Francisco Rd.</i>	<i>Crossing Improvement</i>	
<i>East Channel Trail</i>	<i>John W. Christian Greenbelt</i>	<i>Crossing Improvement</i>	
<i>East Channel Trail</i>	<i>Carribean Dr.</i>	<i>Crossing Improvement and Grade Separation</i>	
<i>East Channel Trail</i>	<i>Iris Ave.</i>	<i>Crossing Improvement and Traffic Control</i>	
<i>East Channel Trail</i>	<i>Tasman Dr.</i>	<i>Crossing Improvement</i>	
<i>East Channel Trail</i>	<i>Evelyn Ave.</i>	<i>Crossing Improvement and Traffic Control</i>	
<i>East Channel Trail</i>	<i>Central Expy.</i>	<i>Crossing Improvement and Grade Separation</i>	
<i>East Channel Trail</i>	<i>Kifer Rd.</i>	<i>Crossing Improvement and Traffic Control</i>	
<i>East Channel Trail</i>	<i>Wolfe Rd.</i>	<i>Crossing Improvement and Grade Separation</i>	
Fair Oaks Ave.	Weddell Dr.	Crossing Improvement	X
Fieldfair Dr.	Fremont Ave.	Crossing Improvement and Traffic Control	
Hollenbeck Ave.	Fremont Ave.	Crossing Improvement	
<i>Lawerence Expy.</i>	<i>Argues Ave.</i>	<i>Crossing Improvement and Grade Separation</i>	
<i>Lawerence Expy.</i>	<i>Reed Ave.</i>	<i>Crossing Improvement and Grade Separation</i>	
<i>Lawrence Expy.</i>	<i>Kifer Rd.</i>	<i>Crossing Improvement and Grade Separation</i>	
Manet Dr.	Fremont Ave.	Crossing Improvement	X
Manet Dr.	Remington Dr.	Crossing Improvement	X
Mary Ave.	Knickerbocker Dr.	Crossing Improvement	X
Mary Ave.	Olive Ave.	Crossing Improvement and Traffic Control	X
Mary Ave.	Maude Ave.	Crossing Improvement	
Mathilda Ave.	Ross Dr.	Crossing Improvement	X
Mathilda Ave.	Innovation Way	Crossing Improvement	
Mathilda Ave.	Sunnyvale-Saratoga Ave.	Crossing Improvement	
<i>Stevens Creek/SR 85 on-and off-ramps</i>	<i>Fremont Ave.</i>	<i>Grade Separation</i>	
Sunnyvale Ave.	Evelyn Ave.	Crossing Improvement and Traffic Control	X
Sunnyvale Ave.	Hendy Ave.	Crossing Improvement	
Sunnyvale Saratoga Ave.	Alberta Ave./Harwick Way	Crossing Improvement	
Sunnyvale-Saratoga Ave.	Cheyenne Dr.	Crossing Improvement and Traffic Control	
Wolfe Rd.	Maude Ave.	Crossing Improvement	

STREET 1	STREET 2	DESIGN	ALSO IN PED PLAN
<b>Low Priority</b>			
Bernardo Ave.	Ticonderoga Dr.	Crossing Improvement and Traffic Control	X
Crawford Dr.	Las Palmas Park	Crossing Improvement	
<i>East Channel Trail</i>	<i>Persian Dr. / SR 237</i>	<i>Crossing Improvement and Grade Separation</i>	
<i>East Channel Trail</i>	<i>Blythe Ave.</i>	<i>Crossing Improvement and Traffic Control</i>	
<i>East Channel Trail</i>	<i>Ahwanee Ave.</i>	<i>Crossing Improvement</i>	
<i>East Channel Trail</i>	<i>Carlisle Way</i>	<i>Crossing Improvement and Traffic Control</i>	
<i>East Channel Trail</i>	<i>Dunholme Way</i>	<i>Crossing Improvement and Traffic Control</i>	
<i>East Channel Trail</i>	<i>Arques Ave.</i>	<i>Crossing Improvement and Grade Separation</i>	
Hollenbeck Dr.	Sheraton Ave.	Traffic Control	
Kennewick Dr.	Homestead Rd.	Traffic Control	
Lakedale Expressway Bridge	Lakedale Way	Crossing Improvement	
Mandarin Dr.	Yorktown Dr.	Crossing Improvement	
Mary Ave Overcrossing	Hwy 101	Grade Separation	
Mary Ave.	Homestead Rd.	Crossing Improvement and Traffic Control	X
Mary Ave.	Washington Ave.	Traffic Control	X
Mary Ave.	Helena Dr.	Crossing Improvement and Traffic Control	X
Pome Ave.	Fremont Ave.	Crossing Improvement and Traffic Control	
Reed Ave.	Evelyn Ave.	Crossing Improvement	
The Dalles	85 Overcrossing	Crossing Improvement and Grade Separation	X

**Table 10. Bikeway Prioritization**

STREET	START	END	PROPOSED FACILITY CLASS
<b>High Priority</b>			
<b>Almanor Ave.</b>	Mary Ave.	Mathilda Ave.	2B, 2
<b>Bernardo Ave. - Homestead-Bernardo Connector</b>	Fremont Ave.	Homestead Rd.	1
<b>Bernardo Ave.</b>	Heathersone Way	Ayala Dr.	2B, 3
<b>Borregas Ave.</b>	Maude Ave.	Carribean Dr.	2B, 4
<b>Caribbean Dr.</b>	Moffett Park Dr.	Bordeaux Dr.	1
<b>Cezanne Dr. - Cumulus Dr. - Azure St.</b>	El Camino Real	Remington Dr.	3B
<b>East Channel Trail</b>	Ahwannee Ave.	Central Expy.	1, 3B
<b>East Channel Trail</b>	<i>El Camino Real</i>	<i>Homestead Rd.</i>	<i>1, 3B</i>
<b>East Channel Trail</b>	Evelyn Ave.	<i>El Camino Real</i>	1
<b>El Camino Real</b>	City Limit	City Limit	4, 1 (Based on ROW)
<b>Evelyn Ave.</b>	S Bernardo Ave.	521 feet west of Mary Ave.	4
<b>Fair Oaks Ave.</b>	Ahwannee Ave.	N Wolfe Rd.	2
<b>Fremont Ave.</b>	Belleville Way	El Camino Real	4
<b>Kifer Rd.</b>	Commercial St.	Uranium Dr.	2B
<b>Mathilda Ave.</b>	El Camino Real	Washington St.	1, 2B, 2
<b>Maude Ave.</b>	City Boundary	Fair Oaks Ave.	2B, 2
<b>Moffett Park Dr.</b>	Ellis St.	East Channel Trail	1
<b>Old San Francisco Rd. - Reed Ave.</b>	Sunnyvale Ave.	Lawrence Expy.	2B, 4
<b>Remington Dr.</b>	Bernardo Ave.	El Camino Real	2B
<b>Stevens Creek Trail</b>	<i>City Limits</i>	<i>Heatherstone Way</i>	1
<b>Sunnyvale Ave.</b>	El Camino Real	Maude Ave.	2, 2B, 4
<b>Sunnyvale Saratoga Rd.</b>	Homestead Rd.	El Camino Real	2B, 4
<b>The Dalles Ave. - Alberta Ave. - Bittern Dr.- Inverness Way</b>	Belleville Way	Teal Dr.	3, 2
<b>Wolfe Rd.</b>	Fremont Ave.	El Camino Real	4

Rows in the table that are italicized are located outside of the City's public right-of-way and will require coordination with other agencies

STREET	START	END	PROPOSED FACILITY CLASS
<b>Medium Priority</b>			
Ahwanee Ave.	Mathilda Ave.	San Rafael St.	2, 3
Bernardo Ave. (Stevens Creek Trail Segment)	Fremont Ave.	Remington Dr.	2
Blair Ave. - Quetta Ave.	Bernardo Ave.	Elmira Dr.	3B
Blue Jay Dr. - Blackhawk Dr. - Dunholme Way - Bobwhite Ave.- Floyd Ave.- Manet Dr.	Homestead Rd.	Crescent Ave.	3B, 3
Calabazas Creek Trail	Central Expy.	Monroe St.	1
Calabazas Creek Trail	Existing Trail	Central Expy.	1
Cascade Dr. - Cordilleras Ave.	S Bernardo Ave.	Fremont Ave.	3, 3B
Caspian Ct.	West Channel	Geneva Dr.	4
Duane Ave.	Borregas Ave.	Fair Oaks Ave.	3
<i>East Channel Trail</i>	Caribbean Dr.	Lakehaven Ter.	1
East Channel Trail	Central Expy	Evelyn Ave.	1
Evelyn Ave.	S Bernardo Ave.	Reed Ave.	1
Garner Dr.-Bradford Dr.-Ross Dr.	John W. Christian Greenbelt	Weddell Dr.	3B
Heatherstone Ave. - Hanover Ave. - Elmira Dr.	Stevens Creek Trail	Quetta Ave.	3B
Helena Dr. - Kinnewick Dr.	South Bernardo Ave.	The Dallas Ave.	3B
Henderson Ave.	Lily Ave.	Bryant Way	3
Innovation Way	Moffett Park Dr.	Bordeaux Dr.	4
Java Dr.	Crossman Ave.	Mathilda Ave.	4
Lawrence Area Station Plan Trails	-	-	1
Lawrence Station Area Plan Bikeways	-	-	2
Mary Ave.	Evelyn Ave.	Almanor Ave.	4
Mary Ave Overcrossing	N Mary Ave.	D St.	4
Mathilda Ave.	5th Ave.	Moffett Park Dr.	4
Morse Ave.	California Ave.	Maude Ave.	3B
<i>Parking Lot between Motel 6 and Applied Chemicals</i>	Vaqueros Ave.	Mathilda Ave.	1
Pastoria Ave.	Evelyn Ave.	El Camino Real	2, 3
Poplar Ave. - Nettle Pl. - Ponderosa Ave. - Sequoia Dr. - Bluebonnet Dr. - Pin Oak Dr.	Bryant Way	Evelyn Ave.	3B
Quail Ave. - Teal Dr. - Sage Hen Way - Castleton Way - Bryant Way - Eleanor Way	Homestead Rd.	Bryant Rd.	3, 3B
Taaffe St.	El Camino Real	Sunnyvale Station	3, 3B
Torrington Dr. - Spinoso Dr. - Crawford Dr.	Hollenbeck Ave.	Sunnyvale Saratoga Rd.	3B
Washington Ave.	S Bernardo Ave.	Mathilda Ave.	3
<i>West Channel Trail</i>	Bordeaux Dr.	Carl Rd.	1
Willow Ave.	Reed Ave.	Lawrence Expy.	2, 2B
Wolfe Rd.	Fair Oaks Ave.	Evelyn Ave.	4
<i>Wright Ave.- Yorktown Dr.- Lime Dr. - Mango Ave. - Lynn Way- Ramona Ave.</i>	Homestead Rd.	Blair Ave.	3B, 3

Rows in the table that are italicized are located outside of the City's public right-of-way and will require coordination with other agencies



STREET	START	END	PROPOSED FACILITY CLASS
<b>Low Priority</b>			
<i>5th St. (Private Street)</i>	Mathilda Ave.	Bordeaux Dr.	1
Alberta Ave. - Norland Dr. - Endicott Dr. - Saskatchewan Dr. - Cheyenne Dr.	Hollenbeck Ave.	Sunnyvale-Saratoga Rd.	3B
Alt Route North of Tasman Dr Connector	East Java Dr.	Persian Dr.	1
Bay Trail Connector	Mathilda Ave.	Bay Trail	1
Belleville Way	Fremont Ave.	Homestead Rd.	3B
Bike/Ped Bridge	Mountain View	Stevens Creek Trail	1
Carlisle Way - Mallard Way	Bobwhite Ave.	Dartshire Way	3B
Danforth Dr. - Russet Dr. - Hyde Park Dr.	Quetta Ave.	Spinosa Dr.	3B
<i>D St. (Private Street)</i>	N Mary Avenue Bridge	5th St.	4
Flamingo Way - Dartshire Way	Dunholme Way	S Wolfe Rd.	3B
Flicker Way - Heron Ave.- Rembrandt Dr. - Crescent Ave.	Homestead Rd.	Sunnyvale Saratoga Rd.	3B, 3
Gibraltar Dr.	Borregas Ave.	Innsbruck Dr.	4
Innsbruck Dr.	Moffett Park Dr.	Java Dr.	2B, 1
Iowa Ave.	Mathilda Ave.	Sunnyvale Ave.	2B
Iris Ave.	Fair Oaks Ave.	Gail Ave.	3
La Conner Dr. - Tenaka Pl. - Yukon Dr.	Sunnyvale Saratoga Rd.	Cascade Dr.	3B
Manila Ave.	Ellis St.	Enterprise Way	2
New Trail	Mathilda Ave.	Sunnyvale Saratoga Rd.	1
Persian Dr.	East Java Dr.	Quality Inn Parking Lot	2
Robin Way	Bernardo Ave.	Knickerbocker	3B
San Junipero Dr. - San Miguel Ave.	Duane Ave.	Ahwanee Ave.	3B
San Rafael St. - Indian Wells Ave.	Ahwanee Ave.	Duane Ave.	3, 2
Silverlake Dr. - Lakedale Way	Lakedale Way Crossing	Greenbelt	3B, 2
South Bayview Ave.	Evelyn Ave.	Old San Francisco Rd.	3B
Tasman Dr.	Reamwood Ave.	Calabazas Creek Trail	4
Ticonderoga Dr. - Pome Ave. - Sheraton Dr.	Bernardo Ave.	Spinosa Dr.	3B, 3



A photograph of a city street during the day. In the foreground, a paved sidewalk with a red curb runs along the left side of the street. A white bus is stopped at a bus stop on the sidewalk. The bus has "53 TRANSIT CTR" displayed on its front sign. Several people are standing on the sidewalk near the bus. On the street, there are two cars: a dark-colored sedan and a white SUV. A yellow pedestrian crossing sign is visible on a pole. In the background, there are several multi-story buildings, some with glass facades. Bare trees are scattered throughout the scene, and the overall lighting suggests it's either morning or late afternoon.

53 TRANSIT CTR



Map 19. High Priority Bikeway Projects

● Bicycle Spot Improvement

— Class I Shared-Use Path

— Class II Bicycle Lane

— Class IIB Buffered Bicycle Lane

— Class III Bicycle Route

— Class IIIB Bicycle Boulevard

— Class IV Separated Bikeway

**Boundaries + Destinations**

● Caltrain Station

● Park

● Light Rail Station

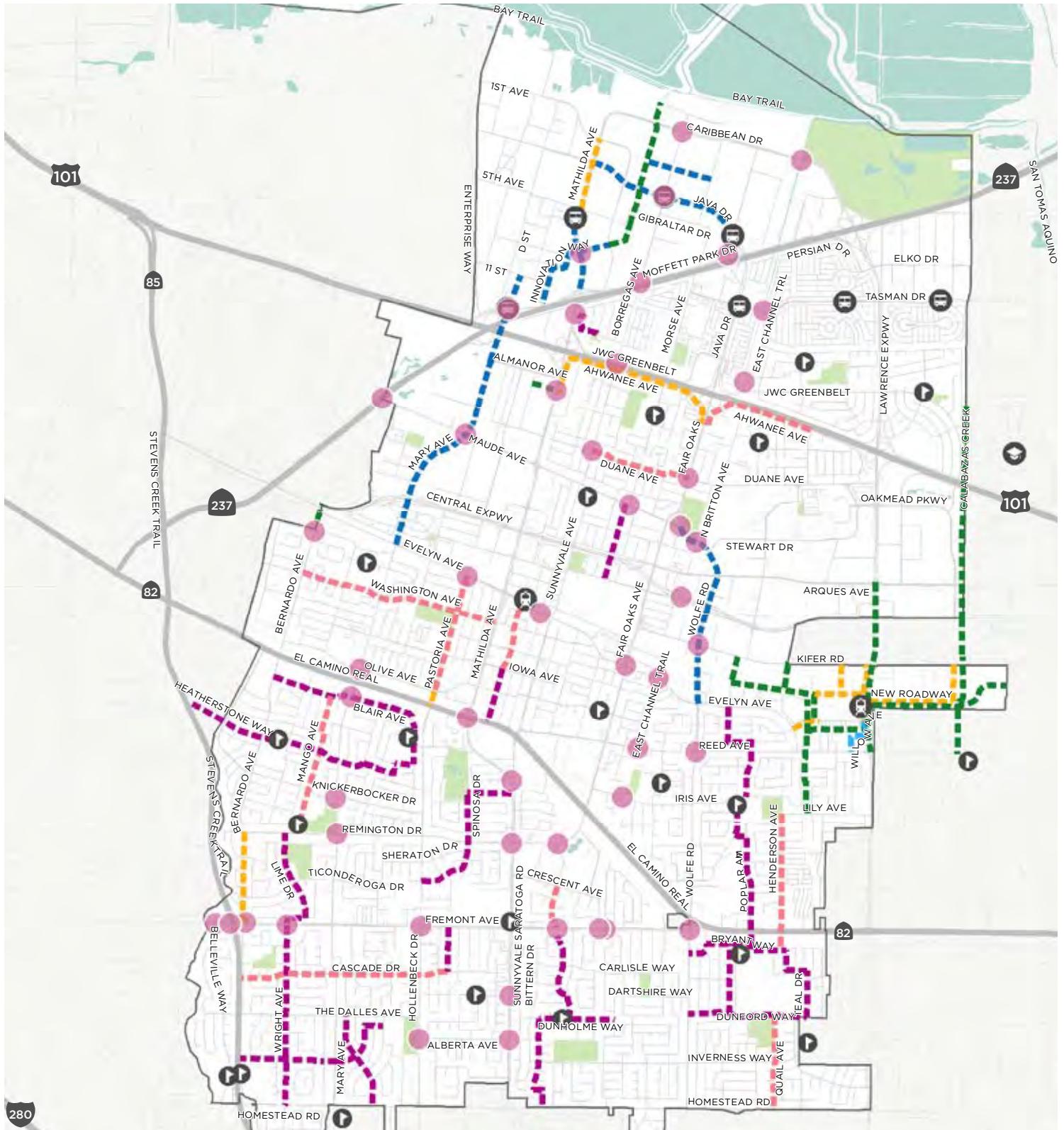
● City Boundary

● Mission College

● Public School



0 0.5 1 MILE



## Map 20. Medium Priority Bikeway Projects

- Bicycle Spot Improvement
  - Class I Shared-Use Path
  - Class II Bicycle Lane
  - Class IIB Buffered Bicycle Lane
  - Class III Bicycle Route
  - Class IIIB Bicycle Boulevard
  - Class IV Separated Bikeway

## **Boundaries + Destinations**

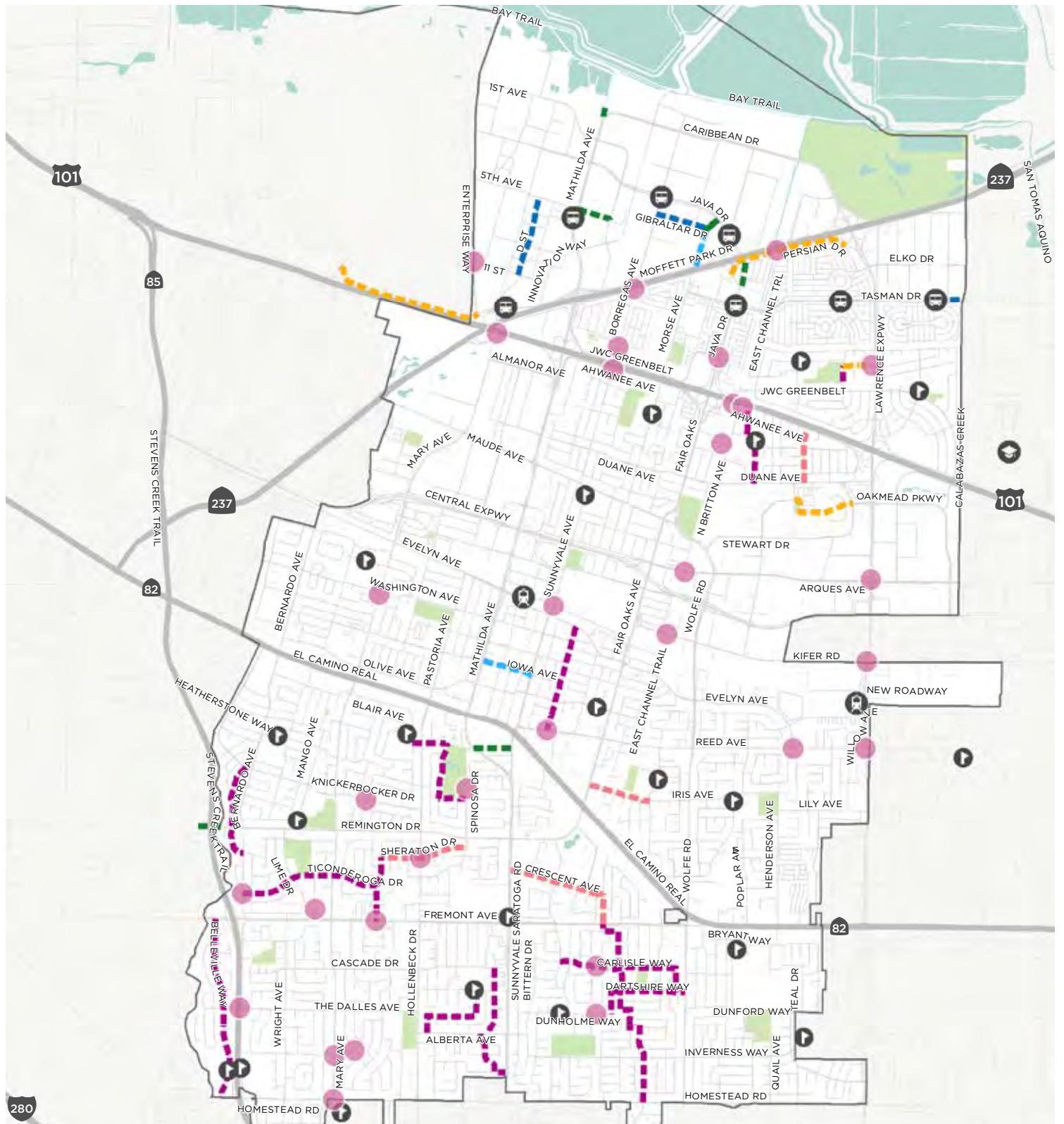
-  Caltrain Station
  -  Light Rail Station
  -  Mission College
  -  Public School

 Park

 City Boundary

1

**MILE**



## Map 21. Low Priority Bikeway Projects

- Bicycle Spot Improvement
  - Class I Shared-Use Path
  - Class II Bicycle Lane
  - Class IIB Buffered Bicycle Lane
  - Class III Bicycle Route
  - Class IIIB Bicycle Boulevard
  - Class IV Separated Bikeway

## Boundaries + Destinations

-  Caltrain Station
  -  Light Rail Station
  -  Mission College
  -  Public School

 Park

 City Boundary

1

A horizontal scale bar representing distance. It features a thick black segment at the right end labeled "MILE". To its left is a thinner black segment, followed by a white gap, then another thicker black segment. Numerical labels "0", "0.5", and "1" are positioned below the scale bar at regular intervals.

**Table 11. Capital Costs by Bikeway Type**

Bikeway Type	Cost Estimate Per Mile Low	Cost Estimate Per Mile High	Mileage	Cost Estimate Low	Cost Estimate High
<b>Class I Shared-Use Path</b>	\$700,000	\$1,500,000	19.7	\$13,790,000	\$29,550,000
<b>Class II Bicycle Lane</b>	\$132,000	\$387,000	7.1	\$937,200	\$2,747,700
<b>Class IIB Buffered Bike Lane</b>	\$172,000	\$420,000	9.9	\$1,702,800	\$4,158,000
<b>Class III Bicycle Route</b>	\$15,400	\$25,700	12.7	\$195,580	\$326,390
<b>Class IIIB Bicycle Boulevard</b>	\$75,000	\$1,020,000	22.2	\$1,665,000	\$22,644,000
<b>Class IV Separated Bikeway</b>	\$300,000	\$2,313,000	17.3	\$5,190,000	\$40,014,900
<b>Total</b>			<b>88.9</b>	<b>\$23,480,580</b>	<b>\$99,440,990</b>

Design and maintenance costs are not included within bikeway costs. Design costs are typically 15% of construction costs.

Class I Shared-Use Path: Includes asphalt path and minor crossing improvements.

Does not include signal modification or right of way acquisition.

Class II Bicycle Lane: Low cost assumes signage, striping. High cost assumes green conflict marking, traffic signal modification including bike signal detection.

Class IIB Buffered Bicycle Lane: Low cost assumes signage, striping, and a painted buffer. High cost assumes green conflict marking, traffic signal modification including bike signal detection, and wayfinding signage.

Class III Bicycle Route: Includes signage and striping.

Class IIIB Bicycle Boulevard: Low cost assumes signage, striping, and minor traffic calming such as speed humps, and up to 3 other elements such as medians, diverters or a raised crosswalk. High cost assumes low cost items plus traffic circles, curb extensions, traffic signal modification including bike signal detection, and wayfinding signage.

Class IV Separated Bikeway: Low cost assumes signage, striping, and a painted buffer with flexible delineators.

High cost assumes green conflict marking, traffic signal modification including bike signal

## Capital Costs

This Plan recommends at least \$23 million in bicycle projects to help Sunnyvale achieve its vision of becoming a Complete Streets Community (Table 11). Cost estimates are provided in 2020 dollars and only include construction costs, not design. Due to annual inflation, cost estimates may increase in the future. Cost estimates for spot improvements will be developed in a later design phase following more detailed engineering analysis.

## Maintenance Costs

Additional cost considerations include the cost of maintaining and replacing bikeways. For example, Class IV separated bikeways require the City to purchase new street sweeping machines that are small enough to fit inside the facility. In addition, all bikeways will need to be re-striped when the road is repaved.

## Funding Sources

Identifying and securing funding for the projects identified in the Bicycle Plan is crucial to achieving the vision and goals established in this plan. A variety of sources exist to fund bicycle infrastructure projects, programs, and studies. Local and regional funding sources can be used for the construction or maintenance of bicycle improvements, along with competitive grant programs. Table 12 displays these funding sources as well as the project types eligible under each source. Short descriptions of each funding source are in the following table.



**Table 12. Funding Sources**

	ON-STREET BIKEWAYS	TRAILS	SAFE ROUTES TO SCHOOL	SAFE ROUTES TO TRANSIT	CROSSING/INTERSECTIONS	BICYCLE PARKING FACILITIES	PROGRAMS	STUDIES
<b>Local and Regional Grant Programs</b>								
2016 Measure B (VTA)	●	●	●	●	●		●	●
Transportation Fund for Clean Air County Program Manager Fund (VTA)	●	●	●	●	●			
One Bay Area (MTC & VTA)	●	●	●	●				
Transportation Development Act, Article 3 (VTA)	●	●	●	●	●			
Transportation for Livable Communities (MTC)	●	●	●	●				
Vehicle Emissions Reductions Based at Schools Program (VTA)	●	●	●	●				
Bicycle Facilities Grant Program (BAAQMD)	●	●	●	●		●		
Climate Initiatives InMissingvative Grant Fund (MTC)	●	●	●	●				
Lifeline Transportation Program (MTC)			●	●				
<b>State and Federal Grant Programs</b>								
Active Transportation Program (CTC)	●	●	●	●	●		●	
Affordable Housing & Sustainable Communities (CA HCD)	●			●			●	
Urban Greening Grants (CA NRA)	●	●	●	●				
Highway Safety Improvement Program (Caltrans)	●		●	●	●			
Sustainable Transportation Planning Grants (Caltrans)							●	
Solutions for Congested Corridors (CTC)	●	●			●			
Office of Traffic Safety (CA OTS)							●	
Recreational Trails Program (CA DPR)		●						
Habitat Conservation Fund (CA DPR)		●						
<b>Other State Programs</b>								
Local Partnership Program (CTC)	●		●	●	●		●	
Road Maintenance and Rehabilitation Program (Controller's Office)	●		●	●				●

## LOCAL AND REGIONAL GRANT PROGRAMS

### 2016 Measure B

Comment start Santa Clara voters approved a half-cent sales tax in 2016 to fund transportation infrastructure investments including bicycle, pedestrian, and complete streets projects. Funding priority will go to walking projects that connect to schools, transit, and employment centers; complete gaps in the existing pedestrian network; cross major barriers; and make walking a safe, convenient form of transportation. Supported projects must be identified in city, county or regional planning documents. Measure B is expected to raise \$6.3 billion (2017 dollars) over 30 years; \$250 million of that has been allocated for bicycle and pedestrian improvements.

*Funds are programmed by VTA.*

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### Transportation Fund for Clean Air County Program Manager Fund

The Bay Area Air Quality Management District (BAAQMD) administers funds to the VTA for projects that reduce vehicle emissions including bicycle projects. These funds come from a \$4 vehicle registration surcharge in Bay Area counties and can be used as a match for competitive state or federal programs.

*Funds are programmed by VTA.*

### One Bay Area Grant

The One Bay Area grant program (OBAG) emphasizes funding for projects within Priority Development Areas (PDAs) in the region that are in-line with housing and land-use goals. Projects that are within or provide access to these PDAs could qualify for OBAG grants.

*Funds are programmed by the Metropolitan Transportation Commission (MTC) and the Santa Clara Valley Transportation Authority (VTA).*

### Transportation Development Act Article 3

Transportation Development Act Article 3 (TDA 3) provides funding annually for bicycle and pedestrian projects. Two percent of TDA 3 funds collected within the county are used for TDA 3 projects. MTC policies require that all projects be reviewed by a BPAC or similar body before approval.

*Funds are programmed by VTA.*

### Transportation for Livable Communities Program

Designed to support community-based transportation projects that bring “new vibrancy” to downtown areas, commercial cores, neighborhoods, and transit corridors. The projects resulting from these grants are intended to provide for a range of transportation choices including bicycling, should support connections between transportation and land use, and should be developed through an inclusive community planning process.

*Funds are programmed by MTC.*



## Vehicle Emissions Reduction Based at Schools Program

The Vehicle Emissions Reduction Based at Schools (VERBS) program receives funds from MTC's Climate Initiative SRTS Program. The goals of this include reducing greenhouse gases by promoting walking, biking, transit, and carpooling to school. These federal CMAQ funds are allocated to each county based on school enrollment. The VERBS Program places an additional focus on safety and reducing collisions.

*Funds are programmed by VTA.*

## Bicycle Facilities Grant Program

Throughout the nine-county Bay Area, the Bicycle Facilities Grant program strives to reduce emissions from on-road vehicles and improve air quality by helping residents and commuters shift to bicycling and walking as alternatives to driving for short distances and first- and-last mile trips. The Bay Area Air Quality Management District (BAAQMD) has grant programs that fund both on-street facilities and bicycle parking facilities. Funding comes from the BAAQMD's Transportation Fund for Clean Air.

*Funds are programmed by BAAQMD or the VTA.*

## Climate Initiatives Innovative Grants Fund

MTC's Climate Initiatives Program promotes innovative ways to reduce greenhouse gas emissions in the Bay Area; and taps federal funding for a pair of competitive grant programs. Innovative grants of \$1 million and up are used to support high-impact projects that can be replicated around the region.

*Funds Programmed by MTC*

## Lifeline Transportation Program

Uses both state and federal funds to provide Lifeline grants for projects that meet mobility and accessibility needs in low-income communities across the Bay Area. MTC establishes new guidelines for each cycle of Lifeline grants, but the goal is the same each time: fund community-based transportation projects developed through a collaborative and inclusive process. Lifeline projects must address transportation gaps or barriers identified in community-based transportation plans or other local planning efforts in low-income neighborhoods.

*Funds programmed by MTC*

## STATE AND FEDERAL GRANT PROGRAMS

### California Active Transportation Program

California's Active Transportation Program (ATP) funds infrastructure and programmatic projects that support the program goals of shifting trips to walking and bicycling, reducing greenhouse gas emissions, and improving public health. Competitive application cycles occur every one to two years, typically in the spring or early summer. Eligible projects include construction of bicycling and walking facilities, new or expanded programmatic activities, or projects that include a combination of infrastructure and non-infrastructure components. Typically no local match is required, though extra points are awarded to applicants who do identify matching funds.

*Funds are programmed by the California Transportation Commission (CTC).*

## Affordable Housing and Sustainable Communities Program

The Affordable Housing and Sustainable Communities Program (AHSC) funds land-use, housing, transportation, and land preservation projects that support infill and compact development that reduces greenhouse gas (GHG) emissions. Projects must fall within one of three project area types: transit-oriented development, integrated connectivity project, or rural innovation project areas. Fundable activities include affordable housing developments, sustainable transportation infrastructure, transportation-related amenities, and program costs.

*Funds are programmed by the Strategic Growth Council and implemented by the Department of Housing and Community Development.*

## Urban Greening Grants

Urban Greening Grants support the development of green infrastructure projects that reduce GHG emissions and provide multiple benefits. Projects must include one of three criteria, most relevantly: reduce commute vehicle miles traveled by constructing bicycle paths, bicycle lanes or pedestrian facilities that provide safe routes for travel between residences, workplaces, commercial centers, and schools. Eligible projects include green streets and alleyways and non-motorized urban trails that provide safe routes for travel between residences, workplaces, commercial centers, and schools.

*Funds are programmed by the California Natural Resources Agency.*

## Highway Safety Improvement Program

Caltrans offers Highway Safety Improvement Program (HSIP) grants every one to two years. Projects on any publicly owned road or active transportation facility are eligible, including bicycle and pedestrian improvements. HSIP focuses on projects that explicitly address documented safety challenges through proven countermeasures, are implementation-ready, and demonstrate cost-effectiveness.

*Funds are programmed by Caltrans.*

## Sustainable Transportation Planning Grants

Caltrans Sustainable Transportation Planning Grants are available to communities for planning, study, and design work to identify and evaluate projects, including conducting outreach or implementing pilot projects. Communities are typically required to provide an 11.47 percent local match, but staff time or in-kind donations are eligible to be used for the match provided the required documentation is submitted.

*Funds are programmed by Caltrans.*

## Solutions for Congested Corridors Program

Funded by SB1, the Congested Corridors Program strives to reduce congestion in highly traveled and congested roads through performance improvements that balance transportation improvements, community impacts, and environmental benefits. This program can fund a wide array of improvements including bicycle facilities and pedestrian facilities. Eligible projects must be detailed in an approved corridor-focused planning document. These projects must include aspects that benefit all modes of transportation using an array of strategies that can change travel behavior, dedicate right of way for bikes and transit, and reduce vehicle miles traveled.

*Funds are programmed by the CTC.*



## Office of Traffic Safety

Under the Fixing America's Surface Transportation (FAST) Act, five percent of Section 405 funds are dedicated to addressing nonmotorized safety. These funds may be used for law enforcement training related to pedestrian and bicycle safety, enforcement campaigns, and public education and awareness campaigns.

*Funds are programmed by the California Office of Traffic Safety.*

## Recreational Trails Program

The Recreational Trails Program helps provide recreational trails for both motorized and non-motorized trail use. Eligible products include trail maintenance and restoration, trailside and trailhead facilities, equipment for maintenance, new trail construction, and more.

*Funds are programmed by the California Department of Parks and Recreation.*

## Habitat Conservation Fund

The Habitat Conservation Fund Program supports projects that bring urban residents into park and wildlife areas, protect plant and animal species, and acquire and develop wildlife corridors and trails.

*Funds are programmed by the California Department of Parks and Recreation.*

## OTHER STATE FUNDS

### Local Partnership Program

This program provides SB1 funds to local and regional agencies that have passed sales tax measures, developer fees, or other transportation-imposed fees to fund road maintenance and rehabilitation, sound walls, and other transportation improvement projects. Jurisdictions with these taxes or fees are eligible for a formulaic annual distribution of no less than \$100,000. These jurisdictions are also eligible for a competitive grant program. Local Partnership Program funds can be used for a wide variety of transportation purposes including roadway rehabilitation and construction, transit capital and infrastructure, bicycle and pedestrian improvements, and green infrastructure.

*Funds are programmed by the CTC.*

### Road Maintenance and Rehabilitation Program

Senate Bill 1 (SB1) created the Road Maintenance and Rehabilitation Program (RMRP) to address deferred maintenance on state highways and local road systems. Program funds can be spent on both design and construction efforts. On-street active transportation related maintenance projects are eligible if program maintenance and other thresholds are met. Funds are allocated to eligible jurisdictions.

*Funds are programmed by the State Controller's Office with guidance from the CTC.*

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# Chapter 5:

# Pedestrian Plan





## Pedestrian Needs

There are a number of factors involved in creating a more walkable city, including the perceived comfort and safety of your walking route, and how pleasant and interesting your surroundings are. The experience of walking is fine-grained, cracks in a portion of a sidewalk or one challenging intersection crossing can affect your walking trip.

This Plan looks at existing walking conditions across the city, and community feedback gathered on barriers to walking to understand where the City should focus improving pedestrian infrastructure. The pedestrian needs analyzed in this chapter focus on four major components of walkability:

- Safety
- Publicly-Identified Barriers
- Equity
- Access to Local Needs

Then, this chapter outlines a number of focus areas, corridors, and spots that will be the focus for pedestrian improvements for the City. The pedestrian recommendation section provides examples of the types of improvements that may be implemented at different types of crossings.

In 2019, the City adopted the Green Stormwater Infrastructure Plan, which aims to gradually transform the City's traditional storm drainage infrastructure to green stormwater infrastructure. Green stormwater infrastructure, such as bioretention rain gardens and pervious pavement, helps to reduce pollutants discharged in stormwater to local waterways. Integrating green stormwater components into pedestrian facilities, such as curb extensions, can improve pedestrian safety and create more appealing walking routes.

“Green Streets,” or streets that use a holistic stormwater management approach, have benefits beyond improving stormwater quality and reducing runoff. Green streets can provide shade and enhanced air quality improvements through an increased tree canopy, incorporate protected bicycle lanes buffered by vegetative features, and overall improve the beauty of a neighborhood with more plantings. The City will evaluate opportunities to integrate green streets and green stormwater infrastructure within the pedestrian recommendations.

## Safety

A key strategy to creating a pedestrian-friendly environment is designing streets that are safe for people walking. Sunnyvale's Vision Zero Plan reinforces the City's priority to invest in pedestrian safety and to reduce traffic fatalities across the city.

Historical pedestrian collision data was collected for 2014-2018 and locations with more than one pedestrian-involved collision during that time frame was evaluated. The analysis identified 34 "hot spots," or intersections where two or more pedestrian crashes have occurred. Two of the intersections identified had six pedestrian crashes, at South Fair Oaks Ave. and Iris Ave., and at El Camino Real and Cezanne Dr. Eight of the 34 spots occurred on El Camino Real, and areas of Hollenbeck Ave., Fremont Ave., Remington Ave., and Fair Oaks Ave. have multiple collision hot spots. A full list of the 34 intersections can be found in Table 13.

**Table 13. Areas of Two or More Pedestrian-Involved Collisions**

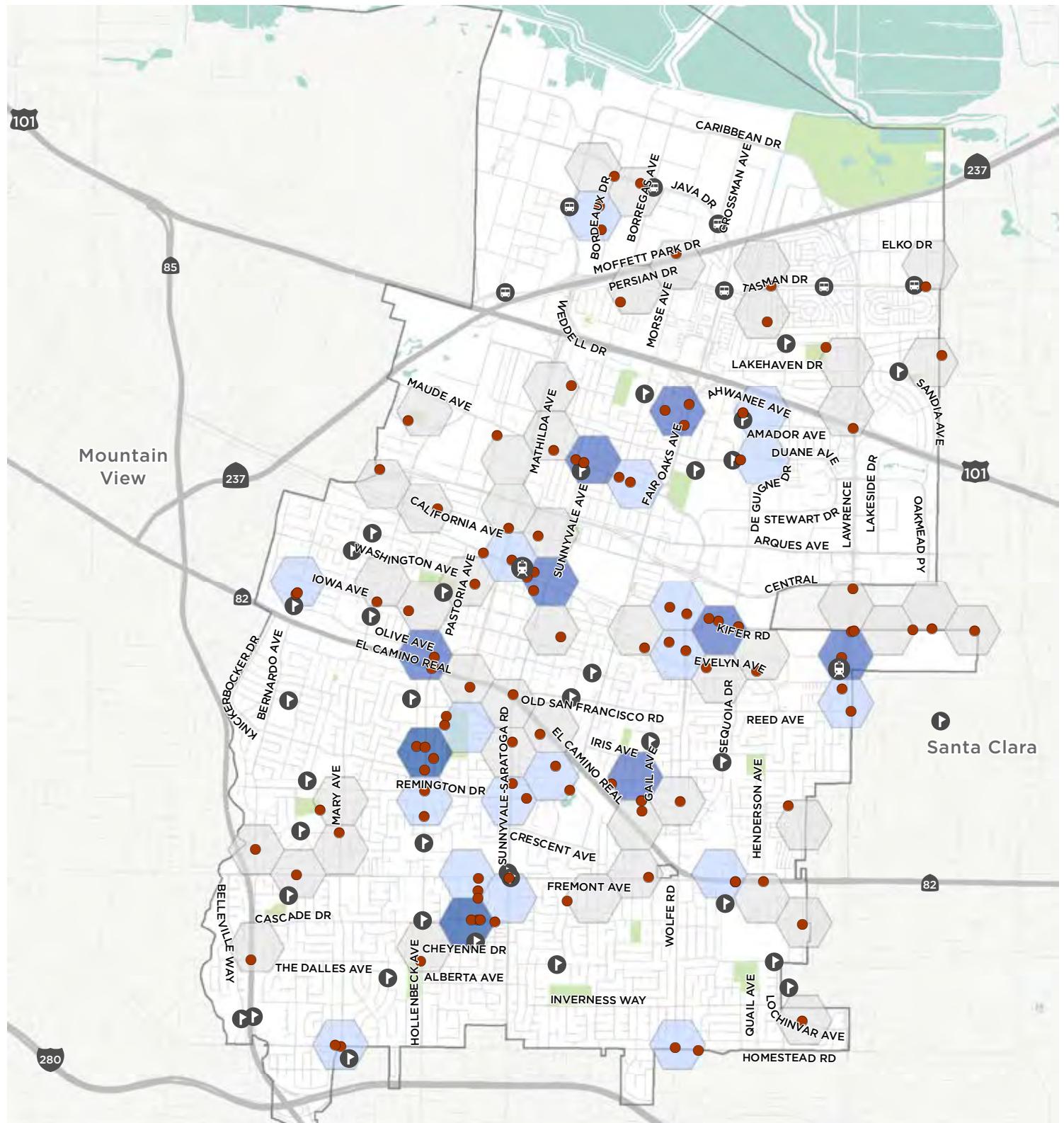
Street 1	Street 2	Ped-Involved Collisions
South Fair Oaks Avenue	Iris Avenue	<b>6</b>
Cezanne Drive	El Camino Real	<b>6</b>
South Fair Oaks Avenue	Evelyn Avenue	<b>5</b>
Alberta Avenue	Hollenbeck Avenue	<b>5</b>
El Camino Real	Maria Lane	<b>4</b>
Fremont Avenue	Manet Drive/Bob White Avenue	<b>4</b>
El Camino Real	Sunnyvale-Saratoga Road/ Sunnyvale Avenue	<b>4</b>
El Camino Real	Remington Drive/Fair Oaks	<b>4</b>
Fremont Avenue	Sunnyvale-Saratoga Road	<b>3</b>
Mathilda Avenue	Ross Drive	<b>3</b>
Henderson Avenue	El Camino Real	<b>3</b>
Helen Avenue	El Camino Real	<b>3</b>
Bernardo Avenue	El Camino Real	<b>3</b>
Marion Way	Wolfe Road	<b>3</b>
Pastoria Avenue	Iowa Avenue	<b>2</b>
Heron Avenue	Homestead Road	<b>2</b>
Sunnyvale-Saratoga Road	Remington Drive	<b>2</b>
Mary Avenue	Washington Avenue	<b>2</b>
Evelyn Avenue	Murphy Avenue	<b>2</b>
California Avenue	Sunnyvale Avenue	<b>2</b>
Remington Drive	Manet Drive	<b>2</b>
Bernardo Avenue	Evelyn Avenue	<b>2</b>
North Fair Oaks Avenue	Caliente Drive	<b>2</b>
Olive Avenue	South Fair Oaks Avenue	<b>2</b>
Mathilda Avenue	Maude Avenue	<b>2</b>
El Camino Real	Taaffe Street	<b>2</b>
Mathilda Avenue	Del Rey Avenue	<b>2</b>
Hollenbeck Avenue	Danforth Drive	<b>2</b>
Weddell Drive	North Fair Oaks Avenue	<b>2</b>
Remington Drive	Michelangelo Drive	<b>2</b>
Reed Avenue	Sequoia Drive	<b>2</b>
Arques Avenue	Commercial Street	<b>2</b>
Tasman Drive	Vienna Drive	<b>2</b>
Maude Avenue	Murphy Avenue	<b>2</b>

Source: UC Berkeley's Transportation Injury Mapping Systems (TIMS). Collision data collected between the dates of 1/1/2014 and 12/31/2018 (most recent available at time of publication).

## Publicly Identified Barriers

Sunnyvale residents and visitors provided local insights to identify barriers to walking. The project team collected more than 300 barriers to walking through an online tool that was open from August through October 2019. Participants identified barriers such as challenging crossings, missing sidewalks, and uncomfortable roadways.

Map 22. Publicly Identified Barriers highlights the areas where multiple barriers to walking were identified. Pockets across multiple neighborhoods, including the SNAIL neighborhood, Nimitz neighborhood, and area surrounding the Sunnyvale Caltrain Station had multiple barriers identified.



**Map 22. Publicly Identified Walking Barriers**

**Public Identified**

● Barrier to Walking

1 barrier

3 barriers

2 barriers

4 barriers

**Destinations**

● Caltrain Station

● VTA Light Rail Station

● School

● Parks



0 0.5 1 MILE

## Equity

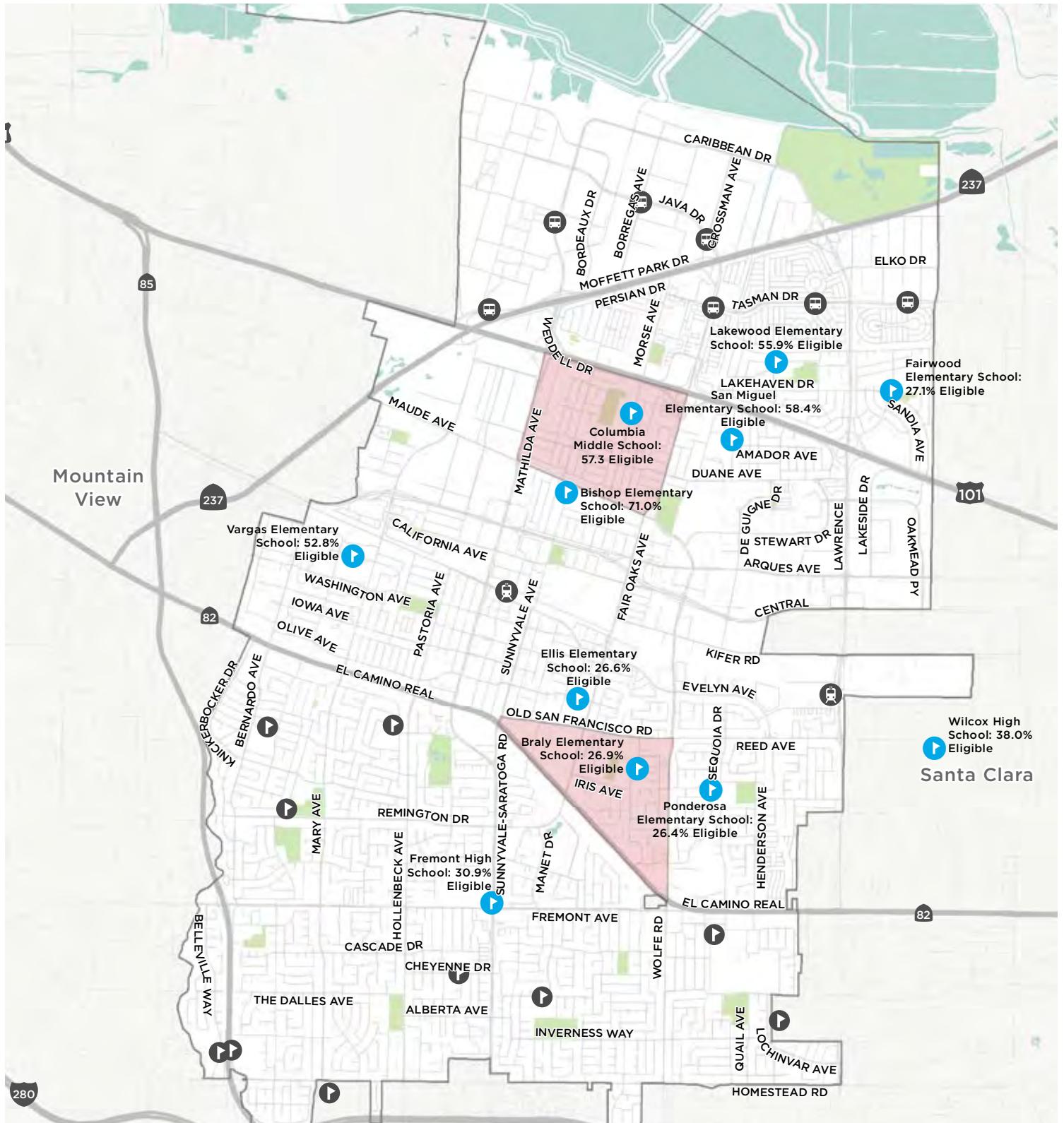
The allocation of public resources in the United States and across the San Francisco Bay Area has historically favored wealthier white communities over disadvantaged communities. Within Sunnyvale, prioritizing walkability within disadvantaged communities acknowledges that active transportation options provide economic, social, and health-promoting opportunities.

This analysis uses the Metropolitan Transportation Commission (MTC) Communities of Concern metric to identify disadvantaged neighborhoods by census tract, using the thresholds of high, higher, and highest. MTC uses the following metrics to determine these areas: race/ethnicity, low-income population (household income below 200% of the Federal poverty level), limited English proficiency population, zero-vehicle households, seniors 75 and over, population with a disability, single-parent families, and severely rent-burdened households.

This analysis also includes data on schools where a majority of students (over 50%) are eligible for Free or Reduced Price Meals (FRPM).

As shown in Map 23. Equity, Sunnyvale currently has three census tracts identified as a “high” Community of Concern. These areas include:

- Sunnyvale Neighbors of Arbor including LaLinda area, also known as the SNAIL neighborhood
- The neighborhoods captured within Old San Francisco Rd., S Wolfe Rd., and El Camino Real
- A small area to the east of Calabazas Creek that has a larger portion within the City of Santa Clara’s jurisdiction



## Map 23. Equity

### MTC Communities of Concern



### Free or Reduced Priced School Meals

Public School with >25% of Students Eligible for FRMP

### Destinations



Caltrain Station



Park



VTA Light Rail Station



City Boundary



Public School



0 0.5 1 MILE

## Access to Local Needs

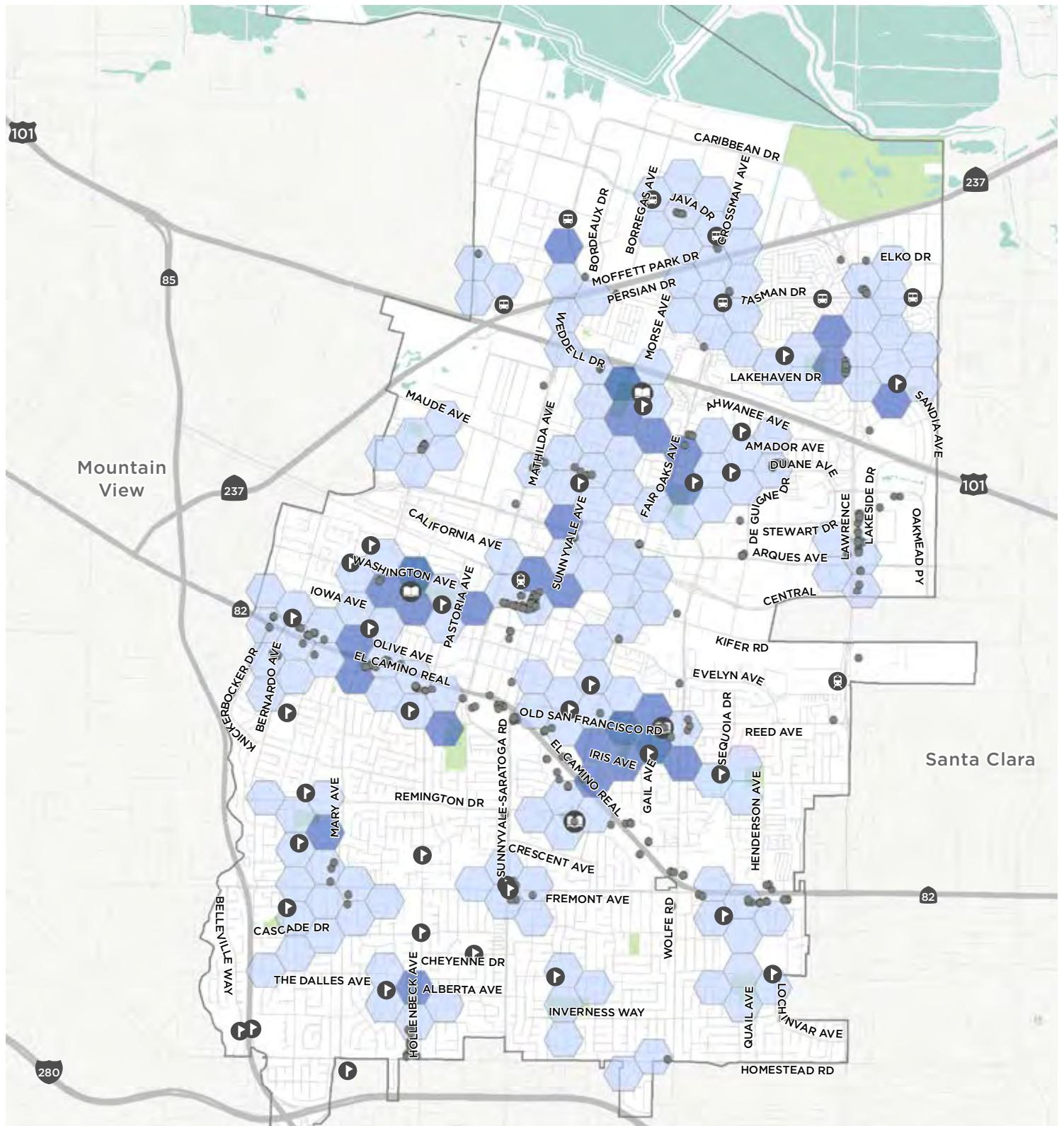
Creating a connected and comfortable pedestrian network helps people reach their walking destinations most efficiently and safely. The fourth component of walkability analyzes how to improve people's walking access to key neighborhood-serving destinations including schools, libraries and community centers, parks, retail, and transit stops.

A pedestrian shed or "ped shed" was developed by determining the distance that could be covered by someone walking for five minutes at a typical pace. This ped shed is then displayed by drawing a quarter-mile circle around a destination. A five-minute walk is considered to be a reasonable trip to reach a destination or to connect with other modes.

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Map 24. Access to Local Needs identifies areas where different categories of destinations have overlapping ped sheds, denoting these areas as having a range of two to four overlapping ped sheds depending on how many types of destinations can be reached within a quarter mile.



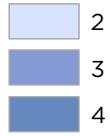
**Map 24. Access to Local Needs**

#### Local Needs

- School
- VTA Light Rail Station
- Caltrain Station
- Library or Community Center

#### Quarter Mile Access

(# of types of destinations)



## Focus Areas and Corridors

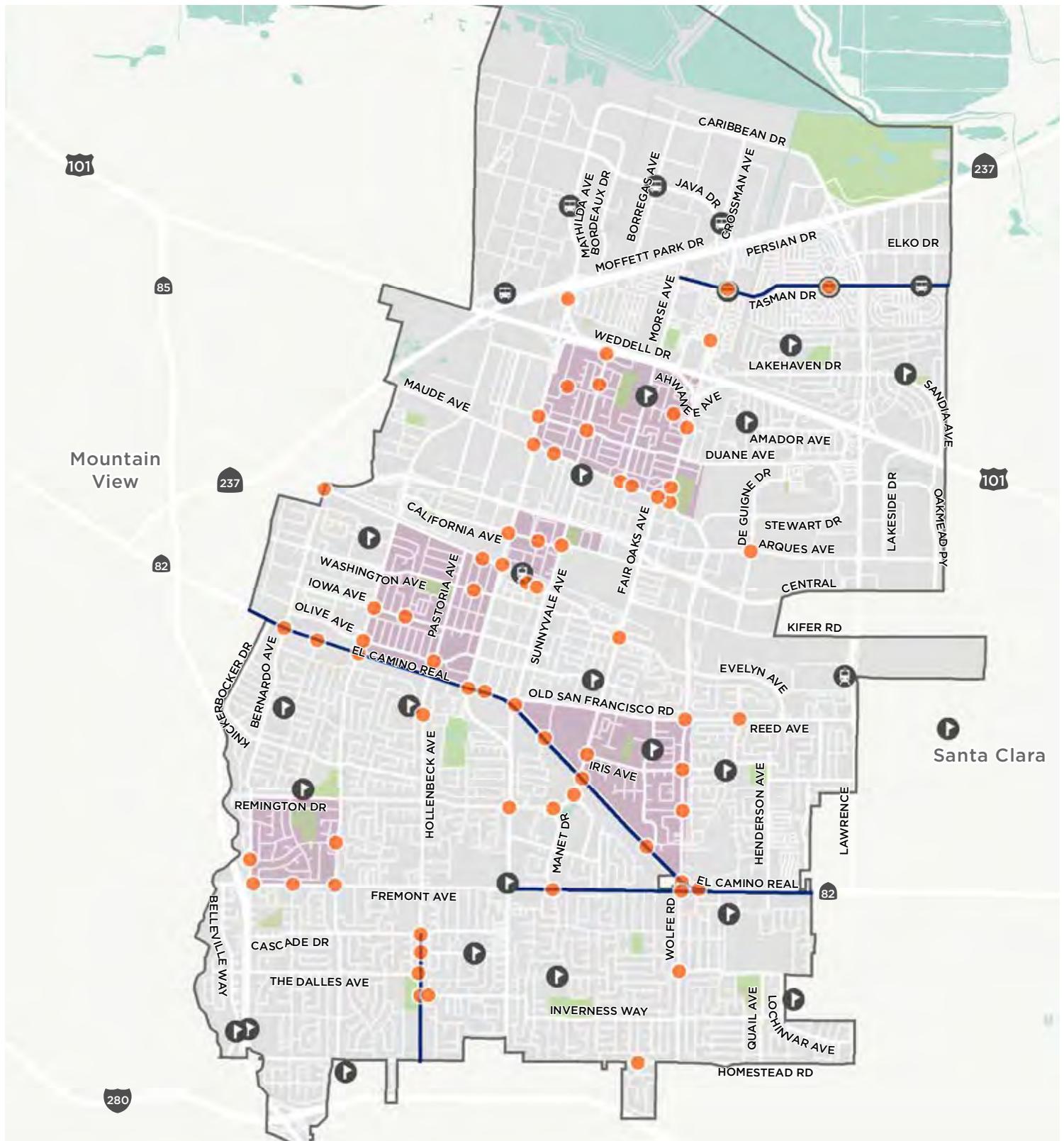
A central strategy for the Pedestrian Plan is the designation of five Focus Pedestrian Areas and four Focus Pedestrian Corridors for the city (Map 25). These zones help the City focus on areas with the highest potential for increasing walkability. The areas were developed by culminating focus areas for each of the four components of walkability: safety, equity, destination accessibility, and publicly identified.

In addition to these zones and corridors are a number of intersection safety spot improvements that have been identified through our pedestrian safety analysis. Even though these intersections are outside of the Focus Areas and Corridors, the history of pedestrian collisions at these intersections warrant City attention.

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The City acknowledges and will reference the pedestrian improvements presented in Area L and Area F of [VTA's Pedestrian Access to Transit Plan.](#)



Map 25. Pedestrian Recommendations

#### Pedestrian Recommendations

● Pedestrian Improvement

— Focus Corridor

■ Focus Area

#### Boundaries + Destinations

● Public School

■ Park

● Caltrain Station

— City Boundary

● VTA Light Rail Station



# Vision, Goals, and Metrics

The goals for the Pedestrian Plan reflect the priorities expressed by the community throughout the public outreach phase. Discussions with City departments, best practices across the nation, and input from community stakeholders have shaped the proposed strategies and policies intended to help the City achieve these goals.

## Vision Statement

Sunnyvale is a Complete Streets Community where residents and commuters have the choice to bicycle and walk to meet their transportation needs on a connected, comfortable, safe, and convenient network designed for all abilities and ages.

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**Table 14. Performance Goals**

Goal	Baseline	Source
Reduce traffic fatalities and serious injuries by 50% by 2029	61 pedestrian and bicycle related fatality and serious injuries (2014-2018)	Sunnyvale Vision Zero Plan (2019)

### GOAL 1

**Design a more comfortable, connected, and accessible pedestrian network that serves users of all ages and abilities**

- **Policy 1:** Continue to assess opportunities to fill in sidewalk gaps and expand sidewalk connectivity to new developments.
  - » **Action 1.1:** Install new sidewalk when redevelopment occurs. For privately owned streets, property owners will have to agree to install sidewalks.

» **Action 1.2:** When public right-of-way is available, identify funding sources or apply to grants to support construction of new sidewalks.

» **Action 1.3:** For areas without sidewalk that were previously annexed from the County, the residents previously voted not to install sidewalks. In order to install sidewalks in these areas or on private roads, residents would need to form an assessment district to pay for sidewalk and related utilities to be built.

- **Policy 2:** Work to eliminate barriers to pedestrian travel in the city.
  - » **Action 2.1:** Continue to enforce the sidewalk maintenance program per Municipal Code 13.08.380 to ensure the pedestrian network is free from obstructions.
  - » **Action 2.2:** Overcome pedestrian barriers, such as highways, with overcrossings to reduce out-of-way travel.
  - » **Action 2.3:** Work with online mapping companies to ensure that recommended walking routes within City limits are accurate.
- **Policy 3:** Continue to identify intersections for improvements that facilitate pedestrian travel and meet Americans with Disabilities Act (ADA) requirements.
  - » **Action 3.1:** When possible, evaluate intersections and locations for installing new or enhancing existing crosswalks, curb extensions, pedestrian-scale lighting, and other improvements.
  - » **Action 3.2:** Consider implementing leading pedestrian interval (LPI) phases in high pedestrian demand areas such as downtown to facilitate safe and efficient



pedestrian travel. Coordinate with Caltrans on implementing LPI crossing El Camino Real. When possible, review signal timing and locations at high-demand locations to identify and adjust for increased pedestrian clearance time and/or shorter pedestrian waiting times.

## GOAL 2

### Design and implement programs to support and incentivize pedestrian travel

- **Policy 4:** Implement pedestrian friendly designs and facilities.
  - » **Action 4.1:** Continue to make available Sunnyvale's free Street Tree Planting program to produce a more pleasant walking experience for pedestrians.
  - » **Action 4.2:** Continue to provide pedestrian facilities, such as street trees, benches, waste receptacles, and landscaping, in the furniture zone when planned for and where space allows.
  - » **Action 4.3:** Work with Caltrain and the Santa Clara VTA to provide more pedestrian amenities such as benches and covered waiting areas at transit stops with real-time transit info. Sunnyvale will reference VTA's Transit Passenger Environment Plan (TPEP), which provides recommendations based on stop ridership.
  - » **Action 4.4:** Continue to update toolkit of available traffic calming measures to reflect best practices.
- **Policy 5:** Target pedestrian improvements in areas with high numbers of seniors (e.g. senior centers, hospitals) to allow the senior community greater accessibility to services, transit, and other amenities.

» **Action 5.1:** Collaborate with City departments to implement Sunnyvale's Age-Friendly Community Action Plan. For more information see: <https://sunnyvale.ca.gov/news/topics/agefriendly/default.htm>

- **Policy 6:** Introduce and promote education, encouragement, and outreach for pedestrian programs, as well as enforcement programs to further support pedestrian safety.

» **Action 6.1:** Continue to develop effective safety programs for youths, adults, and seniors that educate pedestrians and drivers of their rights and responsibilities.

» **Action 6.2:** Continue to promote the City's Access Sunnyvale site to encourage residents to report sidewalk hazards within the City.

## GOAL 3

### Evaluate pedestrian planning progress on a regular basis and adapt the City's efforts to increase effectiveness

- **Policy 7:** Develop a system for reporting on progress made on completing the goals and policies of the Pedestrian Plan.
  - » **Action 7.1:** Prepare and present a triennial report on progress made on achieving the goals and implementing the policies of this plan to the Bicycle and Pedestrian Advisory Commission.
  - » **Action 7.2:** Update the Pedestrian Plan every 10 years.
  - » **Action 7.3:** Implement Vision Zero policies and designs from the Vision Zero Plan - Countermeasures Toolbox to reduce traffic fatalities and serious injuries by 50 percent by 2029.

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# Pedestrian Recommendations

## Infrastructure Recommendations

### RECOMMENDATIONS BY PRIORITY AREAS AND CORRIDORS

Proposed improvements in Sunnyvale include building improved sidewalks to close gaps in the pedestrian network and enhancing crossing conditions at intersections.

Recommendations were evaluated and are mapped within Pedestrian Focus Areas and Corridors. These areas are directly shaped by the streets and paths that provide important walking connections to the highest number of neighborhood destinations such as schools, parks, libraries, and transit stops.

See Tables 13-19 and Maps 26-29 for specific spot improvement locations.

### SIDEWALKS

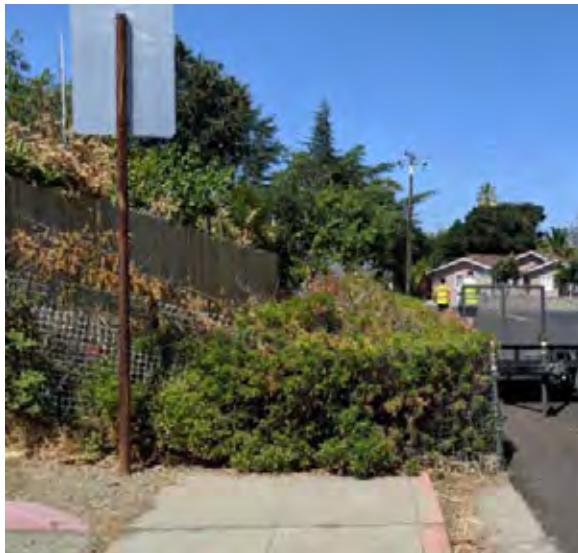
Residents are encouraged to walk when they know they can expect shaded, wide, obstruction-free, and connected sidewalks along with conveniently located and low-stress street crossings. Businesses and commercial areas can thrive where sidewalks have been designed at appropriate scale for the street-level activity.

The City of Sunnyvale understands that sidewalk design should go beyond minimum widths and provide necessary pedestrian amenities. The City has over 10 [design standards](#) for new sidewalks at varying widths and designed to be either attached (directly next to roadway) and detached

(separated from roadway by buffer, such as planting strip). In addition, the City has adopted location-specific sidewalk standards for associated [Specific and Precise Plans](#).

Existing sidewalk gaps (identified in Map 3. Pedestrian Connectivity) and other deficiencies can be addressed in different ways, depending on the ownership of the sidewalk:

- **Within the City's Right-of-way:** For areas that are within the City's right-of-way, sidewalks can be installed in a couple of ways. One, as new development occurs, the City can require developers to build and upgrade sidewalks as part of the development agreement. Two, if no development is planned for that area, the City can apply for funding sources to build sidewalks.
- **On properties previously annexed from the County:** For areas without sidewalks that were previously annexed from the County, the residents previously voted not to install sidewalks. In order to install sidewalks in these areas or on private roads, residents would need to form an assessment district to pay for sidewalk and related utilities to be built.
- **On private roads with Sunnyvale:** On private roads, property owners on these roads would be responsible for the installation of sidewalks and related utilities. However, the City will not take over maintenance of sidewalks on private roads.



Roadways previously annexed by the County, such as portions of Bryant Ave, do not currently have consistent sidewalks.



Areas within Moffett Park were not originally developed with sidewalks on both sides of the street. The City can require new development in this area to construct sidewalks.

### Recommendation 1: Assess Sidewalk Gaps

The City has a database of sidewalk gaps to show where missing sidewalks are located. These gaps can be found on local residential streets annexed from the County, private roads, and industrial or business park areas. Residents did not elect to build sidewalks at the time of annexation. However, if they later decide they want to install sidewalks, they could choose to create an assessment district to complete these gaps. This would require them to pay into the district to have the improvements built, such as curbs, gutters, sidewalks, street lighting, storm drainage systems.

***The City should continue to update this database and inform residents of opportunities to construct sidewalks.***

### Recommendation 2: Ensure Sidewalks are Maintained

Adjacent property owners are responsible for the maintenance of sidewalks including any parking strip area between the property line and the street line, free and clean of excessive amounts of leaves, and of trash or debris (Municipal Code 13.12.050). Vegetation must also be maintained.

***The City will continue to respond to resident and business owner maintenance requests and work to resolve any issues.***

### **Recommendation 3: Clarify Sidewalk Width Standards**

All new and redevelopment projects requiring discretionary permits are required to include sidewalks of at least six feet. Multi-family, commercial, and Specific and Precise Plan areas may require wider sidewalks (City Ordinance 18.12.160). The City has many standard details for varying width sidewalks and frontage zones and specific requirements within Specific and Precise Plans. ***The City should create a citywide map to show which standards apply to each street.*** This could be a public education tool and internal resource for staff when conducting development plan review.

### **Recommendation 4: Ensure Street Trees are Maintained**

The provision of shade has been documented as one of the main determinants of walking as a transportation choice. In addition to providing pedestrian comfort, trees are a key component of an urban ecosystem, providing stormwater capture, carbon sequestration, and urban cooling. The City provides maintenance services for approximately 38,000 street trees, with the assistance of property owners. The City provides pruning services for street trees to maintain structural integrity and to avoid branch or trunk failure as much as possible. Residents are expected to maintain any debris in the right-of-way, water their street trees as needed and report any problems regarding their street trees. ***The City should use all methods of communication to regularly remind property owners of their responsibilities for maintaining City trees on their property and process for requesting City assistance with pruning services.***

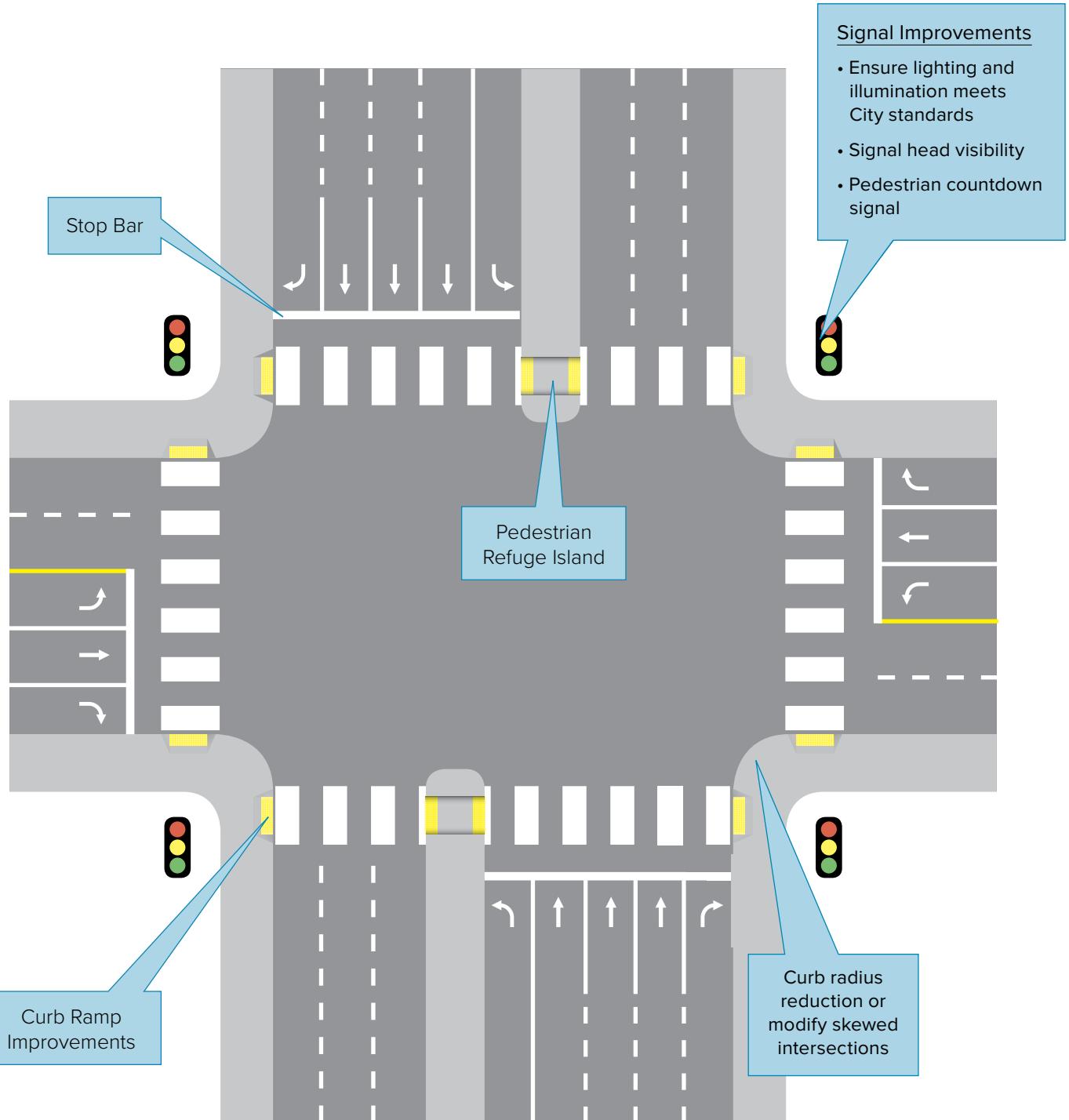
## **PEDESTRIAN CROSSING TYPOLOGIES**

The following pages describe a number of crossing typologies that represent the types of improvements to be implemented at different intersections, based on the characteristic of the intersection. Improvements on intersections with larger arterial roadways differ from improvements on lower volume residential streets. These typologies are broken down by the characteristic of the intersection, and include the appropriate infrastructure improvements for each. The typologies include:

- Major Road Signalized Intersection
- Other Signalized Intersection
- Major Road Unsignalized Intersection
- Other Unsignalized Intersection

**Table 15. Pedestrian Toolbox by Intersection Typology**

Crossing Typologies	Description	Example Location	Recommended Improvements
<b>Major Road Signalized intersection</b>	Signalized intersection that intersects with one major road	Fair Oaks Ave. / Weddell Dr.	<ul style="list-style-type: none"><li>• Ensure curb ramps meet ADA standards</li><li>• Consider installing high visibility crosswalk - specifically near schools and high pedestrian use areas</li><li>• Pushback stop bar</li><li>• Signal improvements:<ul style="list-style-type: none"><li>» Ensure lighting and illumination meets City standards</li><li>» Improve signal head visibility</li><li>» Pedestrian countdown signal</li></ul></li><li>• Pedestrian Refuge island for major road crossing</li><li>• Evaluate pedestrian signal crossing times</li><li>• Redesign of channelized rights to reduce vehicle turning speed</li><li>• Install "Yield to pedestrian" signage</li></ul>
<b>Other Signalized Intersection</b>	Signalized intersection that intersects with minor or neighborhood roads	Pastoria Ave. / Iowa Ave.	<ul style="list-style-type: none"><li>• Ensure curb ramps meet ADA standards</li><li>• Consider installing high visibility crosswalk - specifically near schools and high pedestrian use areas</li><li>• Pushback stop bar</li><li>• Signal improvements:<ul style="list-style-type: none"><li>» Ensure lighting and illumination meets City standards</li><li>» Improve signal head visibility</li><li>» Pedestrian countdown signal</li></ul></li><li>• Evaluate pedestrian signal crossing times</li><li>• Remove obstacle (shrubbery, fencing, etc.) for sight-distance</li><li>• Install "Yield to pedestrian" signage</li></ul>
<b>Major Road unsignalized intersection</b>	Unsignalized intersection that intersects with one major road	Taaffe St. / El Camino Real	<ul style="list-style-type: none"><li>• Ensure curb ramps meet ADA standards</li><li>• Consider installing high visibility crosswalk - specifically near schools and high pedestrian use areas</li><li>• Evaluate installing pedestrian hybrid beacon (HAWK) for major road crossing</li><li>• Install advance yield/stop lines</li><li>• Evaluate if intersection meets signal warrants</li><li>• Ensure lighting and illumination meets City standards</li></ul>
<b>Other unsignalized intersection</b>	Unsignalized intersection that intersects with minor or neighborhood roads	Evelyn Ave. / Murphy Ave.	<ul style="list-style-type: none"><li>• Ensure curb ramps meet ADA standards</li><li>• Crosswalk improvements:<ul style="list-style-type: none"><li>» Consider installing high visibility crosswalk - specifically near schools and high pedestrian use areas</li><li>» Install curb extension/bulb-outs</li><li>» Evaluate installing Rectangular Rapid Flash Beacon (RRFB)</li><li>» Install raised crosswalk</li></ul></li><li>• Install red curb 15-20 feet from corner</li><li>• Evaluate if intersection meets signal warrants</li><li>• Ensure lighting and illumination meets City standards</li><li>• Remove obstacle (shrubbery, fencing, etc.) for sight-distance</li></ul>

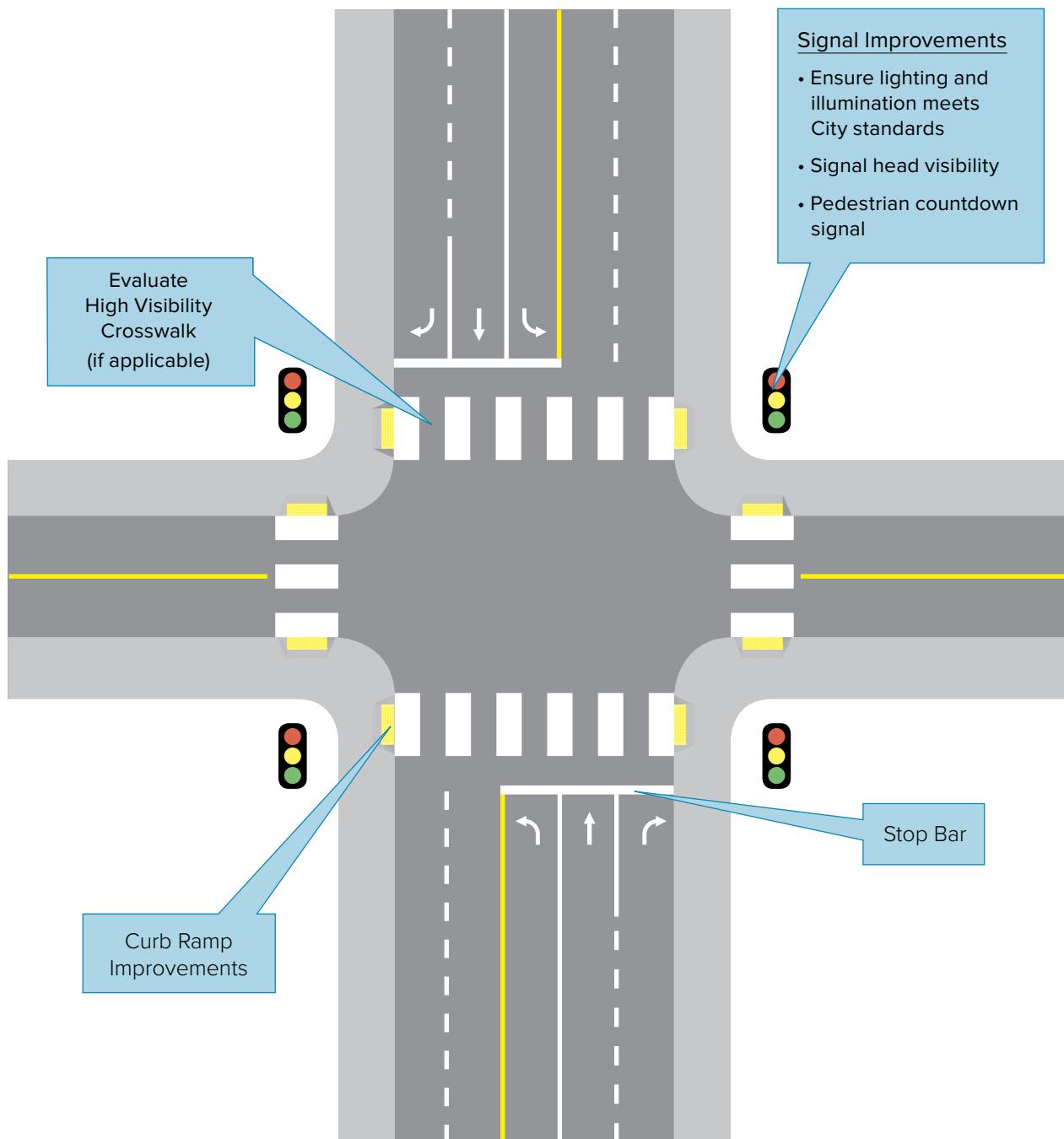


## Major Road Signalized Intersection

Regarding specified improvements, lighting refers to the placement and fixture of street lights, while illumination refers to the lighting level and intensity, often measured by Lux.

### OTHER IMPROVEMENTS

- Evaluate pedestrian crossing
- Redesign of channelized rights to reduce vehicle turning speed
- Install Yield to pedestrian signage
- Curb radius reduction or modify skew intersections. Evaluate crossing for High Visibility Crosswalk.

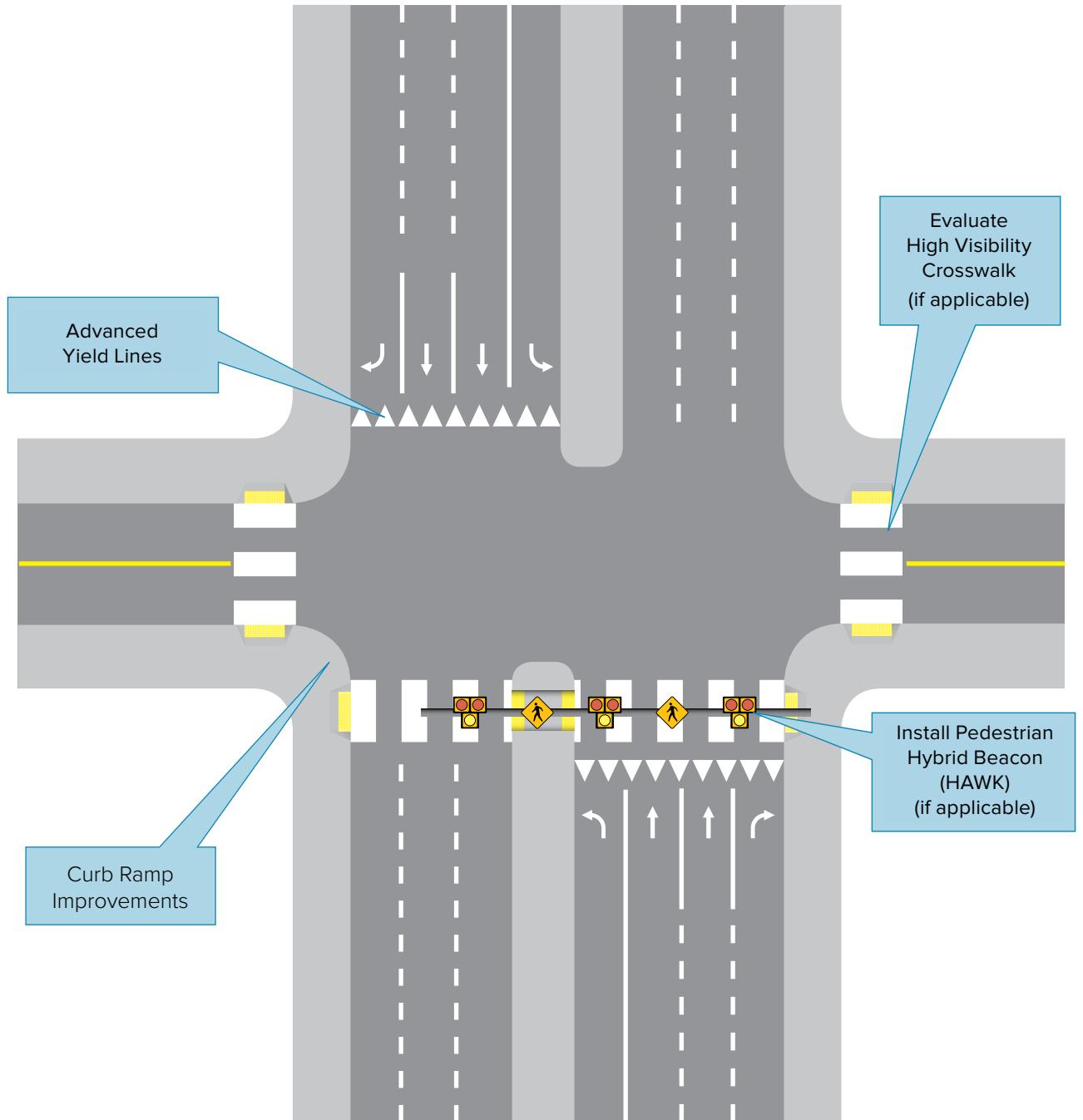


## Other Signalized Intersection

Regarding specified improvements, lighting refers to the placement and fixture of street lights, while illumination refers to the lighting level and intensity, often measured by Lux.

## OTHER IMPROVEMENTS

- Evaluate pedestrian crossing times
- Remove obstacles (shrubbery, fencing, etc.) for sight distance
- Install yield to pedestrian signage



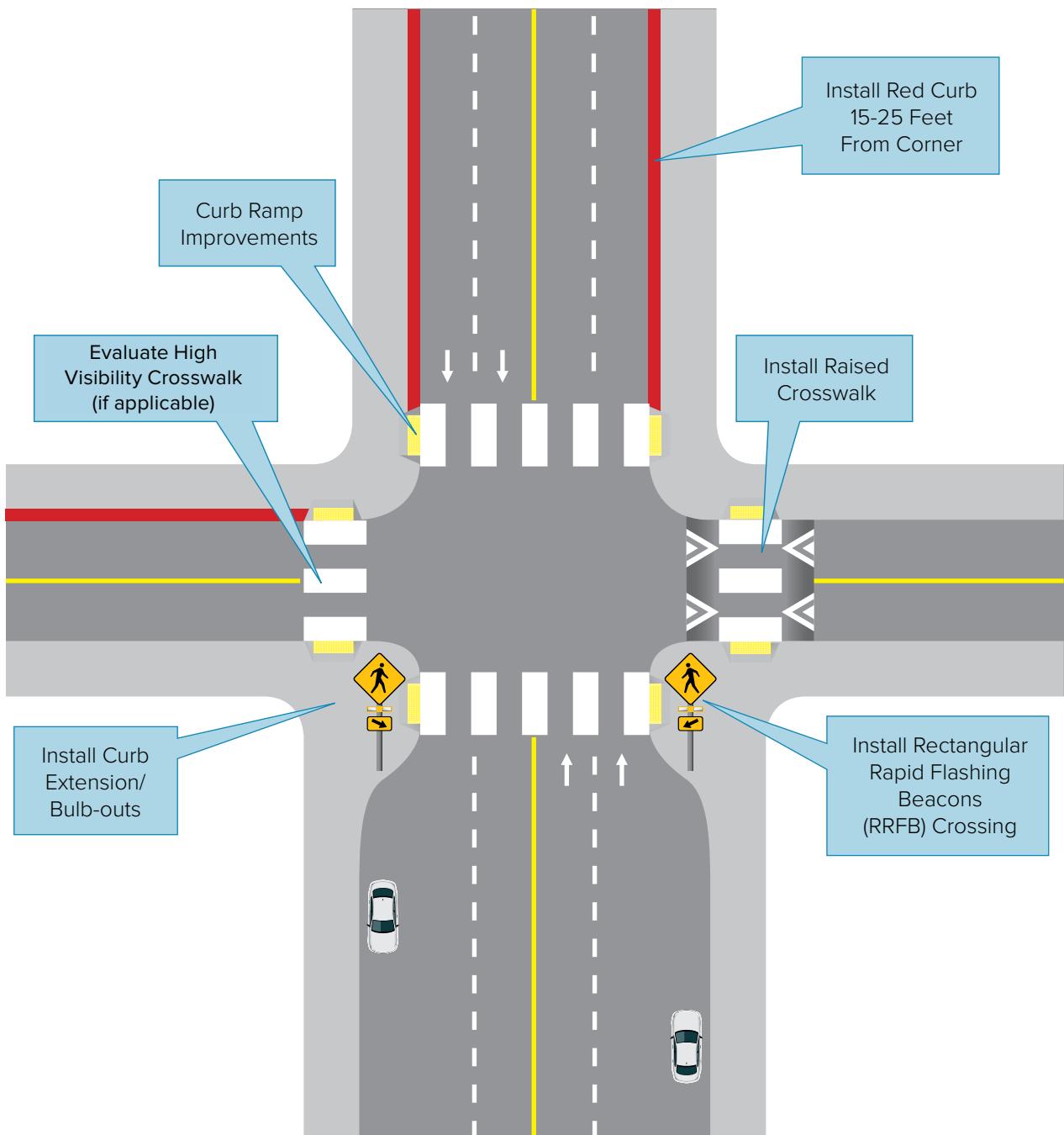
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## Major Road Unsignalized Intersection

Regarding specified improvements, lighting refers to the placement and fixture of street lights, while illumination refers to the lighting level and intensity, often measured by Lux.

### OTHER IMPROVEMENTS

- Evaluate if intersection meets signal warrants
- Ensure lighting and illumination meets City standards



## Other Unsignalized Intersection

Regarding specified improvements, lighting refers to the placement and fixture of street lights, while illumination refers to the lighting level and intensity, often measured by Lux.

### OTHER IMPROVEMENTS

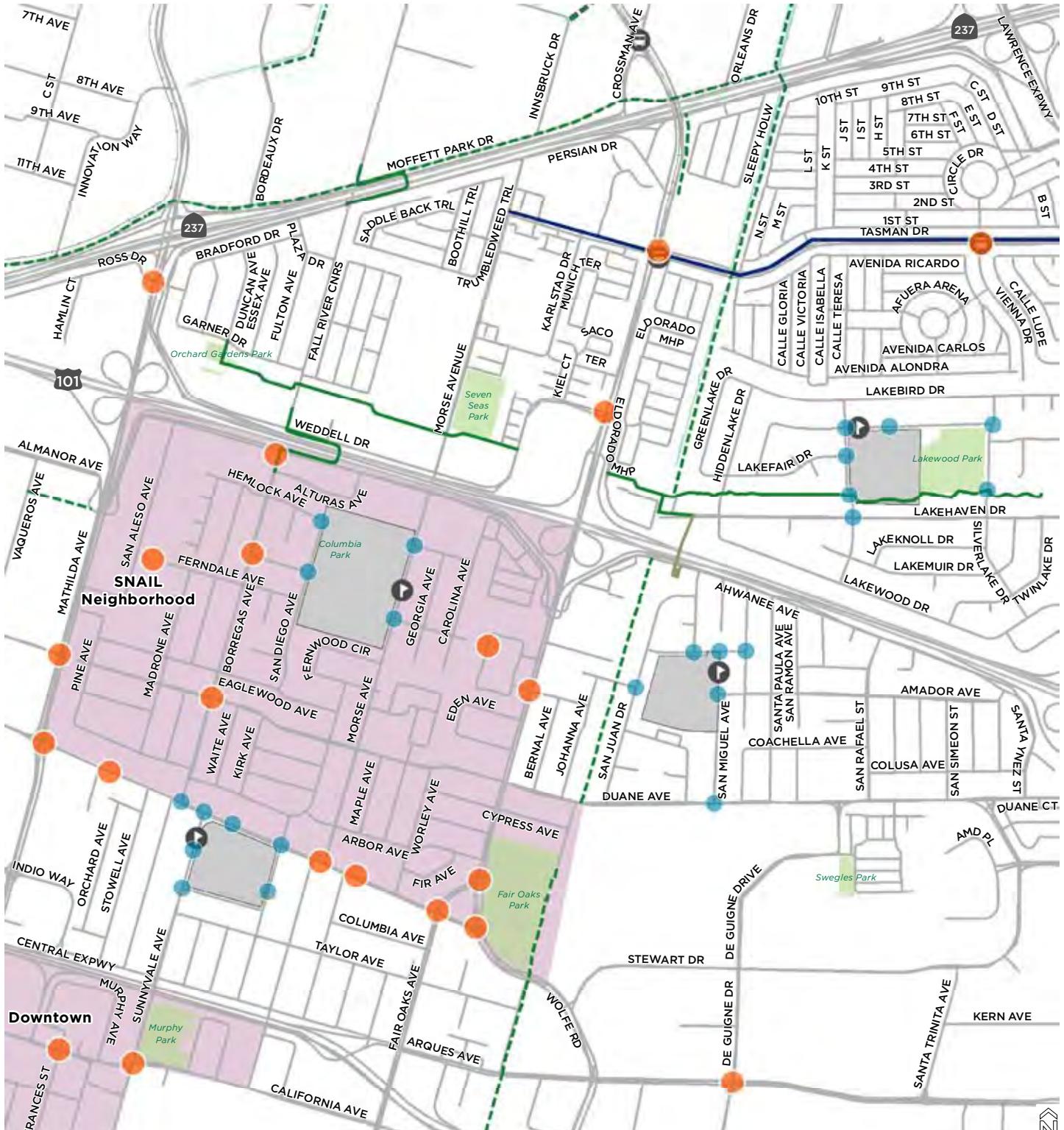
- Evaluate if intersection meets all-way stop controls or signal warrant
- Ensure lighting and illumination meets City standards
- Remove obstacles (shrubbery, fencing, etc.) for sight distance

**Table 16. SNAIL Neighborhood and Tasman Corridor**

Intersection	Focus Area/Corridor	Crossing Typology
Borregas Ave. / Duane Ave.	SNAIL Neighborhood	Other Unsignalized Intersection
Fair Oaks Ave. / Caliente Dr.	SNAIL Neighborhood	Major Road Signalized Intersection
Fair Oaks Ave. / Maude Ave.	SNAIL Neighborhood	Other Signalized Intersection
Mathilda Ave. / Maude Ave.	SNAIL Neighborhood	Major Road Signalized Intersection
San Aleso Ave./ Ferndale Ave.	SNAIL Neighborhood	Mid-Block Crossing
San Angelo Ave./ Maude Ave.	SNAIL Neighborhood	Other Unsignalized Intersection
San Conrado Terr. / Ferndale Ave.	SNAIL Neighborhood	Other Unsignalized Intersection
Sunnyvale Ave. / Maude Ave.	SNAIL Neighborhood	Other Signalized Intersection
Wolfe Rd. / Fair Oaks Ave.	SNAIL Neighborhood	Major Road Signalized Intersection
Fair Oaks Ave. / Tasman Dr.	Tasman Dr Corridor	Major Road Signalized Intersection
Vienna Dr. / Tasman Dr.	Tasman Dr Corridor	Other Signalized Intersection
Commercial St. / Arques Ave.	Pedestrian Safety Spot Improvement	Other Signalized Intersection
Fair Oaks Ave. / Weddell Dr.	Pedestrian Safety Spot Improvement	Major Road Signalized Intersection
Mathilda Ave. / Ross Dr.	Pedestrian Safety Spot Improvement	Major Road Signalized Intersection

*Recommendation details for the Safe Routes to School improvements (shown by the smaller blue dots) can be found in Chapter 6.*

*Tasman Drive between Morse Avenue and Lawrence Expressway has been identified as a Priority Corridor in the Plan and the City has heard from residents that missing sidewalks in the area are a barrier for mobility. Sunnyvale is addressing this gap, although right of way and existing trees provide constraints to adding new pedestrian facilities.*



**Map 26. SNAIL Neighborhood and Tasman Corridor Ped Recommendations**

#### Recommendations

- Pedestrian Improvement
- Safe Routes to Schools Improvement
- Class I Shared-Use Path (Existing)
- - - Class I Shared-Use Path (Proposed)
- Pedestrian Bridge (Walk Bike)

#### Focus Areas

- Focus Corridor
- Focus Area

#### Boundaries + Destinations

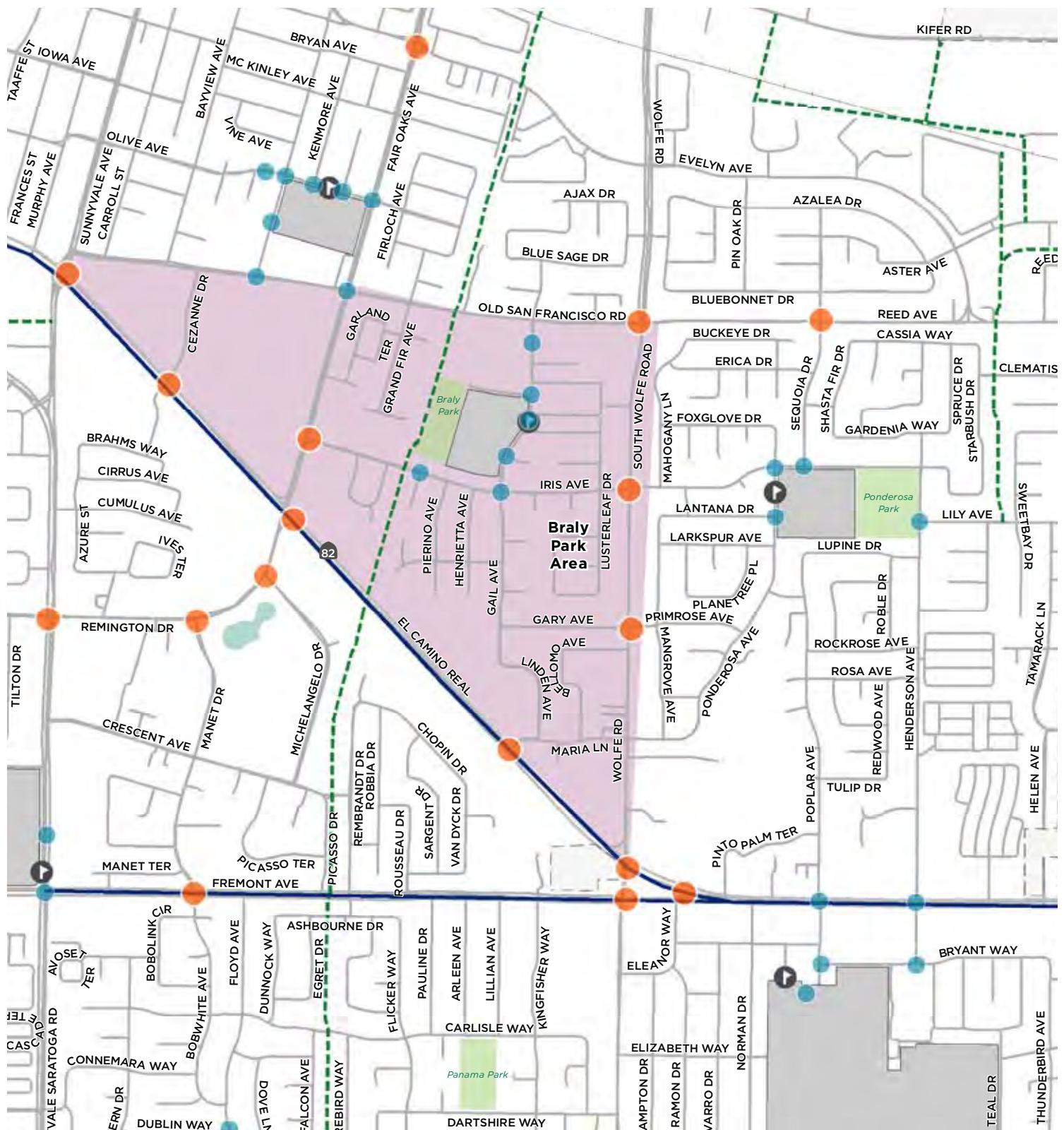
- Public School
- Mission College
- Caltrain Station
- Park
- Light Rail Station
- [ ] City Boundary

0 0.25 0.5 MILE

**Table 17. Braly Park Area, El Camino Real, and Fremont Ave. Corridor**

Intersection	Focus Area/Corridor	Crossing Typology
Fair Oaks Ave. / Iris Ave.	Braly Park Area	Other Signalized Intersection
Fair Oaks Ave. / Old San Francisco Rd.	Braly Park Area	Major Road Signalized Intersection
Wolfe Rd. / Old San Francisco Rd.	Braly Park Area	Major Road Signalized Intersection
Wolfe Rd. / Gary Ave.	Braly Park Area	Other Unsignalized Intersection
Wolfe Rd. / Iris Ave.	Braly Park Area	Other Signalized Intersection
Cezanne Dr. / El Camino Real	El Camino Real Corridor	Major Road Signalized Intersection
Fair Oaks Ave. / El Camino Real	El Camino Real Corridor	Major Road Signalized Intersection
Fremont Ave. / El Camino Real	El Camino Real Corridor	Major Road Unsignalized Intersection
Maria Ln. / El Camino Real	El Camino Real Corridor	Major Road Signalized Intersection
Sunnyvale Ave. / El Camino Real	El Camino Real Corridor	Major Road Signalized Intersection
Wolfe Rd. / El Camino Real	El Camino Real Corridor	Major Road Signalized Intersection
Manet Dr. / Fremont Ave.	Fremont Ave Corridor	Other Signalized Intersection
Wolfe Rd. / Fremont Ave.	Fremont Ave Corridor	Major Road Signalized Intersection
Fair Oaks Ave. / Evelyn Ave.	Pedestrian Safety Spot Improvement	Other Signalized Intersection
Manet Dr. / Remington Dr.	Pedestrian Safety Spot Improvement	Other Signalized Intersection
Remington Dr. / Michelangelo Dr.	Pedestrian Safety Spot Improvement	Other Signalized Intersection
Sequoia Dr. / Reed Ave.	Pedestrian Safety Spot Improvement	Other Signalized Intersection
Sunnyvale- Saratoga Ave. / Remington Dr.	Pedestrian Safety Spot Improvement	Major Road Signalized Intersection
Wolfe Rd. / Marion Way	Pedestrian Safety Spot Improvement	Other Signalized Intersection
S Fair Oaks Ave. / E Evelyn Ave.	Pedestrian Safety Spot Improvement	Other Signalized Intersection
S Wolfe Rd. / Marion Way	Pedestrian Safety Spot Improvement	Other Signalized Intersection

Recommendation details for the Safe Routes to School improvements (shown by the smaller blue dots) can be found in Chapter 6.



Map 27. Braly Park Area, El Camino Real, and Fremont Ave. Corridor Ped Recommendations

#### Recommendations

- Pedestrian Improvement
- Safe Routes to Schools Improvement
- Class I Shared-Use Path (Existing)
- Class I Shared-Use Path (Proposed)
- Pedestrian Bridge (Walk Bike)

#### Focus Areas

- Focus Corridor
- Focus Area

#### Boundaries + Destinations

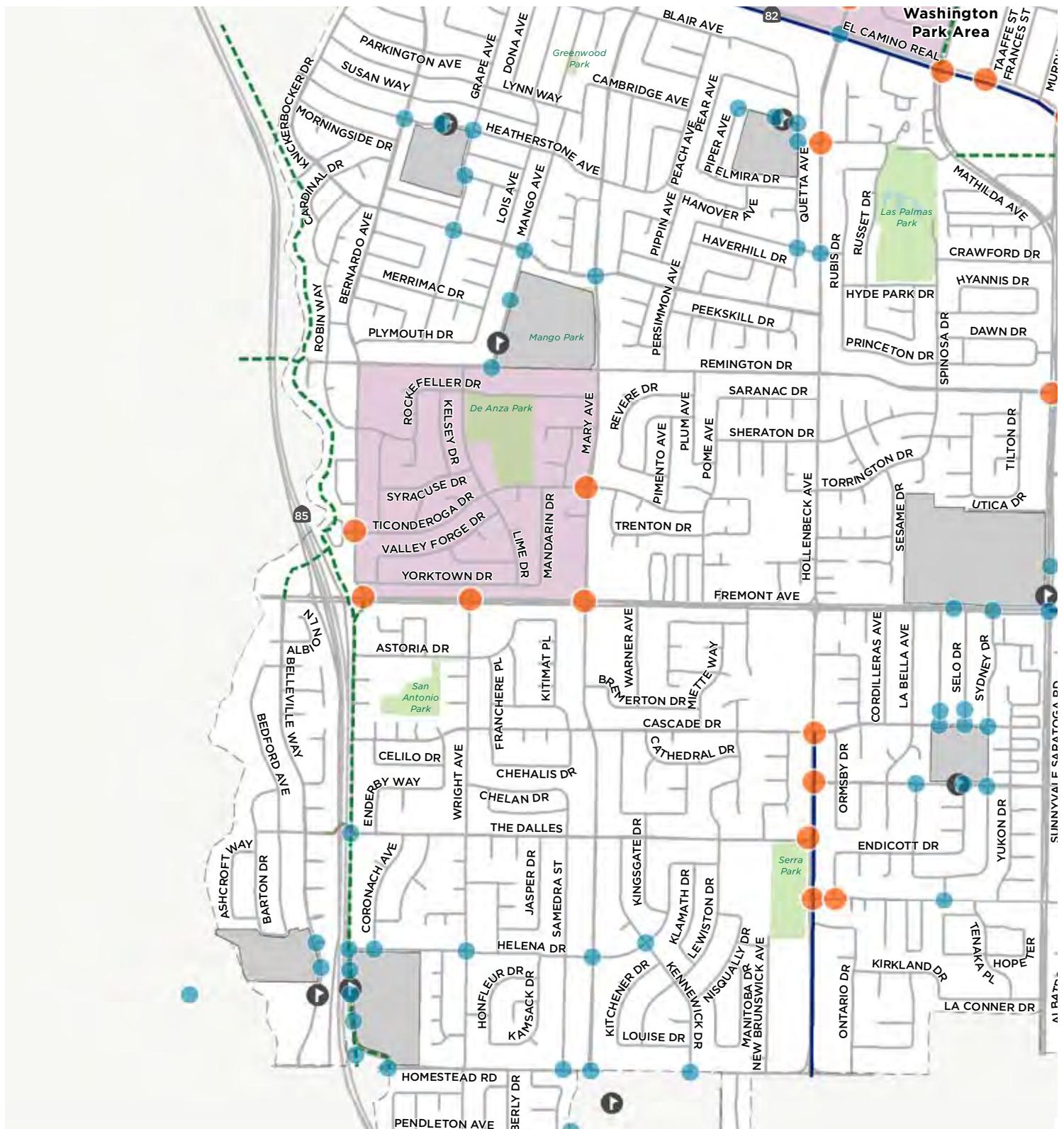
- Public School
- Caltrain Station
- Light Rail Station
- Mission College
- Park
- City Boundary

0 0.25 0.5 MILE

**Table 18. De Anza Area and Hollenbeck Ave. Corridor**

Intersection	Focus Area/Corridor	Crossing Typology
Bernardo Ave. / Fremont Ave.	De Anza Area	Other Signalized Intersection
Bernardo Ave. / Ticonderoga Dr.	De Anza Area	Major Road Signalized Intersection
Mary Ave. / Fremont Ave.	De Anza Area	Minor Road Signalized Intersection
Mary Ave. / Ticonderoga Ave.	De Anza Area	Other Signalized Intersection
Wright Ave. / Fremont Ave.	De Anza Area	Other Unsignalized Intersection
Hollenbeck Ave. / Alberta Ave.	Hollenbeck Dr Corridor	Other Signalized Intersection
Hollenbeck Ave. / Cascade Dr.	Hollenbeck Dr Corridor	Other Signalized Intersection
Hollenbeck Ave. / Cheyenne Dr.	Hollenbeck Dr Corridor	Other Unsignalized Intersection
Hollenbeck Ave. / The Dalles	Hollenbeck Dr Corridor	Other Unsignalized Intersection
Alberta Ave. / Norland Dr.	Pedestrian Safety Spot Improvement	Other Unsignalized Intersection
Hollenbeck Ave. / Danforth Dr.	Pedestrian Safety Spot Improvement	Other Signalized Intersection

*Recommendation details for the Safe Routes to School improvements (shown by the smaller blue dots) can be found in Chapter 6.*



**Map 28. De Anza Area and Hollenbeck Ave.  
Corridor Ped Recommendations**

#### Recommendations

- Pedestrian Improvement
- Safe Routes to Schools Improvement
- Class I Shared-Use Path (Existing)
- Class I Shared-Use Path (Proposed)
- Pedestrian Bridge (Walk Bike)

#### Focus Areas

- Focus Corridor
- Focus Area

#### Boundaries + Destinations

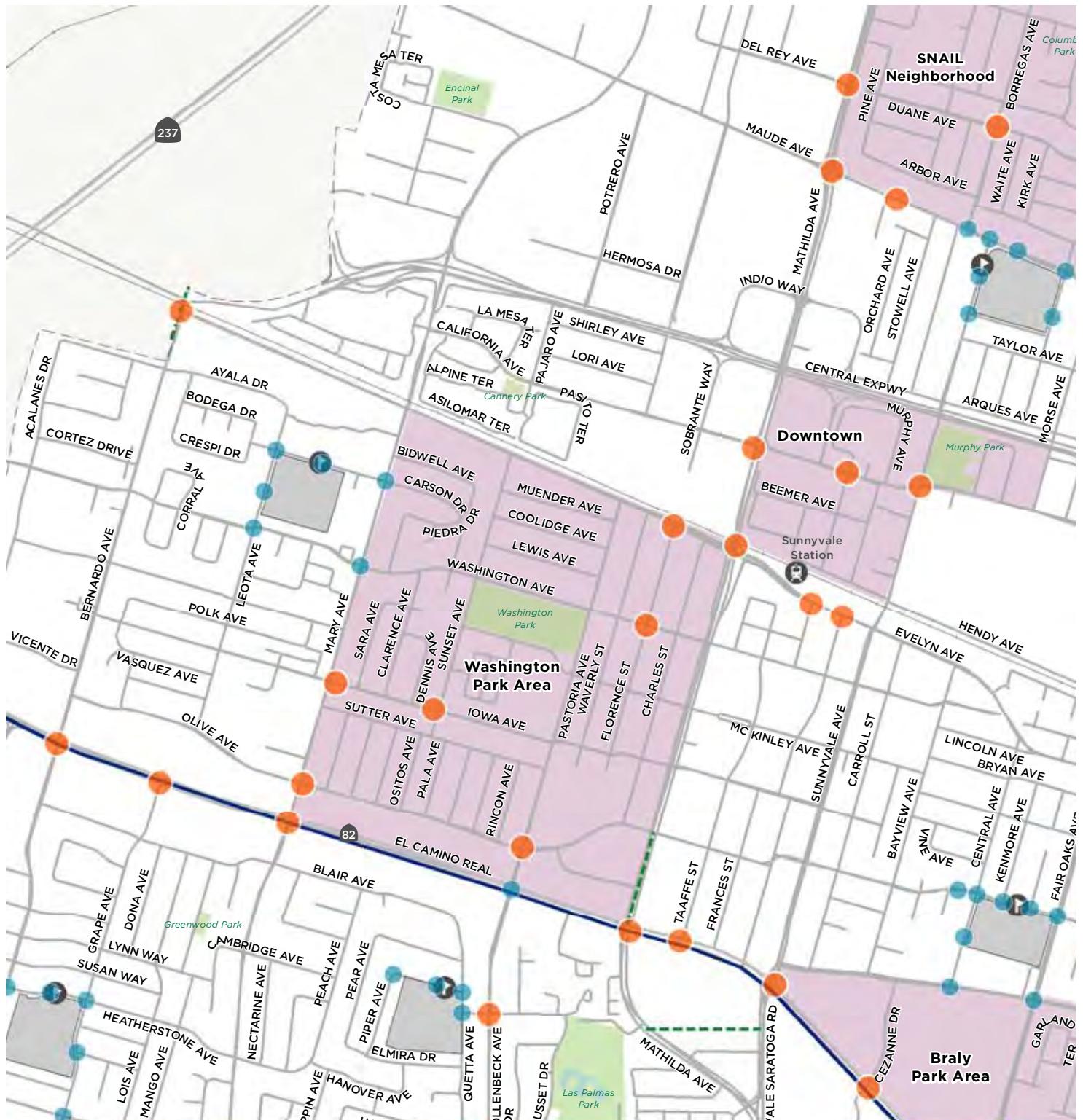
- Public School
- Mission College
- Caltrain Station
- Park
- Light Rail Station
- City Boundary

0 0.25 0.5 MILE

**Table 19. Downtown, El Camino Real, and Washington Park Area**

Intersection	Focus Area/Corridor	Crossing Typology
Murphy Ave. / Evelyn Ave.	Downtown Area	Other Unsignalized Intersection
Frances St. / California Ave.	Downtown Area	Other Unsignalized Intersection
Frances St. / Evelyn Ave.	Downtown Area	Other Signalized Intersection
Mathilda Ave. / California Ave.	Downtown Area	Major Road Signalized Intersection
Mathilda Ave. / Evelyn Ave.	Downtown Area	Other Unsignalized Intersection
Sunnyvale Ave. / California Ave.	Downtown Area	Other Signalized Intersection
Bernardo Ave. / El Camino Real	El Camino Real Corridor	Major Road Signalized Intersection
Grape Ave. / El Camino Real	El Camino Real Corridor	Major Road Signalized Intersection
Mary Ave. / El Camino Real	El Camino Real Corridor	Major Road Signalized Intersection
Mathilda Ave. / El Camino Real	El Camino Real Corridor	Major Road Signalized Intersection
Taafe St. / El Camino Real	El Camino Real Corridor	Major Road Unsignalized Intersection
Florence Ave. / Evelyn Ave.	Washington Park Area	Other Unsignalized Intersection
Florence Ave. / Washington Ave.	Washington Park Area	Other Signalized Intersection
Mary Ave. / Iowa Ave.	Washington Park Area	Other Signalized Intersection
Mary Ave. / Olive Ave.	Washington Park Area	Other Unsignalized Intersection
Pastoria Ave. / Olive Ave.	Washington Park Area	Other Unsignalized Intersection
Sunset Ave. / Iowa Ave.	Washington Park Area	Other Unsignalized Intersection

*Recommendation details for the Safe Routes to School improvements (shown by the smaller blue dots) can be found in Chapter 6.*



Map 29. Downtown, El Camino Real, and Washington Park Area Ped Recommendations

#### Recommendations

- Pedestrian Improvement
- Safe Routes to Schools Improvement
- Class I Shared-Use Path (Existing)
- - Class I Shared-Use Path (Proposed)
- Pedestrian Bridge (Walk Bike)

#### Focus Areas

- Focus Corridor
- Focus Area

#### Boundaries + Destinations

- Public School
- Mission College
- Caltrain Station
- Park
- Light Rail Station
- [---] City Boundary

0 0.25 0.5 MILE

# Pedestrian Improvements Implementation

The prioritization framework helps the City understand where to start when implementing this plan. A higher ranked project indicates a higher pedestrian need, and also prioritizes projects that serve residents living in disadvantaged communities.

Safe Routes to School projects identified through School Walk Audits (and outlined in more detail in Chapter 6) will be included within this prioritization process.

## METHODOLOGY

Recommended projects were evaluated using five criteria that support the vision and goals of the Pedestrian Plan. The framework scores recommended projects using the following criteria:

- Collision Reduction
- Equity
- Access to Key Destinations
- Community Identified Need
- Safe Routes to School

The prioritization process assigns a number value between 0 and 6 to all recommendations based on the criteria outlined in Table 20.

**Table 20. Criteria for Recommendation Prioritization**

Criteria	Measure	Points
<b>Collision Reduction</b>	Projects that are within close proximity (250 feet) of at least one pedestrian-related collision.	1
	Reword as Projects that provide improvements on the High Injury Network (as developed by the Vision Zero Plan)	1
<b>Equity</b>	Projects that are located within a disadvantaged community, as defined by MTC's Community of Concern.	1
<b>Access to Key Destinations</b>	Projects that connect people within 500 feet to a Caltrain station, VTA light rail station, library, school, trail, or major employment area.	1
<b>Community-Identified Need</b>	Projects that were identified through multiple engagement efforts with unique stakeholders	1
<b>Safe Routes to School</b>	Projects identified through the School Walk Audits	1



## PRIORITY PEDESTRIAN PROJECTS

Projects that score between 4 and 6 are categorized as **high priority**. Projects receiving a score of 3 are categorized as **medium priority**. Projects receiving a score of 2 or less are categorized as **low priority**.

High, medium, and low priority projects can be viewed in the following tables and maps, and a full list of project prioritization scoring can be found in Appendix D.

**Table 21. Project Prioritization**



High Priority	
Spot	40 projects
Medium Priority	
Spot	120 projects
Low Priority	
Spot	24 projects

**Table 22. Pedestrian Spot Improvement Prioritization**

Rows in the table that are italicized are located outside of the City's public right-of-way and will require coordination with other agencies.

STREET 1	STREET 2	DESIGN	ZONE/AREA	ALSO IN BIKE PLAN
<b>High Priority</b>				
Alberta Ave.	Richelieu Pl.	Safe Routes to School	Nimitz Elementary	
<i>Cezanne Dr.</i>	<i>El Camino Real</i>	<i>Crossing Improvement</i>	<i>El Camino Real</i>	x
Cumberland Dr.	<b>Cumberland Elementary Frontage</b>	Safe Routes to School	Cumberland Elementary School	
Dunholme Way	Bittern Dr.	Safe Routes to School	Stocklmeir Elementary School	
E Maude Ave.	Borregas Ave.	Safe Routes to School	Bishop Elementary School	
<i>E Maude Ave.</i>	<b>Bishop Elementary Frontage</b>	Safe Routes to School	Bishop Elementary School	
E Olive Ave.	Wilson Ave.	Safe Routes to School	Ellis Elementary School	
<i>El Camino Real</i>	<i>Hollenbeck Ave. / Pastoria Ave.</i>	<i>Safe Routes to School</i>	<i>Cumberland Elementary School</i>	
<i>El Camino Real</i>	Poplar Ave.	Safe Routes to School	Peterson Middle School	x
<i>El Camino Real</i>	<i>Henderson Ave.</i>	<i>Safe Routes to School</i>	<i>Peterson Middle School</i>	x
Fair Oaks Ave.	Tasman Dr.	Crossing Improvement	Tasman Dr Corridor	
<i>Fair Oaks Ave.</i>	<i>El Camino Real</i>	<i>Crossing Improvement</i>	<i>El Camino Real</i>	
Gail Ave.	Braly Elementary Frontage	Safe Routes to School	Braly Elementary School	
Gail Ave.	Iris Ave.	Safe Routes to School	Braly Elementary School	
Gail Ave.	Goldenrod Ct.	Safe Routes to School	Braly Elementary School	
Iris Ave.	Ponderosa Ave.	Safe Routes to School	Ponderosa Elementary School	

STREET 1	STREET 2	DESIGN	ZONE/AREA	ALSO IN BIKE PLAN
<b>High Priority</b>				
Maria Ln.	El Camino Real	Crossing Improvement	El Camino Real	
Mathilda Ave.	Del Rey Ave.	Crossing Improvement	SNAIL Neighborhood Zone	
Maude Ave.	N Sunnyvale Ave.	Safe Routes to School	Bishop Elementary School	x
Maude Ave.	N Bayview Ave.	Safe Routes to School	Bishop Elementary School	
Maude Ave.	Mathilda Ave.	Crossing Improvement	SNAIL Neighborhood Zone	x
Old San Francisco Rd.	S Fair Oaks Ave.	Safe Routes to School	Ellis Elementary School	
Old San Francisco Rd.	Central Ave.	Safe Routes to School	Ellis Elementary School	
Quetta Ave.	Danforth Dr.	Safe Routes to School	Cumberland Elementary School	
San Miguel Ave.	Duane Ave.	Safe Routes to School	San Miguel Elementary School	
Sunnyvale Ave.	El Camino Real	Crossing Improvement	El Camino Real	
Sunnyvale Saratoga Rd.	Fremont Ave.	Safe Routes to School	Fremont High School	x
Sunnyvale Saratoga Fremont High Frontage Rd.		Safe Routes to School	Fremont Hlgh School	
W Fremont Ave.	Sydney Dr.	Safe Routes to School	Fremont High School	
W Remington Dr.	Mango Ave.	Safe Routes to School	Sunnyvale Middle School	
Wolfe Rd.	El Camino Real	Crossing Improvement	El Camino Real	
<b>Medium Priority</b>				
Alvarado Ave.	San Junipero Dr.	Safe Routes to School	San Miguel Elementary School	
Belleville Way	West Valley Parking Lot Entrance	Safe Routes to School	West Valley Elementary School	
Belleville Way	West Valley Elementary School Driveway	Safe Routes to School	West Valley Elementary School	
Bernardo Ave.	El Camino Real	Crossing Improvement	El Camino Real	x
Bernardo Ave.	Evelyn Ave.	Crossing Improvement	None	x
Borregas Ave.	Del Norte Ave.	Crossing Improvement	SNAIL Neighborhood Zone	
Borregas Ave.	Ahwanee Ave.	Crossing Improvement	SNAIL Neighborhood Zone	
Bryant Way	Poplar Ave. / Rosalia Ave.	Safe Routes to School	Peterson Middle School	
Carson Dr.	Leota Ave.	Safe Routes to School	Vargas Elementary School	
Cascade Dr.	Selo Dr.	Safe Routes to School	Nimitz Elementary	
Cascade Dr.	Los Arboles Ave.	Safe Routes to School	Nimitz Elementary	
Cascade Dr.	Sydney Dr.	Safe Routes to School	Nimitz Elementary	
Central Ave.	Ellis Elementary Frontage	Safe Routes to School	Ellis Elementary School	
Cheyenne Dr.	Valcartier Dr.	Safe Routes to School	Nimitz Elementary	
Cheyenne Dr.	Saskatchewan Dr.	Safe Routes to School	Nimitz Elementary	
Cheyenne Dr.	Revelstoke Dr.	Safe Routes to School	Nimitz Elementary	
Coronach Ave.	Helena Dr.	Safe Routes to School	Cupertino Middle School	
Cupertino Middle School Bus Loop	Northern Parking Lot	Safe Routes to School	Cupertino Middle School	
Del Norte Ave.	San Diego Ave.	Safe Routes to School	Columbia Middle School	
Dublin Way	Floyd Ave.	Safe Routes to School	Stocklmeir Elementary School	



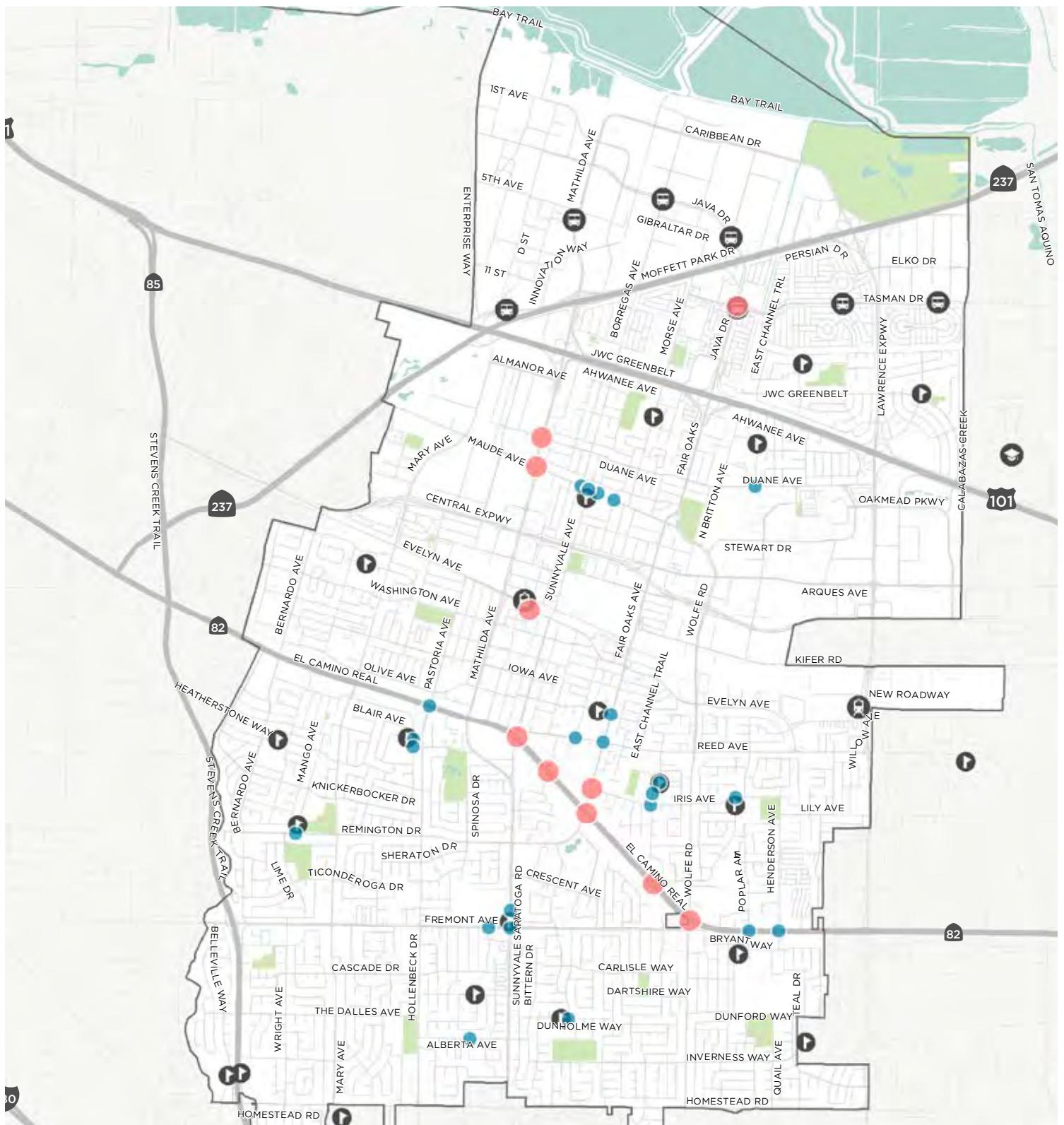
STREET 1	STREET 2	DESIGN	ZONE/AREA	ALSO IN BIKE PLAN
<b>Medium Priority</b>				
Dunford Way	Lochinvar Ave.	Safe Routes to School	Laurelwood Elementary	
Dunholme Way	Floyd Ave.	Safe Routes to School	Stocklmeir Elementary School	
Dunholme Way	Chickadee Ct.	Safe Routes to School	Stocklmeir Elementary School	
Dunholme Way	Blackhawk Dr.	Safe Routes to School	Stocklmeir Elementary School	
Dunholme Way	Condor Way	Safe Routes to School	Stocklmeir Elementary School	
E Olive Ave.	S Fair Oaks Ave.	Safe Routes to School	Ellis Elementary School	
E Olive Ave.	Kenmore Ave.	Safe Routes to School	Ellis Elementary School	
E Olive Ave.	Ellis Elementary Frontage	Safe Routes to School	Ellis Elementary School	
Fair Oaks Ave.	Weddell Dr.	Crossing Improvement	None	x
Fair Oaks Ave.	Evelyn Ave.	Crossing Improvement	None	x
Fair Oaks Ave.	Caliente Dr.	Crossing Improvement	SNAIL Neighborhood Zone	
Fair Oaks Ave.	Iris Ave.	Crossing Improvement	Braly Park Area	
Fair Oaks Ave.	Maude Ave.	Crossing Improvement	SNAIL Neighborhood Zone	
Fairwood Ave.	Redrock Ct.	Safe Routes to School	Fairwood Elementary School	
Fairwood Ave.	John W. Christian Greenbelt	Safe Routes to School	Fairwood Elementary School	
Fairwood Ave.	Fairwood Elementary Frontage	Safe Routes to School	Fairwood Elementary School	
Frances St.	Evelyn Ave.	Crossing Improvement	Downtown	
Fremont Ave.	El Camino Real	Crossing Improvement	El Camino Real	x
Gail Ave.	Braly Elementary Frontage	Safe Routes to School	Braly Elementary School	
Gail Ave.	Jackpine Ct.	Safe Routes to School	Braly Elementary School	
Gail Ave.	Daffodil Ct.	Safe Routes to School	Braly Elementary School	
Gas Station Area	Cupertino Middle School	Safe Routes to School	Cupertino Middle School	
Grape Ave.	El Camino Real	Crossing Improvement	El Camino Real	
Harvard Ave.	Hollenbeck Ave.	Safe Routes to School	Cumberland Elementary School	x
Heatherstone Way	Grape Ave.	Safe Routes to School	Cherry Chase Elementary School	
Heatherstone Way	Cherry Chase Elementary Frontage	Safe Routes to School	Cherry Chase Elementary School	
Helena Dr.	Mary Ave.	Safe Routes to School	Cupertino Middle School	x
Helena Dr.	Kennewick Dr.	Safe Routes to School	Cupertino Middle School	x
Helena Dr.	Wright Ave.	Safe Routes to School	Cupertino Middle School	
Hemlock Ave.	San Diego Ave.	Safe Routes to School	Columbia Middle School	
Heron Ave.	Homestead Rd.	Crossing Improvement	None	
Hollenback Ave.	Alberta Ave.	Crossing Improvement	Hollenbeck Ave Corridor	x
Hollenback Ave.	The Dalles	Crossing Improvement	Hollenbeck Ave Corridor	
Hollenbeck Ave.	Danforth Dr.	Crossing Improvement	None	
Hollenbeck Ave.	Cascade Dr.	Crossing Improvement	Hollenbeck Ave Corridor	

<b>STREET 1</b>	<b>STREET 2</b>	<b>DESIGN</b>	<b>ZONE/AREA</b>	<b>ALSO IN BIKE PLAN</b>
<b>Medium Priority</b>				
Homestead Rd.	Samedra St.	Safe Routes to School	Homestead High School	x
Homestead Rd.	Bernardo Ave.	Safe Routes to School	Cupertino Middle School	
Kennewick Dr.	Homestead Rd	Safe Routes to School	Homestead High School	
Lakechime Dr.	School Parking Lot	Safe Routes to School	Lakewood Elementary School	
Lakechime Dr.	Meadowlake Dr.	Safe Routes to School	Lakewood Elementary School	
Lakefair Dr.	Meadowlake Dr.	Safe Routes to School	Lakewood Elementary School	
Lakehaven Dr.	Meadowlake Dr.	Safe Routes to School	Lakewood Elementary School	
Leota Ave.	Vargas School Drop Off Loop	Safe Routes to School	Vargas Elementary School	
Lily Ave.	Henderson Ave.	Safe Routes to School	Ponderosa Elementary School	
Manet Dr.	Remington Dr.	Crossing Improvement	None	x
Manet Dr.	Fremont Ave.	Crossing Improvement	Fremont Ave Corridor	x
Mango Ave.	W Knickerbocker Dr.	Safe Routes to School	Sunnyvale Middle School	
Mango Ave.	Sunnyvale Middle Frontage	Safe Routes to School	Sunnyvale Middle School	
Mary Ave.	Olive Ave.	Crossing Improvement	Washington Park Area	x
Mary Ave.	Washington Ave.	Safe Routes to School	Vargas Elementary School	x
Mary Ave.	Homestead Rd	Safe Routes to School	Homestead High School	x
Mary Ave.	El Camino Real	Crossing Improvement	El Camino Real	
Mary Ave.	Iowa Ave.	Crossing Improvement	Washington Park Area	
Mary Ave.	Carson Dr.	Safe Routes to School	Vargas Elementary School	
Mathilda Ave.	El Camino Real	Crossing Improvement	El Camino Real	x
Mathilda Ave.	Ross Dr.	Crossing Improvement	None	x
Mathilda Ave.	California Ave.	Crossing Improvement	Downtown	
Mathilda Ave.	Evelyn Ave.	Crossing Improvement	Downtown	
Meadowlake Dr.	John W. Christian Greenbelt Crossing	Safe Routes to School	Lakewood Elementary School	
Morse Ave.	Maude Ave.	Crossing Improvement	SNAIL Neighborhood Zone	x
Morse Ave.	Glendale Ave.	Safe Routes to School	Columbia Middle School	
Morse Ave.	E Ferndale Ave.	Safe Routes to School	Columbia Middle School	
Murphy Ave.	Evelyn Ave.	Crossing Improvement	None	x
N Sunnyvale Ave.	Hazelton Ave.	Safe Routes to School	Bishop Elementary School	
N Sunnyvale Ave.	Bishop Elementary Frontage	Safe Routes to School	Bishop Elementary School	
Norland Dr.	Alberta Ave.	Crossing Improvement	None	
Pastoria Ave.	Olive Ave.	Crossing Improvement	Washington Park Area	
Ponderosa Ave.	Lantana Dr.	Safe Routes to School	Ponderosa Elementary School	
Quetta Ave.	Harvard Ave.	Safe Routes to School	Cumberland Elementary School	
Remington Dr.	Michelangelo Dr.	Crossing Improvement	None	
Roosevelt Ave.	Maude Ave.	Crossing Improvement	SNAIL Neighborhood Zone	



STREET 1	STREET 2	DESIGN	ZONE/AREA	ALSO IN BIKE PLAN
<b>Medium Priority</b>				
Rosalia Ave.	Peterson Middle Frontage	Safe Routes to School	Peterson Middle School	
S Bernardo Ave.	Heatherstone Way	Safe Routes to School	Cherry Chase Elementary School	
S Mary Ave.	Knickerbocker Dr.	Safe Routes to School	Sunnyvale Middle School	x
S. Bernardo Ave.	The Dalles	Safe Routes to School	Cupertino Middle School	x
S. Bernardo Ave.	The Dalles	Safe Routes to School	Homestead High School	x
S. Bernardo Ave.	Helena Dr.	Safe Routes to School	Cupertino Middle School	
S. Bernardo Ave.	Cupertino Middle Frontage	Safe Routes to School	Cupertino Middle School	
S. Bernardo Ave. between N and S Parking Lot	Cupertino Middle	Safe Routes to School	Cupertino Middle School	
San Angelo Ave.	Maude Ave.	Crossing Improvement	SNAIL Neighborhood Zone	
San Miguel Ave.	Amador Ave.	Safe Routes to School	San Miguel Elementary School	
San Miguel Ave.	Alvarado Ave.	Safe Routes to School	San Miguel Elementary School	
Sandia Ave.	Fairwood Ave.	Safe Routes to School	Fairwood Elementary School	
Selo Dr.	Nimitz Elementary Frontage	Safe Routes to School	Nimitz Elementary	
Silverlake Dr.	John W. Christian Greenbelt	Safe Routes to School	Lakewood Elementary School	
Stocklmeir Elementary Frontage	Dunholme Way	Safe Routes to School	Stocklmeir Elementary School	
Sunnyvale-Saratoga Rd.	Remington Dr.	Crossing Improvement	None	x
Taaffe St.	EI Camino Real	Crossing Improvement	EI Camino Real	
Teal Dr.	Inverness Way / Lochinvar Ave.	Safe Routes to School	Laurelwood Elementary	
Teal Dr.	Laurelwood Elementary Frontage	Safe Routes to School	Laurelwood Elementary	
Teal Dr.	Dunford Way	Safe Routes to School	Laurelwood Elementary	
Vienna Dr.	Tasman Dr.	Crossing Improvement	Tasman Dr Corridor	
Washington Ave.	Leota Ave.	Safe Routes to School	Vargas Elementary School	
Wolfe Rd.	Wolfe Rd.	Crossing Improvement	Fremont Ave Corridor	x
Wolfe Rd.	Old San Francisco Rd.	Crossing Improvement	Braly Park Area	x
Wolfe Rd.	Fair Oaks Ave.	Crossing Improvement	SNAIL Neighborhood Zone	
Wolfe Rd.	Gary Ave.	Crossing Improvement	Braly Park Area	
Wolfe Rd.	Iris Ave.	Crossing Improvement	Braly Park Area	
Wolfe Rd.	Marion Way	Crossing Improvement	None	

<b>STREET 1</b>	<b>STREET 2</b>	<b>DESIGN</b>	<b>ZONE/AREA</b>	<b>ALSO IN BIKE PLAN</b>
<b>Low Priority</b>				
Bayview Ave.	Bishop Elementary Frontage	Safe Routes to School	Bishop Elementary School	
Blythe Ave.	San Juan Dr.	Safe Routes to School	San Miguel Elementary School	
Borregas Ave.	Duane Ave.	Crossing Improvement	SNAIL Neighborhood Zone	x
Carson Dr.	Vargas Elementary Back Entrance	Safe Routes to School	Vargas Elementary School	
Commercial St.	Arques Ave.	Crossing Improvement	None	
Cumberland Dr.	Quetta Ave.	Safe Routes to School	Cumberland Elementary School	
Dunholme Way	Chukar Ct.	Safe Routes to School	Stocklmeir Elementary School	
E Olive Ave.	Central Ave.	Safe Routes to School	Ellis Elementary School	
Fallen Leaf Ln.	Louise Ln.	Safe Routes to School	West Valley Elementary School	
Ferndale Ave.	San Aleso Ave.	Crossing Improvement	SNAIL Neighborhood Zone	
Florence St.	Evelyn Ave.	Crossing Improvement	Downtown	
Florence St.	Washington Ave.	Crossing Improvement	Downtown	
Frances St.	California Ave.	Crossing Improvement	Downtown	
Grape Ave.	Hudson Way	Safe Routes to School	Cherry Chase Elementary School	
Grape Ave.	W Knickerbocker Dr.	Safe Routes to School	Cherry Chase Elementary School	
Henderson Ave.	Bryant Way	Safe Routes to School	Peterson Middle School	
Hollenbeck Ave.	Cheyenne Dr.	Crossing Improvement	Hollenbeck Ave Corridor	
Kerry Ave./Kensington Ave.	Lochinvar Ave.	Safe Routes to School	Laurelwood Elementary	
Lakechime Dr.	Silverlake Dr.	Safe Routes to School	Lakewood Elementary School	
Los Arboles Ave.	Nimitz Elementary Frontage	Safe Routes to School	Nimitz Elementary	
Mary Ave.	Ticonderoga Dr.	Crossing Improvement	De Anza Area	
Mary Ave.	Fremont Ave.	Crossing Improvement	De Anza Area	x
Mary Ave. Bridge	Homestead High Western Parking Lot Access	Safe Routes to School	Homestead High School	
Piper Ave.	Cumberland Dr.	Safe Routes to School	Cumberland Elementary School	
S. Bernardo Ave.	Fremont Ave.	Crossing Improvement	De Anza Area	x
S. Bernardo Ave.	Ticonderoga Dr.	Crossing Improvement	De Anza Area	x
San Conrado Terr.	Ferndale Ave.	Crossing Improvement	SNAIL Neighborhood Zone	
San Pablo Ave.	Alvarado Ave.	Safe Routes to School	San Miguel Elementary School	
Sequoia Dr.	Reed Ave.	Crossing Improvement	None	
Sequoia Dr.	Iris Ave.	Safe Routes to School	Ponderosa Elementary School	
Sunnyvale Ave.	California Ave.	Crossing Improvement	Downtown	
Sunset Ave.	Iowa Ave.	Crossing Improvement	Washington Park Area	
Wolfe Rd.	Maude Ave.	Crossing Improvement	SNAIL Neighborhood Zone	x
Wright Ave.	Fremont Ave.	Crossing Improvement	De Anza Area	x



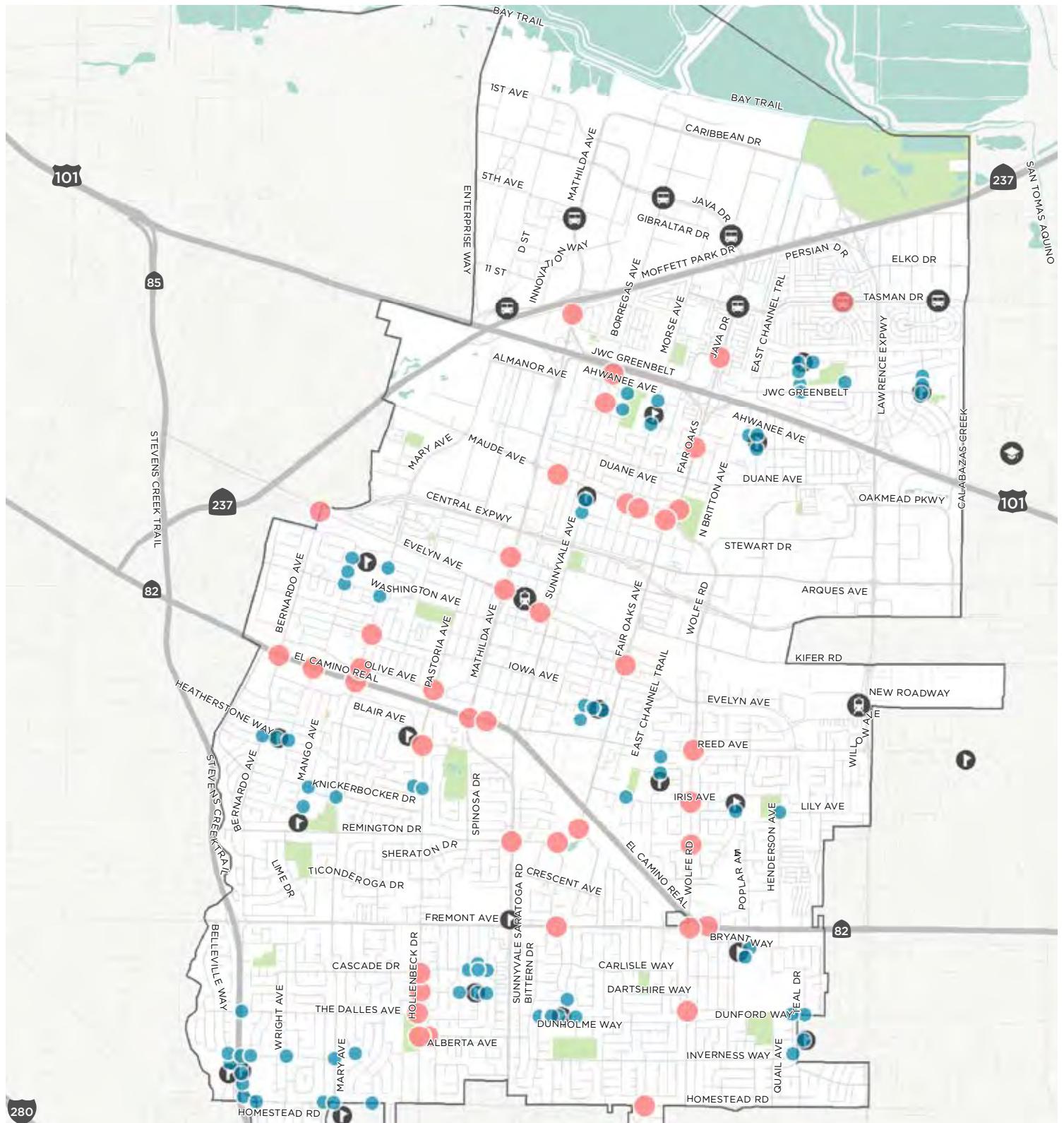
**Map 30. High Priority Pedestrian Spot Improvements**

- Safe Routes to School Improvement
- Spot Improvement

#### Boundaries + Destinations

- |   |                    |   |               |
|---|--------------------|---|---------------|
| ● | Caltrain Station   | ● | Park          |
| ● | Light Rail Station | □ | City Boundary |
| ● | Mission College    |   |               |
| ● | Public School      |   |               |

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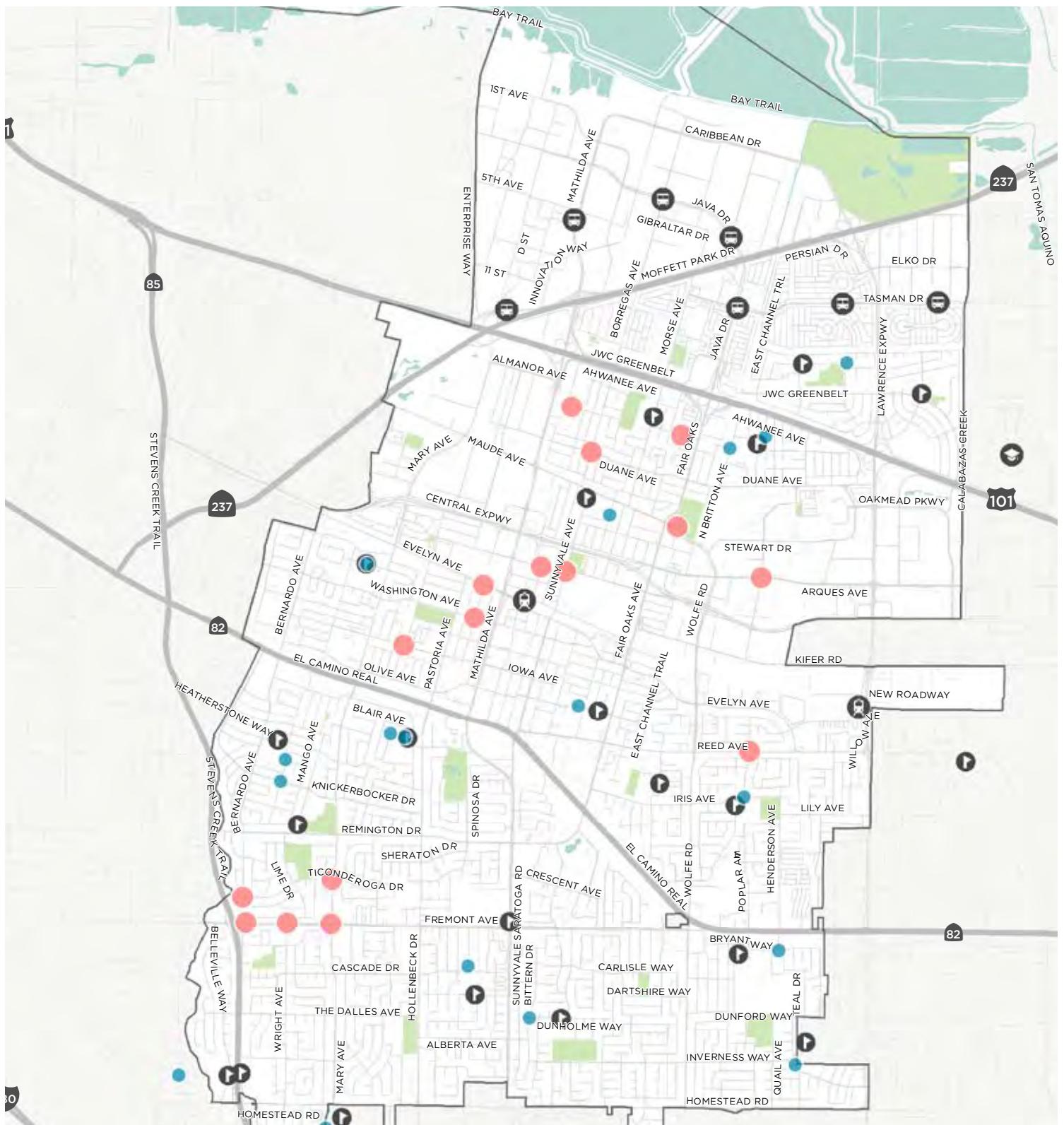
**Map 31. Medium Priority Pedestrian Spot Improvements**

- Safe Routes to School Improvement
- Spot Improvement

#### Boundaries + Destinations

- |                      |                 |
|----------------------|-----------------|
| ● Caltrain Station   | ● Park          |
| ● Light Rail Station | □ City Boundary |
| ● Mission College    |                 |
| ● Public School      |                 |

0 0.5 1 MILE



Map 32. Low Priority Pedestrian Spot Improvements

- Safe Routes to School Improvement
- Spot Improvement

#### Boundaries + Destinations

- |   |                    |   |               |
|---|--------------------|---|---------------|
| ● | Caltrain Station   | ● | Park          |
| ● | Light Rail Station | □ | City Boundary |
| ● | Mission College    |   |               |
| ● | Public School      |   |               |

0 0.5 1 MILE

## COSTS

More detailed cost estimates for the Safe Routes to School improvements can be found in Chapter 6. Cost estimates for spot improvements will be developed in a later design phase following more detailed engineering analysis.

## FUNDING

Identifying and securing funding for the projects identified in the Plan is crucial to achieving the vision and goals established in this Plan. A variety of sources exist to fund pedestrian infrastructure projects, programs, and studies. Local and regional funding sources can be used for the construction or maintenance of pedestrian improvements, along with competitive grant programs. Table 23 displays these funding sources as well as the project types eligible under each source.



**Table 23. Funding Sources**

FUNDING SOURCE	PEDESTRIAN INFRASTRUCTURE	TRAILS	SAFE ROUTES TO SCHOOL	SAFE ROUTES TO TRANSIT	PEDESTRIAN PROGRAMS	STUDIES
<b>Local and Regional Grant Programs</b>						
2016 Measure B (VTA)	●	●	●	●	●	●
Transportation Fund for Clean Air County Program Manager Fund (VTA)	●	●	●	●		
One Bay Area (MTC & VTA)	●	●	●	●		
Transportation Development Act, Article 3 (VTA)	●	●	●	●		
Transportation for Livable Communities (MTC)	●	●	●	●		
Vehicle Emissions Reductions Based at Schools Program (VTA)	●	●	●	●		
Community Design for Transportation Planning Grants (Caltrans)	●	●	●	●		
Climate Initiatives InMissingvative Grants Fund (MTC)	●	●	●	●		
Lifeline Transportation Program (MTC)	●		●	●		
<b>State and Federal Grant Programs</b>						
Active Transportation Program (CTC)	●	●	●	●	●	
Affordable Housing & Sustainable Communities (CA HCD)	●			●	●	
Urban Greening Grants (CA NRA)	●	●	●	●		
Proposition 1 Storm Water Grand Program - Round 2 (CA Water Resources Board)	●					
Highway Safety Improvement Program (Caltrans)	●		●	●		
Sustainable Transportation Planning Grant (Caltrans)						●
Solutions for Congested Corridors (CTC)	●	●				
Office of Traffic Safety (CA OTS)					●	
Recreational Trails Program (CA DPR)		●				
Habitat Conservation Fund (CA DPR)						
<b>Other State Programs</b>						
Local Partnership Program (CTC)	●		●	●		
Road Maintenance and Rehabilitation Program (Controller's Office)	●		●	●		

## LOCAL AND REGIONAL GRANT PROGRAMS

### 2016 Measure B

Santa Clara County voters approved a half-cent sales tax in 2016 to fund transportation infrastructure investments including bicycle, pedestrian, and complete streets projects. Funding priority will go to bicycle and pedestrian projects that connect to schools, transit, and employment centers; complete gaps in the existing network; cross major barriers; and make walking and bicycling a safe, convenient form of transportation. Supported projects must be identified in city, county or regional planning documents. Measure B is expected to raise \$6.3 billion (2017 dollars) over 30 years; \$250 million of that has been allocated for bicycle and pedestrian improvements.

*Funds are programmed by VTA.*

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### Transportation Fund for Clean Air County Program Manager Fund

The Bay Area Air Quality Management District (BAAQMD) administers funds to the Santa Clara County VTA for projects that reduce vehicle emissions including bicycle projects. These funds come from a \$4 vehicle registration surcharge in Bay Area counties and can be used as a match for competitive state or federal programs.

*Funds are programmed by the Bay Area Air Quality Management District (BAAQMD and the Santa Clara Valley Transportation Authority (VTA)*

### One Bay Area Grant

The One Bay Area Grant (OBAG) programs emphasize funding for projects within Priority Development Areas (PDAs) in the region that are in-line with housing and land-use goals. Projects that are within or provide access to these PDAs could qualify for OBAG grants.

*Funds are programmed by the Metropolitan Transportation Commission (MTC) & and the Santa Clara Valley Transportation Authority (VTA).*

### Transportation Development Act Article 3

Transportation Development Act Article 3 (TDA 3) provides funding annually for bicycle and pedestrian projects. Two percent of TDA 3 funds collected within the county are used for TDA 3 projects. MTC policies require that all projects be reviewed by a BPAC or similar body before approval.

*Funds are programmed by VTA.*

### Transportation for Livable Communities Program

Designed to support community-based transportation projects that bring “new vibrancy” to downtown areas, commercial cores, neighborhoods, and transit corridors. The projects resulting from these grants are intended to provide for a range of transportation choices including walking and to support connections between transportation and land use, and should be developed through inclusive community planning.

*Funds are programmed by MTC.*

### Vehicle Emissions Reduction Based at Schools Program

The Vehicle Emissions Reduction Based at Schools (VERBS) program receives funds from MTC’s Climate Initiative SRTS Program. The goals of this include reducing greenhouse gases by promoting walking, biking, transit, and carpooling to school. These federal CMAQ funds are allocated to each county based on school enrollment. The VERBS Program places an additional focus on safety and reducing collisions.

*Funds are programmed by VTA.*



## Community Design for Transportation Planning Grants

These planning grants are intended to help agencies fund efforts to write new city codes or modify existing city codes and ordinances with the goal of creating compact, mixed-use communities and pedestrian-friendly streets - particularly around transit corridors and at transportation hubs.

*Funds are programmed by Caltrans.*

## Climate Initiatives Innovative Grants Fund

MTC's Climate Initiatives Program promotes innovative ways to reduce greenhouse gas emissions in the Bay Area, and taps federal funding for a pair of competitive grant programs. Innovative Grants of \$1 million and up are used to support high-impact projects that can be replicated around the region.

*Funds Programmed by MTC*

## Lifeline Transportation Program

Uses both state and federal funds to provide Lifeline grants for projects that meet mobility and accessibility needs in low-income communities across the Bay Area. MTC establishes new guidelines for each cycle of Lifeline grants, but the goal is the same each time: fund community-based transportation projects developed through a collaborative and inclusive process. Lifeline projects must address transportation gaps or barriers identified in community-based transportation plans or other local planning efforts in low-income neighborhoods.

*Funds programmed by MTC*

## STATE AND FEDERAL GRANT PROGRAMS

### California Active Transportation Program

California's Active Transportation Program (ATP) funds infrastructure and programmatic projects that support the program goals of shifting trips to walking and bicycling, reducing greenhouse gas (GHG) emissions, and improving public health. Competitive application cycles occur every one to two years, typically in the spring or early summer. Eligible projects include construction of bicycling and walking facilities, new or expanded programmatic activities, or projects that include a combination of infrastructure and non-infrastructure components. Typically, no local match is required, though extra points are awarded to applicants who do identify matching funds.

*Funds are programmed by the California Transportation Commission (CTC).*

### Affordable Housing & Sustainable Communities (CA HCD)

The Affordable Housing and Sustainable Communities Program (AHSC) funds land-use, housing, transportation, and land preservation projects that support infill and compact development that reduces greenhouse gas (GHG) emissions. Projects must fall within one of three project area types: transit-oriented development, integrated connectivity project, or rural innovation project areas. Fundable activities include affordable housing developments, sustainable transportation infrastructure, transportation-related amenities, and program costs.

*Funds are programmed by the Strategic Growth Council and implemented by the Department of Housing and Community Development.*

## **Urban Greening Grants**

Urban Greening Grants support the development of green infrastructure projects that reduce GHG emissions and provide multiple benefits. Projects must include one of three criteria, most relevantly: reduce commute vehicle miles travels by constructing bicycle paths, bicycle lanes, or pedestrian facilities that provide safe routes for travel between residences, workplaces, commercial centers, and schools. Eligible projects include green streets and alleyways and non-motorized urban trails that provide safe routes for travel between residences, workplaces, commercial centers, and schools.

*Funds are programmed by the California Natural Resources Agency.*

## **Proposition 1 Stormwater Grant Program Round 2**

The Proposition 1 Storm Water Grant Program Round 2 aims to provide funding for projects that help water infrastructure systems adapt to climate change, increase collaboration opportunities for water resource and infrastructure management, and improve regional water self-reliance. The Program's Round 2 funding provides approximately \$86 million for multi-benefit storm water management project that include, but are not limited to, green infrastructure, rainwater and storm water capture projects and storm water treatment facilities. Eligible projects must be included in the region's Storm Water Resource Plan. Communities are required to provide a 50 percent local match, which may be in the form of federal grants or loans, local and private funding, or staff or volunteer ("in kind") services.

*Funds are programmed by the CA Water Resources Board.*

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## **Highway Safety Improvement Program**

Caltrans offers Highway Safety Improvement Program (HSIP) grants every one to two years. Projects on any publicly owned road or active transportation facility are eligible, including bicycle and pedestrian improvements. HSIP focuses on projects that explicitly address documented safety challenges through proven countermeasures, are implementation-ready, and demonstrate cost-effectiveness.

*Funds are programmed by Caltrans.*

## **Sustainable Transportation Planning Grants**

Caltrans Sustainable Transportation Planning Grants are available to communities for planning, study, and design work to identify and evaluate projects, including conducting outreach or implementing pilot projects. Communities are typically required to provide an 11.47 percent local match, but staff time or in-kind donations are eligible to be used for the match provided the required documentation is submitted.

*Funds are programmed by Caltrans.*

## **Solutions for Congested Corridors Program**

Funded by Senate Bill 1, the Congested Corridors Program strives to reduce congestion in highly traveled and congested corridors through performance improvements that balance transportation improvements, community impacts, and environmental benefits. This program can fund a wide array of improvements including bicycle facilities and pedestrian facilities. Eligible projects must be detailed in an approved corridor-focused planning document. These projects must include aspects that benefit all modes of transportation using an array of strategies that can change travel behavior, dedicate rights-of-way for bikes and transit, and reduce vehicle miles traveled.

*Funds are programmed by the CTC.*



## Office of Traffic Safety

Under the Fixing America's Surface Transportation (FAST) Act, five percent of Section 405 funds are dedicated to addressing nonmotorized safety. These funds may be used for law enforcement training related to pedestrian and bicycle safety, enforcement campaigns, and public education and awareness campaigns.

*Funds are programmed by the California Office of Traffic Safety.*

## Recreational Trails Program

The Recreational Trails Program helps provide recreational trials for both motorized and non-motorized trail use. Eligible products include trail maintenance and restoration, trailside and trailhead facilities, equipment for maintenance, new trail construction, and more.

*Funds are programmed by the California Department of Parks and Recreation.*

## Habitat Conservation Fund

The Habitat Conservation Fund Program supports projects that bring urban residents into park and wildlife areas, protect plant and animal species, and acquire and develop wildlife corridors and trails.

*Funds are programmed by the California Department of Parks and Recreation..*

## OTHER STATE PROGRAMS

### Local Partnership Program

This program provides SB1 funds to local and regional agencies that have passed sales tax measures, developer fees, or other transportation-imposed fees to fund road maintenance and rehabilitation, sound walls, and other transportation improvement projects. Jurisdictions with these taxes or fees are eligible for a formulaic annual distribution of no less than \$100,000. These jurisdictions are also eligible for a competitive grant program. Local Partnership Program funds can be used for a wide variety of transportation purposes including roadway rehabilitation and construction, transit capital and infrastructure, bicycle and pedestrian improvements, and green infrastructure.

*Funds are programmed by the CTC.*

### Road Maintenance and Rehabilitation Program

Senate Bill 1 (SB1) created the Road Maintenance and Rehabilitation Program (RMRP) to address deferred maintenance on state highways and local road systems. Program funds can be spent on both design and construction efforts. On-street active transportation related maintenance projects are eligible if program maintenance and other thresholds are met. Funds are allocated to eligible jurisdictions.

*Funds are programmed by the State Controller's Office with guidance from the CTC.*

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# **Chapter 6:** **Safe Routes** **to School Plan**





# Safe Routes to School Needs Analysis

The Sunnyvale SRTS Plan incorporated the perspectives of key stakeholders through a multi-prong needs analysis approach:

1. **School Walk Audits:** Observations of each school's arrival or dismissal procedures with representatives from the school, including both staff and parents, school district, City, and consultant team to identify areas of concern for people walking and bicycling to school.
2. **Public Workshop:** Recommendations produced through the walk audit process were presented to the public at an in-person meeting to gather feedback and comments.
3. **Detailed Review:** Recommendations produced through the walk audit process were presented to school staff, school district staff, and City staff to gather feedback and comments.

## School Walk Audits

Walk audits were performed in April and May 2019 at 21 public schools that serve Sunnyvale students. Walk audits were scheduled for either arrival or dismissal with either the school principal or school administrative assistant and were coordinated with Officer O'Connell. After confirming the date and time for the audit, Officer O'Connell and school staff would issue an invitation to parents and school district staff to join the audit. Audits brought together a combination of school staff, parents, school district staff (when available), City staff, and transportation planning and engineering consultants.

Walk audit teams gathered before the first or last bell (depending on whether the walk audit was during arrival or dismissal) to be oriented to the school and the walk audit process. Using a large map print-out of the school and surrounding roadways, observation points were identified and walk audit team members volunteered to observe at a location of their choice.

During the audit, team members observed the location in question and noted issues or areas of concerns that prevented students, from safely walking or bicycling to the school. Afterwards, walk audit teams gathered to discuss observations and determine the areas of highest concern.

Following each walk audit, consultant staff prepared a technical memorandum summarizing the observations and areas of concern and an improvement plan map detailing recommended improvements to address the noted concerns. The improvement plans for each school begin on page 158.

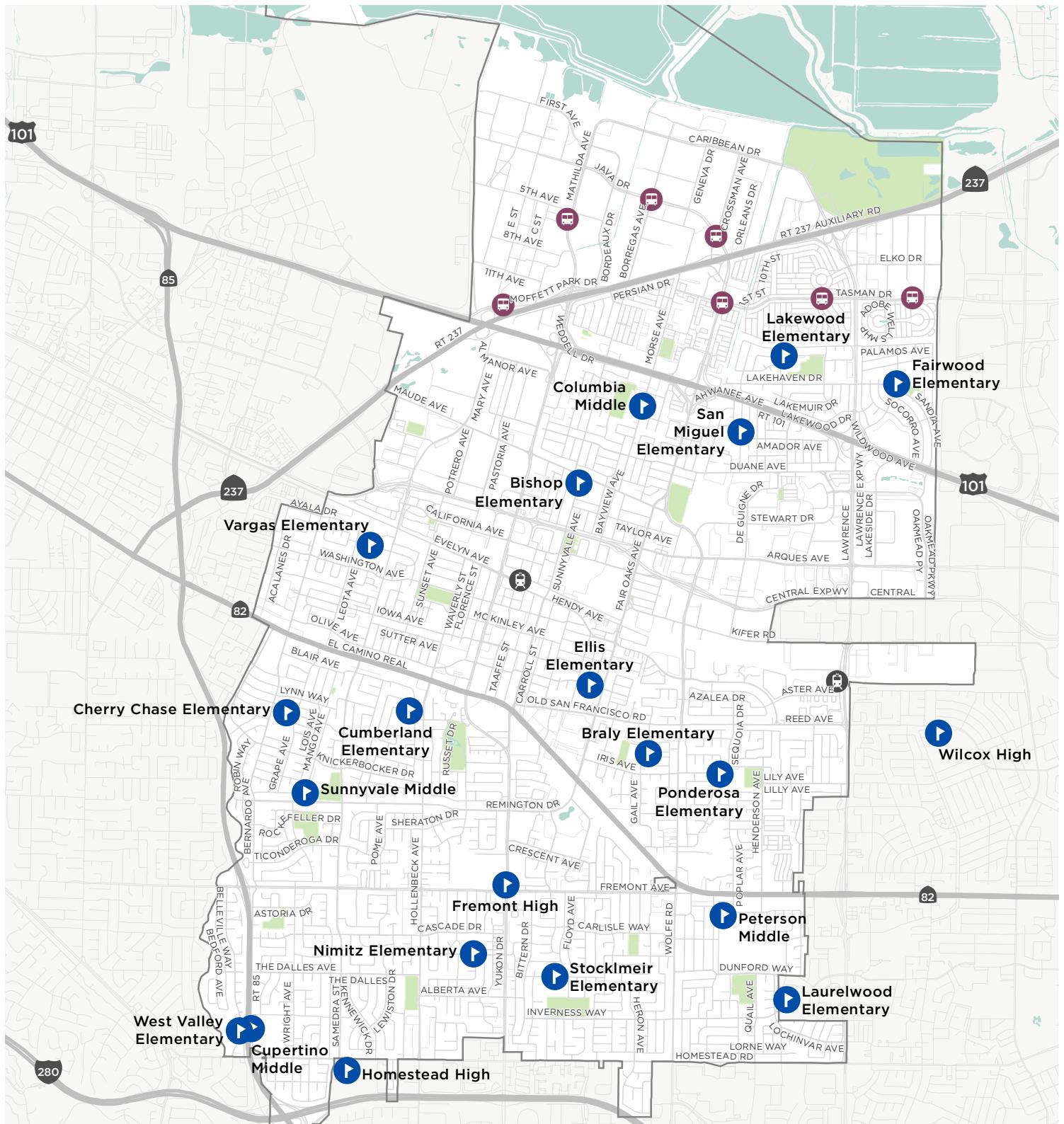
Walk audits had previously been conducted in 2018 at many schools in Sunnyvale by the Sunnyvale SRTS Collaborative. The walk audit teams considered notes from these walk audits as provide background information and to orient them to areas of concern.

## Public Workshop

The 21 school improvement plan maps were presented at a public workshop in December 2019. Over 75 people attended this workshop, including parents and students from many of the schools audited. Each school's improvement plan map was printed twice and placed on a table with pens, markers, sticky notes, and comment cards. Attendees were able to draw directly on the plans or leave comments via a sticky note or comment card. City and consultant staff were present to answer questions. The feedback was recorded and each comment was considered in making edits to the improvement plan maps.

## Detailed Review

Each school's technical memo and improvement plan map were provided to school staff, school district staff, and City staff for review. After internal review by each group, a set of internally-consistent, consolidated comments was provided to the consultant team for incorporation into the technical memos and improvement plan maps.



## Map 33. Public Schools

Public School

Caltrain Station

VTA Light Rail Station

Parks

City Boundary



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# Vision and Goals

The goals for the SRTS Plan reflect the priorities expressed by the community throughout the public outreach phase. Discussions with City departments, best practices across the nation, and input from community stakeholders have shaped the proposed strategies and policies intended to help the City achieve these goals.

## Vision Statement

Sunnyvale is a Complete Streets Community where residents and commuters have the choice to bicycle and walk to meet their transportation needs on a connected, comfortable, and convenient network designed for all abilities and ages.

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### GOAL 1

**Increase safety for people walking and bicycling by improving school travel routes to be safe, convenient, and comfortable for all users and modes.**

- **Policy 1:** Work with School Districts that serve Sunnyvale students, and the school community (teachers, administrators, students, parents, and neighbors) to identify infrastructure improvements that make walking and bicycling to school a safer option for students.
  - » **Action 1.1:** Identify, develop, and enhance education, encouragement, and enforcement programs while working with the School Districts that serve Sunnyvale students.
  - » **Action 1.2:** Utilize school walk audits to identify priority infrastructure improvements close to schools within the city to produce a safer walking and bicycling environment. Coordinate with neighboring jurisdictions to develop infrastructure improvements close to schools located outside of Sunnyvale but serve Sunnyvale residents.
  - » **Action 1.3:** Identify infrastructure improvements in the Capital Improvement Program (CIPs) to enhance pedestrian safety adjacent to schools.
  - » **Action 1.4:** Assist school districts, as needed, with providing bicycle racks to public schools that serve Sunnyvale students, or add additional racks at schools in need of more bicycle parking.
  - » **Action 1.5:** Work with the Department of Public Safety to target speed enforcement and use speed feedback signs. Consider installing traffic calming and other speed reduction measures to further incentivize drivers to travel the reduced speed limit in school zones as needed.



## GOAL 2

### Increase participation in the Safe Routes to School Program

- **Policy 2:** Conduct comprehensive community outreach to engage with students, parents, staff, and the community to design and implement a program that makes using active transportation modes to and from schools safer and increases the percentage of students arriving using active transportation.
  - » **Action 2.1:** Design an equitable outreach campaign to engage community members of all backgrounds in a Safe Routes to School program.
  - » **Action 2.2:** When possible, produce outreach materials to inform communities of the City of Sunnyvale's Safe Routes to School program and the progress made towards its goals and objectives.
  - » **Action 2.3:** Help to organize or host events that publicize and increase awareness of the Safe Routes to School efforts, programs, and resources.
  - » **Action 2.4:** Survey students to determine baseline active transportation mode share, and specify a goal for active transportation mode share by 2030, either by school, district, or another grouping.
- **Policy 3:** Encourage Sunnyvale public schools to participate in Sunnyvale's SRTS program.
  - » **Action 3.1:** Conduct walk audits at public schools that serve Sunnyvale students and utilize the subsequent improvement plans to pursue grant funding for implementation.
  - » **Action 3.2:** City staff should continue to participate in Santa Clara County Safe Routes to School programs and task forces.
  - » **Action 3.3:** Eliminate barriers to participation in the Safe Routes to School program, whether founded on race, ethnicity, national origin, disability, income level, language, or any other basis.
  - » **Action 3.4:** Present progress to the BPAC annually that highlights school participation in SRTS activities. Include hand tally results in the report.
- **Policy 4:** Expand on existing Walk and Bike to School encouragement events and programs to increase awareness about active transportation options available to students.
  - » **Action 4.1:** Continue to expand support for Walk to School Day and Bike to School Day.
  - » **Action 4.2:** Continue to encourage Walking School Bus and/or Bike Train to incentivize pedestrian and bicycling behavior in a supervised manner and report on progress.
  - » **Action 4.3:** Assist the school districts in establishing promotional campaigns to encourage students and parents to walk or roll to school.
  - » **Action 4.4:** Explore providing "Drive Your Bike" programming to middle school and high school aged students to prepare them to bicycle safely to school and around their neighborhoods.

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# Engineering Recommendations

Safe street design leads to safe walking and bicycling. Engineering improvements are therefore a key way that the City can increase safety around schools. As documented earlier, the bulk of the work for this plan entailed conducting school walk audits at each of the 21 public schools serving Sunnyvale students. This section offers citywide engineering recommendations, describes the engineering improvements recommended in the school improvement plans, and provides a summary of each school's existing conditions before displaying the improvement plan map.

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## Citywide Engineering Recommendations

**Recommendation 1:** Conduct biennial crossing guard evaluation at locations that have an existing crossing guard to determine if travel patterns have changed, which warrant adjustments for crossing guard placement.

**Recommendation 2:** Continue vegetation maintenance in the public right-of-way near public schools that serve Sunnyvale students to ensure good visibility to all signage. Vegetation on the school site is the responsibility of the school.

**Recommendation 3:** Where feasible or required, incorporate green stormwater infrastructure improvements within safe routes to school projects to enhance safety and shading opportunities.



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# Glossary of Recommended Infrastructure Improvements

Each school improvement plan recommends technical engineering recommendations to improve safety and access for students and guardians who bike or walk to school.

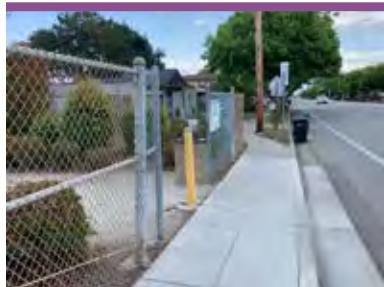
This glossary provides an image and brief description of the most commonly recommended roadway improvements along with the symbol used to represent the recommendation.

This glossary is intended to help city staff, parents, students, school staff, and other members of the public better understand the improvement recommendations in this Plan.

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ACCESS POINTS



Access points are indicated on all improvement plan maps. These indicate the locations where the school or campus can be entered.



ADVANCE YIELD MARKINGS



These markings, also referred to as "shark's teeth," are placed on the roadway 20-50 feet before a mid-block crosswalk or crosswalk at an uncontrolled intersection to indicate where drivers should stop and wait for people to cross. These markings have been shown to increase driver yield compliance.



BICYCLE PARKING



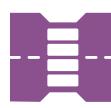
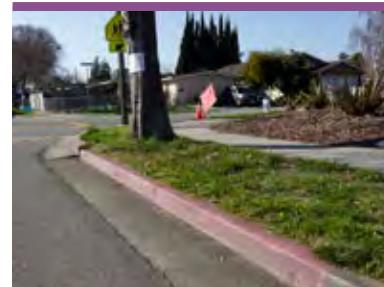
Bicycle parking can be designed for short-term or long-term use and includes bicycle racks (pictured), bicycle cages, lockers, and bicycle stations, among other designs. Parking should allow for bicycles to be locked to the rack at two points of the bike frame, sufficiently spaced from each other, and in a secure, well-illuminated area.

**BUS STOPS**

Existing VTA and other public agency bus stops are indicated on improvement plan maps. In some cases, recommendations to relocate a stop may be provided to improve sightlines or visibility.

**CROSSING GUARDS**

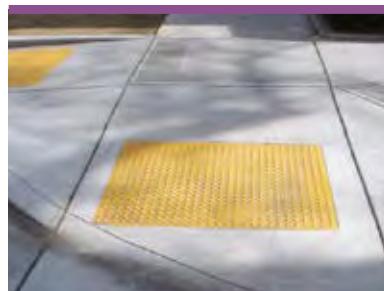
Crossing guards are trained personnel who help control traffic and aid people crossing streets near schools. Crossing guards can be useful at uncontrolled and stop sign-controlled intersections with high volumes of people walking.

**CURB COLORS/PARKING RESTRICTIONS**

Curb colors indicate parking/loading restrictions along segments of curbs. In most cases, these are accompanied by signs providing additional detail about the restriction. Existing and proposed changes are noted on improvement plan maps. The length of the curb designation should be determined in accordance with City standards.

**CURB EXTENSIONS/  
BULB OUTS**

Curb extensions/bulb-outs extend the curb into the street. They can provide several important traffic calming and safety benefits including a shorter crossing distance, improved visibility at intersections, and provide additional space for people waiting to cross. They can be installed at intersections or mid-block. The terms can be used interchangeably.

**CURB RAMPS**

Curb ramps allow for smooth transitions between the sidewalk and street level. Curb ramps are important for those with special mobility needs, strollers, and many other users. Ramps must be built to current ADA standards.

**HIGH-VISIBILITY  
CROSSWALKS**

High visibility crosswalks are crosswalks that are marked with thick bars, drawing additional attention and awareness to the crossing. In school zones these crossings are yellow, as opposed to the standard white color.



### LEADING PEDESTRIAN INTERVAL (LPI)



An LPI provides people with a few seconds to begin walking into the intersection before the vehicle signal turns green. This increases visibility and awareness of people crossing for. This is especially useful at locations with high volumes of people walking and/or vehicle turning movements.



### LIMITING TURN MOVEMENTS



Prohibiting vehicle turning movements has many benefits for both vehicular circulation and safety for people walking and bicycling. Preventing certain turn movements, including U-Turns, can reduce conflict points and improve overall vehicle flow.



### PARK & WALK LOCATIONS



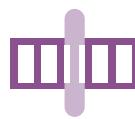
Park and walk locations are areas within a few blocks of the campus where guardians can park their car and walk their student(s) to campus. They provide the double benefit of reducing congestion close to the school and providing an opportunity for students to start their day with a walk.



### PEDESTRIAN HYBRID BEACON/HAWK



A pedestrian hybrid beacon, also known as a High-Intensity Activated Crosswalk (HAWK), is a signal designed to increase safety for people crossing at unsignalized locations on multi-lane roadways. When the button is pushed, the beacon will flash yellow to alert drivers to prepare to stop. It will then turn solid red to indicate drivers should stop. Once it begins flashing red, drivers may continue once the crosswalk is clear.



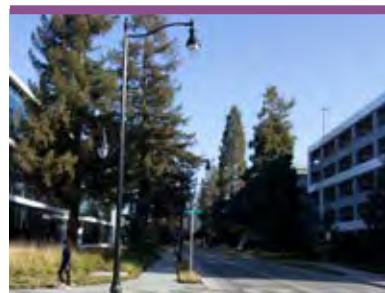
### PEDESTRIAN REFUGE ISLANDS



A pedestrian refuge island is constructed in a road's median and is designed to be a waiting spot for people who cannot, or choose not to, cross the entire roadway at once. These features are particularly useful for seniors, students, and those with mobility impairments.



### PEDESTRIAN SCALE LIGHTING



Pedestrian-scale lighting improves visibility for both people walking and driving, particularly at intersections.



### PROTECTED INTERSECTIONS



Protected intersections add physical barriers and other infrastructure to reduce conflicts between people walking, bicycling, and driving by increasing visibility and providing physical protection. This design feature enhances sight distance and reduces crossing distances for people walking and bicycling.



### RAISED CROSSWALKS



Raised crosswalks make people crossing more visible to people driving and also slow vehicles. They can be used at midblock crossing locations as well as in other areas, such as parking lots.



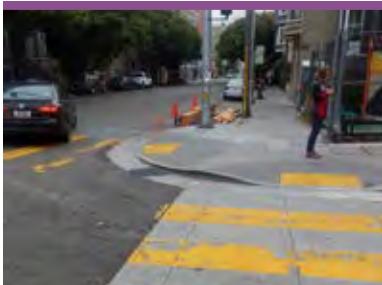
### RECTANGULAR RAPID FLASH BEACON (RRFB)



RRFBs are user-activated flashing lights used at unsignalized intersections or mid-block crossings. These beacons alert people driving to the presence of people in the crosswalk. RRFBs have been shown to increase driver yielding behavior.



### REDUCED CORNER RADII



The size of the curb radius (angle of the corner) has an impact on the speed of turning vehicles. A reduced corner radius creates a tighter turning movement and therefore reduces turning speed. Reducing turning speeds to about 15 mph is important as corners are where drivers are most likely to encounter people crossing. Curb extensions/bulb-outs are one way to reduce corner radii.

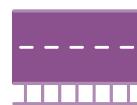


### SCHOOL LOADING ZONES



School loading zones are curbside areas where drivers pull to the curb to pick-up or drop-off students. Loading zones can be signed and regulated in a variety of ways to suit the specific needs of each school.

Safety assessments may also include programmatic recommendations for a rolling drop-off or student valet program to increase loading zone efficiency.



### SIDEWALKS



Sidewalks provide dedicated space for people to walk. The minimum width of a sidewalk should be six feet or greater.



## SIGNAGE



Improvement plans can include recommendations for new or updated roadside or on-campus signs. Signs serve a wide range of uses from prohibiting movements, limiting parking, or providing advance notice of school zones or crosswalks. Images of the intended signs are used. Non-standard signs that schools/school districts can implement are also recommended (e.g. "Please Pull Forward" etc.).



## SPEED BUMPS



Speed bumps, also called speed humps, provide traffic calming by reducing vehicle speeds. They are typically placed in a series and cross the entire width of the roadway. These cannot be used on high volume or high-speed streets.

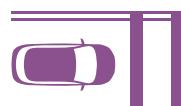


## SPEED FEEDBACK SIGNS



Speed feedback signs attempt to slow speeding drivers by alerting them of their speed and the speed posted limit. These can be combined with signs reminding drivers they are entering a school zone.

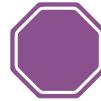
152



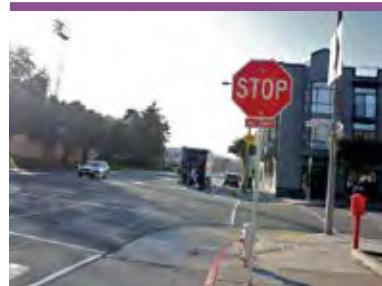
## STOP OR LIMIT LINES



Stop lines are solid white lines that extend across approach lanes. They may be used to indicate the point behind which vehicles are required to stop in compliance with a stop sign, or another traffic control device that requires vehicles to stop.



## STOP SIGNS



A stop sign is a traffic control device used to regulate traffic through an intersection. In general, the implementation of stop control is regulated by the Federal Highway Administration and requires a technical analysis be conducted before a stop sign can be installed.



## STREET LANE STRIPING



Adding or modifying a street's striping pattern can make on-street movements more predictable. Narrow lanes can also encourage lower speeds.



## TRAFFIC CONES



Traffic cones can be used by schools to block driveways and prevent turns that might interfere with students using the sidewalk or street safely. Cones are a low-cost and temporary method to perform traffic control for arrival and dismissal periods.

## TRAFFIC SIGNALS, PEDESTRIAN SIGNAL HEADS, AND BICYCLE SIGNAL HEADS



A traffic signal is a traffic control device used to regulate traffic through an intersection.

Pedestrian signal heads and countdown signals provide people with information about the remaining time they have to cross the street.

Bicycle signal heads can be used to regulate bicycle traffic through an intersection to improve the efficiency of bicycle movements.



## PEDESTRIAN SCRAMBLE



Traffic signals can be programmed to create a “pedestrian scramble” which shows red lights to vehicles in all directions, and allows people walking to cross the intersection in any direction.

# Bishop Elementary School

450 N. Sunnyvale Ave.  
Sunnyvale, CA 94085

GRADES

**K-5**

SCHOOL TYPE

**NEIGHBORHOOD**

ENROLLMENT

**475****49%**

**ENGLISH  
LANGUAGE  
LEARNERS**  
(231)

**71%**

**FREE/  
REDUCED  
LUNCH**  
(335)

WALK AUDIT

**TUESDAY, APRIL 23, 2019**

ARRIVAL

DISMISSAL

**Bishop Elementary School** is located in a residential neighborhood in the central section of the city. Although dedicated bicycle parking has been provided for students, few parked bicycles were observed during the walk audit. Recent, significant renovations include the construction of a new parking lot and driveway loop off of North Sunnyvale Avenue. In 2018, the City of Sunnyvale received an Active Transportation Program grant to fund SRTS improvements around Bishop Elementary. The work will be completed in 2020. Previous SRTS activities at Bishop have included Kindergarten, 2nd and 4th grade in-class walk and bike education, a Family Fun Bike Night, and a bike repair and helmet distribution event.

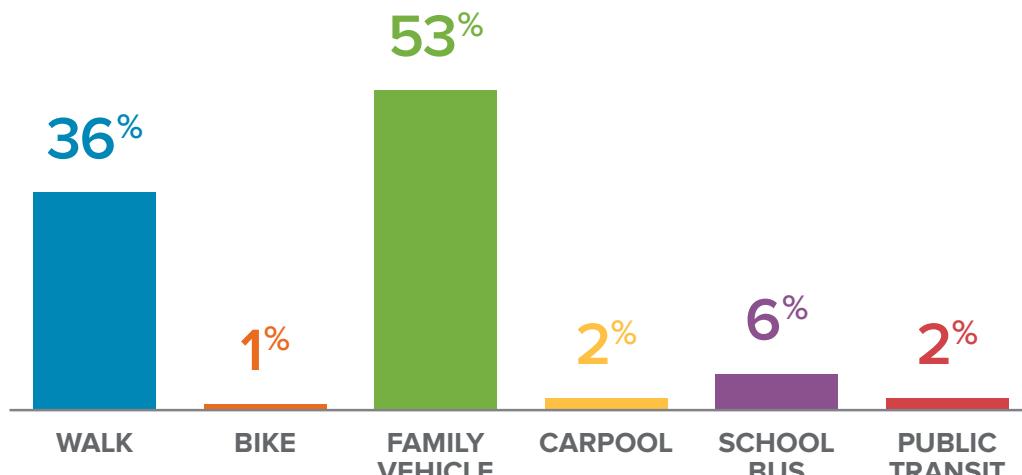
## SUMMARY OF EXISTING CONDITIONS

### E Maude Avenue Frontage

- A rolling drop-off/pick-up allows parents driving eastbound on E Maude Avenue to turn into the parking lot loop, drop-off or pick-up their student(s), and then turn right out of the loop to continue eastbound on E Maude Avenue.
- Parked vehicles east of the driveway exit blocked sight lines for parents exiting the parking lot loop.



## Bishop Elementary School Hand Tallies, Spring 2018



Hand tally data was collected for the following modes: walk, bicycle, family vehicle, carpool, school bus, public transit, and other (scooter, skateboard, etc.) Only values above 2% are listed above, with the exception of including bicycling regardless of value.

- Multiple students and parents were observed crossing E Maude Avenue mid-block; few people driving yielded to the people crossing.

### N. Sunnyvale Avenue / E. Maude Avenue

- This is a signalized T-intersection with a crossing guard during arrival and dismissal hours.
- A long queue of automobile traffic along E Maude Avenue was creating delays for VTA Bus Line 55 and prevented the bus from pulling up to the bus stop near this intersection. As a result, bus users had to cross through traffic to board the bus.
- All people driving yielded to people walking in the right-turn slip lanes at the intersection.

### N. Bayview Avenue / E. Maude Avenue

- This intersection is controlled by stop signs on the north and south approaches. There are in-road warning lights (IRWL) on the eastbound approach to the intersection and there is a crossing guard present during arrival and dismissal hours.

- People driving were perceived as speeding along the street, making incomplete stops at the intersection, and disregarding the crossing guard.
- During the audit 36 children crossed E Maude toward the school.

### N. Sunnyvale Avenue / Hazelton Avenue

- This is a minor street stop-controlled T-intersection with a speed feedback sign on the northeast corner.
- There is a dedicated school bus drop-off zone north of the intersection near the main school entrance.
- Large turning radii on the northeast and southeast corners of the intersection allow people driving to make fast turns.

### N. Bayview Avenue / Hazelton Avenue

- This is a minor street stop-controlled T-intersection.
- The northwest and southwest corners have large turning radii, allowing vehicles to make fast turns.

## Existing Conditions

- Crossing Guard Location
- Bike Parking
- Relocation of Existing "No Left Turn" Sign
- Speed Feedback Sign
- Bus Stop
- School Access Point
- School Circulation
- Class II Bicycle Lane
- Class IIB Buffered Bicycle Lane

## Recommendations

- Sidewalk Extensions & Gap Closure
- Raised Crosswalk
- High-Visibility Crosswalk
- Park & Walk Location
- Rectangular Rapid Flash Beacon (RRFB)
- R26S "No Stopping Any Time" Signage
- R1-5 "Yield to Pedestrians Here" Signage
- R25D "School Loading" Signage
- Curb Ramp
- Curb Extension
- Stop Bar
- Red Curb
- White Curb
- Lighting
- Directional Curb Ramps
- Class II Bicycle Lane
- Class IIB Buffered Bicycle Lane



The above items are recommendations only and based on Safe Routes to Schools site assessment best practices. Feasibility determination, final design, accessibility, funding, and implementation of any re-

# Safe Routes to Schools Improvement Plan

## Bishop Elementary School

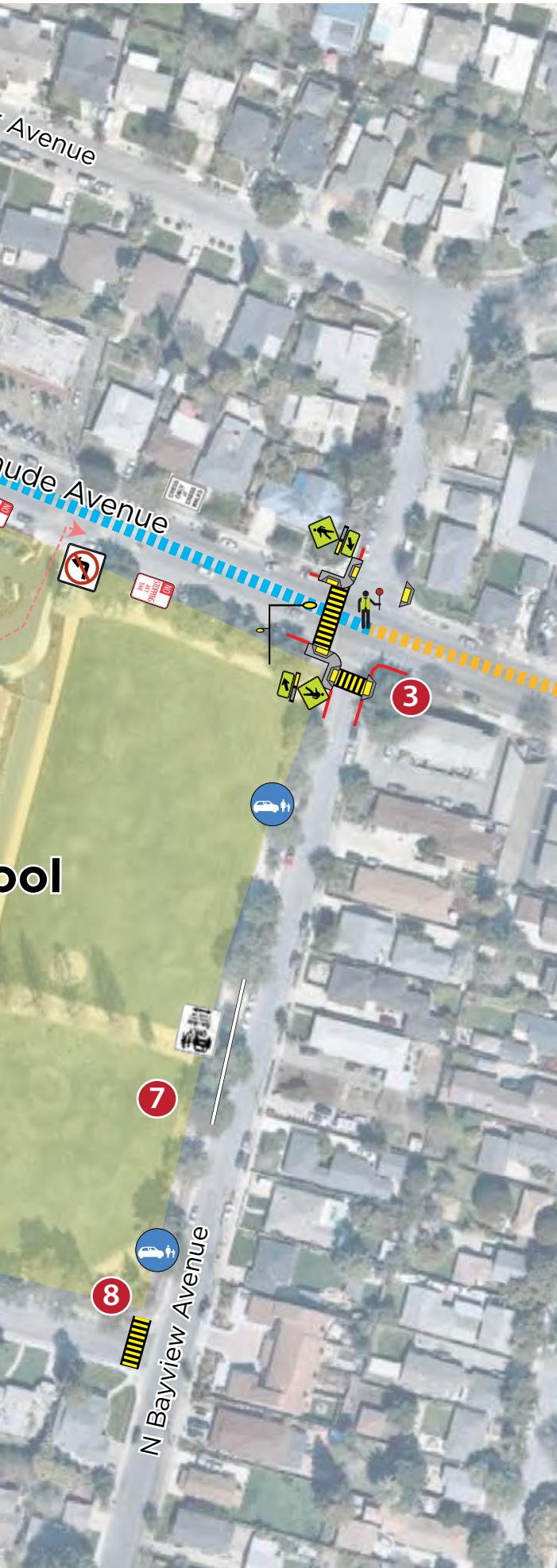
### Sunnyvale

School Audit held April 2019

- 1 E. Maude Avenue Frontage**
  - Install R26S "No Stopping Any Time" signs along south side of E. Maude Avenue between dedicated right turn lane and the drop-off zone entrance, between the drop-off zone entrance and exit, and after the drop-off zone exit. (Note: Currently under construction)
  - Remove parking on both sides of road and install Class IIB bicycle lanes.
  - Install R2-9 "Cross Only at Crosswalks" signage.
- 2 N. Sunnyvale Avenue/E. Maude Avenue**
  - Install red curb paint along southeast corner and sides of proposed curb extension on northeast corner of E Maude Avenue and N Sunnyvale Avenue.
  - Install advance stop markings on westbound approach consistent with Sunnyvale ATP: Safe Routes to School grant application.
  - Improvements consistent with current city project to close slip lanes on south side of intersection.
- 3 N. Bayview Avenue/E. Maude Avenue**
  - Upgrade both existing crosswalks to high visibility crosswalks.
  - Upgrade northwest and northeast curb ramps to be ADA-compliant.
  - Reconfigure southwest and southeast corners with directional curb ramps.
  - Upgrade existing flashing beacon sign to RRFB.
  - Install red curb paint on northwest and southwest corners of E. Maude Avenue and N. Bayview Avenue.
  - Install lighting on southwest corner.
- 4 N. Sunnyvale Avenue/Hazelton Avenue**
  - Upgrade both existing crosswalks to high visibility crosswalks.
  - Consider installing curb extensions on northwest and northeast corners of N. Sunnyvale Avenue and Hazelton Avenue.
  - Install advanced yield markings and install R1-5 "Yield to Pedestrians Here" signage on north and south approaches. Conduct a speed survey to evaluate traffic calming infrastructure.
  - Install pedestrian scale lighting on northeast corner.
- 5 Borregas Avenue/E. Maude Avenue**
  - Close slip lane onto Borregas Avenue, upgrade existing crosswalks to high visibility crosswalks, and install stop bars on all approaches consistent with the Active Transportation Program (ATP) SNAIL Neighborhood Connectivity Improvements grant application.
  - Install red curb paint on all corners of offset intersection.
- 6 N. Sunnyvale Avenue**
  - As part of the Active Transportation Program (ATP) SRTS grant funded project, removal of on-street parking will be evaluated to determine if they could be removed for installation of a Class II bike lane.
- 7 Bayview Avenue Frontage**
  - Install R25D "School Loading" signage and install white curb in front of school access point on Bayview Avenue.
- 8 Bayview Avenue/Hazelton Avenue**
  - Install high visibility crosswalk on west leg of intersection.
- 9 Bike Parking and Campus Access**
  - Consider promoting Park and Walk access on Bayview Avenue and Hazelton Avenue.



Improvements not to scale



# Braly Elementary School

675 Gail Ave.  
Sunnyvale, CA 94086

GRADES

**K-5**



SCHOOL TYPE

**NEIGHBORHOOD**



ENROLLMENT

**391**



**49%**



ENGLISH  
LANGUAGE  
LEARNERS

(190)

**25%**



FREE/  
REDUCED  
LUNCH

(98)

**Braly Elementary School** is located next to Braly Park in a residential neighborhood in central Sunnyvale. The school is close to Ponderosa Park and Ponderosa Elementary School, which are about a half-mile east of Braly Elementary. Previous SRTS activity at Braly Elementary has included Kindergarten and 2nd grade in-class walk and bike education and a Family Fun Bike Night.

WALK AUDIT

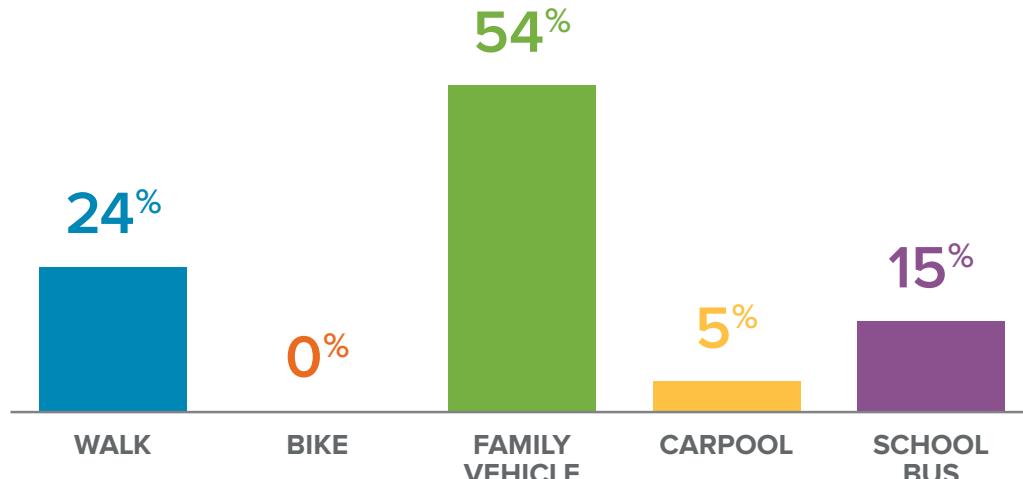
**TUESDAY, APRIL 30, 2019**

ARRIVAL

DISMISSAL



## Braly Elementary School Hand Tallies, Spring 2018



Hand tally data was collected for the following modes: walk, bicycle, family vehicle, carpool, school bus, public transit, and other (scooter, skateboard, etc.) Only values above 2% are listed above, with the exception of including bicycling regardless of value.

## SUMMARY OF EXISTING CONDITIONS

### Gail Avenue Frontage

- A crossing guard is present during arrival and dismissal hours.
- Street corners in the segment have large radii, which allow for fast vehicle turns.
- Red paint demarcating “No Parking” zones is faded.

### Gail Avenue / Iris Avenue

- Street corners at this intersection have large radii, which allow for fast vehicle turns.
- The crosswalks were highly trafficked, but people driving did not always make complete stops.

### Gail Avenue / Daffodil Court

- Street corners at this intersection have large radii, which allow for fast vehicle turns.
- Daffodil Court became congested during arrival and dismissal, with some parents double parking and unloading children on the street.

159

### Gail Avenue Segment (Old San Francisco Road to northeast side of Daffodil Court)

- Street corners at intersections along this corridor have large radii, which allow for fast vehicle turns.
- People were observed driving quickly along this segment of road to reach the traffic signal at Gail Avenue and Old San Francisco Road.

## Existing Conditions

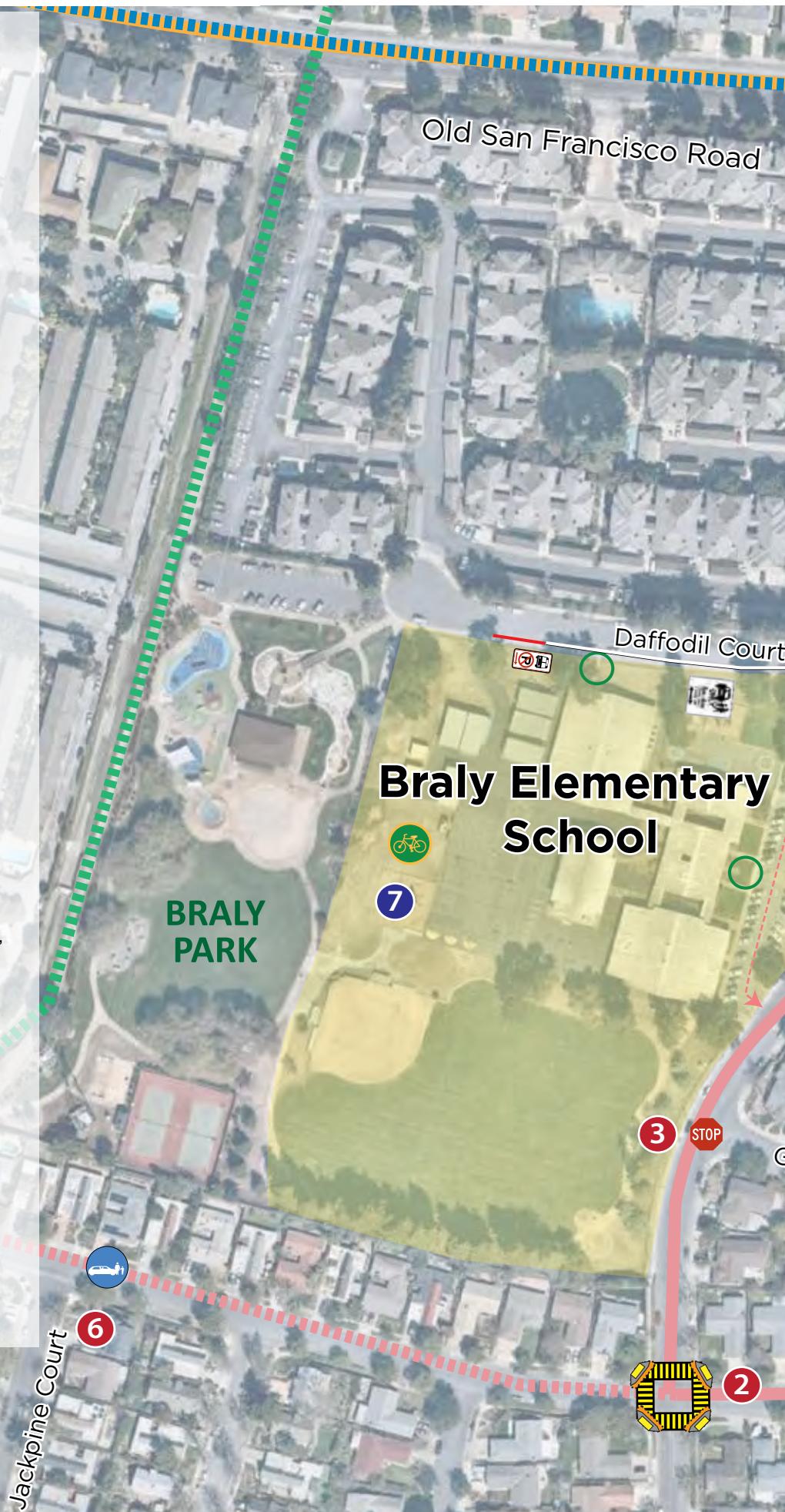
- Crossing Guard Location
- Speed Feedback Sign
- School Access Point
- School Circulation
- Class II Bicycle Lane
- Class III Bicycle Route

## Recommendations

- High-Visibility Crosswalk
- Curb Extension
- Directional Curb Ramps
- R25D "School Loading" Signage
- Bus Loading Zone Signage
- Advance Yield Markings
- School Assembly B or D Signage
- Red Curb
- White Curb
- Park & Walk Location
- R1-5 "Yield to Pedestrians Here" Signage
- Potential Bike Parking Location
- Crosswalk and Stop Sign Warrant Study
- Class I Shared-Use Path
- Class III Bicycle Route
- Class IV Separated Bikeway

## Implementing Agency

- City of Sunnyvale
- Santa Clara Unified School District

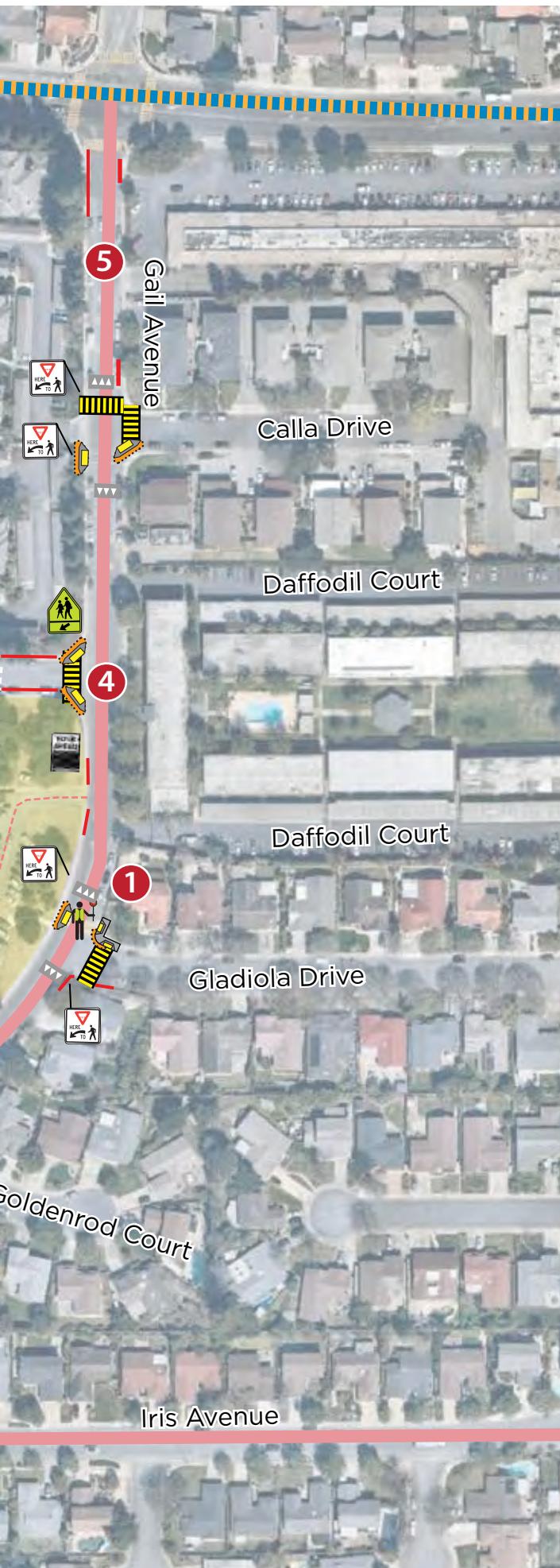


# Safe Routes to Schools Improvement Plan

## Braly Elementary School

### Sunnyvale

School Audit held April 2019



#### 1 Gail Avenue School Frontage

- Install high visibility crosswalk across Gladiola Drive.
- Install red paint on southeast corners.
- Install curb extensions and directional curb ramps on northwest and northeast corners of Gladiola Drive.
- Refresh or install red curb paint along northeast and southeast corners after installing curb extensions.
- Install advanced yield markings and install R1-5 "Yield to Pedestrians Here" signage at the north and south approach.

#### 2 Gail Avenue/Iris Avenue

- Upgrade all four existing crosswalks to high visibility crosswalks.
- Consider Installing a curb extension at all four corners.

#### 3 Gail Avenue/Goldenrod Court

- Perform crosswalk and stop warrant study crossing Goldenrod Court.

#### 4 Gail Avenue/Daffodil Court

- Install curb extensions on the northwest and southwest corners.
- Upgrade west leg crosswalk to high visibility crosswalk .
- Refresh and extend 20 feet of red curb paint on the north and south sides of Daffodil Court and Gail Avenue.
- Repaint existing 107 feet of white curb space red and install "Bus Loading Zone" signage.
- Paint southern curb white (about 300 feet) and install RD25 "School Loading" signage.
- Install R1-5 "Yield to Pedestrians Here" signage at the south approach.

#### 5 Gail Avenue Segment

- Install high visibility crosswalk across the northern leg of the Calla Drive intersection and upgrade eastern crosswalk to high visibility.
- Install curb extensions at southeast and southwest corners.
- Refresh the red curb paint along the northwest corner of Gail Avenue and Calla Drive.
- Refresh red curb paint along the west and east sides of the road south of Gail Avenue and Old San Francisco Road.
- Install advanced yield markings and install R1-5 "Yield to Pedestrians Here" signage at the north and south approach.

#### 6 Jackpine Court /Iris Avenue

- Consider Park and Walk location to decrease the use of both Daffodil Court and drop-off zone.
- Consider a new school entrance point from the east side of Braly Park to increase access to Braly Elementary School.

#### 7 Braly Elementary Campus

- Consider installing new gated secure bike parking with cover for students and teachers.

0 200 ft  
Improvements not to scale



# Cherry Chase Elementary School

1138 Heatherstone Way  
Sunnyvale, CA 94087

GRADES

**K-5**



SCHOOL TYPE

**NEIGHBORHOOD**



ENROLLMENT

**835**



**18%**



ENGLISH  
LANGUAGE  
LEARNERS

(152)

**4%**



FREE/  
REDUCED  
LUNCH

(34)

WALK AUDIT

**MONDAY, MAY 6, 2019**

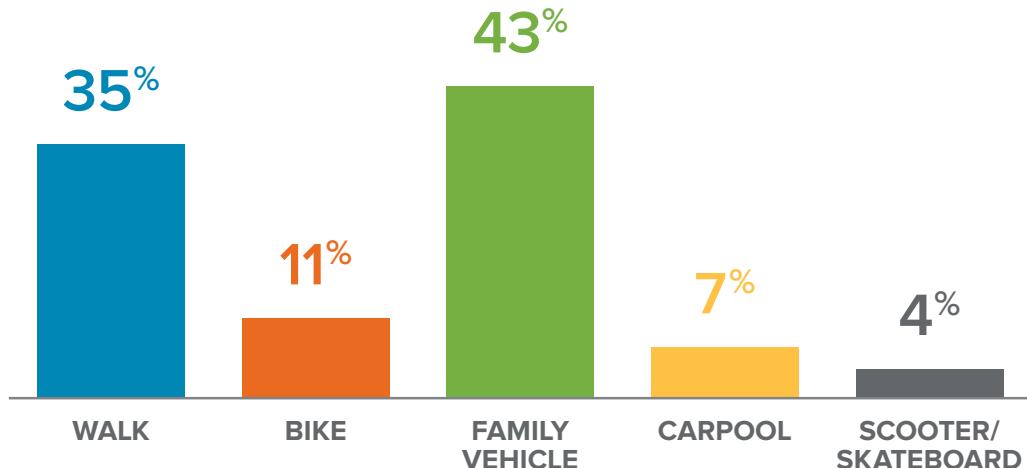
**ARRIVAL**

**DISMISSAL**

**Cherry Chase Elementary School** is located in a residential neighborhood on the west side of Sunnyvale. The school posts the preferred arrival and dismissal procedures on its website. In addition to the school rules for parking, arrival, and dismissal, the website also provides tips for avoiding common traffic violations and how to properly wear a helmet. Cherry Chase Elementary provides secure bicycle parking for up to 140 bicycles. Previous SRTS activity at Cherry Chase Elementary has included a bike rodeo, and Kindergarten, 2nd and 4th grade in-class walk and bike education.



## Cherry Chase Elementary School Hand Tallies, Spring 2018



Hand tally data was collected for the following modes: walk, bicycle, family vehicle, carpool, school bus, public transit, and other (scooter, skateboard, etc.) Only values above 2% are listed above, with the exception of including bicycling regardless of value.

## SUMMARY OF EXISTING CONDITIONS

### S. Bernardo Avenue / Heatherstone Way

- This is a signalized intersection with the majority of people observed walking north and south.
- The street corners at this intersection have large radii, which allow for fast vehicle turns.

### Heatherstone Way School Frontage

- There is a driveway loop that was seen used by 67 parent drivers during the walk audit.
- Congestion and U-turns result in blocked crosswalks and blocked staff parking.

### Grape Avenue / Heatherstone Way

- This is a four-way stop-controlled intersection with a crossing guard present during arrival and dismissal hours.
- The street corners at this intersection have large radii, which allow for fast vehicle turns.

- Parents were seen parking at the northeast corner, or double parking south of the intersection, in order to walk students to school.

### Grape Avenue / Hudson Way

- This is a yield-controlled T-intersection that is skewed, resulting in long crosswalks and large radii.
- There is a crossing guard present during arrival and dismissal hours, however, some drivers ignored the crossing guard and drove through the intersection when students were crossing.

## Existing Conditions

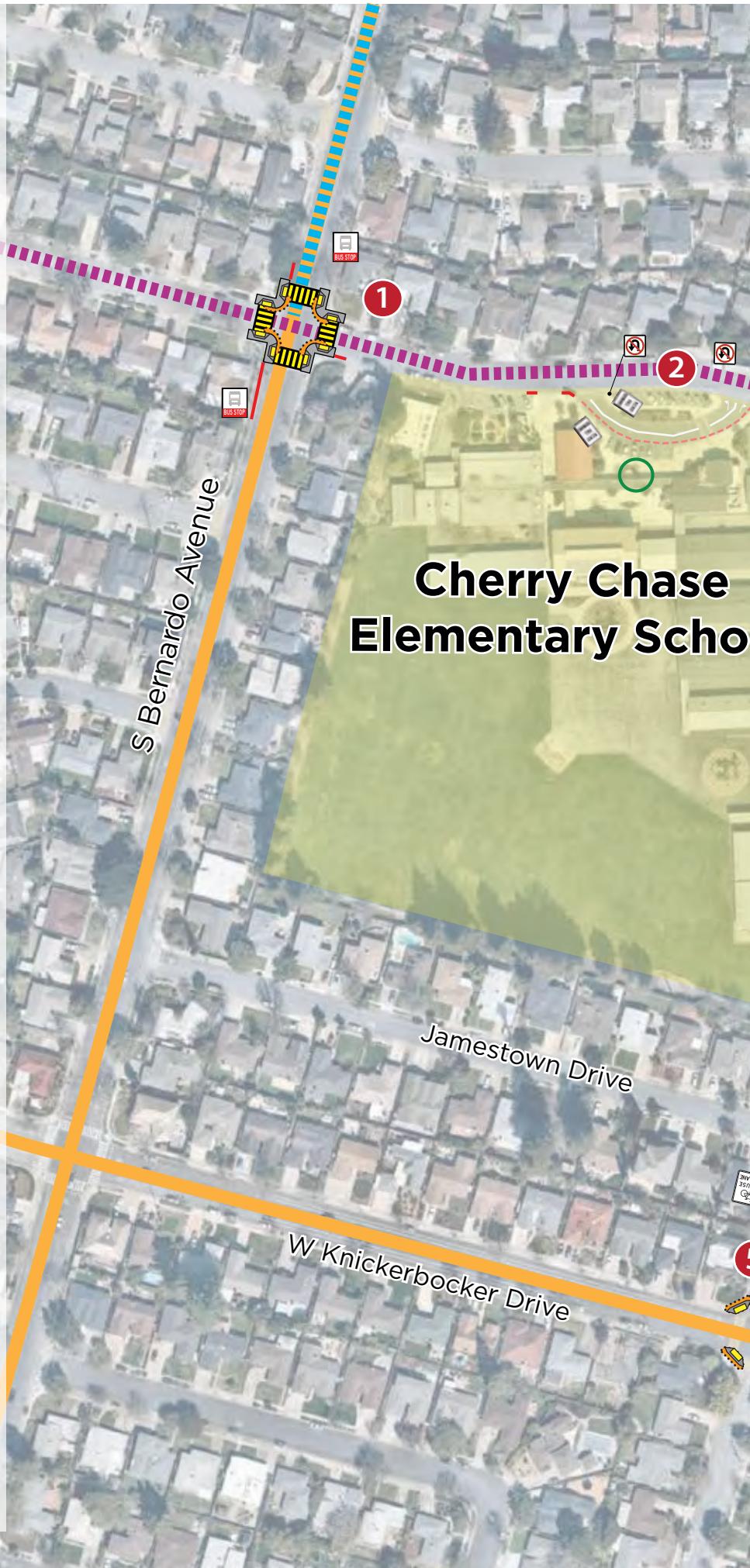
- Crossing Guard Location
- School Access Point
- School Circulation
- Bus Stop
- Bike Parking
- Class II Bicycle Lane

## Recommendations

- High-Visibility Crosswalk
- Directional Curb Ramps
- Curb Extension
- R1-5 "Yield to Pedestrians Here" Signage
- R3-4 "No U-Turn" Sign
- Curb Ramp
- "Please Pull Forward" Signage
- R25D "School Loading" Signage
- Red Curb
- White Curb
- R61-19 "Double Lane Control Right & Left Turn" Signage
- White Right & Left Turn Pavement Marking
- R4-11 "Bikes May Use Full Lane" Signage
- Stop Sign Warrant Study
- R26A "No Parking Any Time" Signage
- Class IIIB Bicycle Boulevard
- Class IIB Buffered Bicycle Lane

## Implementing Agency

- City of Sunnyvale
- Sunnyvale School District



# Cherry Chase Elementary School

# Safe Routes to Schools Improvement Plan

## Cherry Chase Elementary School

### Sunnyvale

School Audit held May 2019

#### 1 S Bernardo Avenue/Heatherstone Way

- Upgrade all four existing crosswalks to high visibility crosswalks.
- Consider installing curb extensions on all four corners and construct with directional curb ramps.
- Consider installing 20 feet of red curb paint on northwest corner along S Bernardo Avenue and southeast corner along Heatherstone Way.
- Consider installing 70 feet of red curb paint along southbound VTA bus stop off of S Bernardo Avenue and Heatherstone Way.

#### 2 Heatherstone Way Frontage

- Consider installing 10 feet of red curb on left and right corners of driveway before drop-off/pick-up loop.
- Stripe white in the middle of the drop-off to delineate traffic flow.
- Consider installing white left and right turn pavement arrows at end of school drop-off zone.
- Consider installing R3-4 "No U-Turn" signage on Heatherstone Way for both east and westbound traffic.
- Install "Please Pull Forward" signage near entrance of school drop-off zone on both sides on the sidewalk.
- Install R61-19 "Double Lane Control Right and Left Turn" signage at end of school drop-off zone.
- Install double yellow centerline striping along Heatherstone Way.

#### 3 Grape Avenue/Heatherstone Way

- Upgrade existing crosswalk to high visibility crosswalks.
- Install curb extensions at all four corners.
- Consider installing and or refreshing 20 feet of red curb paint on all corners.

#### 4 Grape Avenue/Hudson Way

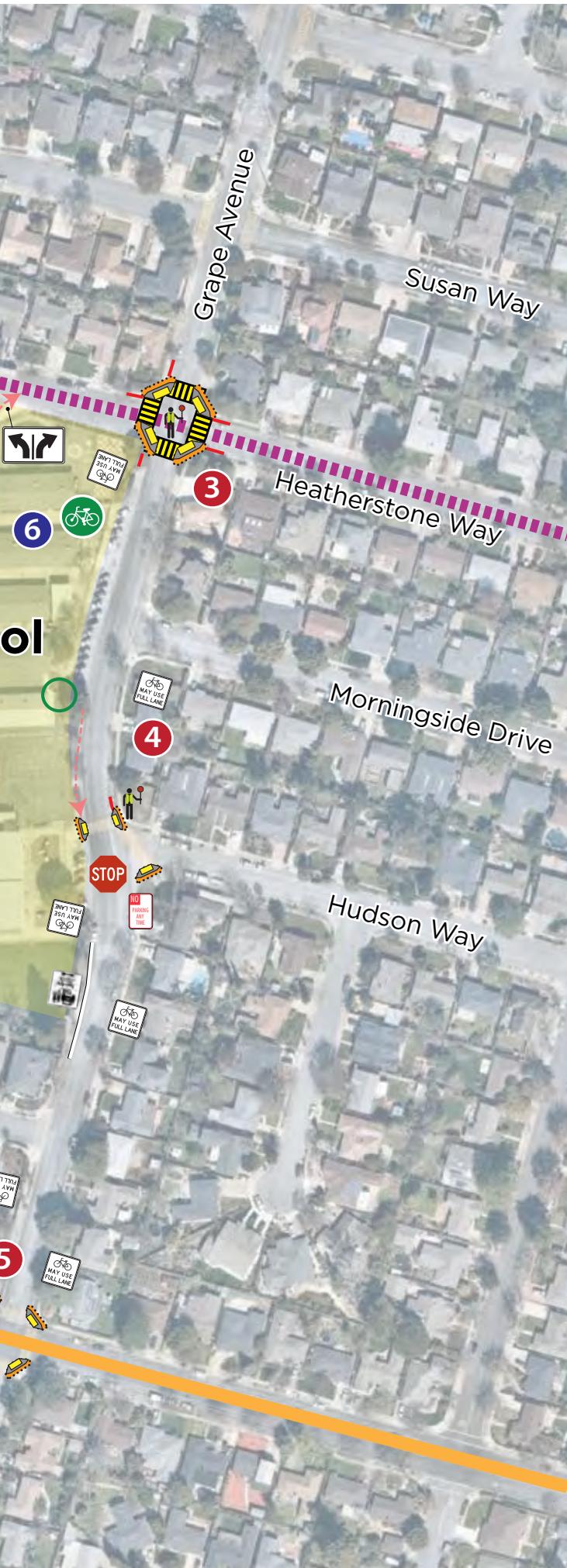
- Install "Bikes May Use Full Lane" signage on Grape Avenue between Heatherstone Way and W Knickerbocker Drive.
- Install curb extensions on northeast, northwest, and southeast corners of the intersection.
- Install red curb paint northeast of proposed post curb extension of Hudson Way.
- Conduct a stop sign warrant study to evaluate the addition of a stop sign at intersection.
- Consider installing 160 feet of white curb along Grape Avenue between Hudson Way and Jamestown Drive. Add on RD25 "School Loading" signage along sidewalk.
- Install R26A "No Parking At Any Time" signage south of southeast corner of intersection.

#### 5 Grape Avenue/West Knickerbocker Drive

- Install curb extensions at all four corners.

#### 6 Bike Parking

- Consider securing existing bike parking for students and teachers.



0 200 ft



Improvements not to scale

recommended improvements is the responsibility of the appropriate governing agency.



# Columbia Middle School

739 Morse Ave.  
Sunnyvale, CA 94085

GRADES

**6-8**



SCHOOL TYPE

**NEIGHBORHOOD**



ENROLLMENT

**790**



**28%**



ENGLISH  
LANGUAGE  
LEARNERS

(223)

**57%**



FREE/  
REDUCED  
LUNCH

(450)

WALK AUDIT

**MONDAY, MAY 20, 2019**

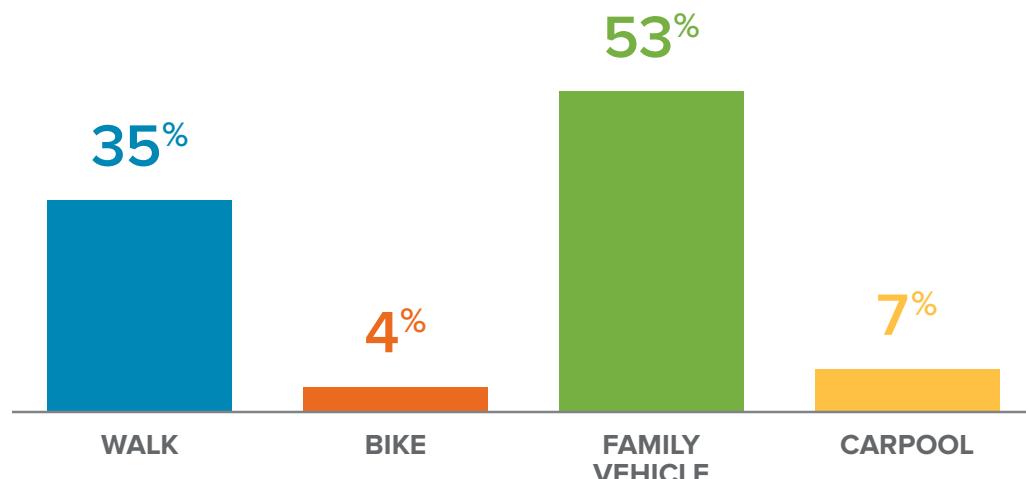
ARRIVAL

DISMISSAL

**Columbia Middle School** is located in a residential area in the northern section of the city. The school offers bicycle parking inside the school; about 25 bicycles were parked on the day of the walk audit. There is also bicycle parking outside the school next to the Columbia Neighborhood Center, which provides recreational, health, educational and social services programs for low income Sunnyvale residents.



## Columbia Middle School Hand Tallies, Spring 2018



Hand tally data was collected for the following modes: walk, bicycle, family vehicle, carpool, school bus, public transit, and other (scooter, skateboard, etc.) Only values above 2% are listed above, with the exception of including bicycling regardless of value.

## SUMMARY OF EXISTING CONDITIONS

### Morse Avenue Frontage

- There are two one-way driveway loops along Morse Avenue.
- There is white curb for unloading/loading passengers along part of the road, and some sections of red curb indicating no parking near entrances and exits.

### Morse Avenue / Glendale Avenue

- This is a T-intersection with two yellow high-visibility crosswalks.
- There is a crossing guard present during arrival and dismissal hours, yet at least one person driving failed to yield to the crossing guard while children were present.
- The street corners at this intersection have large radii, which allow for fast vehicle turns.

### Morse Avenue / E. Ferndale Avenue

- This is a T-intersection with one yellow crosswalk.
- There is a crossing guard present during arrival and dismissal hours, yet at least three people driving failed to yield to the crossing guard while children were present.
- The street corners at this intersection have large radii, which allow for fast vehicle turns.

167

### San Diego Avenue / Del Norte Avenue

- This is a T-intersection adjacent to an access point into the school.
- Approximately 30 students were observed running across San Diego Ave. from the school access point without looking to see if moving vehicles were present.



## Columbian Middle School

The above items are recommendations only and based on Safe Routes to Schools site assessment best practices. Feasibility determination, final design, accessibility, funding, and implementation of any recommendations are the responsibility of the City of Sunnyvale.

# Safe Routes to Schools Improvement Plan

## Columbia Middle School

### Sunnyvale

School Audit held May 2019

1

#### Morse Avenue/Glendale Avenue

- Install directional curb ramps and curb extensions on northwest, northeast, and southeast corners of Morse Avenue and Glendale Avenue.
- Consider adding and or refreshing red curb paint along each school driveway entrance.

2

#### Morse Avenue/E Ferndale Avenue

- Install curb extensions and directional curb ramps on northwest, northeast, and southeast corners of Morse Avenue and E Ferndale Avenue.
- Install a raised crosswalk across the north leg of the intersection.
- Install high visibility crosswalk across the east leg.
- Install advance yield marking around Morse Avenue crosswalk.
- Consider adding 20 feet of red curb paint next to each end of proposed curb extension. Refresh red curb paint along northeast corner of Morse Avenue and E Ferndale Avenue.
- Install Speed Feedback Sign north of intersection facing northbound traffic consistent with Sunnyvale ATP: SNAIL Neighborhood grant application.

3

#### San Diego Avenue/Del Norte Avenue

- Install curb ramp on the northwest corner facing Del Norte Avenue.
- Install high visibility crosswalk across San Diego Avenue on the south leg. Curb ramp existing along the east side of San Diego Avenue can connect the north leg with proposed curb ramp.
- Install directional curb ramps and curb extension on southwest corner. Install curb extension on southeast corner.
- Install red curb on each side of southeast curb extension.
- Long Term: Move southeast curb north to be in line with southwest curb corner of Del Norte Avenue and San Diego Avenue.

4

#### Columbia Park and Parking Lot

- Consider making northeast gate to Alturas Avenue ADA accessible.



0 200 ft  
Improvements not to scale



# Cumberland Elementary School

824 Cumberland Ave.  
Sunnyvale, CA 94087

GRADES

**K-5**



SCHOOL TYPE

**NEIGHBORHOOD**



ENROLLMENT

**806**



**19%**



ENGLISH  
LANGUAGE  
LEARNERS

(156)

**5%**



FREE/  
REDUCED  
LUNCH

(42)

WALK AUDIT

**TUESDAY, APRIL 30, 2019**

ARRIVAL

DISMISSAL

Due to enrollment over the school's capacity, arrival and dismissal times are very busy at **Cumberland Elementary School**. Dismissal is slightly less hectic, as the school provides multiple after school programs that stagger pick-up. The school provides bicycle parking at multiple locations and it is often highly used. A bike rodeo, including a helmet fitting and distribution event, in May 2019 provided helmets to 27 students.

## SUMMARY OF EXISTING CONDITIONS

### Cumberland Drive School Frontage

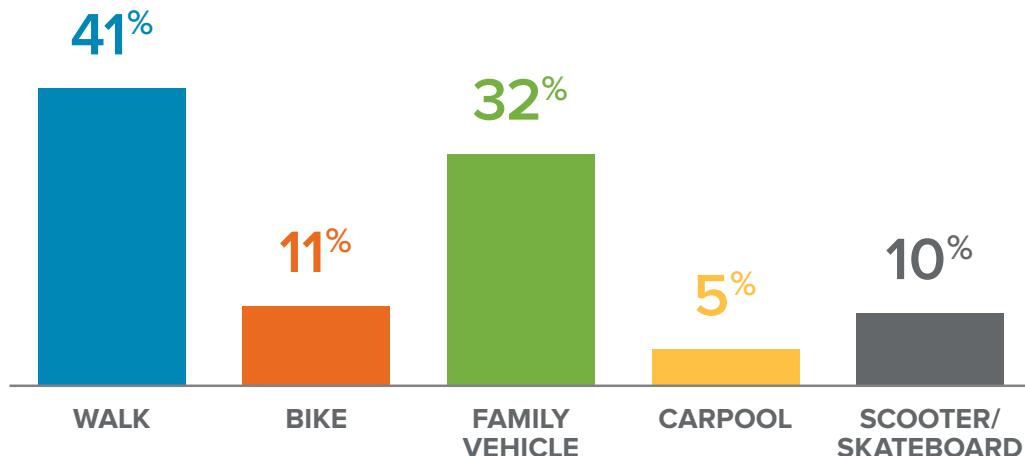
- There is a driveway loop for arrival and dismissal. Loading and unloading is allowed along the entire frontage, but parking is prohibited.
- Congestion from parents driving into or waiting to drive into the loop resulted in multiple undesired behaviors during the walk audit, including cutting off other people driving, driving on the wrong side of the road to pass the queue, and parking in “No Parking” zones.

### Quetta Avenue / Cumberland Drive

- Over 80 people were observed walking across Cumberland Drive at this intersection on the day of the walk audit.
- Parked cars along both roads and people waiting in vehicles to turn onto Cumberland Drive obstruct visibility for people on foot.



## Cumberland Elementary School Hand Tallies, Spring 2018



Hand tally data was collected for the following modes: walk, bicycle, family vehicle, carpool, school bus, public transit, and other (scooter, skateboard, etc.) Only values above 2% are listed above, with the exception of including bicycling regardless of value.

### Quetta Avenue / Danforth Drive

- This is a three-way stop-controlled intersection with crosswalks across all approaches and a crossing guard stationed during arrival and dismissal hours.
- During the walk audit, over 230 people walked and over 50 people bicycled across the intersection.
- There is a bus stop and a passenger loading zone to the south of the intersection along Quetta Avenue.

### Piper Avenue / Cumberland Avenue

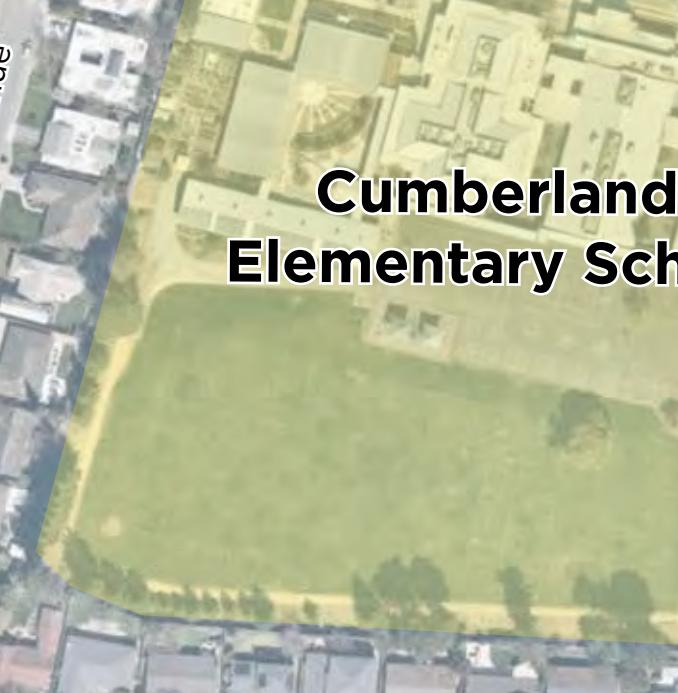
- This intersection connects a pedestrian walkway from the neighborhood to the school.
- Over 80 people were observed walking across the intersection during the walk audit.

### El Camino Real / Hollenbeck Avenue / S. Pastoria Avenue

- El Camino Real is a six-lane road that students cross on foot and on bicycle to access the school.
- Walk audit participants reported that people driving do not always yield to people crossing on foot and bicycle.

### Harvard Avenue / Hollenbeck Avenue

- This is a four-way intersection that is stop-controlled on Harvard Avenue with an existing pedestrian-actuated flashing beacon above the school crossing sign next to the crosswalk across Hollenbeck Avenue.
- Past audits noted high vehicle speeds along Hollenbeck Avenue.



### Existing Conditions

- School Access Point
- BUS STOP Bus Stop
- Class II Bicycle Lane

### Recommendations

- |   |                        |   |                             |                                       |                                       |
|---|------------------------|---|-----------------------------|---------------------------------------|---------------------------------------|
| <span style="color: orange;">● ● ●</span> | Temporary Cones        | <span style="color: yellow;">     </span> | High-Visibility Crosswalk   | <span style="color: green;">○</span>  | School Assembly D Signage             |
| <span style="color: grey;">↑</span>       | Directional Curb Ramps | <span style="color: yellow;">—</span>     | Double Yellow Centerline    | <span style="color: green;">○</span>  | Rectangular Rapid Flash Beacon (RRFB) |
| <span style="color: orange;">↑</span>     | Curb Extension         | <span style="color: black;">○</span>      | Leading Pedestrian Interval | <span style="color: orange;">—</span> | Class II Bicycle Lane                 |
| <span style="color: red;">—</span>        | Red Curb               | <span style="color: white;">     </span>  | White Continental Crosswalk | <span style="color: purple;">—</span> | Class IIIB Bicycle Boulevard          |
| <span style="color: grey;">▼▼▼</span>     | Advance Yield Markings | <span style="color: red;">🚫 ↩</span>      | "No Left Turn" Signage      | <span style="color: blue;">—</span>   | Class IV Separated Bikeway            |

# Safe Routes to Schools Improvement Plan

## Cumberland Elementary School

### Sunnyvale

School Audit held April 2019

#### 1 Cumberland Drive (School Frontage)

- During pickup/drop off times, place temporary cones at entrance and exit of school loop to disallow left turns into and out of loop.

#### 2 Cumberland Drive (School Frontage)

- Install double yellow centerline.
- Install "No Left Turn" signage on westbound on Cumberland into school drop off loop.
- Work with school to standardize signage.

#### 3 Cumberland Drive/Quetta Avenue

- Install a curb extension on northwest and southwest corners of intersection.

#### 4 Quetta Avenue/Danforth Drive

- Upgrade all three transverse crosswalks to high visibility crosswalks.
- Install curb extensions on northeast and southeast corners of intersection.

#### 5 Piper Avenue/Cumberland Avenue

- Upgrade transverse crosswalk to high visibility crosswalk.
- Install and RRFB.
- Install advance yield markings.

#### 6 Danforth Drive/Hollenbeck Avenue

- Install curb extensions on northwest, northeast, and southeast corners of intersection.
- Install high visibility crosswalks on all legs of intersection.

#### 7 Quetta Avenue/Harvard Avenue

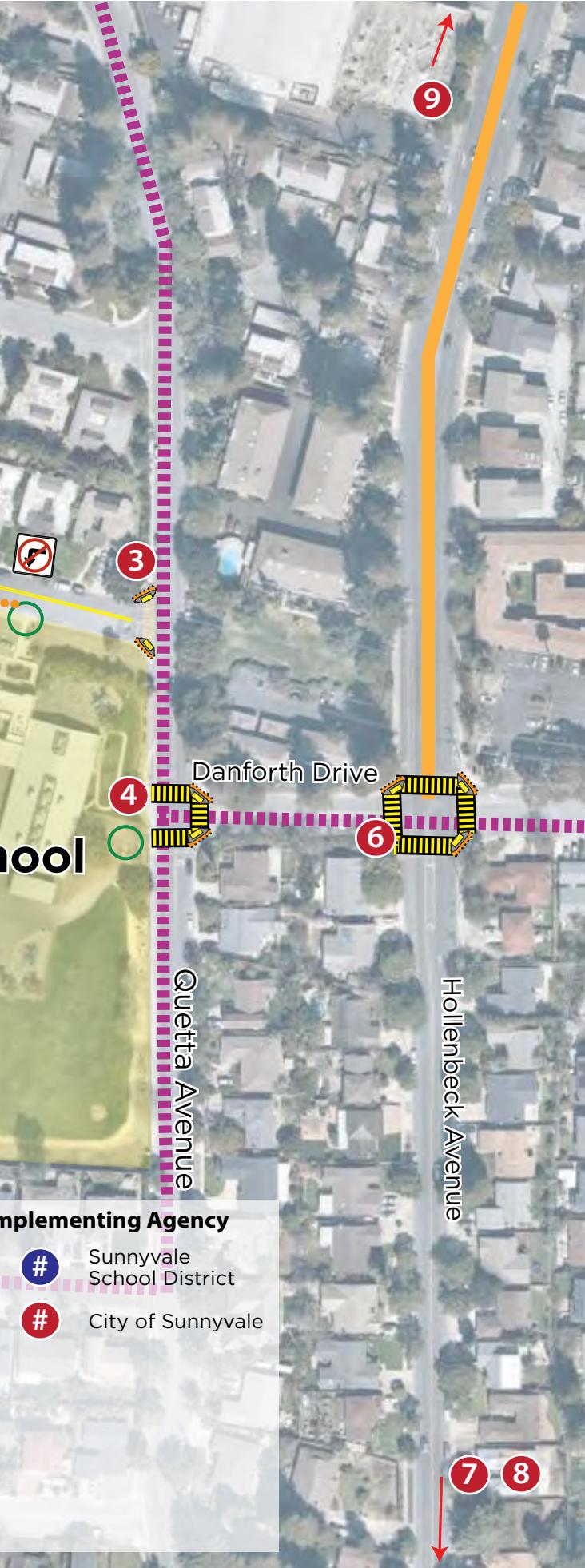
- Install curb extensions and directional ramps on all corners of intersection.
- Add double yellow center line striping on south leg of intersection.
- Install white continental crosswalks on east and west legs of intersection.

#### 8 Hollenbeck Avenue/Harvard Avenue

- Upgrade north leg crosswalk to a white continental crosswalk.
- Install advance yield markings on south and north legs.
- Install an Assembly D sign on south leg for northbound traffic.

#### 9 Hollenbeck Avenue/El Camino Real/S. Pastoria Avenue

- Upgrade east leg and west leg crosswalks to white continental crosswalks.
- Reduce corner radii and install directional curb ramps.
- Install Leading Pedestrian Intervals.



#### Implementing Agency



Sunnyvale  
School District



City of Sunnyvale

0 200 ft N  
Improvements not to scale



# Cupertino Middle School

1650 S. Bernardo Ave.  
Sunnyvale, CA 94087

GRADES

**6-8**



SCHOOL TYPE

**NEIGHBORHOOD**



ENROLLMENT

**1,358**



**8%**



ENGLISH  
LANGUAGE  
LEARNERS

(114)

**9%**



FREE/  
REDUCED  
LUNCH

(118)

WALK AUDIT

**THURSDAY, MAY 23, 2019**

ARRIVAL

DISMISSAL

**Cupertino Middle School** is located on the south side of Sunnyvale just north of Homestead Road. The school does not allow parents to enter the parking lots during arrival and dismissal, so the majority of students arriving or leaving by car are picked up or dropped off on Bernardo Avenue and Helena Drive. The school provides secure bicycle parking both north and southwest of the school.

### SUMMARY OF EXISTING CONDITIONS

#### Bernardo Avenue / The Dalles Avenue

- There are two standard white crosswalks connecting to a crossing over Highway 85.
- There is a crossing guard stationed during arrival and dismissal hours.

#### Bernardo Avenue / Helena Drive

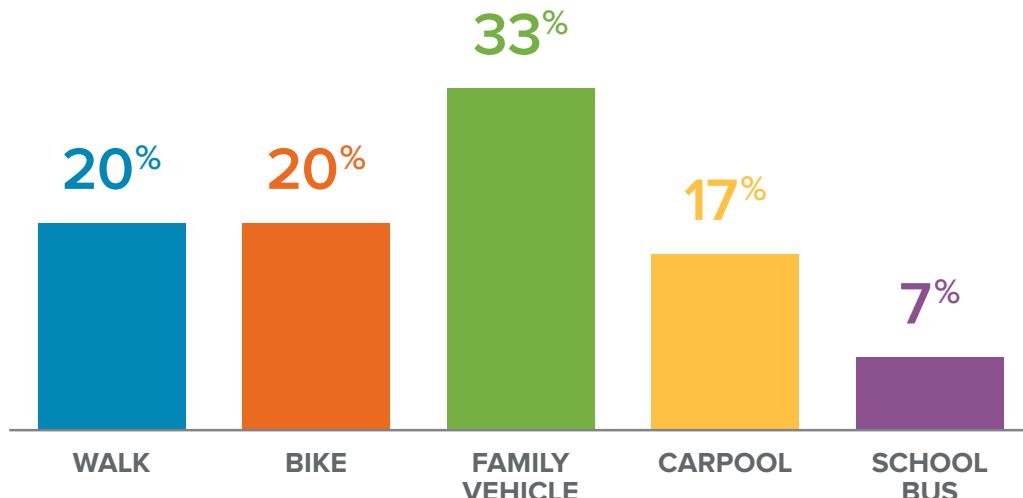
- This is a T-intersection and is stop-controlled from Helena Drive.
- People driving were observed not coming to a complete stop and rolling through the yellow transverse crosswalk.

#### Coronach Avenue / Helena Drive

- This is a T-intersection and there is no traffic control at any approach.
- There is a crossing guard stationed during arrival and dismissal hours.



## Cupertino Middle School Hand Tallies, Spring 2018



Hand tally data was collected for the following modes: walk, bicycle, family vehicle, carpool, school bus, public transit, and other (scooter, skateboard, etc.) Only values above 2% are listed above, with the exception of including bicycling regardless of value.

### Wright Avenue / Helena Drive

- This is a four-way stop-controlled intersection with transverse yellow crosswalks across all approaches.
- There is a crossing guard present during arrival and dismissal hours.
- The street corners at this intersection have large radii, which allow for fast vehicle turns.

### Bus Loop / Northern Parking Lot

- The sidewalk along the frontage is narrow and/or missing.

### Bernardo Avenue between Northern Parking Lot and Southern Parking Lot

- The sidewalk is narrow on the west side of Bernardo Avenue.
- There is a high volume of people walking and bicycling along this section of Bernardo Avenue.

### Gas Station Area

- There is a shared-use path behind the gas station but no curb ramps to access it by bicycle.
- Some parents wait at the gas station in vehicles to pick-up students.

### Bernardo Avenue / Homestead Road

- This is a four-way signalized intersection with transverse crosswalks across the northern, eastern and southern approaches.
- Many students ride bicycles into the school using the back entrance gate approximately 250 feet east of the intersection.

## Existing Conditions

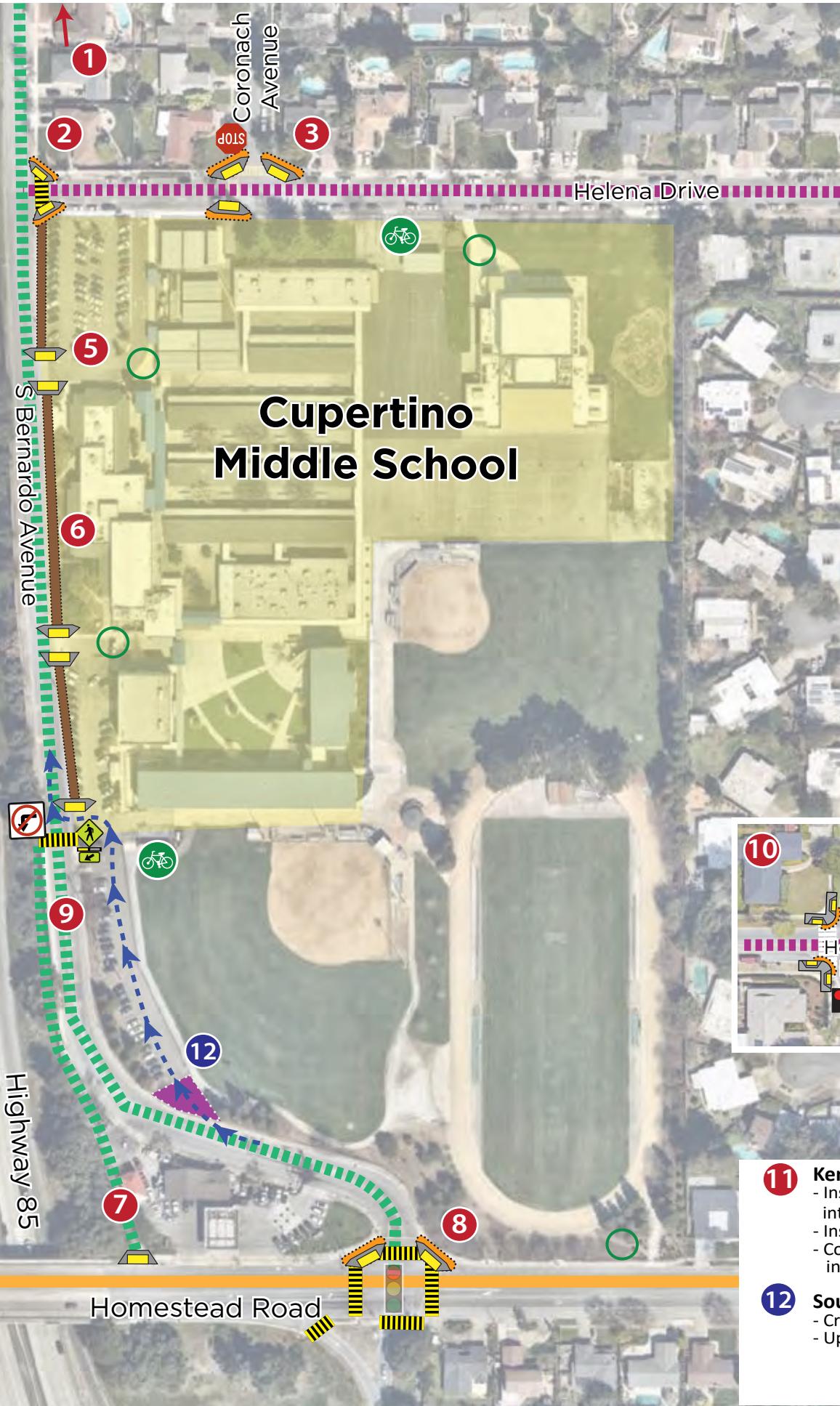
- Crossing Guard Location
- School Access Point
- Bike Parking
- Class II Bike Lane

## Recommendations

- High-Visibility Crosswalk
- Stop Sign Warrant Study
- Curb Ramp
- "No Left Turn" Signage
- Crossing Guard Location
- HAWK Beacon
- Curb Extension
- Sidewalk
- Driveway
- Traffic Signal Change
- Rectangular Rapid Flash Beacon (RRFB)
- Class I Shared-Use Path
- Class III Bicycle Route
- Class IIIB Bicycle Boulevard
- Directional Curb Ramps
- White Continental Crosswalk
- Proposed Circulation

## Implementing Agency

- Cupertino Union School District
- City of Sunnyvale



# Safe Routes to Schools Improvement Plan

## Cupertino Middle School

### Sunnyvale

School Audit held May 2019

1

#### Bernardo Avenue/The Dalles Avenue (see inset)

- Upgrade existing crosswalks to high-visibility.
- Install curb ramp at end of the cul-de-sac on west side of pedestrian bridge.
- Install curb extensions on northeast and southeast corners of intersection to reduce turning radii.

2

#### Bernardo Avenue/Helena Drive

- Upgrade crosswalk to high visibility.
- Install curb extensions on northeast and southeast corners of intersection.

3

#### Coronach Avenue/Helena Drive

- Conduct stop sign warrant study.
- Install curb extensions on both legs of crosswalk across Helena Drive.

4

#### Wright Avenue/Helena Drive

- Upgrade crosswalks to high visibility.
- Install curb extensions and directional curb ramps on all corners.
- Consider a second crossing guard.

5

#### Bus Loop/Northern Parking Lot

- Install curb ramps across the driveway with new sidewalks. (see also Recommendation 6)

6

#### Bernardo Avenue between Northern Parking Lot and Southern Parking Lot/Crosswalk

- Upgrade crosswalk to high visibility.
- Widen sidewalk along school frontage.
- Install curb ramps across the driveway with new sidewalks.

7

#### Gas Station Area

- Install bike ramp from roadways to allow for bicycle access to shared-use path west of gas station.

8

#### Bernardo Avenue/Homestead Road

- Upgrade crosswalks to yellow high-visibility crosswalks.
- Install curb extensions to square up northern corners.
- Update signal timing to allow for more frequent left turns from Bernardo Avenue onto Homestead Road.

9

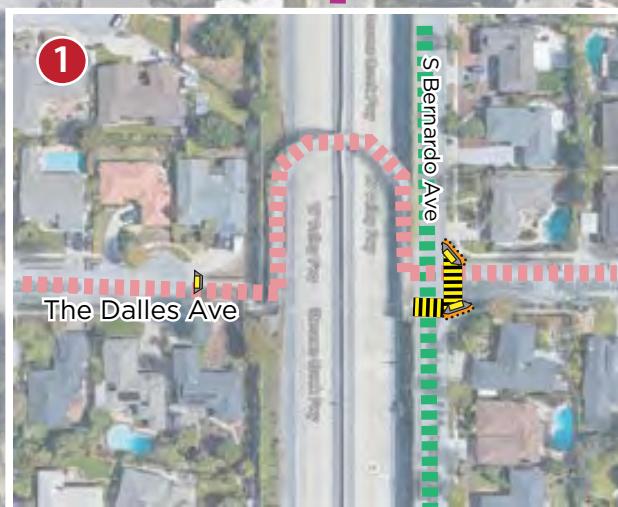
#### Bernardo Avenue

- Remove parking on east side of Bernardo Avenue.
- Install "No Left Turn" Sign at exit to school's southern driveway.
- Install high visibility crosswalk and RRFB to south of entrance to school's southern driveway.

10

#### Mary Avenue/Helena Drive

- Install curb extensions and directional curb ramps on all corners.
- Upgrade existing RRFB to a HAWK Beacon.
- Upgrade existing crosswalks to white continental.



#### Kennewick Drive/Helena Drive1

Install curb extensions and directional curb ramps on all corners of intersection.

Install white continental crosswalks on all legs of intersection.

Conduct stop sign warrant study. If stop sign is not warranted, install an RRFB.

#### Southern Drop-Off Loop

Create parking lot access at southern end of southern parking lot upgrade parking lot to parking lot and drop off/pick up loop.

- Loop should be right-in/right-out only.
- New driveway access should be one-way-in only.



Improvements not to scale



Sunnyvale

## INDIVIDUAL SCHOOL SUMMARIES AND IMPROVEMENT PLANS

# Ellis Elementary School

550 E. Olive Ave.  
Sunnyvale, CA 94086

GRADES

**TK-5**



SCHOOL TYPE

**NEIGHBORHOOD**



ENROLLMENT

**787**



**49%**



ENGLISH  
LANGUAGE  
LEARNERS

(385)

**26%**



FREE/  
REDUCED  
LUNCH

(207)

WALK AUDIT

**THURSDAY, MAY 2, 2019**

**ARRIVAL**

**DISMISSAL**

**Ellis Elementary School** is located in a residential neighborhood in Sunnyvale one block north of Old San Francisco Road. Many students arrive at campus in private vehicles, but many students were also observed walking and biking to school. There are multiple drop-off locations for students arriving by car and by bus. Previous SRTS activity at Ellis Elementary includes Kindergarten in-class education and multiple bike rodeos.

### SUMMARY OF EXISTING CONDITIONS

#### S. Fair Oaks Avenue / E. Olive Avenue

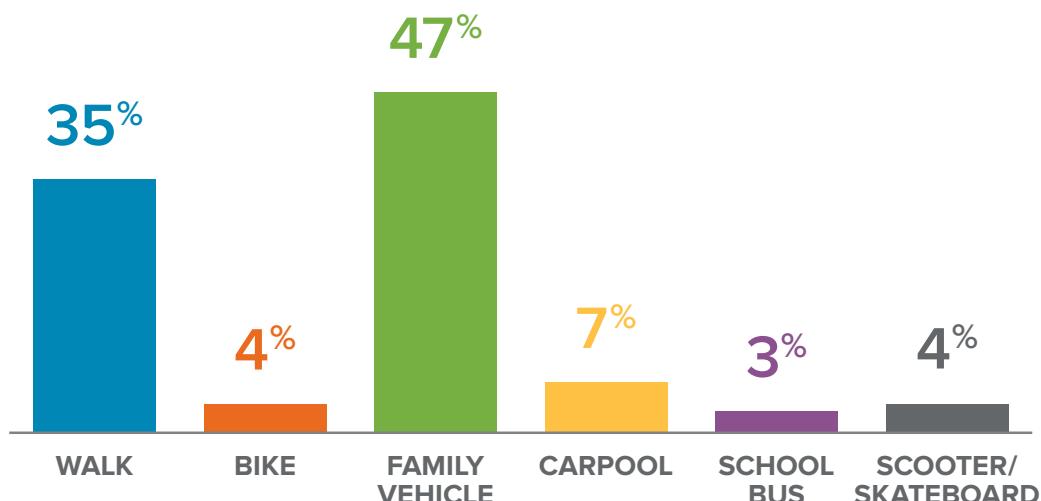
- This is a signalized intersection with a crossing guard stationed during arrival and dismissal hours. It is the preferred intersection used by parents and guardians walking with kindergarten students due to its proximity to the kindergarten classroom. However, it is also used by students from other grade levels.
- One drop-off lane is very close to this intersection, which was noted to cause back-ups and visibility issues as cars exited the drop-off lane.
- Most of the car movements at this intersection are left or right turns from E. Olive Avenue onto S. Fair Oaks Avenue, which creates points of conflict with pedestrians crossing the street.

#### E. Olive Avenue

- E. Olive Avenue is one of the two primary areas where students are dropped-off and picked-up at Ellis Elementary.
- Drivers were observed performing U-turns to enter the line of waiting cars and to pull directly to the curb if space was available.
- The queue of cars backed-up in both directions of travel along E. Olive Avenue.
- Many pedestrians crossed at the unmarked crosswalk across E Olive Avenue at Wilson Avenue.



## Ellis Elementary School Hand Tallies, Spring 2018



Hand tally data was collected for the following modes: walk, bicycle, family vehicle, carpool, school bus, public transit, and other (scooter, skateboard, etc.) Only values above 2% are listed above, with the exception of including bicycling regardless of value.

### Kenmore Avenue / E. Olive Avenue

- This is an uncontrolled T-intersection.
- Parents who drove students to school were observed stopping near all corners of this intersection to unload students. This activity blocked curb ramps and crosswalks, and reduced visibility of people walking.
- Multiple people driving were observed stopping without pulling directly to the curb which blocked traffic and led people driving behind them to cross into the opposing travel lane and continue their movement.
- The entrance to the school parking lot is to the east of the intersection. People driving were observed blocking the driveway and preventing other vehicles from being able to turn in.

### Central Avenue / E. Olive Avenue

- This is a four-way stop-controlled intersection with the highest number of students walking and bicycling to the school.
- People driving were observed failing to yield to people walking, stopping in the crosswalk, and entering the intersection before people finished crossing.

- School staff said that people drive more aggressive at this intersection when students are not around.

### Central Avenue

- There are multiple drop-off/pick-up points along Central Avenue that create various points of conflict for people driving and people crossing midblock.
- There are two pull-in areas along central Avenue. Both areas have raised median islands.
- The northern pull-in area is reserved for school buses. People driving begin to disrespect this rule as the morning bell approaches.
- Parents and guardians are allowed to use the southern pull-in area during arrival and dismissal hours.
- When private vehicles are using both pull-in areas, they become heavily congested. Some people driving block travel lanes as they wait to turn into the pull-in area. Others park their cars in the area, despite its designation as a loading zone.
- Students who get out of vehicles in the outer lane were observed moving between cars to reach the curb.

## Existing Conditions

- Crossing Guard Location
- School Circulation
- School Access Point
- Class II Bicycle Lane
- Class III Bicycle Route
- Bike Parking

## Recommendations

- Leading Pedestrian Interval
- R3-4 "No U-Turn" Signage
- Cones/Delineators
- "Keep Clear" Markings
- Stop Sign Warrant Study
- "No Left Turn" Signage
- White Curb
- Curb Extension
- High-Visibility Crosswalk
- Red Curb
- Advanced Stop Pavement Marking
- R2D5 School Loading Signage
- Potential Bike Parking Location
- Class IV Separated Bikeway
- Directional Curb Ramps

## Implementing Agency

- # City of Sunnyvale
- # Sunnyvale School District



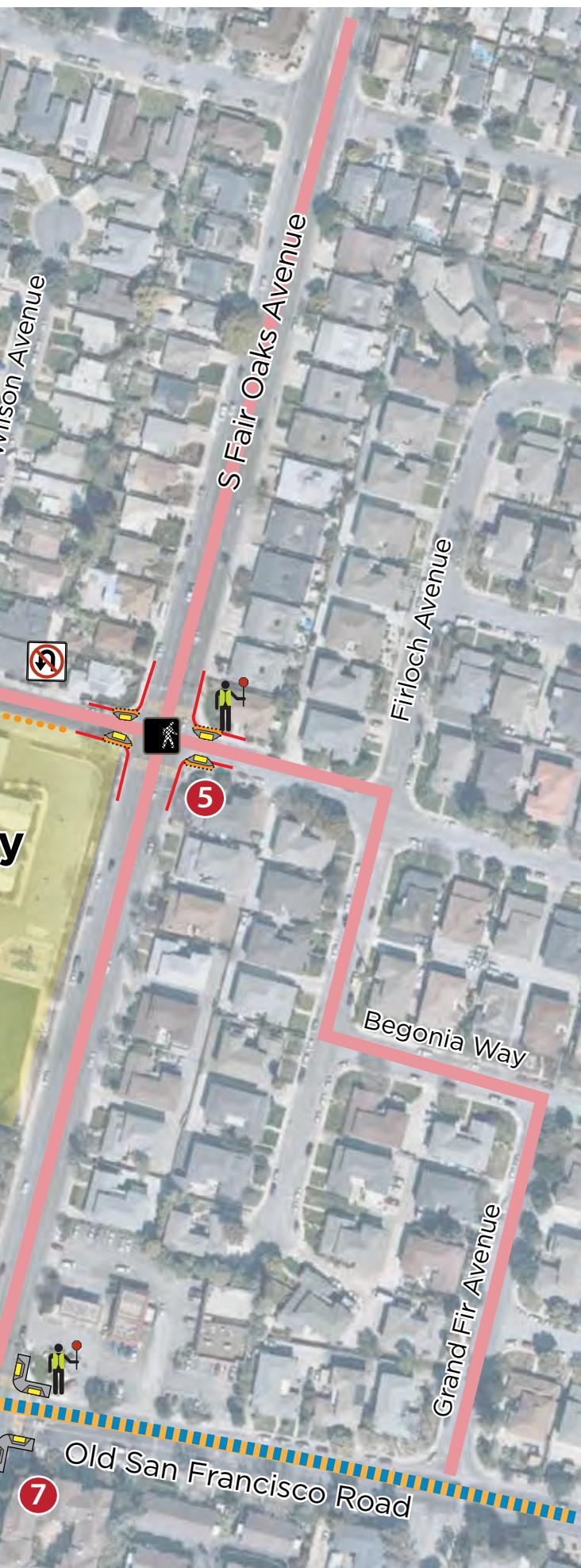
The above items are recommendations only and based on Safe Routes to Schools site assessment best practices. Feasibility determination, final design, accessibility, funding, and implementation of any recommendations are the responsibility of the implementing agency.

# Safe Routes to Schools Improvement Plan

## Ellis Elementary School

### Sunnyvale

School Audit held May 2019



#### 1 Central Avenue

- Restrict left turns into and out of northern pull-in area and install R3-2 "No Left Turn" signage.
- Install white curb and R2D5 "School Loading" signage.

#### 2 Central Avenue/E. Olive Avenue

- Upgrade three existing crosswalks to high visibility crosswalks
- Install high-visibility crosswalk on west leg of intersection.
- Install advance stop markings at each approach with a marked crosswalk.
- Daylight intersection with red curb. Each approach should have 20 feet of red curb.

#### 3 Kenmore Avenue/E. Olive Avenue

- Conduct stop sign warrant study to evaluate addition of a stop sign at Kenmore/E Olive intersection.
- Install a high visibility crosswalk on north leg of intersection.
- Install curb extensions on northwest and northeast corners.

#### 4 Wilson Avenue /E. Olive Avenue

- Install high visibility crosswalks on northern and eastern legs of intersection.
- Conduct stop sign warrant analysis study at intersection.
- Install curb extension on northwest corner facing Wilson Avenue.
- Install curb extension on northeast corner facing both streets and install curb extension on southeast corner.
- Short Term: Place cones or delineators in the middle segment of the pull-in to discourage drivers from pulling U-turns to enter pull-in.
- Long Term: See Recommendation #9.

#### 5 S. Fair Oaks Avenue/E. Olive Avenue

- Modify the signal phases to provide leading pedestrian intervals for crossings of S Fair Oaks Avenue.
- Install red curb to daylight intersection. Each approach should have 20 feet of red curb.
- Install curb extensions on east and west crosswalks of intersection.

#### 6 E. Olive Avenue

- Install R3-4 "No U-Turn" signage on E Olive Avenue for Westbound Traffic.

#### 7 S. Fair Oaks Avenue/Old San Francisco Road

- Modify the signal phases to provide a leading pedestrian interval at all crossings.
- Install directional curb ramps while reducing turning radii at all four corners.

#### 8 Central Avenue/Old San Francisco Road

- Upgrade existing transverse crosswalk across Central Avenue to a high visibility crosswalk.

#### 9 Ellis Elementary School Parking Lot & Pull-in Areas

- Short term: Relocate existing bicycle and scooter parking area to a moresecure location within campus.
- Long Term: Make changes in accordance with Ellis Elementary Site Plan.

0 200 ft



Improvements not to scale



Sunnyvale

# Fairwood Elementary School

1110 Fairwood Ave.  
Sunnyvale, CA 94089

GRADES

**K-5**



SCHOOL TYPE

**NEIGHBORHOOD**



ENROLLMENT

**435**



**23%**



ENGLISH  
LANGUAGE  
LEARNERS

(100)

**26%**



FREE/  
REDUCED  
LUNCH

(112)

WALK AUDIT

**MONDAY, APRIL 29, 2019**

ARRIVAL

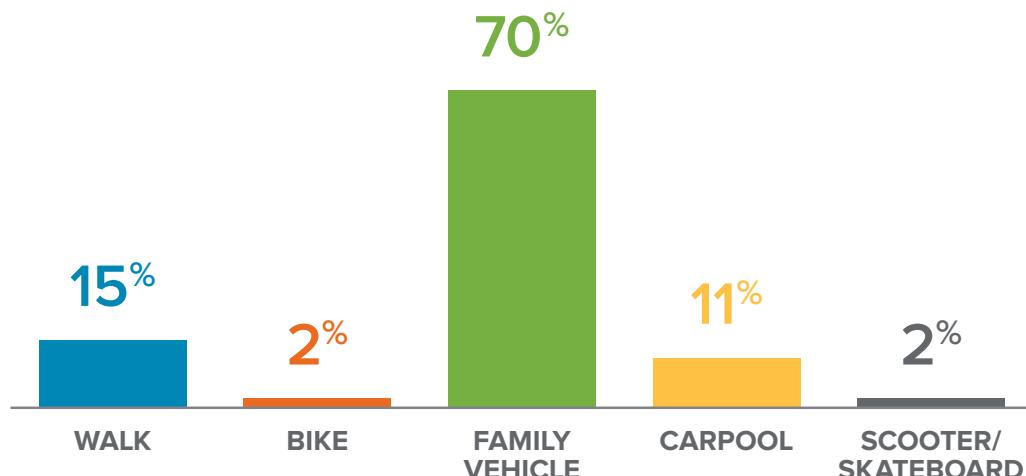
DISMISSAL

## Fairwood Elementary School

is located in a residential neighborhood in the north of Sunnyvale. It is directly adjacent to Fairwood Park, lies just south of the John W. Christian Greenbelt, and is a mile south of the Bay Trail. Many students and their guardians walk to Fairwood Elementary on Fairwood Avenue. Previous SRTS activity at Fairwood Elementary includes 4th grade in-class bike education.



## Fairwood Elementary School Hand Tallies, Spring 2018



Hand tally data was collected for the following modes: walk, bicycle, family vehicle, carpool, school bus, public transit, and other (scooter, skateboard, etc.) Only values above 2% are listed above, with the exception of including bicycling regardless of value.

## SUMMARY OF EXISTING CONDITIONS

### Sandia Avenue School Frontage

- There are two driveways into the parking lot; the eastern driveway is for entrance and the western driveway is for exit.
- Vegetation around the driveways limits visibility for people driving.

### Fairwood Avenue / Sandia Avenue

- This is a four-way, all-way stop-controlled intersection with a crossing guard stationed during arrival and dismissal hours.
- During the walk audit, a high volume of people were observed walking and bicycling across this intersection.

### Fairwood Avenue School Frontage

- There is a parking lot and driveway loop accessible from Fairwood Avenue. The southern driveway is for entrance and the northern driveway is for exit.
- At peak, up to four cars were queued waiting to enter the driveway.

### Fairwood Avenue / Redrock Court

- This is an uncontrolled four-way intersection connecting a cul-de-sac and the school's driveway exit to Fairwood Avenue.
- This is a popular park and walk location. However, there are no marked crosswalks at this intersection.

### Fairwood Avenue / John W. Christian Greenbelt

- The Greenbelt links multiple schools, parks, businesses and neighborhoods.
- The existing mid-block crossing has a white transverse crosswalk.



The above items are recommendations only and based on Safe Routes to Schools site assessment best practices. Feasibility determination, final design, accessibility, funding, and implementation are separate processes.

# Safe Routes to Schools Improvement Plan

## Fairwood Elementary School

### Sunnyvale

School Audit held April 2019

#### 1 Sandia Avenue

- Work with school garden club to trim vegetation in school's garden and in landscaped buffer to improve visibility for exiting drivers.

#### 2 Fairwood Avenue/Sandia Avenue

- Upgrade the crosswalks at all four approaches to high visibility crosswalks.
- Install advance stop markings at each approach.
- Install curb extensions and directional curb ramps on all four corners.

#### 3 Fairwood Avenue

- Stripe a Detail 22 yellow centerline stripe between Sandia Avenue and Prescott Avenue to discourage drivers from passing in opposing travel lane.

#### 4 Fairwood Avenue/Redrock Court

- Stripe high-visibility crosswalk across south and west legs of the intersection.
- Install advance yield markings in advance of both crossings.
- Install School Assembly B signage at both crosswalks.
- Install curb extensions on the northwest, southwest, and southeast corners.
- Perform a stop or yield sign warrant analysis.
- Install red curb next to ramps to daylight intersection.

#### 5 Fairwood Avenue/John W. Christian Greenbelt

- Upgrade existing white transverse crosswalk to a yellow high visibility crosswalk.
- Install curb extensions to narrow crossing distance.
- Install advance yield markings in advance of crosswalk.
- Install School Assembly B signage at crosswalk.

Calabazas Creek

#### Existing Conditions



School Access Point



Class I Shared-Use Path



Bike Parking



School Circulation

#### Recommendations



Park & Walk Location



Lane Markings



Vegetation Trimming



Red Curb



High-Visibility Crosswalk



Curb Extension



Directional Curb Ramps



Advanced Stop Pavement  
Marking



Advance Yield Markings



School Assembly B Signage



Stop Sign Warrant Study

#### Implementing Agency



City of Sunnyvale



Sunnyvale School District

0 200 ft N  
Improvements not to scale



# Fremont High School

575 W. Fremont Ave.  
Sunnyvale, CA 94087

GRADES

**9-12**



SCHOOL TYPE

**NEIGHBORHOOD**



ENROLLMENT

**2,081**



**14%**



ENGLISH  
LANGUAGE  
LEARNERS

(300)

**31%**



FREE/  
REDUCED  
LUNCH

(638)

WALK AUDIT

**THURSDAY, MAY 23, 2019**

**ARRIVAL**

**DISMISSAL**

**Fremont High School** is located in a residential neighborhood in south-central Sunnyvale. Fremont High has two driveway loops, is served by the 55 VTA bus line, and provides bicycle racks between the school buildings and field facilities.



## SUMMARY OF EXISTING CONDITIONS

### Sunnyvale Saratoga Road School Frontage

- Multiple points of conflict were observed between people driving and people walking and bicycling, including people driving in the bicycle lane and braking suddenly to avoid people walking in the crosswalk.

### Sydney Drive / W. Fremont Avenue

- People driving were observed not yielding to students crossing W. Fremont Avenue.

### Sunnyvale Saratoga Road / Fremont Avenue

- This is a four-way signalized intersection with a high volume of students walking and bicycling to school.
- Many students were observed bicycling onto the school campus from this intersection
- Many people driving and making southbound turns encroached into the bicycle lane.

### W. Fremont Avenue Driveway Loop

- People drove in the bicycle lane while queuing to enter the loop.
- People exiting the loop waited for a clearance to make a U-turn at Selo Drive, resulting in congestion within the loop.

#### Existing Conditions

- School Access Point
- Class II Bicycle Lane
- Class IIB Buffered Bicycle Lane

#### Recommendations

- Bollards
- HAWK Beacon
- High-Visibility Crosswalk
- Curb Extension
- Bike Parking
- R9-3bp "Use Crosswalk" Signage
- Protected Intersection

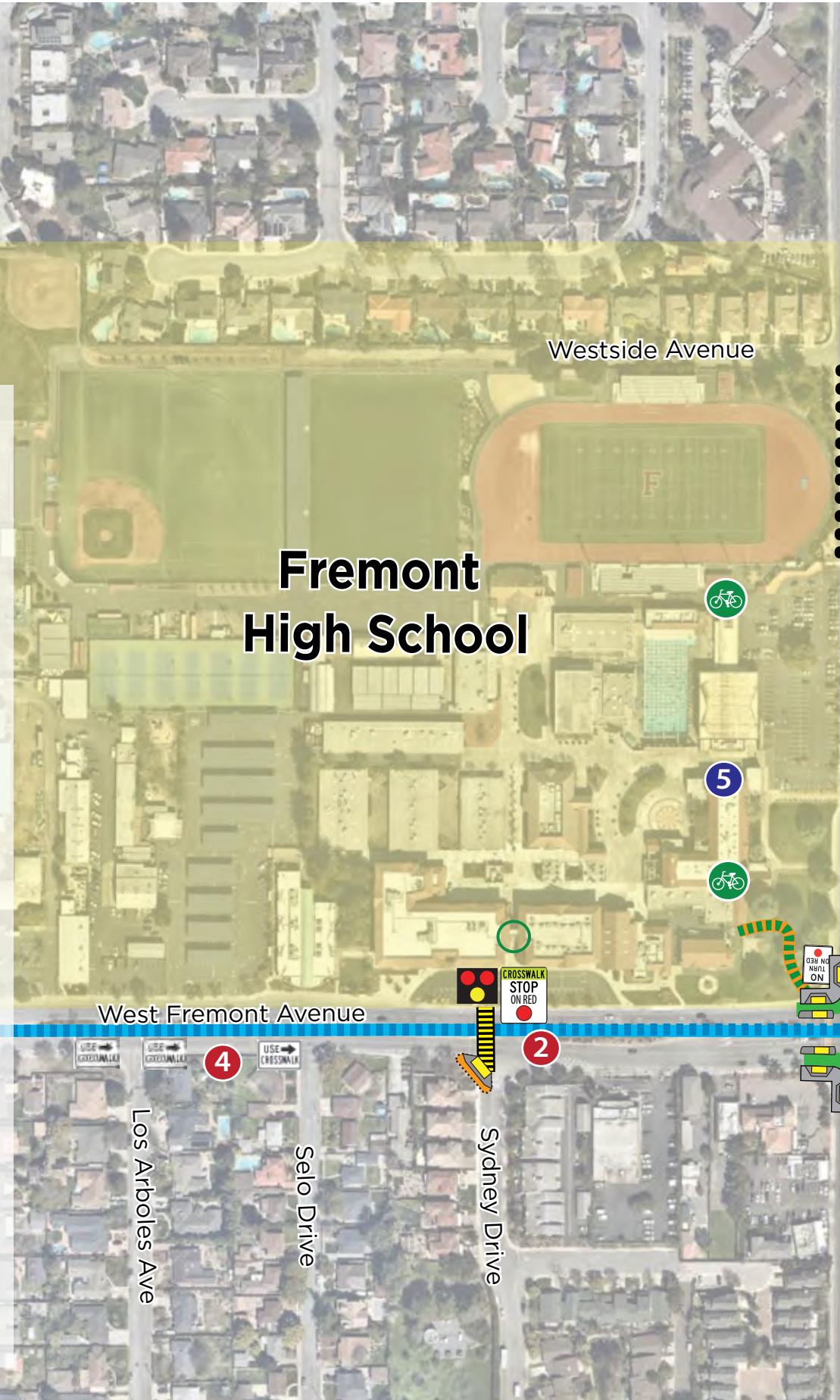
- R10-11 "No Turn On Red" Signage

- Path Improvements
- Class IV Separated Bikeway

#### Implementing Agency

- Fremont Union High School District
- City of Sunnyvale

# Fremont High School



# Safe Routes to Schools Improvement Plan

## Fremont High School

### Sunnyvale

School Audit held May 2019

#### 1 Sunnyvale Saratoga Road

- Short Term: Place bollards/implement physical buffer on southbound bicycle lane from Westside Ave to drop off turn-in until Class IV Separated Bikeway installed on Sunnyvale Saratoga.

#### 2 Sydney Drive/West Fremont Avenue

- Upgrade current RRFB to HAWK Beacon.
- Upgrade current crosswalk to high visibility crosswalk.
- Install a curb extension on southwest corner of intersection.

#### 3 Sunnyvale Saratoga Road/Fremont Avenue

- Evaluate operations at intersection for possible upgrade in timing of left turns, including protective signal phasing for bicycles and pedestrians.
- Install a protected intersection to allow for two stage left turns on all corners.
- Consider installing R10-11 "No Right Turn on Red" signage for vehicles turning right at northwest and northeast corners of intersection.
- Note: This location is a CMP intersection. Additional evaluation is necessary to evaluate if signal changes would cause significant impacts.

#### 4 West Fremont Avenue

- Install R9-3bP "Cross Only at Crosswalk" signage to encourage crosswalk usage.

#### 5 Fremont High School Campus

- Explore options for Bike Parking near southeast entrance of school.
- Consider improving path on southeast corner of campus.
- Explore options for Bike Parking near the Sunnyvale Saratoga Road entrance.



0 200 ft  
Improvements not to scale



# Homestead High School

211370 Homestead Rd.  
Cupertino, CA 95014

GRADES

**9-12**



SCHOOL TYPE

**MAGNET**

**5**

ENROLLMENT

**2,425**



**8%**



ENGLISH  
LANGUAGE  
LEARNERS  
(184)

**14%**



FREE/  
REDUCED  
LUNCH  
(348)

WALK AUDIT

**WEDNESDAY, MAY 29, 2019**

ARRIVAL

DISMISSAL

**Homestead High School** is located in Cupertino just south of the Sunnyvale city limit. This school serves both Cupertino and Sunnyvale students. Bicycle parking on campus is heavily used by students. There is limited student vehicle parking on campus. Vehicle parking permits are sold on a first-come, first-served basis to students.

The City secured funding from the One Bay Area Grant Cycle 2 for Vehicle Emissions Reductions Based at Schools in 2017 for a project at Homestead High School. The improvements include traffic signal modification at S. Mary Avenue/Homestead Road and Kennewick Drive/Homestead Road, pedestrian access enhancements such as installation of high visibility crosswalks, accessible pedestrian signals, shortening crossing for pedestrians, installation of green buffered bike lanes along Homestead between MacKenzie Drive and Mary Avenue, and improvements of the existing path for bicycles to the high school from eastbound Homestead Road to the Mary Avenue Bridge Trail.



## SUMMARY OF EXISTING CONDITIONS

### Samedra Street / Homestead Road

- This is a T-intersection with stop-control on Samedra Street.
- There are no sidewalks on Samedra Street, and a narrow sidewalk on Homestead Road.

### Mary Avenue / Homestead Road

- This is a four-way, multi-lane signalized intersection with transverse crosswalks across all four approaches.
- There are no pedestrian countdown signals on some of the crossings.
- People driving were observed blocking the crosswalk and intersection while attempting to turn into the school driveway.

### Kennewick Drive / Homestead Road

- This is a four-way signalized intersection with transverse crosswalks; the south leg is the driveway entrance to the school.
- Some students bicycling were observed using the entrance as an exit.

### Mary Avenue Bridge / Western Parking Lot Access

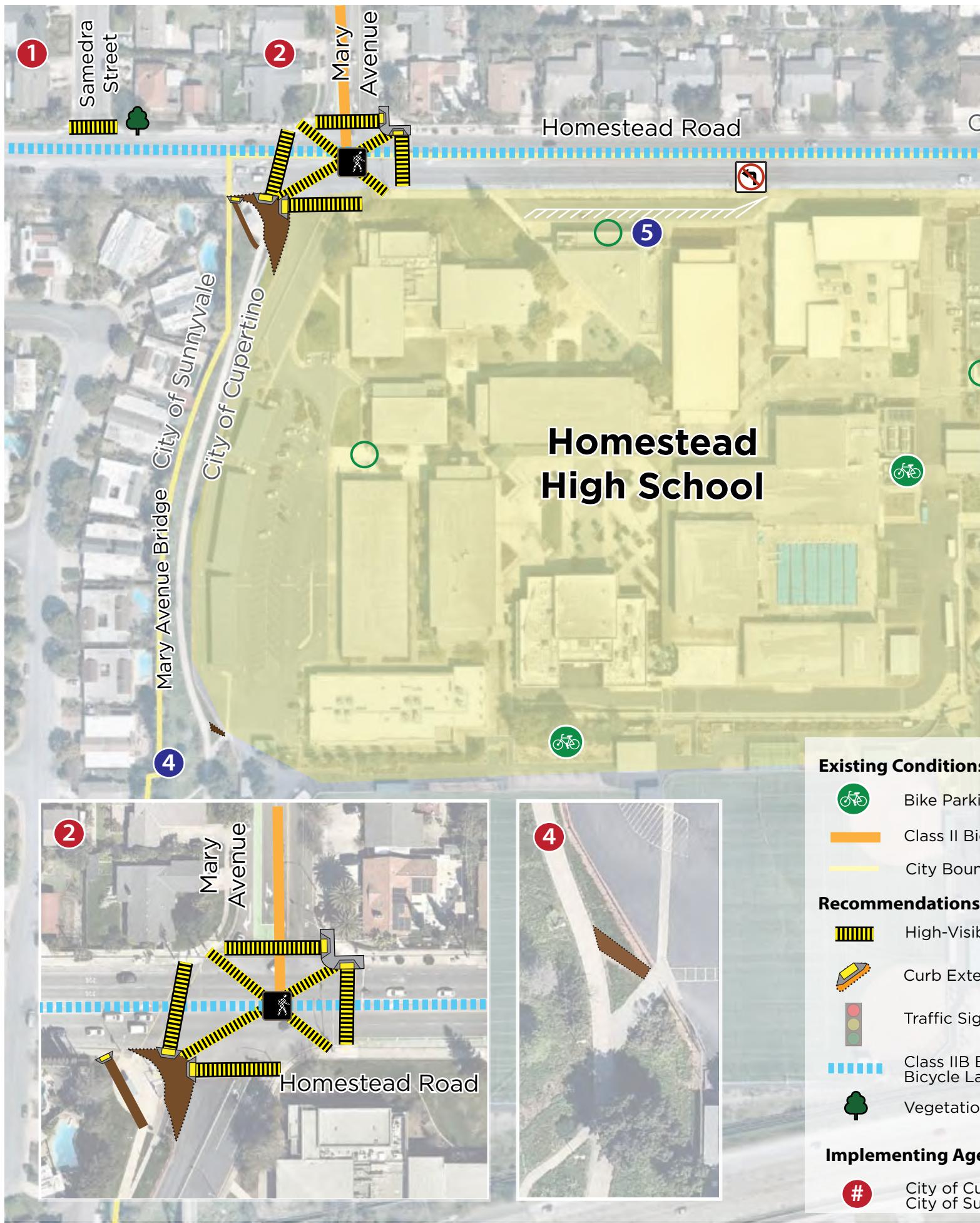
- A concrete path connects the Mary Avenue Bridge to the parking lot access instead of entering the loop.

### Driveway Loop on Homestead Road

- People driving idle on both sides of the loop, do not pull up to the end of the loop when dropping off, turn left despite the left turn restriction, and park in the bicycle lane.

### Student Parking Lot Exit

- People driving out of the parking lot block the sidewalk while waiting to turn left, forcing people walking to weave through vehicles.



The above items are recommendations only and based on Safe Routes to Schools site assessment best practices. Feasibility determination, final design, accessibility, funding, and implementation are the responsibility of the implementing agencies.

# Safe Routes to Schools Improvement Plan

## Homestead High School, Cupertino

School Audit held May 2019

①

### Samedra Street/Homestead Road

- Install high-visibility crosswalk across Samedra Street.
- Remove vegetation along northeast corner.
- Square up northwest corner.\*\*

②

### Mary Avenue/Homestead Road (also see inset)

- Install high visibility crosswalks.
- Install Lead Pedestrian Interval phasing to traffic signal timing.
- Install pedestrian scramble/Barnes Dance for signal timing during school drop-off/pick-up hours.
- Reduce turning radii on northeast and southwest corners of intersection. Include access ramp to Mary Avenue Bridge trail on southwest corner.
- Install bicycle ramp.\*\*

③

### Kennewick Drive/Homestead Road

- Install high-visibility crosswalks.
- Modify signal timing.

④

### Mary Avenue Bridge/Western Parking Lot Access (also see inset)

- Pave informal path between Mary Avenue Bridge trail and parking lot.
- Long term: Install bicycle roundabout.

⑤

### Drop-Off/Pick-Up Loop

- Restripe to promote two lanes (drop off/pick up lane and through lane).
- Provide signs and markings encouraging drivers to pull forward.

⑥

### Student Parking Lot

- At the west driveway, add stop line and right turn arrow in the driveway at the edge of sidewalk. Move Do Not Enter sign to west side of driveway.
- At the eastern driveway, add a stop bar and lane movement markings.

NOTE: Recommended improvements are consistent with the VERBS Grant.

\*\*Recommendation not graphically represented on improvement plan.



School Access Point



Leading Pedestrian Interval



Curb Ramp



Class IIIB Bicycle Boulevard



Pedestrian Scramble



Sidewalk



Fremont Union High  
School District

0 200 ft Improvements not to scale



## INDIVIDUAL SCHOOL SUMMARIES AND IMPROVEMENT PLANS

# Lakewood Elementary School

750 Lakechime Dr.  
Sunnyvale, CA 94089

GRADES

**K-5**



SCHOOL TYPE

**NEIGHBORHOOD**



ENROLLMENT

**437**



**32%**



ENGLISH  
LANGUAGE  
LEARNERS

(139)

**55%**



FREE/  
REDUCED  
LUNCH

(238)

### WALK AUDIT

**THURSDAY, APRIL 25, 2019**

**ARRIVAL**

**DISMISSAL**

**Lakewood Elementary School** is located in northeast Sunnyvale. Lakewood Park and the John W. Christian Greenbelt are adjacent to the school to the east and south, respectively.

### SUMMARY OF EXISTING CONDITIONS

#### Lakechime Drive / School Parking Lot

- Walk audit participants observed people driving above safe speeds along Lakechime Drive to pass school traffic.

#### Meadowlake Drive / Lakechime Drive

- This is a four-way stop-controlled intersection with transverse yellow crosswalks across all approaches.
- Walk audit participants observed people parking vehicles in or adjacent to crosswalks.

#### Meadowlake Drive / Lakefair Drive

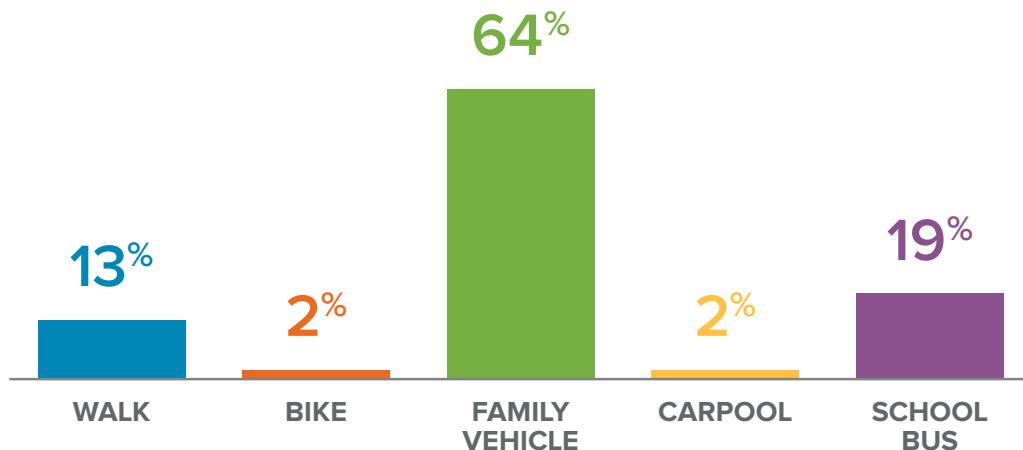
- This is a T-intersection with no stop control and transverse crosswalks on the north and west approaches. There is a passenger loading/un-loading area on the east side of Meadowlake Drive.

#### Meadowlake Drive / John W. Christian Greenbelt Area

- There is an uncontrolled standard crosswalk where the shared-use path crosses Meadowlake Drive.



## Lakewood Elementary School Hand Tallies, Spring 2018



Hand tally data was collected for the following modes: walk, bicycle, family vehicle, carpool, school bus, public transit, and other (scooter, skateboard, etc.) Only values above 2% are listed above, with the exception of including bicycling regardless of value.

### Meadowlake Drive / Lakehaven Drive

- This is a four-way stop-controlled intersection with transverse yellow crosswalks across three approaches and a crossing guard present during school arrival and dismissal hours.
- People driving were observed parking in or adjacent to the crosswalks.

### Silverlake Drive / John W. Christian Greenbelt Area

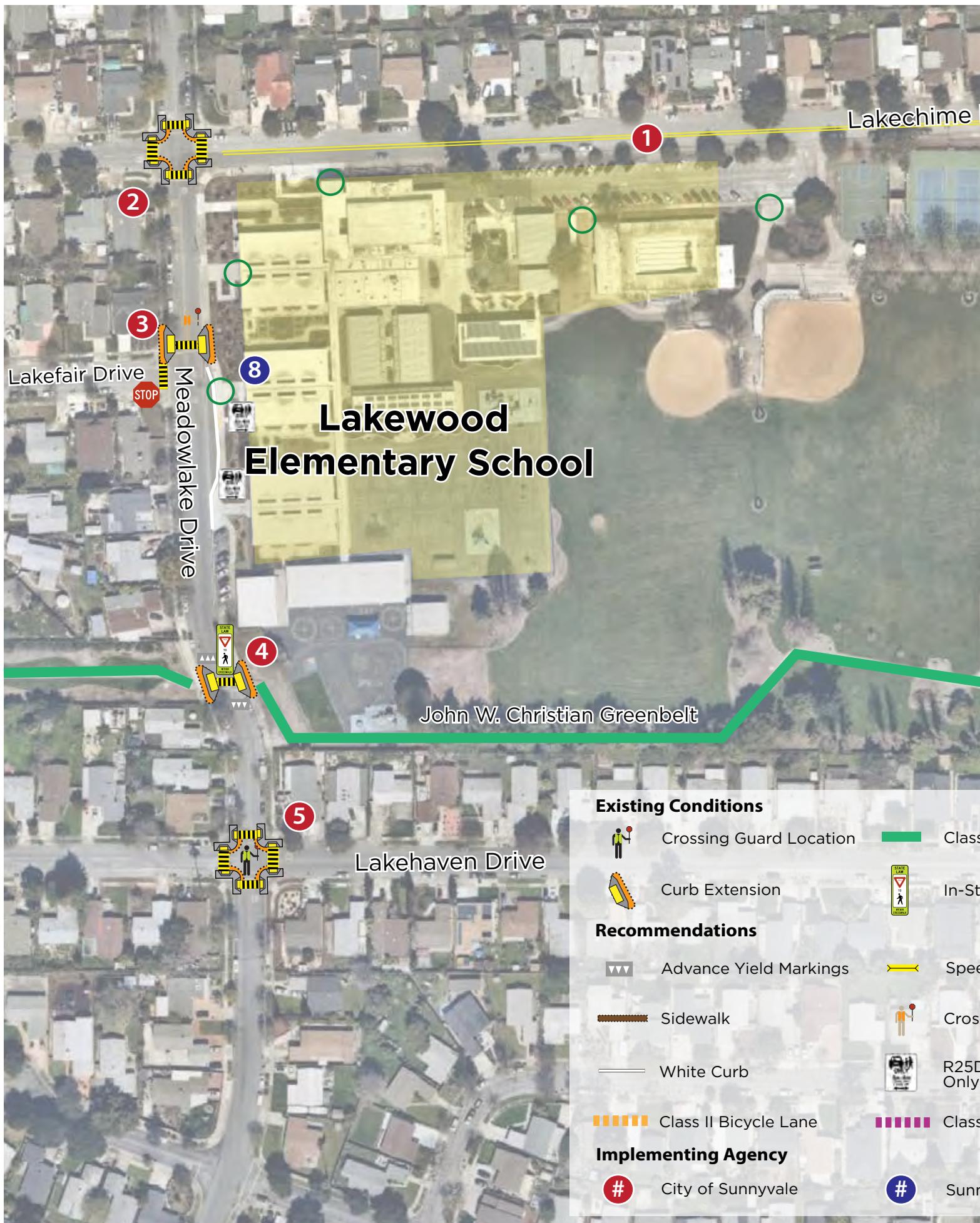
- There is no marked crosswalk where the shared-use path crosses Silverlake Drive, and the curb ramps between the greenbelt access points do not align.

### Silverlake Drive / Lakechime Drive

- This is a T-intersection with stop control and a standard crosswalk on Lakechime Drive.
- The southwest corner has a large radius, and people driving were observed turning quickly and not coming to a complete stop at the stop sign.

### School Driveway Loop Area on Lakechime Drive

- People driving do not use this area as a one-way loop as designed, but instead use it to park, or make U-turns into and out of the area.

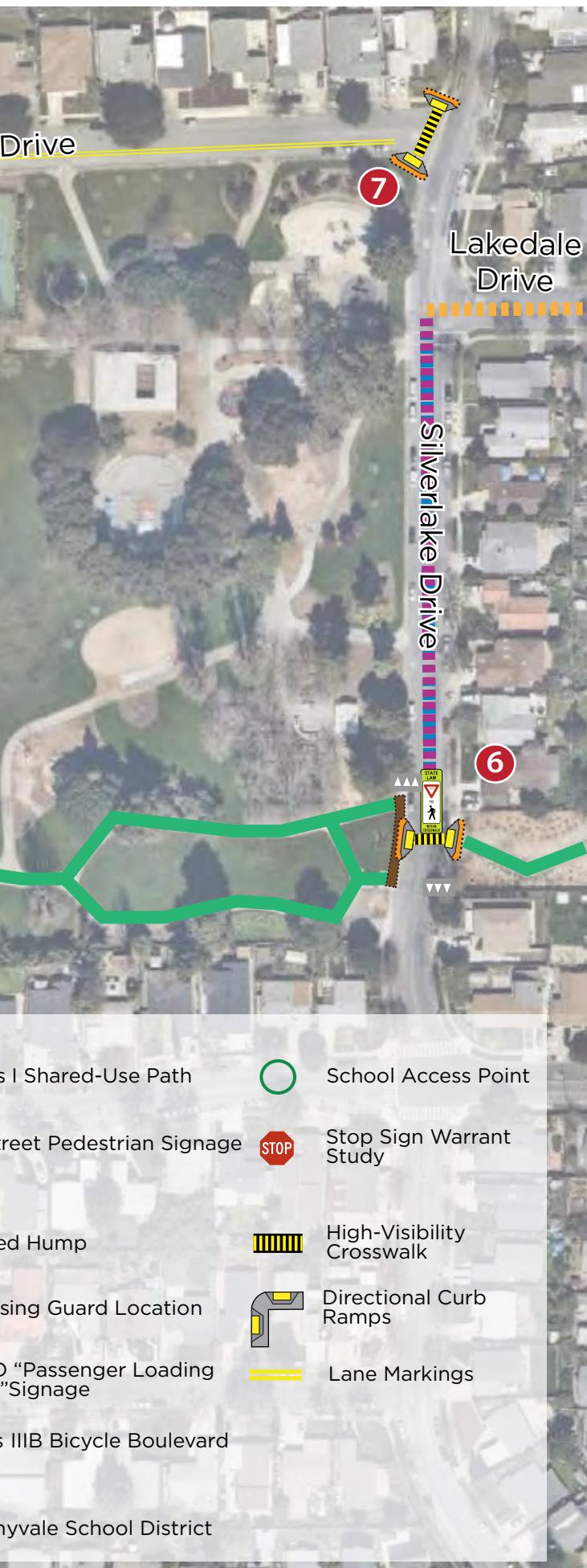


# Safe Routes to Schools Improvement Plan

## Lakewood Elementary School

### Sunnyvale

School Audit held April 2019



- 1 Lakechime Drive/School Parking Lot**
  - Conduct a speed survey to evaluate potential for traffic calming infrastructure.
  - Install double yellow center line along Lakechime Drive.
- 2 Meadowlake Drive/Lakechime Drive**
  - Install curb extensions and directional ramps at all four corners.
  - Upgrade crosswalks to high-visibility crosswalks.
- 3 Meadowlake Drive in Front of School**
  - Upgrade crosswalks to high-visibility on north and west legs.
  - Conduct stop sign warrant analysis on Lakefair Drive.
  - Install curb extensions on northwest, northeast, and southwest corners of intersection.
  - Place a new crossing guard at intersection.
  - Work with school to install white curb and install R25-D "Passenger Loading Only" signage.
- 4 Meadowlake Drive/John. W. Christian Greenbelt Area**
  - Upgrade crosswalk to high-visibility crosswalk.
  - Paint center stripe for 20 feet on trail up to edge of sidewalk and hazard mark bollards.
  - Install yield signs and yield lines on either side of crosswalk on Meadowlake Drive.
  - Install curb extensions on both sides of crosswalk.
- 5 Meadowlake Drive/Lakehaven Drive**
  - Upgrade existing crosswalks to high-visibility crosswalks.
  - Install high-visibility crosswalk on western leg of intersection.
  - Install curb extensions at all four corners.
- 6 Silverlake Drive/John. W. Christian Greenbelt**
  - Widen sidewalk to 8' between between the John W. Christian Greenbelt on west side.
  - Install high-visibility crosswalk, in-street pedestrian signage, and yield lines.
  - Install curb extensions on both sides of crosswalk.
- 7 Silverlake Drive/Lakechime Drive**
  - Upgrade crosswalk to high-visibility crosswalk.
  - Install curb extension and directional curb ramps on northwest and southwest corners.
- 8 School Drop-Off/Pick-Up Area**
  - Require right turn only out of loop.
  - Work with city to install white curb and install R25-D "Passenger Loading Only" signage.

0 200 ft  
N  
Improvements not to scale



# Laurelwood Elementary School

955 Teal Dr.  
Santa Clara, CA 95051

GRADES

**K-5**



SCHOOL TYPE

**NEIGHBORHOOD**



ENROLLMENT

**644**



**34%**



ENGLISH  
LANGUAGE  
LEARNERS

(217)

**10%**



FREE/  
REDUCED  
LUNCH

(67)

**Laurelwood Elementary School** is located in the City of Santa Clara, one block from the Sunnyvale city limit. This school serves both Sunnyvale and Santa Clara students. In recent years, Laurelwood has increased student enrollment, which has resulted in increased vehicle traffic. There is unsecured bicycle parking for about 40 bicycles provided on the east side of the school near the main entrance. On the day of the walk audit, the bicycle racks appeared to be at full capacity.

WALK AUDIT

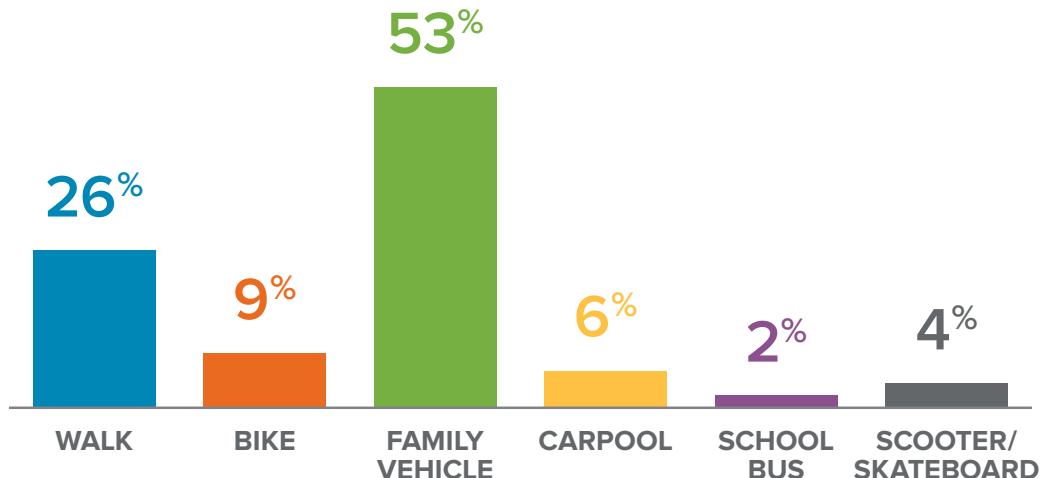
**TUESDAY, MAY 14, 2019**

ARRIVAL

DISMISSAL



## Laurelwood Elementary School Hand Tallies, Spring 2018



Hand tally data was collected for the following modes: walk, bicycle, family vehicle, carpool, school bus, public transit, and other (scooter, skateboard, etc.) Only values above 2% are listed above, with the exception of including bicycling regardless of value.

## SUMMARY OF EXISTING CONDITIONS

### Teal Drive / Dunford Way

- This intersection is all-way stop-controlled with three faded yellow crosswalks across the east, west, and north approaches.

### Teal Drive / Lochinvar Avenue / Inverness Way

- The intersection is all-way stop-controlled, with three yellow standard crosswalks and a crossing guard present during arrival and dismissal hours.
- The skew of the intersection creates long crossings and large corner radii.

### Lochinvar Avenue / Kerry Avenue / Kensington Avenue

- This is a four-way intersection with stop control on Kensington Avenue and Kerry Avenue and no striped crosswalks.
- All four corners of this intersection have large radii, allowing vehicles to take faster turns.

### Teal Drive School Frontage

- A high-visibility mid-block crosswalk is located at the school entrance.

## Existing Conditions

- Bike Parking
- Crossing Guard Location
- School Bus Stop
- School Access Point
- City Boundary Line
- Class III Bicycle Route

## Recommendations

- "School Assembly B" Signage
- Advance Yield Markings
- High-Visibility Crosswalk
- Curb Extension
- Reduced Corner Radius/Slip Lane Removal
- Curb Ramp
- "Keep Clear" Markings
- Advance Stop Markings
- Red Curb
- Class III Bicycle Route
- Stop Sign Warrant Study
- Striping Removal

## Implementing Agency

- # City of Sunnyvale
- # Santa Clara Unified School District
- # City of Santa Clara



# Safe Routes to Schools Improvement Plan

## Laurelwood Elementary Santa Clara & Sunnyvale

School Audit held May 2019

### 1 Teal Drive/Dunford Way

- Install high visibility crosswalks on all approaches.
- Refresh red curb paint on the northwest corner and install on the northeast corners of Teal Drive and Dunford Way.
- Install advance stop markings ahead of all approaches.
- Upgrade southeast and southwest curb ramps to be ADA-compliant.

### 2 Teal Drive/Inverness Way/Lochinvar Avenue

- Install curb extensions and directional ramps on northeast and southwest corners.
- Install high-visibility crosswalks on all approaches. Consider widening crosswalk on north approach to be an even width.
- Install red curb paint on the northwest and southeast corners of Teal Drive/Inverness Way/Lochinvar Avenue.
- Install red curb to the east of the crosswalk on the north and south sides of Teal Drive.
- Consider realignment of east crosswalk approach further east. Include reconstruction of curb ramp on the southeast corner to align with new crosswalk.

### 3 Kerry Avenue/Kensington Avenue/Lochinvar Avenue

- Install high-visibility crosswalks on the east and west legs.

### 4 Dunford Way/Lochinvar Avenue

- Conduct a stop sign warrant or yield study for the northbound approach.

### 5 Lochinvar Avenue/Swallow Drive

- Remove right turn slip lane on Swallow Drive.
- Install high-visibility crosswalk across the northern leg of the intersection. Install directional curb ramp at the northwest and southwest corners and install a curb ramp at the northeast corner.
- Remove the crosswalk across the eastern approach of Lochinvar Avenue.

### 6 Teal Drive

- Install advance yield lines for the crosswalk in front of the school.
- Install double yellow center line striping on Teal Drive from Lochinvar Avenue to midblock crosswalk in front of the school.

### 7 Thrush Way/Teal Drive

- Conduct a stop sign warrant study. If stop sign is not warranted, install "School Assembly B" signage and advance yield markings in advance of the existing crosswalk.
- Reduce corner turning radius on northeast corner.

### 8 School Campus

- Consider making northeast gate to Alturas Avenue ADA accessible.



0 200 ft



Improvements not to scale



Sunnyvale

# Nimitz Elementary School

545 E. Cheyenne Dr.  
Sunnyvale, CA 94087

GRADES

**K-5**



SCHOOL TYPE

**NEIGHBORHOOD**



ENROLLMENT

**628**



**26%**



ENGLISH  
LANGUAGE  
LEARNERS

(165)

**21%**



FREE/  
REDUCED  
LUNCH

(132)

WALK AUDIT

**TUESDAY, MAY 14, 2019**

ARRIVAL

DISMISSAL

**Nimitz Elementary School** is located in a suburban neighborhood in southern Sunnyvale. Although the school is within walking distance from commercial business on W. Fremont Avenue, many of the surrounding streets lack the infrastructure to support bicycling and walking in the area.



## SUMMARY OF EXISTING CONDITIONS

### Revelstoke Drive / Cheyenne Street

- There is a crossing guard at this location during arrival and dismissal hours.
- Walk audit participants observed people driving above safe speeds on Cheyenne Drive.

### Saskatchewan Drive / Cheyenne Street

- A high volume of students walking and bicycling was observed at this intersection.

### Valcartier Drive / Cheyenne Street

- There is an entrance to the school campus at this location.
- There is also a pedestrian walkway connecting Yukon Drive and Cheyenne Drive.

### Richelieu Place / Alberta Avenue

- There is a crossing guard at this location during arrival and dismissal hours.
- There are white, transverse crosswalks at this intersection, and the north corners of the intersection are skewed.

### Los Arboles Avenue / Cascade Drive

- Parent drivers were observed parking in front of neighborhood residents' driveways, in front of a fire hydrant, and in the red curb near the crosswalk.

### Selo Drive / Cascade Drive

- Walk audit participants reported that minor collisions have occurred at this location in the past due to parent drivers parking in front of driveways.

### Selo Drive

- There are no sidewalks along the length of this roadway leading up to the school.

### Los Arboles Avenue

- There are no sidewalks along the length of this roadway leading up to the school.

## Existing Conditions

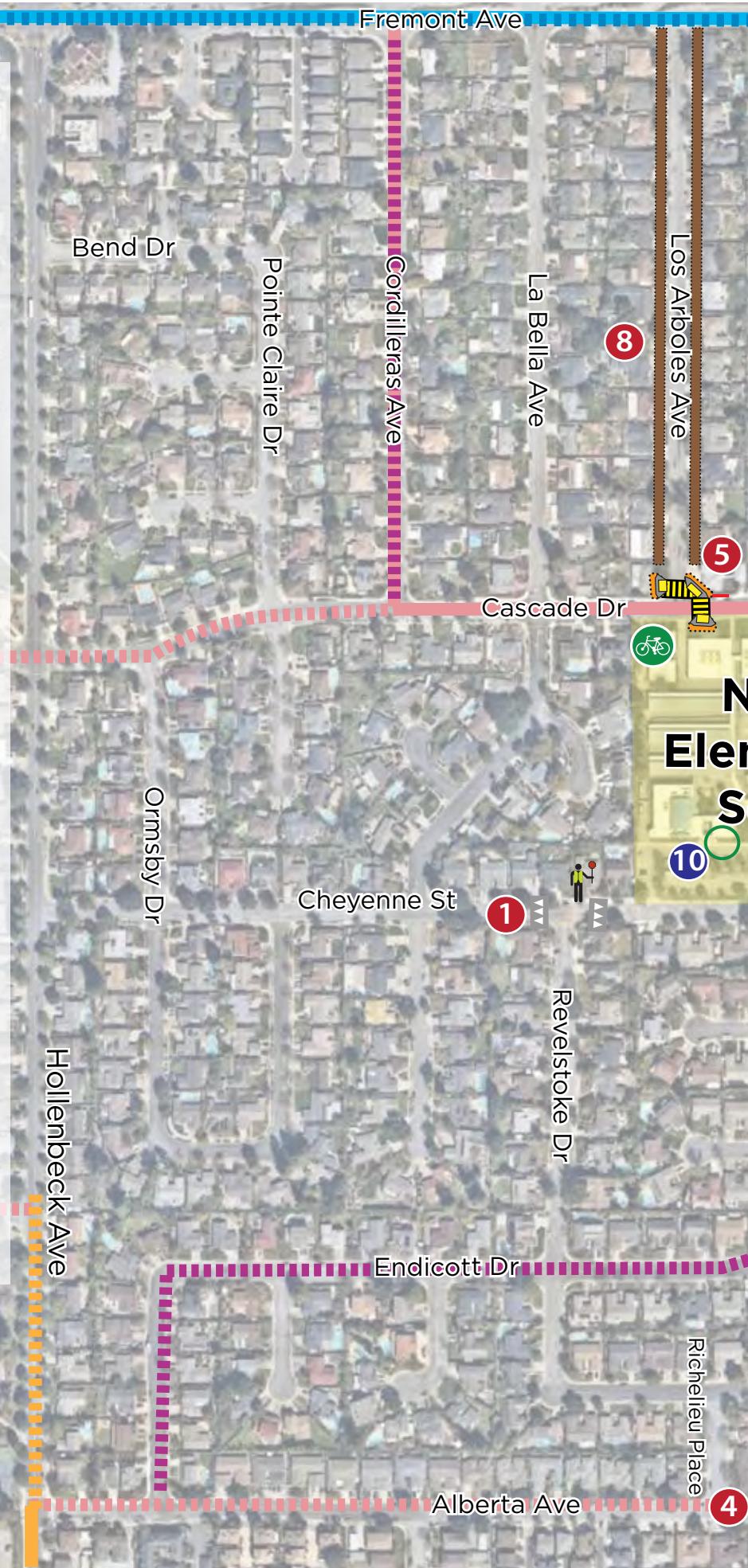
- School Access Point
- Bicycle Parking
- Crossing Guard
- Class II Bicycle Lane
- Class III Bicycle Route
- Class IIB Buffered Bicycle Lane

## Recommendations

- High Visibility Crosswalk
- Curb Extension
- Sidewalk
- Red Curb
- Advance Yield Markings
- Pedestrian Scale Lighting
- Directional Curb Ramps
- Raised Crosswalk
- Rectangular Rapid Flash Beacon (RRFB)
- Class II Bicycle Lane
- Class III Bicycle Route
- Class IIIB Bicycle Boulevard
- Class IV Separated Bikeway

## Implementing Agency

- # City of Sunnyvale
- # Cupertino Union School District



The above items are recommendations only and based on Safe Routes to Schools site assessment best practices. Feasibility determination, final design, accessibility, funding, and implementation are the responsibility of the implementing agency.

# Safe Routes to Schools Improvement Plan

Nimitz Elementary,

Sunnyvale

School Audit held May 2019

- 1 Revelstoke Drive/Cheyenne Street**
  - Add advanced yield markings on Cheyenne St on west and east sides of intersection to alert cars of proper stopping position when students are in crosswalk.
- 2 Saskatchewan Drive/Cheyenne Street**
  - Upgrade existing crosswalk to raised crosswalk.
  - Install curb extensions on both sides of the crosswalk.
  - Install double yellow centerline along Cheyenne Street.
- 3 Valcartier Drive/Cheyenne Street**
  - Install double yellow centerline.
  - Adjust existing bollards for ADA compliance and provide pedestrian scale lighting at pedestrian cut through.
- 4 Richelieu Place/Alberta Avenue**
  - Upgrade west and north legs of crosswalk to high visibility.
  - Install directional curb ramps and reduce corner turning radii on the northwest and northeast corners of the intersection.
  - Install curb extension on southwest corner.
  - Install an RRFB on west leg of intersection.
- 5 Los Arboles Avenue/Cascade Drive**
  - Paint red curb in lieu of existing "No Parking from here to Corner" sign at corner of Cascade Drive. Remove sign.
  - Install curb extensions on northeast, northwest, and southeast corners of the intersection.
  - Upgrade existing crosswalks to high visibility.
- 6 Selo Drive/Cascade Drive**
  - Paint red curb in lieu of existing "No Parking from here to Corner" sign at corner of Cascade Drive. Remove sign.
  - Install curb extensions on southwest and northwest corners of the intersection.
  - Upgrade existing crosswalk to high visibility.
- 7 Selo Drive**
  - Install continuous sidewalks along Selo Drive.
  - Note: Would require residents to join assessment district to fund improvements.
- 8 Los Arboles Avenue**
  - Install continuous sidewalks along Los Arboles Ave.
  - Note: Would require residents to join assessment district to fund improvements.
- 9 Sydney Drive/Cascade Drive**
  - Upgrade existing crosswalks to high visibility.
  - Install curb extensions at northwest and southwest corners.
- 10 Drop-Off Loop**
  - Implement an attended rolling drop off in the morning; enforce the "pull forward" signage within the loop and discourage drop off at the entrance of the loop.



# Peterson Middle School

1380 Rosalia Ave.  
Sunnyvale, CA 94087

GRADES

**6-8**



SCHOOL TYPE

**NEIGHBORHOOD**



ENROLLMENT

**908**



**19%**



ENGLISH  
LANGUAGE  
LEARNERS

(176)

**25%**



FREE/  
REDUCED  
LUNCH  
(223)

WALK AUDIT

**TUESDAY, MAY 21, 2019**

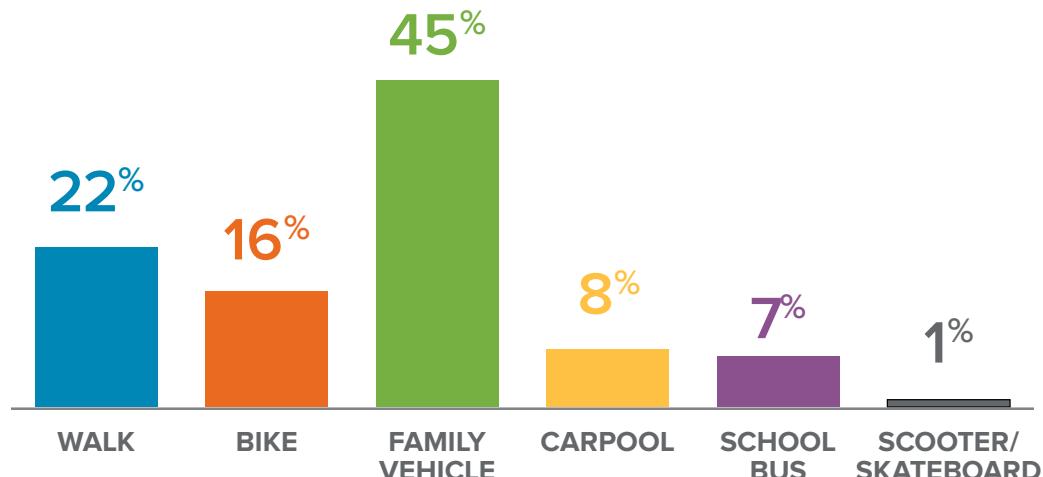
ARRIVAL

DISMISSAL

**Peterson Middle School** is located in the southeast corner of the city on the site of a former high school; as such, the school has a much larger campus footprint than a typical middle school. It is located in a formerly annexed County parcel, and when the parcels were annexed into the City, the neighborhood voted to not have sidewalks or other street improvements installed. Therefore, a lot of streets near the school do not have sidewalks. The school is primarily accessed through a network of “one-way” roads. There are signs installed by local community members throughout the immediate neighborhood directing vehicles. The school has a large number of students that walk or bike to the school. There is a secure bicycle parking corral at the southeast corner of the parking lot, accessible only via the campus or Bryant Way. The school hosted a helmet fitting and distribution event in June 2019. In October 2019, the school hosted the Bay Area BikeMobile, fitted and distributed helmets to 18 students, and inspected and corrected 10 students’ helmets.



## Peterson Middle School Hand Tallies, Spring 2018



Hand tally data was collected for the following modes: walk, bicycle, family vehicle, carpool, school bus, public transit, and other (scooter, skateboard, etc.) Only values above 2% are listed above, with the exception of including bicycling regardless of value.

## SUMMARY OF EXISTING CONDITIONS

### **Poplar Avenue / El Camino Real**

- This is a four-way signalized intersection. Caltrans, which owns and operates El Camino Real, recently installed high-visibility crosswalks across all four approaches, and pedestrian signal heads with countdown timers at this location.
- All four corners of the intersection have large radii, allowing for fast vehicle turns.

### **Henderson Avenue / El Camino Real**

- This is a four-way signalized intersection. Caltrans, which owns and operates El Camino Real, recently installed high-visibility crosswalks across all four approaches, and pedestrian signal heads with countdown timers at this location.
- The majority of students bicycling to school and dozens of students walking to school passed through this intersection across the eastern approach.

### **Henderson Avenue / Bryant Way**

- This is a four-way stop-controlled intersection with one marked crosswalk across the eastern approach.

- All school bicycle traffic uses Bryant Way to access bicycle parking or exit after school.

### **Poplar Avenue / Bryant Way / Rosalia Avenue**

- There are no sidewalks or bicycle lanes along Poplar Avenue from the school to Bryant Way, leading to conflict between people walking, bicycling, and driving.
- Multiple signs along these roads are blocked by vegetation.

### **Rosalia Avenue**

- This road serves as the main drop-off/pick-up area for the school for students arriving or leaving by private vehicle.
- There is no sidewalk on the northern side of the road.

### **Parking Lot / Campus Renovations**

- Future renovations will relocate the school's bicycle parking.



The above items are recommendations only and based on Safe Routes to Schools site assessment best practices. Feasibility determination, final design, accessibility, funding, and implementation are separate processes.

# Safe Routes to Schools Improvement Plan

## Peterson Middle School, Sunnyvale

School Audit held May 2019

1

### Poplar Avenue/El Camino Real

- Upgrade north and south crosswalks to high visibility.
- Install directional curb ramps on all corners of intersection to reduce corner turn radii.
- Install sharrows on Poplar Avenue.
- Install advance stop markings ahead of all approaches
- Consider modifying vehicular flow by:
  - Adding separate left turn phases for both northbound and southbound traffic.
  - Extending the westbound left turn queue.
  - Installing vehicle detection.

2

### Henderson Avenue/El Camino Real

- Upgrade north and south crosswalks to high visibility.
- Install directional curb ramps on all corners to reduce corner turn radii.
- Install sharrows on Henderson Avenue.
- Install advance stop markings ahead of all approaches.
- Consider modifying vehicular flow by adding separate left turn phases for both northbound and southbound traffic and installing vehicle detection.

3

### Henderson Avenue/Bryant Way

- Upgrade existing east crosswalk to high visibility.
- Install high visibility crosswalks on north and west legs of intersection.

4

### Poplar Avenue/Bryant Way/Rosalia Avenue

- Trim vegetation around the school to make signs more visible to all road users.
- Audit the school guide signs to determine if there are any conflicting signs or signs that need to be removed.
- Install "Vehicles Yield to Ped" signage on westbound Bryant Way.
- LONG TERM: Install high visibility crosswalks across eastern and southern legs of Bryant Way/Poplar Avenue intersection if sidewalk is installed along Poplar Avenue.
- LONG TERM: Install missing sidewalk along Poplar Avenue as feasible. This would require residents to form and pay into an Assessment District. Alternatively, study removal of parking on one side of street and install a pedestrian/bicycle path with delineators.

5

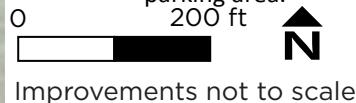
### Rosalia Avenue (see insert)

- Using the landscaped area north of Rosalia Avenue, construct 10-feet of sidewalk to serve the northern loading lane. Add curb ramps to both sides of the crosswalks to access this area. Restrict students from walking across the drop-off area except in the crosswalks.
- Restripe this segment of Rosalia Avenue to reflect the realigned lanes and to better delineate the area.
- If feasible, consider assigning school staff to monitor the crosswalks to help meter students across.

6

### Campus Renovations (see insert)

- The future campus renovations will relocate the school's bicycle parking. Special care needs to be taken to reasonably accommodate bicycle movements.
  - If possible, allow for access from both sides of the parking facility and work with school community to identify additional bike parking locations.
  - Students biking from the west or arriving via Poplar Avenue, should follow the traffic flow and enter the parking area from the parking lot driveway on Rosalia Avenue.
  - Students biking from the east should arrive via Bryant Way and enter via the western parking lot driveway. A dedicated pathway for bicyclists should be maintained from the driveway to the parking area.



# Ponderosa Elementary School

804 Ponderosa Ave.  
Sunnyvale, CA 94086

GRADES

**K-5**



SCHOOL TYPE

**NEIGHBORHOOD**



ENROLLMENT

**590**



**44%**



ENGLISH  
LANGUAGE  
LEARNERS

(260)

**26%**



FREE/  
REDUCED  
LUNCH

(153)

**Ponderosa Elementary School** is located in a residential neighborhood in central Sunnyvale, adjacent to Ponderosa Park. There is newly-installed bicycle parking at the Ponderosa Avenue entrance and behind the school near the baseball diamond. Each October, Ponderosa Elementary hosts a Bike Train and uses that opportunity to conduct helmet inspections and provide corrections. In 2019, the Bike Train had about 150 participants. Other previous SRTS activities at Ponderosa Elementary include kindergarten and 2nd grade in-class walk and bike education, Walk & Roll Day, and a bike repair event.

WALK AUDIT

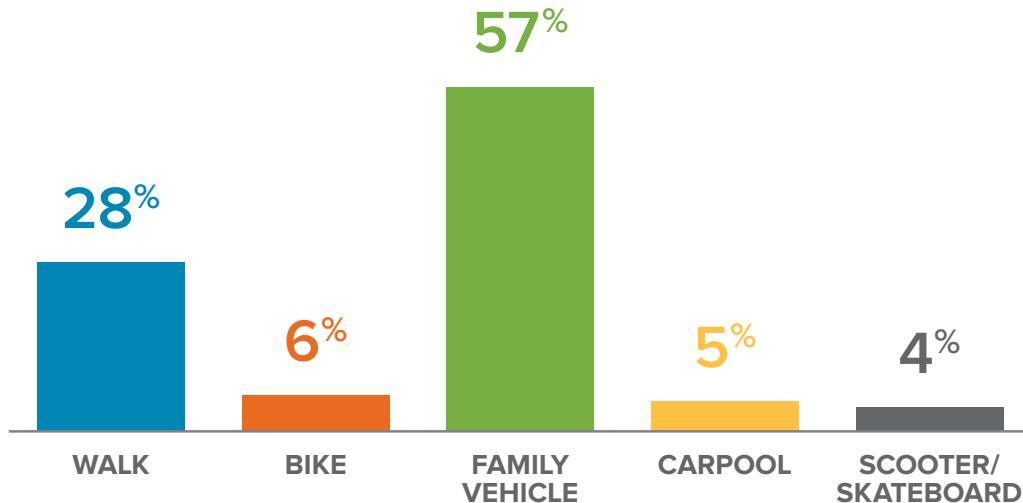
**MONDAY, MAY 20, 2019**

**ARRIVAL**

**DISMISSAL**



## Ponderosa Elementary School Hand Tallies, Spring 2018



Hand tally data was collected for the following modes: walk, bicycle, family vehicle, carpool, school bus, public transit, and other (scooter, skateboard, etc.) Only values above 2% are listed above, with the exception of including bicycling regardless of value.

## SUMMARY OF EXISTING CONDITIONS

### Sequoia Drive / Iris Avenue

- This is a T-intersection with a stop sign on Sequoia Drive, two transverse crosswalks, and a crossing guard stationed here during arrival and dismissal hours.
- Over 120 people walking were observed during a fifteen-minute timeframe during the arrival period.

### Ponderosa Avenue / Iris Avenue

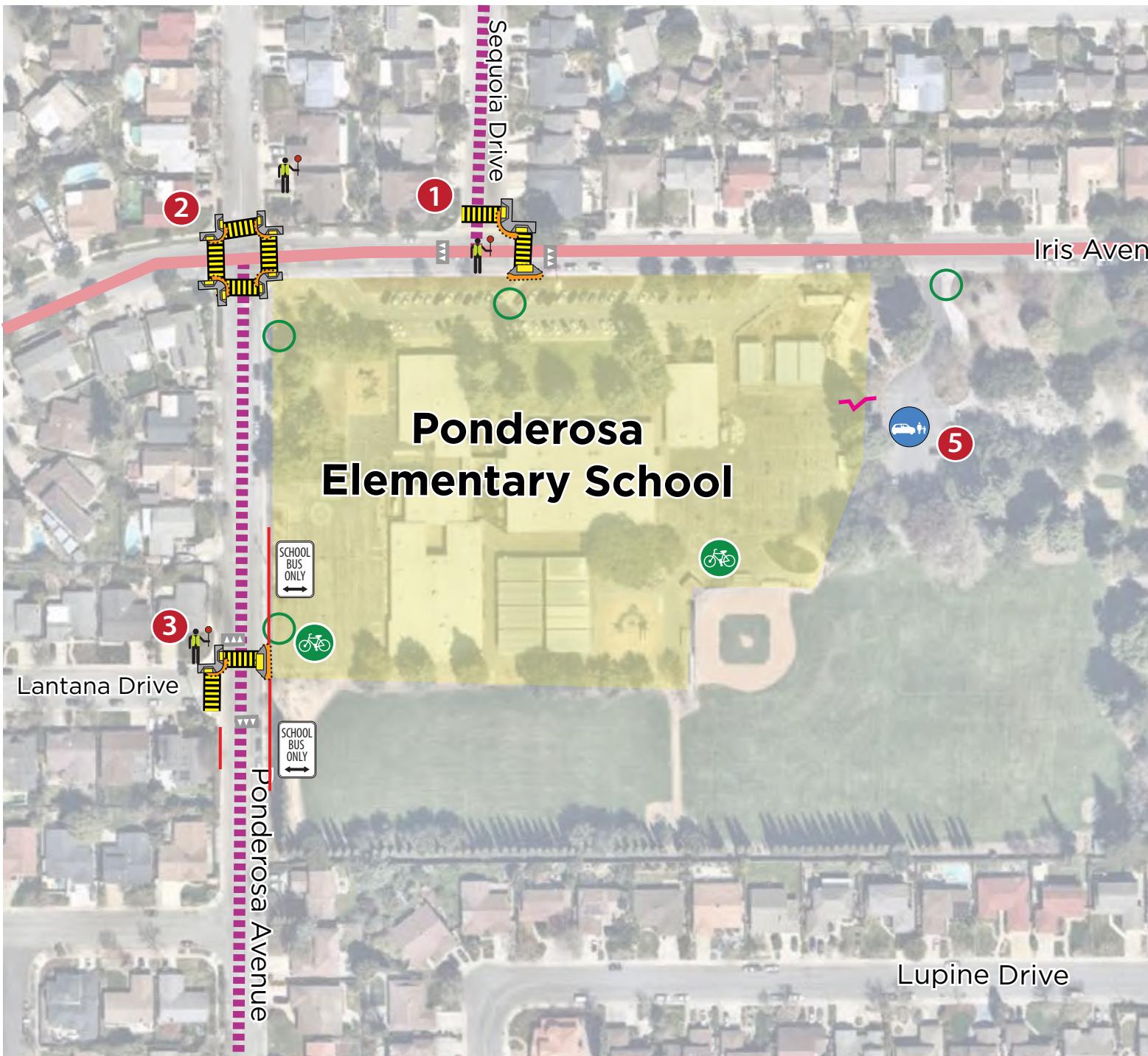
- This is a four-way stop-controlled intersection with standard crosswalks on all approaches.
- Many people driving were observed failing to come to a complete stop at the intersection.

### Ponderosa Avenue / Lantana Drive

- There is a crossing guard stationed at this intersection during arrival and dismissal hours.
- Existing high-visibility crosswalk and red curb paint are faded.

### Henderson Avenue / Lily Avenue

- This is a T-intersection with stop-control on Lily Avenue and a crossing guard stationed here during arrival and dismissal hours.
- There is an existing RRFB on the south leg of the intersection.
- Walk audit participants observed people driving into the crosswalk while waiting to turn onto Henderson Avenue from Lily Avenue.



#### Existing Conditions

- Crossing Guard
- School Access Point
- Bike Parking

#### Recommendations

- High-Visibility Crosswalk
- Directional Curb Ramps

#### Recommendations (continued)

- Advance Yield Markings
- Curb Extension
- Path/Gate
- Red Curb
- Park and Walk Location
- R24A "School Bus Only" Signage

■ Class III Bicycle Route

■ Class IIIB Bicycle Boulevard

#### Implementing Agency

- # Santa Clara Unified School District
- # City of Sunnyvale

# Safe Routes to Schools Improvement Plan

## Ponderosa Elementary School

### Sunnyvale

School Audit held May 2019

#### 1 Sequoia Drive/Iris Avenue

- Upgrade transverse crosswalks to high visibility crosswalks.
- Install advance yield markings.
- Install curb extensions and directional ramps on northeast and southeast corners.

#### 2 Ponderosa Avenue/Iris Avenue

- Upgrade existing crosswalks to high visibility.
- Install curb extensions and directional ramps on all four corners.

#### 3 Ponderosa Avenue/Lantana Drive

- Repaint the crosswalks.
- Add advance yield markings on both sides of crosswalk on Ponderosa Ave.
- Repaint and extend red curb on the southwest corner of the intersection to a total length of 20'.
- Extend the red curb both northward and southward and add "School Bus Only" (R24A) signage.
- Install curb extensions and directional ramps on northwest and northeast corners.

#### 4 Henderson Avenue/Lily Avenue

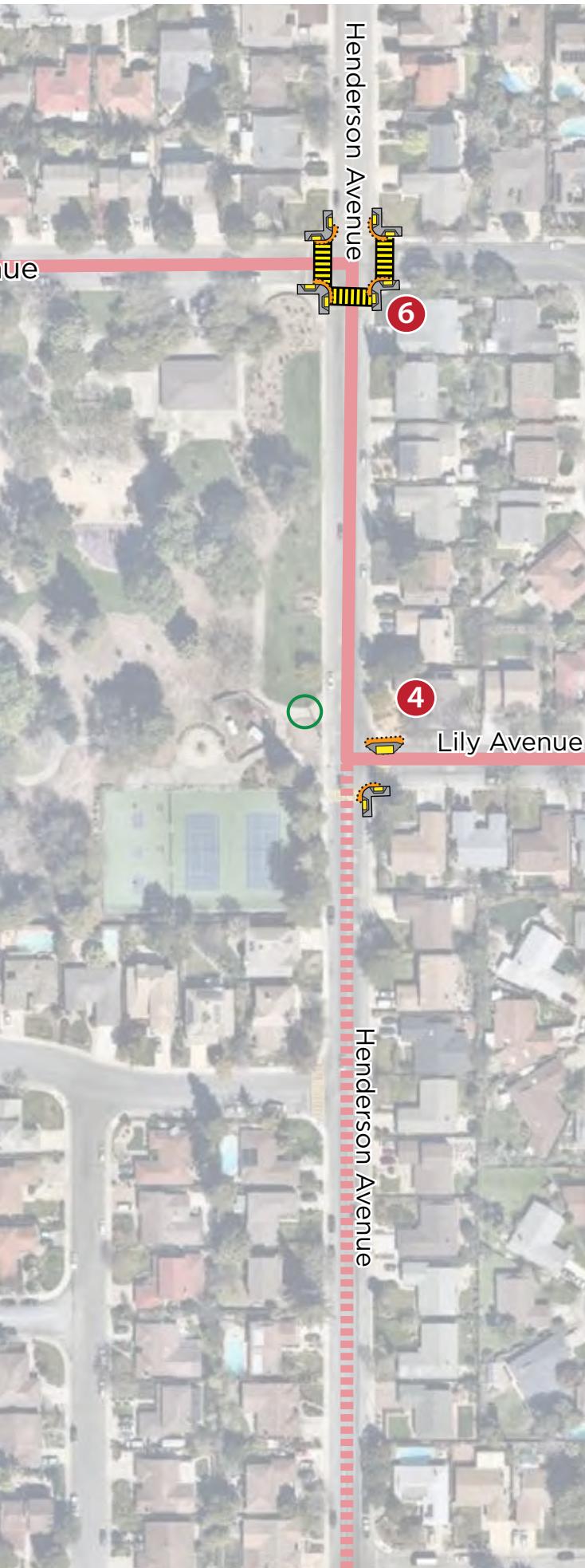
- Install curb extension on northeast corner of intersection facing Lily Avenue.
- Install curb extension and directional ramps on southeast corner of intersection.

#### 5 Ponderosa Park Parking Lot

- Designate the lot as a "Park & Walk" location.
- Coordinate with Park Division to identify and construct a path and access route to the school.

#### 6 Henderson Avenue/Iris Avenue

- Install curb extensions and directional ramps on all four corners.
- Upgrade existing crosswalks to high-visibility.



0 200 ft  
N  
Improvements not to scale

# San Miguel Elementary School

777 San Miguel Ave.  
Sunnyvale, CA 94085

GRADES

**K-5**



SCHOOL TYPE

**NEIGHBORHOOD**



ENROLLMENT

**403**



**57%**



ENGLISH  
LANGUAGE  
LEARNERS

(231)

**57%**



FREE/  
REDUCED  
LUNCH

(229)

WALK AUDIT

**THURSDAY, APRIL 25, 2019**

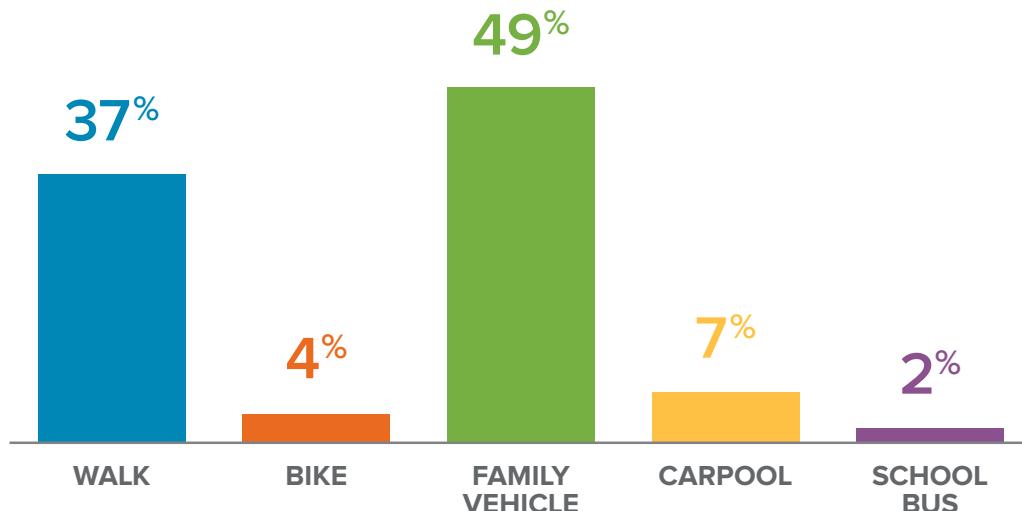
ARRIVAL

DISMISSAL

**San Miguel Elementary School** is located in a residential neighborhood in the northeastern section of the city. Previous SRTS activities at San Miguel Elementary includes Kindergarten, 2nd and 4th grade in-class walk and bike education, a bike rodeo, and multiple Family Bike Nights.



## San Miguel Elementary School Hand Tallies, Spring 2018



Hand tally data was collected for the following modes: walk, bicycle, family vehicle, carpool, school bus, public transit, and other (scooter, skateboard, etc.) Only values above 2% are listed above, with the exception of including bicycling regardless of value.

## SUMMARY OF EXISTING CONDITIONS

### San Miguel Avenue School Frontage

- There is a one-way driveway in the front of the school.
- People were observed driving into the loop exit, and there is a faded “Do Not Enter” sign at the loop exit.

### San Miguel Avenue / Amador Avenue

- This is a T-intersection with stop-control on Amador Avenue, standard crosswalks across two approaches and a crossing guard stationed during arrival and dismissal hours.
- Walk audit participants observed people driving quickly after yielding to people crossing in the crosswalks.

### San Miguel Avenue / Alvarado Avenue

- This is a T-intersection with no crosswalks or stop control devices.
- Walk audit participants observed people driving at high speeds along Alvarado Avenue and while turning.

215

### San Junipero Drive / Alvarado Avenue

- This is a T-intersection with no stop control, standard crosswalks across two approaches, and a crossing guard stationed here during arrival and dismissal hours.
- Walk audit participants observed people parking vehicles in the bus loading zone east of San Junipero.

### San Juan Drive / Blythe Avenue

- This is a T-intersection with no stop control and high-visibility crosswalks across two approaches.
- There is an access point to the school at this location.



## San Miguel Elementary School

Existing Conditions	Recommendations
School Access Point	"Do Not Enter" Signage
Class IIIB Buffered Bicycle Lane	High-Visibility Crosswalk
Implementing Agency	
Sunnyvale School District	Advance Yield Markings
City of Sunnyvale	Vegetation Trimming
	Curb Ramp
	Path Improvements
	Raised Crosswalk
	Speed Feedback Sign
	Curb Extension
	Stop Sign Warrant Study
	Advance Stop Pavement Marking
	R26s "No Stopping At Any Time" Signage
	HAWK Beacon
	Class I Shared-Use Path
	Class IIIB Bicycle Boulevard
	Directional Curb Ramps

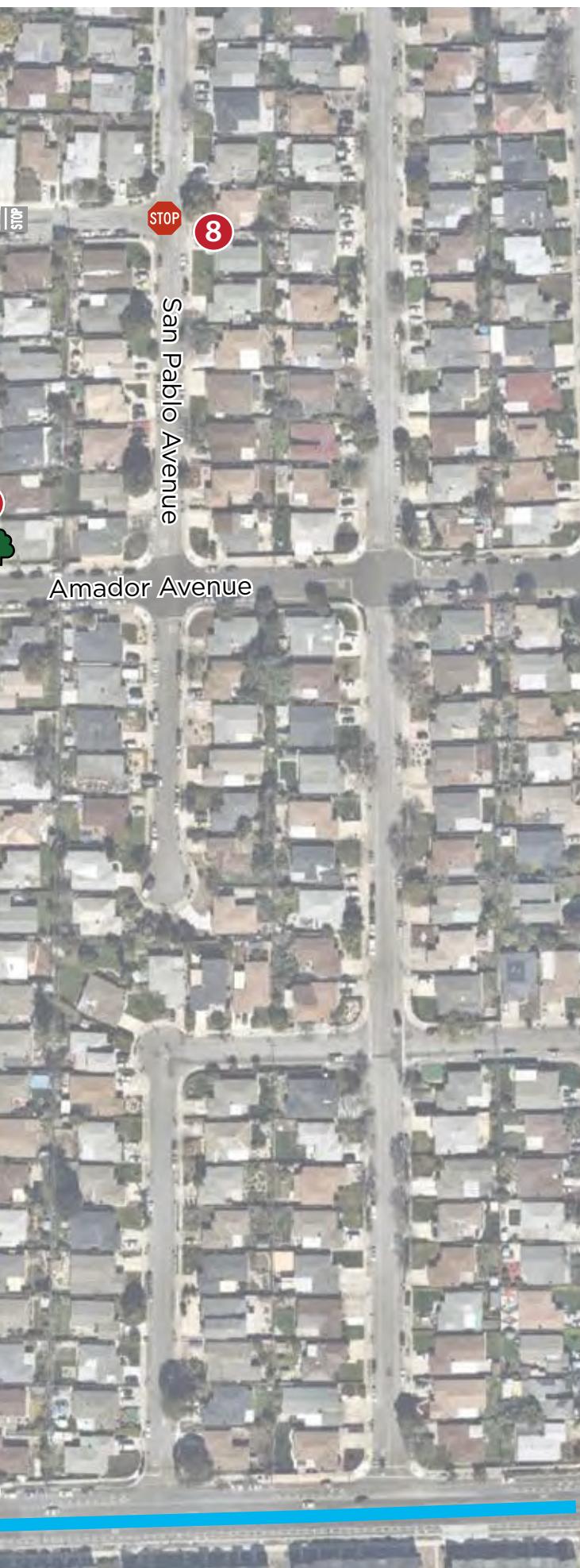
The above items are recommendations only and based on Safe Routes to Schools site assessment best practices. Feasibility determination, final design, accessibility, funding, and implementation of any recommendations are the responsibility of the City of Sunnyvale and the Sunnyvale School District.

# Safe Routes to Schools Improvement Plan

## San Miguel Elementary School

### Sunnyvale

School Audit held April 2019



- 1 San Miguel Avenue (School Frontage)**
  - Replace fading "Do Not Enter" sign at the loop exit.
- 2 San Miguel Avenue (School Frontage)**
  - Install speed feedback sign for southbound traffic.
- 3 San Miguel Avenue/Amador Avenue**
  - Upgrade east leg of intersection to high visibility crosswalk.
  - Install raised crosswalk on north leg of intersection across San Miguel Avenue.
  - Install curb extensions on northwest and southeast corners. Install curb extension and directional curb ramps on northeast corner.
  - Install advance yield markings on the north and south legs of the intersection.
  - Trim the tree on the northeast corner of the intersection so it does not cover the "Yield to Pedestrians" sign.
- 4 San Miguel Avenue/Alvarado Avenue**
  - Install high visibility crosswalks on the west and south legs of intersection.
  - Add curb extensions to the northwest and southwest corners.
  - Conduct stop sign warrant assessment for all three legs.
    - If stop signs are warranted:
      - Install high visibility crosswalk on east leg of intersection. Install midblock curb ramp on north side of east crosswalk.
      - Install advance stop pavement markings on all approaches.
    - If stop signs are not warranted, install advance yield markings on all legs of intersection.
- 5 San Junipero Drive/Alvarado Avenue**
  - Upgrade crosswalks to high visibility crosswalks.
  - Add advance yield markings to the east and west side of intersection.
  - Install "School Bus Only" (R24A) signage along red curb zone on Alvarado Ave.
  - Conduct a Stop or Yield sign warrant study for north leg of intersection. Install advance stop pavement markings if stop sign is warranted.
  - Install curb extensions and direction ramp on northeast corner of intersection. Install curb extension on northwest corner facing San Junipero.
  - Install speed feedback sign for southbound vehicular travel.
- 6 San Juan Drive/Blythe Avenue**
  - Upgrade path to ADA standards.
  - Install curb extension on southeast corner.
  - Install curb extension and directional ramps on southwest corner.
  - Install curb extension and directional ramp on northwest corner facing Blythe Avenue.
- 7 San Miguel Avenue/Duane Avenue**
  - Install HAWK beacon on both east and west legs of intersection.
- 8 San Pablo Avenue/Alvarado Avenue**
  - Conduct warrant study for stop sign and crosswalk.

0 200 ft Improvements not to scale



# Stocklmeir Elementary School

592 Dunholme Way  
Sunnyvale, CA 94087

GRADES

**K-5**



SCHOOL TYPE

**NEIGHBORHOOD**



ENROLLMENT

**1,106**



**17%**



ENGLISH  
LANGUAGE  
LEARNERS

(186)

**4%**



FREE/  
REDUCED  
LUNCH

(41)

WALK AUDIT

**MONDAY, MAY 6, 2019**

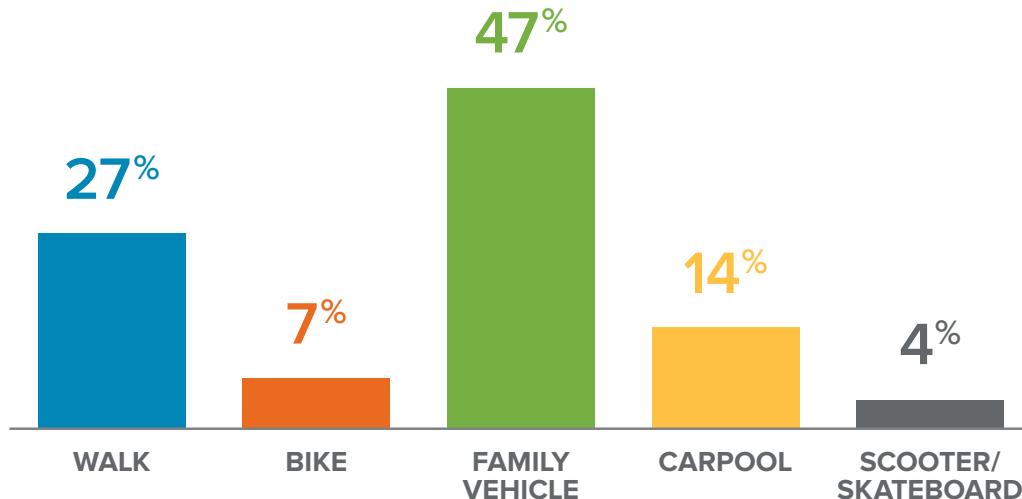
ARRIVAL

DISMISSAL

**Stocklmeir Elementary School** is located in a suburban area of Sunnyvale in the southern portion of the city. It is on the same block as Ortega Park. The school handbook on the district webpage outlines parking and drop-off areas. Stocklmeir Elementary has hosted an annual bicycle rodeo since at least 2017. In September 2019, the school hosted the Bay Area BikeMobile in addition to the bicycle rodeo, and 20 helmets were fitted and distributed to students.



## Stocklmeir Elementary School Hand Tallies, Spring 2018



Hand tally data was collected for the following modes: walk, bicycle, family vehicle, carpool, school bus, public transit, and other (scooter, skateboard, etc.) Only values above 2% are listed above, with the exception of including bicycling regardless of value.

## SUMMARY OF EXISTING CONDITIONS

### Bittern Drive / Dunholme Way

- This is a four-way stop-controlled intersection with standard crosswalks across all four approaches.

### Chickadee Court / Dunholme Way

- This is a T-intersection with stop control on Chickadee Court and high-visibility crosswalks across two approaches.
- Walk audit participants observed parents parking on Chickadee Court to drop-off and pick-up students, requiring students to cross Dunholme Way.

### Chukar Court / Dunholme Way

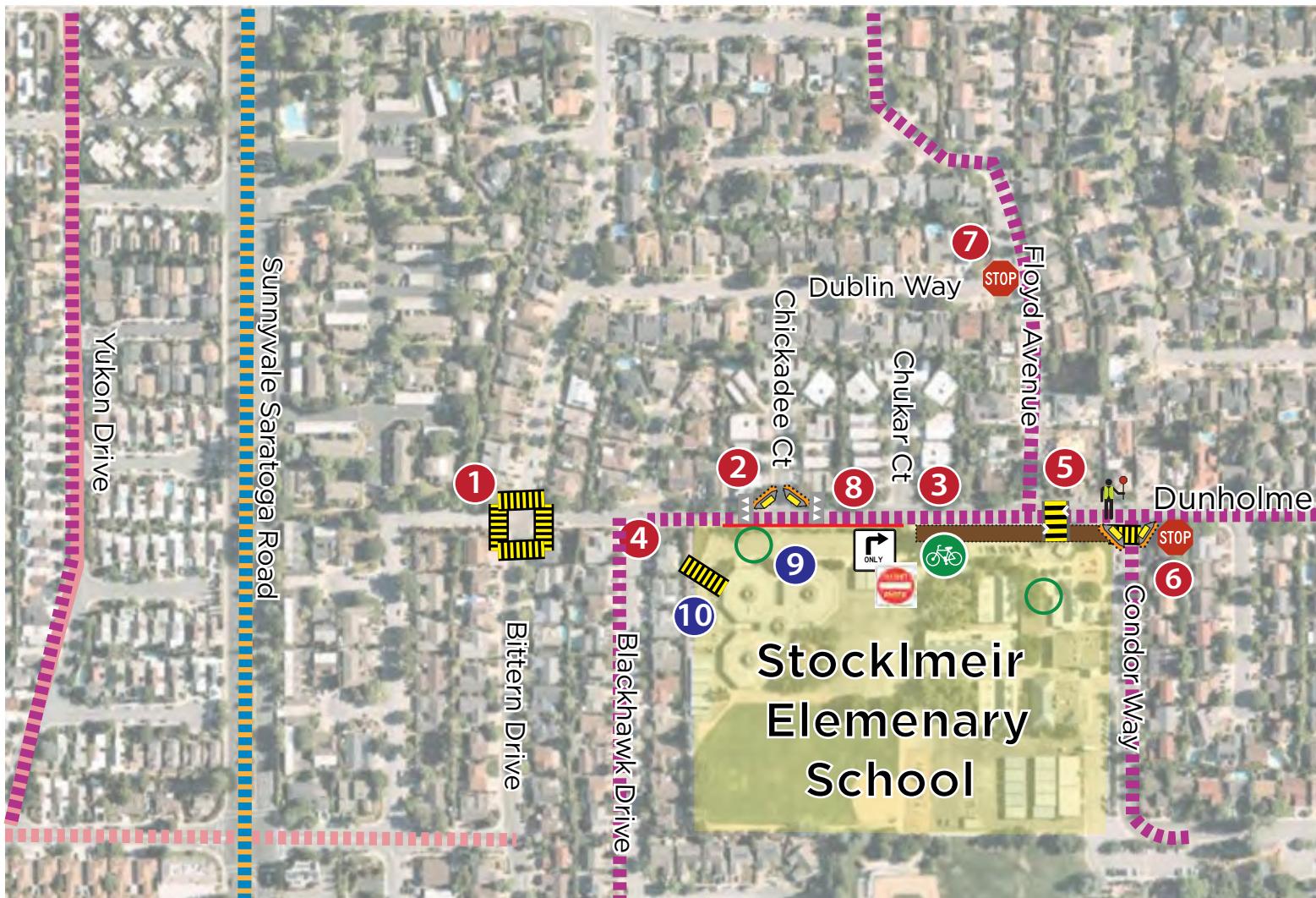
- This is a T-intersection with no stop control and no crosswalks.
- Walk audit participants observed parents parking on Chukar Court to drop-off and pick-up students, requiring students to cross Dunholme Way.

### Blackhawk Drive / Dunholme Way

- This is a four-way intersection with stop control on Blackhawk Drive and high-visibility crosswalks crossing Blackhawk Drive.
- Parents driving to the loop on Dunholme Way queue in the eastbound lane, which causes congestion on Blackhawk Drive.

### West Parking Lot

- Over 50 students and over 20 parents were observed using a faded crosswalk to access the school from the northwest side of campus.



#### Existing Conditions

- Bicycle Parking
- Crossing Guard
- School Access Point

Class II Bicycle Lane

Class III Bicycle Route

#### Recommendations

- Curb Extension
- Raised Crosswalk
- Sidewalk
- Red Curb
- High Visibility Crosswalk
- Advance Yield Markings
- “Do Not Enter” Signage

Stop Sign Warrant Study

“Right Turn Only” Signage

Class I Shared-Use Path

Class III Bicycle Route

Class IIIB Bicycle Boulevard

Class IV Separated Bikeway

#### Implementing Agency

City of Sunnyvale

Cupertino Union School District

# Safe Routes to Schools Improvement Plan

## Stocklmeir Elementary School

### Sunnyvale

School Audit held May 2019

- 
- 1 Bittern Drive/Dunholme Way**
    - Upgrade to high visibility crosswalks on all four legs of intersection.
    - Install advance stop lines on all four legs of intersection .
  - 2 Chickadee Court/Dunholme Way**
    - Install advance yield lines across Dunholme Way ahead of intersection to increase yield rates for the crosswalk.
    - Install curb extensions on southwest and northwest corners.
  - 3 Chukar Court/Dunholme Way**
    - Widen sidewalks on school frontage from Chukar to Condor Way in order to support the greater foot traffic this area receives.
  - 4 Blackhawk Drive /Dunholme Way**
    - Consider installing centerline striping along Dunholme Way between Bittern Drive and Blackhawk Drive.
  - 5 Floyd Avenue/Dunholme Way**
    - Install raised crosswalk on east leg of intersection.
  - 6 Condor Way /Dunholme Way**
    - install curb extensions on the southeast and southwest corners of intersection.
    - Upgrade south crosswalk to high visibility.
    - Conduct a stop sign warrant analysis for south leg of intersection.
  - 7 Floyd Avenue/Dublin Way**
    - Conduct a stop sign warrant analysis for the west leg of intersection.
  - 8 School Frontage**
    - Repaint red curb along school frontage in front of drop-off loop.
  - 9 School Drop-Off Loop**
    - Convert drop-off loop to one-way-in, one-way-out during drop-off/pick-up in front of school.
    - Install "Do Not Enter" and Right-Turn signage at eastern driveway of school drop-off loop.
  - 10 West Parking Lot**
    - Repaint crosswalk inside staff parking lot to increase visibility.

0 200 ft  
Improvements not to scale



## Sunnyvale Middle School

1080 Mango Ave.  
Sunnyvale, CA 94087

GRADES

**6-8**



SCHOOL TYPE

**NEIGHBORHOOD**



ENROLLMENT

**1,211**



**14%**



ENGLISH  
LANGUAGE  
LEARNERS

(165)

**24%**



FREE/  
REDUCED  
LUNCH

(295)

WALK AUDIT

**THURSDAY, MAY 30, 2019**

ARRIVAL

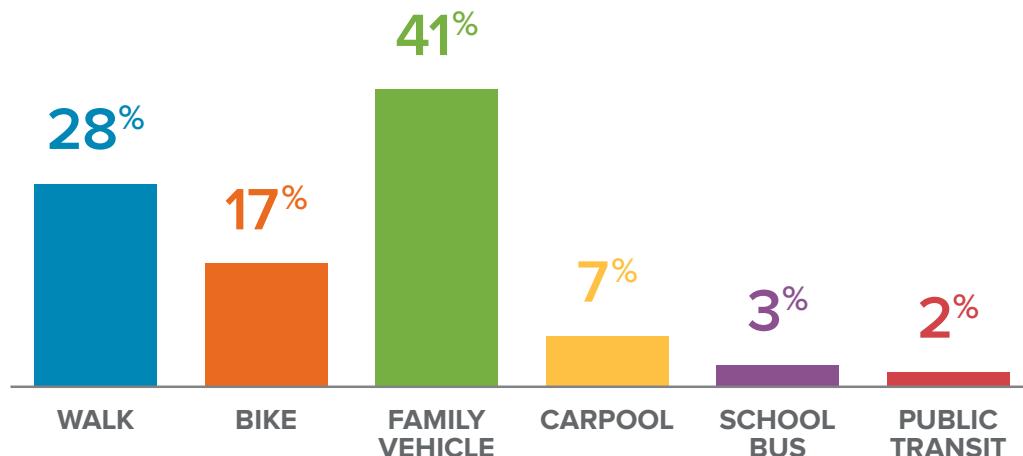
DISMISSAL

### Sunnyvale Middle School

is located in a residential neighborhood in the southwestern section of the city. Bicycle parking is available on the north side of the school campus, accessible via Mango Avenue, and is often highly used. There is an active SRTS team at the school comprised of school administration, teachers, parents, students, and bicycling advocates. This group published a “Sunnyvale Middle School Walking and Biking Guide,” which is distributed to families and includes a route map and tips for safe bicycling, walking, skating, and driving. This team also prepares SRTS tips for students and parents, distributed via e-newsletter and the in-school TV channel. In 2017, the school hosted a Family Fun Bike Night. The school hosted a helmet fitting and distribution event in June 2019. In October 2019, the school hosted the Bay Area BikeMobile, and fitted and distributed helmets to 15 students.



## Sunnyvale Middle School Hand Tallies, Spring 2018



Hand tally data was collected for the following modes: walk, bicycle, family vehicle, carpool, school bus, public transit, and other (scooter, skateboard, etc.) Only values above 2% are listed above, with the exception of including bicycling regardless of value.

## SUMMARY OF EXISTING CONDITIONS

### Mango Avenue

- Mango Avenue is the primary pick-up/drop-off location for Sunnyvale Middle School students and families arriving by private car.
- There is a curbside loading zone on Mango Avenue that is inefficiently used by parents due to lack of lane striping.

### Mango Avenue / W. Knickerbocker Drive

- This is a four-way, all-way stop controlled intersection with two crossing guards stationed at this intersection. Each crossing guard meters students walking and bicycling across two approaches.
- The majority of school-related traffic (all modes) passes through this intersection.

### S. Mary Avenue

- Students who bicycle to/from campus use a path on the northern side of campus to enter/exit the school via S. Mary Avenue.

- 223
- Students were observed bicycling on the sidewalk along S. Mary Avenue before entering the S. Mary Avenue / W. Knickerbocker Drive intersection to reach the east side of S. Mary Avenue to continue riding north.

### Mango Avenue / W. Remington Drive

- This is a T-intersection with stop control on Mango Avenue, two high-visibility crosswalks, and pedestrian-actuated in-road warning lights across W. Remington Drive.
- There are two VTA bus stops on W. Remington Drive (one at Mango Avenue and one at S. Mary Avenue) for Line 53. The stop at Mango Avenue blocks visibility of students waiting to cross.



The above items are recommendations only and based on Safe Routes to Schools site assessment best practices. Feasibility determination, final design, accessibility, funding, and implementation of any recommendations are the responsibility of the City of Sunnyvale and the Sunnyvale School District.

# Safe Routes to Schools Improvement Plan

Sunnyvale Middle School,

Sunnyvale

School Audit held May 2019

1

## Mango Avenue

- Install R3-4 "No U-turn" signage along the eastern sidewalk.
- Restripe the yellow centerline as with a Detail 22 yellow stripe to discourage encroachment into opposing travel lanes.

2

## Mango Avenue/W. Knickerbocker Drive

- Install curb extensions and directional ramps at all four corners.

3

## S. Mary Avenue/Knickerbocker Drive

- Place new crossing guard at intersection.

4

## Mango Avenue/W. Remington Drive

- Upgrade the existing IRWL to an RRFB.
- Install curb extensions at the northwest, northeast, and southeast corners.
- Work with VTA to consolidate/relocate the bus stops on Remington Drive to increase visibility of the northeast corner.
- Install directional ramps at northeast corner.

5

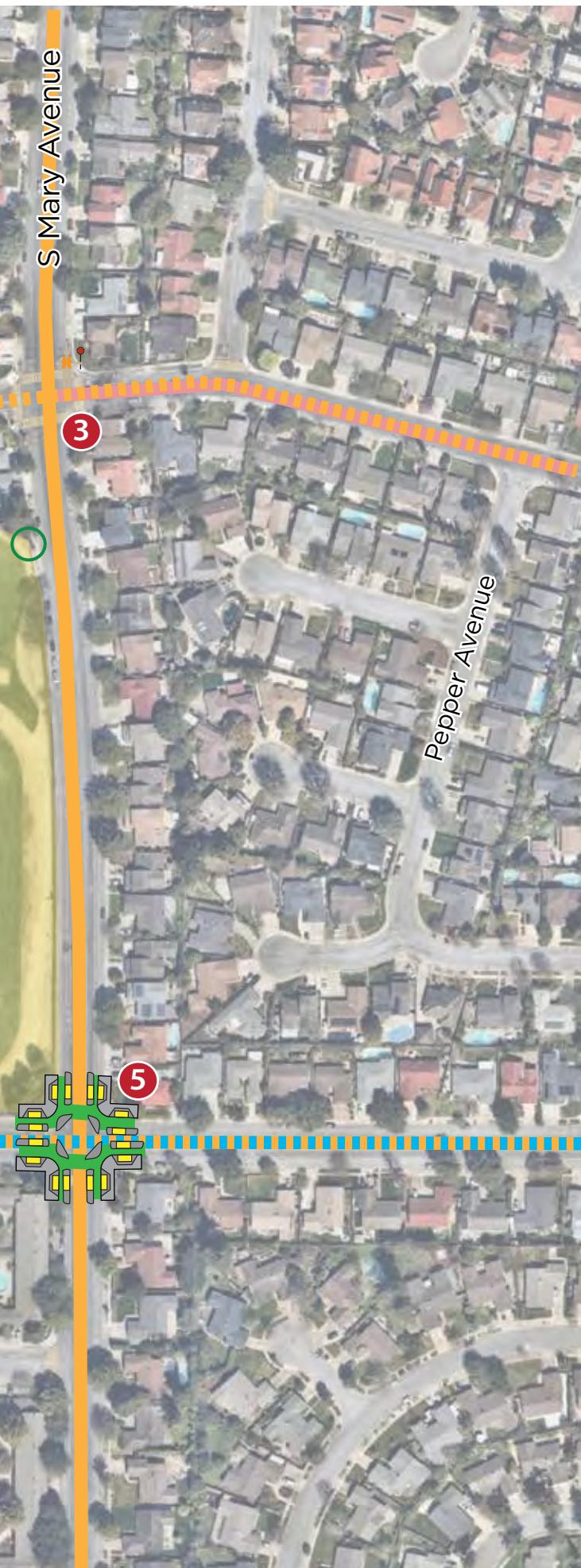
## S. Mary Avenue/W. Remington Drive

- Install protected intersection.

6

## School Campus

- Install a curb ramp at the southern side of the crosswalk near the parking lot entry driveway.
- Delineate a path for bicycles from the bicycle parking area through the exit driveway to separate uses.
- Update the driveways along the school frontage to meet current city standards.



0 200 ft  
Improvements not to scale



# Vargas Elementary School

1054 Carson Dr.  
Sunnyvale, CA 94086

GRADES

**K-5**



SCHOOL TYPE

**NEIGHBORHOOD**



ENROLLMENT

**484**



**46%**



ENGLISH  
LANGUAGE  
LEARNERS

(220)

**47%**



FREE/  
REDUCED  
LUNCH

(229)

WALK AUDIT

**TUESDAY, MAY 7, 2019**

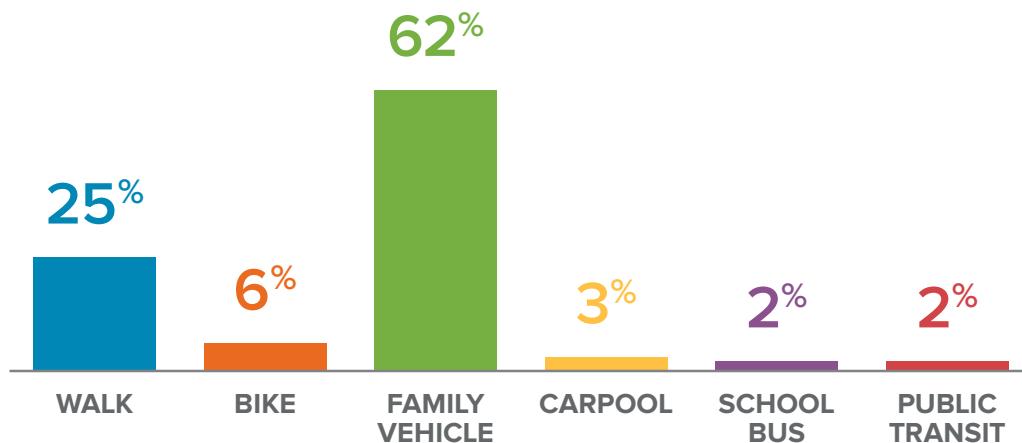
ARRIVAL

DISMISSAL

**Vargas Elementary School** is located in the central-west section of the city. Bicycle parking is provided, but it is not secured and is over capacity. Some students leave their bikes against a nearby shed due to lack of bicycle parking space. Previous SRTS activities at Vargas Elementary have included Kindergarten in-class education and a bike repair event hosted by the Bay Area BikeMobile.



## Vargas Elementary School Hand Tallies, Spring 2018



Hand tally data was collected for the following modes: walk, bicycle, family vehicle, carpool, school bus, public transit, and other (scooter, skateboard, etc.) Only values above 2% are listed above, with the exception of including bicycling regardless of value.

## SUMMARY OF EXISTING CONDITIONS

### Mary Avenue / Carson Drive

- This is a four-way intersection with stop control on Carson Drive and two high-visibility crosswalks across Carson Drive.
- Large radii at all corners of this intersection allow for fast vehicle turns.

### Carson Drive near Back Entrance / School Bus Stop

- Some families use the front-in angled parking at this location for drop-off, while other families park behind them and cause congestion and confusion.

### Leota Avenue / Carson Drive

- This is a four-way stop-controlled intersection with standard crosswalks across all approaches and a crossing guard stationed during arrival and dismissal hours.
- Large radii at all corners of this intersection allow for fast vehicle turns.

### Leota Avenue / Driveway Loop

- Walk audit participants observed people driving above safe speeds along Leota Avenue.
- Many parents were observed turning left out of the driveway loop, despite the posted Right Turn Only sign.

### Leota Avenue / Washington Avenue

- This is a four-way stop-controlled intersection with standard crosswalks across all approaches and a crossing guard stationed during arrival and dismissal hours.
- Skewed intersection geometry and large corner radii promote fast turns.



The above items are recommendations only and based on Safe Routes to Schools site assessment best practices. Feasibility determination, final design, accessibility, funding, and implementation are the responsibility of the implementing agency.

# Safe Routes to Schools Improvement Plan

## Vargas Elementary School

### Sunnyvale

School Audit held May 2019

#### 1 Mary Avenue/Carson Drive

- Install curb extensions across Carson drive on the east and west legs of intersection. Install directional ramps across Mary Ave on the southwest and southeast corners.
- Install high-visibility crosswalks on south leg of intersection.
- Install HAWK beacon on south leg of intersection.
- Trim vegetation on southwest corner.

#### 2 Carson Drive near Back Entrance/Bus Stop

- Conduct traffic calming warrant study along Carson Drive. Install traffic calming if warranted.
- Install double yellow centerline along Carson Drive.

#### 3 Leota Avenue/Carson Drive

- Convert crosswalks to high-visibility crosswalks.
- Install curb extensions and directional ramps at all four corners of intersection.

#### 4 Leota Avenue/Drop-Off Loop

- Conduct traffic calming warrant study along Leota Avenue. Install traffic calming if warranted.
- Install double yellow centerline along Leota Avenue.

#### 5 Leota Avenue/Washington Avenue

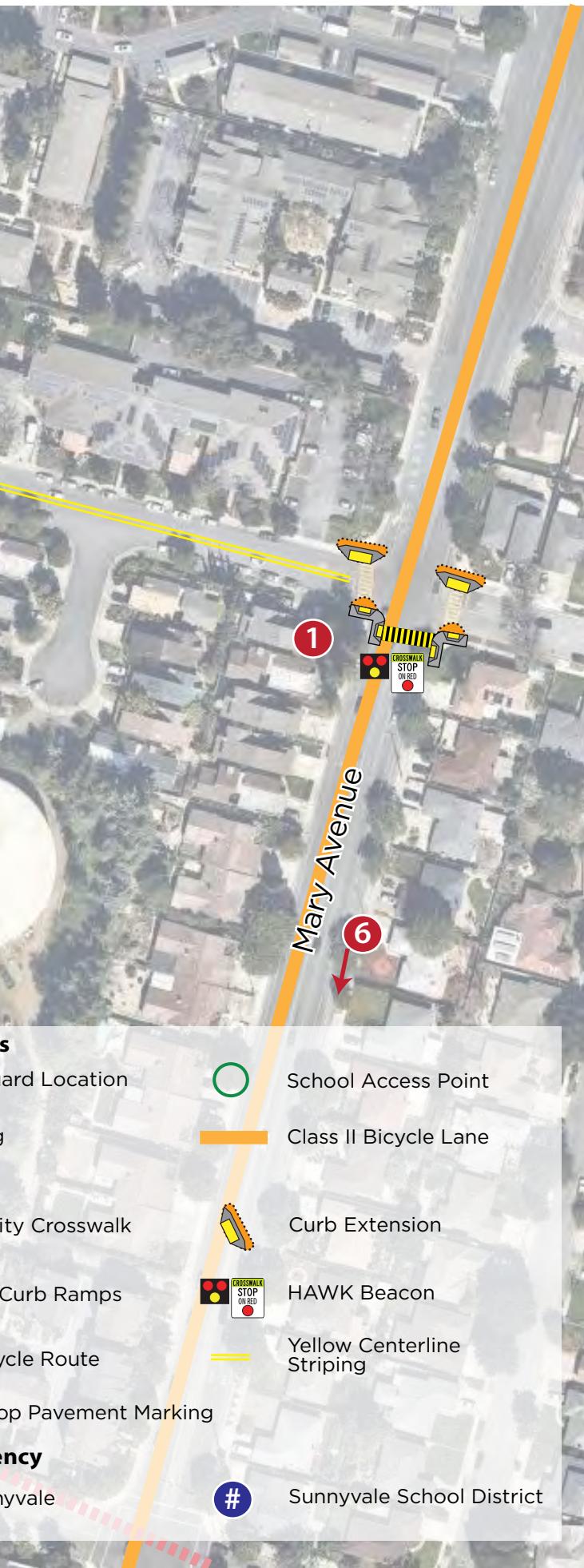
- Convert crosswalks to high-visibility crosswalks.
- Install curb extensions on northeast and southwest corners of intersection. Install directional curb ramps on all corners.
- Install advance stop pavement markings on all legs.

#### 6 Mary Avenue/Washington Avenue (see insert)

- Install directional curb ramps at all four corners and reduce turning radii at all corners.
- Upgrade existing crosswalks to high-visibility.

#### 7 School Campus

- Upgrade and expand bike parking areas.



0 200 ft



Improvements not to scale



Sunnyvale

# West Valley Elementary School

1635 Belleville Way  
Sunnyvale, CA 94087

GRADES

**K-5**



SCHOOL TYPE

**NEIGHBORHOOD**



ENROLLMENT

**554**



**13%**



ENGLISH  
LANGUAGE  
LEARNERS

(73)

**3%**



FREE/  
REDUCED  
LUNCH

(16)

WALK AUDIT

**MONDAY, MAY 13, 2019**

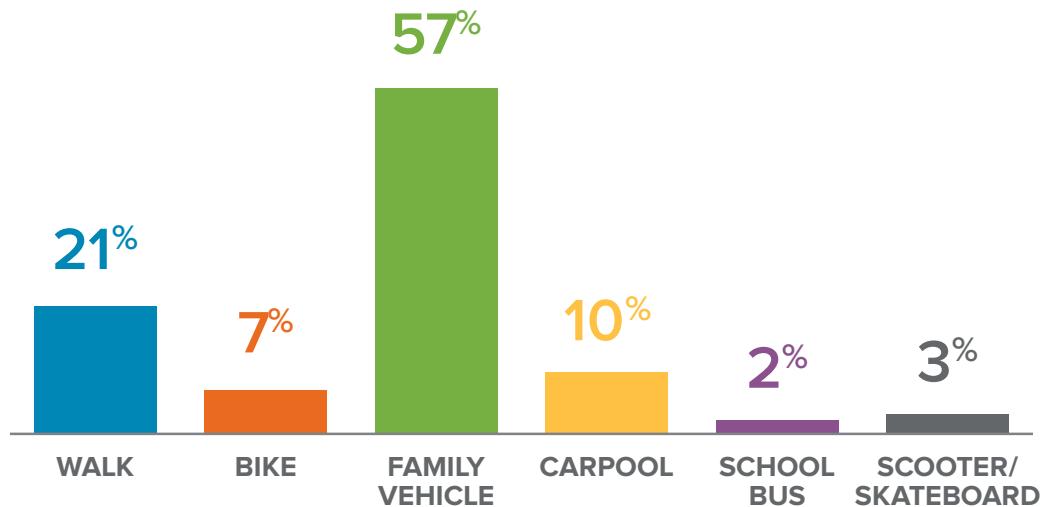
ARRIVAL

DISMISSAL

**West Valley Elementary School** is located in the southeast corner of the city next to Stevens Creek Trail. It is located near the Sunnyvale/Los Altos city border, and serves students from both cities. There is a shared-use path off of Fallen Leaf Lane that connects students who live on the west side of the creek to the back side of the elementary school. State Route 85 runs to the east of West Valley Elementary School, cutting it off from the rest of Sunnyvale.



## West Valley Elementary School Hand Tallies, Spring 2018



Hand tally data was collected for the following modes: walk, bicycle, family vehicle, carpool, school bus, public transit, and other (scooter, skateboard, etc.) Only values above 2% are listed above, with the exception of including bicycling regardless of value.

## SUMMARY OF EXISTING CONDITIONS

### Belleville Way / Driveway Loop Entrance

- Parents pull into the driveway loop; waiting parents queue along Belleville Way.

### Belleville Way / Driveway Loop Exit

- Students and families walk north on Belleville Way to reach the school, crossing both the driveway loop exit and entrance.

### Fallen Leaf Lane / Louise Lane

- There are no sidewalks on Fallen Leaf Lane at this location.

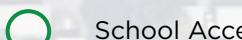
### Fallen Leaf Lane Pedestrian Pathway

- This pathway connects Fallen Leaf Lane to the school campus and is often used by students both walking and bicycling.
- In the morning during the walk audit, the lighting was poor and dense foliage blocked parts of the path.

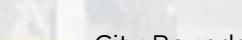
## West Element



### Existing Conditions



School Access

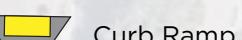


City Boundary

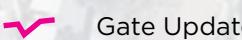
### Recommendations



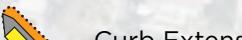
High-Visibility



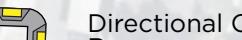
Curb Ramp



Gate Update



Curb Extension



Directional Curb Ramps

### Implementing Agency

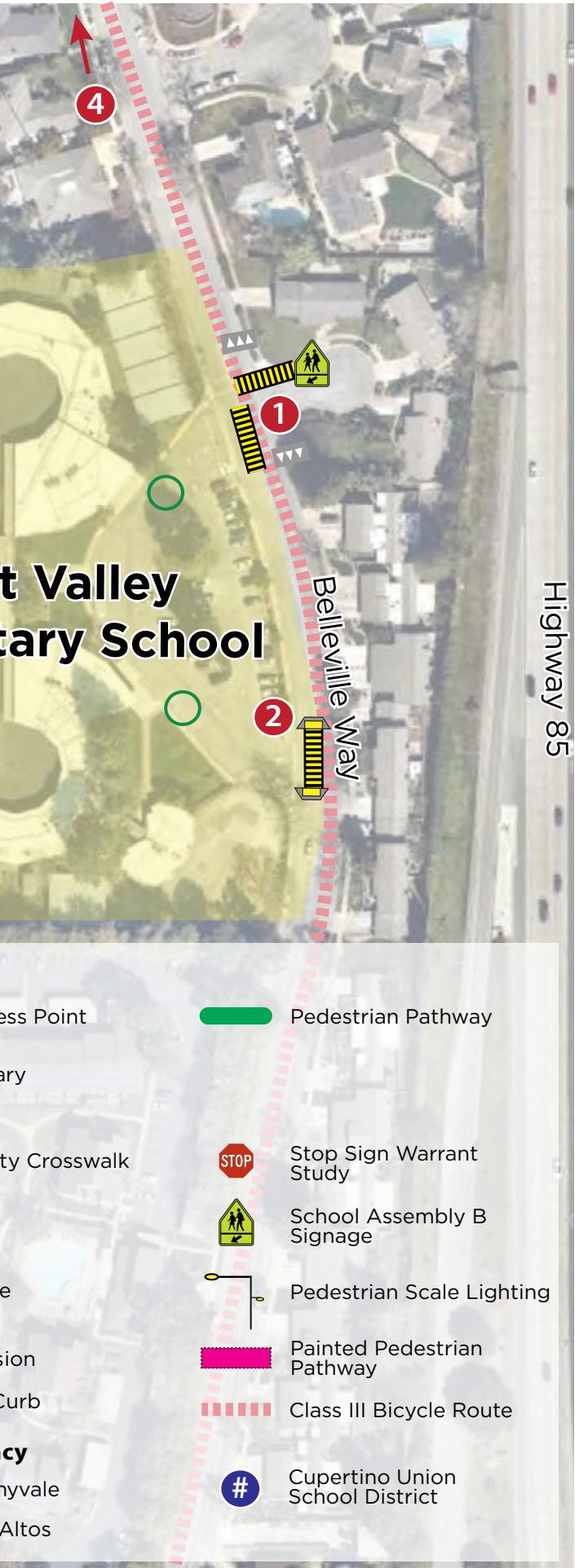


City of Sunnyvale



City of Los Altos





## Safe Routes to Schools Improvement Plan

### West Valley Elementary School, Sunnyvale

School Audit held May 2019

- 1 **Belleville Way/Parking Lot Entrance**
  - Upgrade crosswalks to high visibility.
  - Install advance yield markings.
  - Install School Assembly B signage.
- 2 **Belleville Way and Outbound School Driveway**
  - Install curb ramps and high-visibility crosswalk across driveway
- 3 **Fallen Leaf Lane/Louise Lane**
  - Install painted pedestrian walkway with flexible delineators on southeast corner of intersection; design bollards so that they will not be hit by right-turning vehicles and to be clear of existing driveway access at the corner.
- 4 **Belleville Way/The Dalles**
  - Install curb ramp at the west side exit of pedestrian bridge.
  - Install curb extensions and directional ramps on all four corners of intersection.
  - Please refer to Cupertino Middle School Recommendation map for additional improvements to east side of pedestrian bridge.
- 5 **Belleville Way/Barton Drive**
  - Consider promoting this as a bicycle entrance and ensuring that gates are open and unlocked during school drop-off and pick-up hours.
- 6 **Fallen Leaf Lane Pedestrian Pathway**
  - Increase width of pathway entrance at Fallen Leaf Lane by modifying the spacing of existing gates.
  - Install additional lighting along pathway.

0 200 ft  
Improvements not to scale



# Wilcox High School

3250 Monroe St.  
Santa Clara, CA 95051

GRADES

**9-12**



SCHOOL TYPE

**NEIGHBORHOOD**



ENROLLMENT

**1,961**



**16%**



ENGLISH  
LANGUAGE  
LEARNERS

(306)

**37%**



FREE/  
REDUCED  
LUNCH

(734)

WALK AUDIT

**THURSDAY, MAY 23, 2019**

ARRIVAL

DISMISSAL

**Wilcox High School** is located in a residential neighborhood in the City of Santa Clara. It serves both Sunnyvale and Santa Clara students. Wilcox High is serviced by VTA Bus 21.



## SUMMARY OF EXISTING CONDITIONS

### Calabazas Boulevard / Monroe Street

- This is a three-way signalized intersection with two standard crosswalks.
- The southwest and southeast corners of the intersection have large radii, allowing for fast vehicle turns.
- Many students walking and bicycling were observed turning left from Calabazas Boulevard to travel west on Monroe Street.

### Meadowbrook Drive / Monroe Street

- This is a four-way intersection with the exit of the school driveway loop on the south leg.
- There is a high-visibility crosswalk across Monroe Street with a HAWK beacon present, and there is a standard crosswalk across Meadowbrook Drive.

### Chromite Drive / Monroe Street

- This is a signalized T-intersection with standard crosswalks across two approaches.

### Calabazas Boulevard / Georgetown Place

- This intersection connects to a campus access point with on-campus bicycle parking. Many students riding bicycles cross Calabazas Boulevard to reach this location.
- This intersection is also the school bus loading area. At times, the bus can block visibility of the crosswalk.

### Glade Drive / Monroe Street

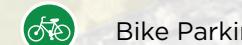
- This is a T-intersection with stop control on Glade Drive.
- There is a high-visibility crosswalk across Monroe Street with a HAWK beacon present, and there is a standard crosswalk across Glade Drive.

### Monroe Street

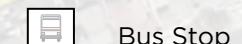
- School staff reported that people driving above safe speeds on Monroe Street is a longstanding issue for the school.



#### Existing Conditions

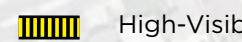


Bike Parking



Bus Stop

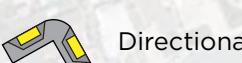
#### Recommendations



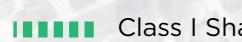
High-Visiblity Curb Extension



Crossbike Markings



Directional Markings



Class I Shared Lane



Curb Extension

#### Implementing Agency



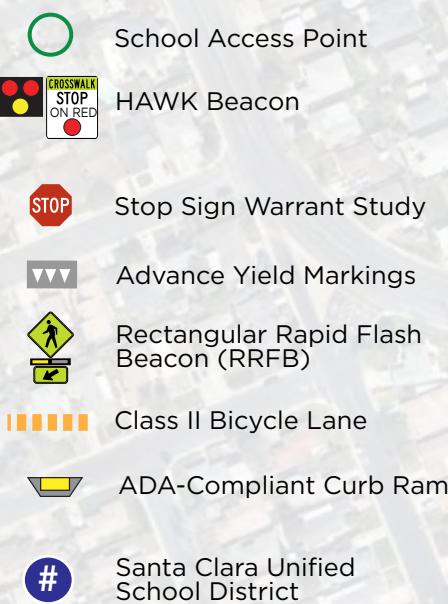
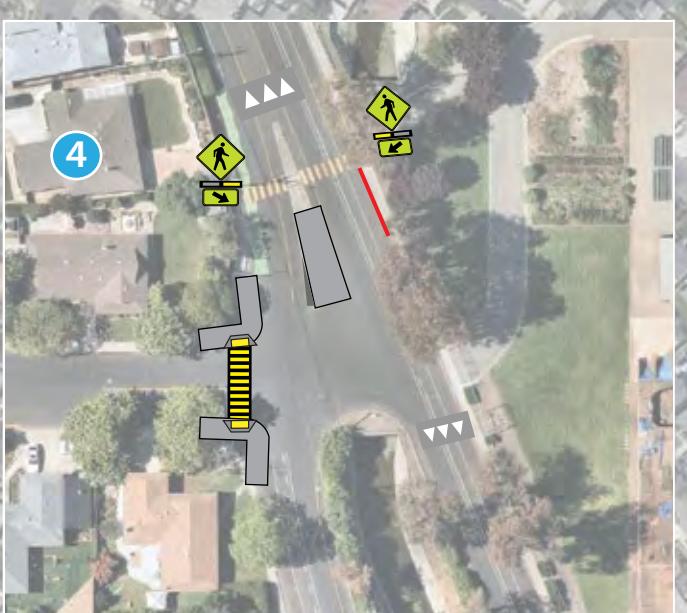
# City of San Jose

# Safe Routes to Schools Improvement Plan

Wilcox High School,

Santa Clara

School Audit held May 2019



0 200 ft Improvements not to scale

## 1 Calabazas Boulevard/Monroe Street

- Install directional curb ramp and curb extension on southeast corner of intersection and reduce turning radii.
- Upgrade crosswalks to high visibility.
- Upgrade existing curb ramps to be ADA-compliant.

## 2 Marchese Way/Monroe Street

- Upgrade north leg of crosswalk to high visibility.
- Upgrade existing curb ramps to be ADA-compliant.

## 3 Meadowbrook Drove/Monroe Street

- Upgrade crosswalk across Meadowbrook Drive to high visibility.
- Upgrade northeast curb ramp to be ADA-compliant.

## 4 Calabazas Boulevard/Georgetown Place

- Reconfigure intersection to widen northern median and tighten turning radius on northwest and southwest corners.
- Widen refuge space in median.
- Install crosswalk across Georgetown and upgrade curb ramps.
- Move bus loading zone to north of crosswalk only.
- Install advance yield markings and RRFB at crosswalk.
- Paint 20' of red curb south of crosswalk.
- Install crossbike markings for people on bikes traveling southbound on Calabazas.

## 5 Calabazas Boulevard School Entry

- Allow for bicycle access onto school south of crosswalk.

**Note:** All recommended improvements are within the City of Santa Clara's City Limits.

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# Programmatic Recommendations

SRTS programs are more than simply improving infrastructure around schools. A true SRTS program cannot be successful without using additional strategies to create enthusiasm among students and caregivers for walking and bicycling to school.

## Coordination Recommendations

A SRTS program is only as effective as its coordination between members and partners. The coordination recommendations below offer suggestions to improve coordination and communication between key stakeholders.

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**Recommendation 1.1:** Continue holding biannual SRTS Task Force meetings with school stakeholders. The Task Force should continue to coordinate activities, discuss implementation challenges, identify new opportunities, and provide support to the SRTS Program Coordinator.

**Recommendation 1.2:** Work with school districts to identify a SRTS coordinator for each district at the district level. These coordinators should be a paid staff member whose job description clearly includes coordinating with the City SRTS Coordinator, promoting the SRTS curriculum, connecting teachers with SRTS resources, and supporting education and encouragement activities led by teachers and community volunteers.

**Recommendation 1.3:** Create a formalized “School Champion” volunteer position at each school and ensure the role is filled at the beginning of each school year. This could be an assigned role within the PTA, or it could be someone outside of the school community, such as a grandparent or retired senior.



## Equity Recommendations

The equity recommendations below encompass actions that could have been listed under many of the other subheadings in this chapter. However, by bringing them together under the framework of equity, the plan ensures that the SRTS program reaches all populations by including communities of various ethnicities, addressing the needs of all children, and reaching low-income communities.

**Recommendation 2.1:** Produce outreach materials in Spanish, and other languages as needed, and provide to schools with a high percentage of students who speak these languages, such as at Bishop Elementary, San Miguel Elementary, and Vargas Elementary.

**Recommendation 2.2:** Continue to distribute free helmets as grant funding allows.

**Recommendation 2.3:** Focus enforcement efforts on the most risky behaviors and high-collision locations as identified in the Sunnyvale Vision Zero Plan. By focusing enforcement efforts on these behaviors and locations, it reduces the likelihood of equity disparities in enforcement.

## EQUITY RESOURCES

Metropolitan Transportation Commission (MTC) and Bay Area Air Quality Management District Spare the Air Youth “Inclusion & Equity in School Commute Programs.” Includes detailed strategies for communicating with families, addressing personal safety concerns, and increasing access for children with disabilities. Accessed Jan. 2020: <https://sparetheairyouth.org/inclusion-and-equity-in-school-commute-program-guidebook/>

## Education Recommendations

Education classes and activities inform families about transportation choices, teach walking and biking safety skills, promote driver safety campaigns near schools, and communicate the benefits of active transportation.

**Recommendation 3.1:** Identify and pursue funds to support traffic safety education in schools. Grant programs such as the Office of Traffic Safety (OTS) Grants fund Pedestrian and Bicycle Safety programs (see page 255 for more information on funding).

**Recommendation 3.2:** Continue providing existing education programs such as Bicycle and Pedestrian Safety Assemblies and Bike Rodeo, and increase the number of schools participating in these programs. Target schools that have not received education programming in the past. Work with the principal, PTA, or other school stakeholders to determine the barriers to implementing education at these schools.

**Recommendation 3.3:** Explore programming ideas for middle school-aged students and high school-aged students. These might include:

- **Drive Your Bike curriculum:** Multiple groups in the Bay Area offer “Drive Your Bike” education aimed at middle school and high school students. The Drive Your Bike program teaches students to bicycle safely to school and around their neighborhoods, and encourages them to start riding more often. It includes a classroom component, a blacktop component, and ends with an off-campus neighborhood bike ride. This program is typically held during a PE class.
- **Bike maintenance education through a Bike Shed program:** Organizations such as the YMCA provide bicycle maintenance courses to a select group of students during or after the school day. The participating school can install a bike shed that provides space to hold bikes, maintenance tools, and workstations.
- **Student-developed biking and walking campaigns:** A select group of middle or high school students (such as members of an environmental club) can develop a video or social media campaign to educate and encourage peers to use active transportation modes. Videos can be shown as part of morning announcements or general assemblies, or be incorporated as part of a health-related class.
- **SRTS Middle and High School Task Force:** The City can convene a task force of middle and high school students to share ideas for SRTS events and encouragement

at their schools. This can provide a platform for coordinating efforts around events such as Bike to School Day, Earth Day, and Cocoa to Carpool days.

- **Encourage participation at Youth for the Environment and Sustainability (YES) Conference:** The YES Conference is a free, annual event that brings together middle- and high-school students from the nine San Francisco Bay Area counties to discuss solutions to the climate change crisis. The young adults' goal is to raise awareness of how our transportation choices affect our families, our communities, our air and our planet.

**Recommendation 3.4:** Explore hiring a contractor to provide SRTS programming at schools, pending availability.



## Encouragement Recommendations

Encouragement activities must serve the unique needs of the school community, providing age-appropriate, safe, community-specific, and inclusive opportunities for youth and families to get involved and celebrate transportation options. Many of the following activities are already being done by some of the schools discussed in this plan. When possible, specifics of existing efforts are described in the individual school summaries. The below activities are suggestions for schools without encouragement activities to begin implementation, or are suggestions to expand encouragement activities at already-participating schools.

**Recommendation 4.1:** Implement ongoing (weekly or monthly) Walk and Roll Days at all schools, including ongoing messaging to the school community about the events. Continue coordinating existing encouragement programs, such as school participation in national events such as Walk and Roll to School Week, Walk to School Day, Bike Month, and Bike to School Day.

**Recommendation 4.2:** Consider implementing additional encouragement activities, such as a Golden Sneaker Award contest. The contest encourages students to compete for who can bike or walk to school most often, with the winning classroom winning a sneaker spray-painted gold and mounted on a piece of wood. This activity requires minimal, one-time cost to implement.

**Recommendation 4.3:** Explore low-cost incentives that can be implemented in the classroom, such as ‘front of the line’ and ‘no homework’ passes to children who walk and bicycle to school.

### ENCOURAGEMENT RESOURCES:

Walk & Bike to School website. Includes ideas for both Walk to School Day/Week/Month, and ongoing Walk and Roll events.

<http://www.walkbiketoschool.org/>

San Mateo County Office of Education “SRTS Parent and Community Empowerment Toolkit.” Includes many additional encouragement activities.

<https://www.menlopark.org/DocumentCenter/View/23521/SMCOE-Parent-and-Community-Empowerment-Toolkit>

Alameda County SRTS Golden Sneaker Contest. Includes program description, toolkit, and worksheets for various grade levels. Accessed Jan. 2020: <http://alamedacountysr2s.org/our-services/plan-an-event/golden-sneaker-contest/>

## Enforcement Recommendations

Enforcement activities aim to deter unsafe behaviors from everyone traveling near schools and encourage all road users to obey traffic laws and share the road safely around schools.

**Recommendation 5.1:** Continue to conduct focused traffic enforcement at specific school-related locations. This will include coordinating with individual schools and school districts.

**Recommendation 5.2:** Direct public safety staff to focus enforcement efforts on the High Injury Network and on driver actions that are most likely to cause a severe injury or fatality, including failure to yield right of way.

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## Evaluation Recommendations

Evaluating the projects and programs of each of the other “E’s” tracks progress and determines which activities, events, and projects are most effective at accomplishing the overall program goals.

**Recommendation 6.1:** Continue to conduct travel tallies twice year.

### EVALUATION RESOURCES

Metropolitan Transportation Commission and Bay Area Air Quality Management District Spare the Air Youth “Evaluating School Commute Programs.” Includes detailed instructions for hand tallies, parent surveys, and formalized activity and event tracking, and suggested outcomes and measures for success to use when evaluating a SRTS program. Accessed Jan. 2020: <https://sparetheairyouth.org/evaluating-school-commute-programs>



# SRTS Implementation

## Engineering Recommendations Prioritization

The prioritization framework helps the City understand where to start when implementing the engineering recommendations in this plan. The projects listed in the SRTS Plan have been included in the Pedestrian Plan prioritization process. This process assigned a number value to all recommendations. Projects near schools will automatically receive one additional point.

Nevertheless, there are some steps the City can take to expedite key recommendations from this Plan, namely, focusing on the “low-hanging fruit” and areas of high need. The following sections offer a simpler version of the Pedestrian Plan prioritization process to highlight key areas of priority for this Plan.

### COST PRIORITIZATION

Many of the proposed engineering improvements around schools in Sunnyvale can be implemented easily and inexpensively using existing Department of Public Works paving, signage, and striping budgets. In order to facilitate the expeditious implementation of this plan, it is recommended that the following types of projects are implemented first as soon as they can be fit into existing Department of Public Works workloads:

- Crosswalk markings, including high-visibility crosswalks and standard crosswalks
- Curb paint, including parking restrictions (red) and loading zones (white)
- Signage

- Striping, such as advance yield/stop lines, paint and post curb extensions, and other street markings
- Vegetation maintenance

### EQUITY PRIORITIZATION

Higher-cost projects should be prioritized at schools in areas of equity concerns. Two schools in Sunnyvale are in MTC Communities of Concern: Braly Elementary and Columbia Middle. The prioritization of improvements at these schools serves students and families living in disadvantaged communities.

### SAFETY PRIORITIZATION

Finally, higher-cost projects should be prioritized at schools with a history of fatal collisions. Two schools in Sunnyvale are near pedestrian-or bicyclist-related collisions with a fatality. Between 2014-2018, two bicycle-related fatalities and one pedestrian-related fatality occurred near Peterson Middle. Near Fremont High one bicycle-related fatality and one pedestrian-related fatality took place. The prioritization of improvements at these schools serves students and families walking and bicycling in areas of high safety concern.

**Table 24. Cost Prioritization**

Juris.	Location	School	Improvement				
			Crosswalk	Curb Paint	Signage	Striping	Vegetation
City	E. Maude Avenue Frontage	Bishop Elementary School			x		
City	N. Sunnyvale Avenue / E. Maude Avenue	Bishop Elementary School		x		x	
City	N. Bayview Avenue / E. Maude Avenue	Bishop Elementary School	x	x			
City	N. Sunnyvale Avenue / Hazelton Avenue	Bishop Elementary School	x			x	
City	Borregas Avenue / E. Maude Avenue	Bishop Elementary School	x				
City	N. Bayview Avenue Frontage	Bishop Elementary School			x		
City	N. Bayview Avenue / Hazelton Avenue	Bishop Elementary School	x				
City	Gail Avenue Frontage	Braly Elementary School	x	x		x	
City	Gail Avenue / Iris Avenue	Braly Elementary School	x				
City	Gail Avenue / Daffodil Court	Braly Elementary School	x	x	x		
City	Gail Avenue Segment	Braly Elementary School	x	x	x		
244	City	S. Bernardo Avenue / Heatherstone Way	Cherry Chase Elementary School	x	x		
	City	Heatherstone Way Frontage		x	x	x	x
	City	Grape Avenue / Heatherstone Way	Cherry Chase Elementary School	x	x		
	City	Grape Avenue / Hudson Way	Cherry Chase Elementary School		x	x	
	City	Grape Avenue / W Knickerbocker Drive	Cherry Chase Elementary School				
	City	Morse Avenue / Glendale Avenue	Columbia Middle School		x		
	City	Morse Avenue / E Ferndale Avenue	Columbia Middle School	x	x		x
	City	San Diego Avenue / Del Norte Avenue	Columbia Middle School	x	x		
	City	Cumberland Drive Frontage	Cumberland Elementary School		x		
	City	Quetta Avenue / Cumberland Drive	Cumberland Elementary School				
	City	Quetta Avenue / Danforth Drive	Cumberland Elementary School	x			
	City	Piper Avenue / Cumberland Drive	Cumberland Elementary School	x			x
	City	Quetta Avenue / Harvard Avenue	Cumberland Elementary School	x			



Juris.	Location	School	Improvement				
			Crosswalk	Curb Paint	Signage	Striping	Vegetation
City	Harvard Avenue / Hollenbeck Avenue	Cumberland Elementary School	x		x	x	
City / Caltrans	EI Camino Real / Hollenbeck Avenue / S. Pastoria Avenue	Cumberland Elementary School	x				
City	Bernardo Avenue / The Dalles	Cupertino Middle School	x				
City	Bernardo Avenue / Helena Drive	Cupertino Middle School	x				
City	Wright Avenue / Helena Drive	Cupertino Middle School	x				
City	Bernardo Avenue / (Sunnyvale Homestead Road and Cupertino)	Cupertino Middle School	x				
City	Bernardo Avenue	Cupertino Middle School	x		x		
City	Mary Avenue / Helena Drive	Cupertino Middle School	x				
City	Kennewick Drive / Helena Drive	Cupertino Middle School	x				
City	Central Avenue	Ellis Elementary School		x	x		
City	Central Avenue / E. Olive Avenue	Ellis Elementary School	x	x		x	
City	Kenmore Avenue / E. Olive Avenue	Ellis Elementary School	x				
City	Wilson Avenue / E. Olive Avenue	Ellis Elementary School	x	x			
City	S. Fair Oaks Avenue / E. Olive Avenue	Ellis Elementary School		x			
City	E. Olive Avenue	Ellis Elementary School			x		
District	School Parking Lot & Pull-in Areas	Ellis Elementary School			x		
District	Sandia Avenue	Fairwood Elementary School					x
City	Fairwood Avenue / Sandia Avenue	Fairwood Elementary School	x			x	
City	Fairwood Avenue	Fairwood Elementary School				x	
City	Fairwood Avenue / Redrock Court	Fairwood Elementary School	x	x	x	x	
City	Fairwood Avenue / John W. Christian Greenbelt	Fairwood Elementary School	x		x	x	
City	Sydney Drive / W. Fremont Avenue	Fremont High School	x				
City	Sunnyvale Saratoga Road / Fremont Avenue	Fremont High School			x		
City	Samedra Street / Homestead Road (Cupertino)	Homestead High School	x				x
City	Mary Avenue / (Sunnyvale Homestead Road and Cupertino)	Homestead High School	x				

Juris.	Location	School	Improvement				
			Crosswalk	Curb Paint	Signage	Striping	Vegetation
City (Sunnyvale and Cupertino)	Kennewick Drive / Homestead Road	Homestead High School	x				
District	Drop-Off / Pick-Up Loop	Homestead High School			x	x	
City	Lakechime Drive / School Parking Lot	Lakewood Elementary School					x
City	Meadowlake Drive / Lakechime Drive	Lakewood Elementary School	x				
City	Meadowlake Drive / Lakefair Drive	Lakewood Elementary School	x				
City	Meadowlake Drive / John W. Christian Greenbelt Crossing	Lakewood Elementary School	x		x	x	
City	Meadowlake Drive / Lakehaven Drive	Lakewood Elementary School	x				
City	Silverlake Drive / John W. Christian Greenbelt Crossing	Lakewood Elementary School	x		x	x	
City	Silverlake Drive / Lakechime Drive	Lakewood Elementary School	x				
District	Drop-Off / Pick-Up Area	Lakewood Elementary School			x	x	
City	Teal Drive / Dunford Way	Laurelwood Elementary	x	x			x
City	Teal Drive / Lochinvar Avenue / Inverness Way	Laurelwood Elementary	x	x			
City	Lochinvar Avenue / Kerry Avenue / Kensington Avenue	Laurelwood Elementary	x				
City (Santa Clara)	Teal Drive School Frontage	Laurelwood Elementary					x
City (Santa Clara)	Teal Drive / Thrush Way	Laurelwood Elementary			x	x	
City (Santa Clara)	Swallow Drive / Lochinvar Avenue	Laurelwood Elementary	x				
City	Revelstoke Drive / Cheyenne Street	Nimitz Elementary					x
City	Saskatchewan Drive / Cheyenne Street	Nimitz Elementary	x				x
City	Valcartier Drive / Cheyenne Street	Nimitz Elementary					x
City	Richelieu Place / Alberta Avenue	Nimitz Elementary	x				
City	Los Arboles Avenue / Cascade Drive	Nimitz Elementary	x	x			
City	Selo Drive / Cascade Drive	Nimitz Elementary	x	x			
City	Sydney Drive / Cascade Drive	Nimitz Elementary	x				
City / Caltrans	Poplar Avenue / El Camino Real	Peterson Middle School	x				x



Juris.	Location	School	Improvement				
			Crosswalk	Curb Paint	Signage	Striping	Vegetation
City / Caltrans	Henderson Avenue / El Camino Real	Peterson Middle School	x			x	
City	Henderson Avenue / Bryant Way	Peterson Middle School	x				
City	Poplar Avenue / Bryant Way / Rosalia Avenue	Peterson Middle School	x		x		x
District	Rosalia Avenue	Peterson Middle School				x	
City	Sequoia Drive / Iris Avenue	Ponderosa Elementary School	x			x	
City	Ponderosa Avenue / Iris Avenue	Ponderosa Elementary School	x				
City	Ponderosa Avenue / Lantana Drive	Ponderosa Elementary School	x	x	x	x	
City	Henderson Avenue / Iris Avenue	Ponderosa Elementary School	x				
City	San Miguel Avenue / Amador Avenue	San Miguel Elementary School	x			x	x
City	San Miguel Avenue / Alvarado Avenue	San Miguel Elementary School	x			x	
City	San Junipero Drive / Alvarado Avenue	San Miguel Elementary School	x		x	x	
District	San Miguel Avenue School Frontage	San Miguel Elementary School			x		
City	Bittern Drive / Dunholme Way	Stocklmeir Elementary School	x			x	
City	Chickadee Court / Dunholme Way	Stocklmeir Elementary School				x	
City	Blackhawk Drive / Dunholme Way	Stocklmeir Elementary School				x	
City	Floyd Avenue / Dunholme Way	Stocklmeir Elementary School	x				
District	School Drop-Off Loop	Stocklmeir Elementary School			x		
District	West Parking Lot	Stocklmeir Elementary School	x				
City	Mango Avenue	Sunnyvale Middle School			x	x	
City	S. Mary Avenue / Knickerbocker Drive	Sunnyvale Middle School				x	
District	On-Campus Improvements	Sunnyvale Middle School			x		
City	Mary Avenue / Carson Drive	Vargas Elementary School	x				x
City	Carson Drive near Back Entrance / School Bus Stop	Vargas Elementary School				x	
City	Leota Avenue / Carson Drive	Vargas Elementary School	x				
City	Leota Avenue / School Drop Off Loop	Vargas Elementary School				x	
City	Leota Avenue / Washington Avenue	Vargas Elementary School	x				
City	Mary Avenue / Washington Avenue	Vargas Elementary School	x				

Juris.	Location	School	Improvement				
			Crosswalk	Curb Paint	Signage	Striping	Vegetation
City	Belleville Way / Parking Lot Entrance	West Valley Elementary School	x		x	x	
City	Belleville Way and Outbound School Driveway	West Valley Elementary School	x				
City (Santa Clara)	Calabazas Boulevard / Monroe Street	Wilcox High School	x				
City (Santa Clara)	Marchese Way / Monroe Street	Wilcox High School	x				
City (Santa Clara)	Meadowbrook Drive / Monroe Street	Wilcox High School	x				
City (Santa Clara)	Chromite Drive / Monroe Street	Wilcox High School	x				
City (Santa Clara)	Calabazas Boulevard / Georgetown Place	Wilcox High School				x	



Juris.	Location	School	Improvement
<b>EQUITY PRIORITIZATION</b>			
City	Gail Avenue Frontage	Braly Elementary School	Curb extensions
City	Gail Avenue / Iris Avenue	Braly Elementary School	Curb extensions
City	Gail Avenue / Goldenrod Court	Braly Elementary School	Crosswalk and stop warrant study
City	Gail Avenue / Daffodil Court	Braly Elementary School	Curb extensions
City	Iris Avenue / Jackpine Court	Braly Elementary School	New school entrance point; park and walk location
City	Gail Avenue Segment	Braly Elementary School	Curb extensions
District	On-Campus Improvements	Braly Elementary School	Secure bike parking
City	Morse Avenue / Glendale Avenue	Columbia Middle School	Curb extensions, curb ramps
City	Morse Avenue / E. Ferndale Avenue	Columbia Middle School	Curb extensions; speed feedback signs; curb ramps
City	San Diego Avenue / Del Norte Avenue	Columbia Middle School	Curb ramp; curb extension; move curb
City	San Diego Avenue / E. Hemlock Avenue	Columbia Middle School	Make gate in parking lot ADA accessible
<b>SAFETY PRIORITIZATION</b>			
City	Sunnyvale Saratoga Road	Fremont High School	Upgrade Class II bicycle lane to Class IV
City	Sydney Drive / W. Fremont Avenue	Fremont High School	Upgrade RRFB to HAWK; curb extension
City	Sunnyvale Saratoga Road / Fremont Avenue	Fremont High School	Upgrade timing and consider adding signal phasing; curb extension and directional curb ramps; protected intersection
District	On-Campus Improvements	Fremont High School	Explore bicycle parking options, possible path upgrade
City / Caltrans	Poplar Avenue / El Camino Real	Peterson Middle School	Curb extensions; sharrows; modify vehicular flow
City / Caltrans	Henderson Avenue / El Camino Real	Peterson Middle School	Curb extensions; sharrows; modify vehicular flow
City	Bryant Way / Poplar Avenue / Rosalia Avenue	Peterson Middle School	Consider installing missing sidewalk
District	Rosalia Avenue	Peterson Middle School	Construct sidewalk; curb ramps

## Cost Estimates

Planning-level cost estimates were developed for many of the infrastructure improvements recommended in the school improvement plans. The estimates are based on the design and construction costs for comparable projects in nearby jurisdictions. Additionally, estimated program costs were developed through consultation with program service providers. Program costs assume hiring a contractor to implement the activities and do not reflect City or school staff time. A list of cost estimates is shown in Table 25.

These estimates do not include maintenance and operations costs. The City will have to budget funding for annual maintenance and electricity costs, as well as replacement costs every 6-15 years.

For any of the roadway design recommendations (not including parking restrictions), the City will evaluate opportunities for including green stormwater infrastructure as part of the overall implementation. The GSI Plan identifies preliminary planning level typical costs of \$276,000-\$539,000 per acre for green streets. Specific costs need to be evaluated on a project-by-project basis and, therefore, are not included in the estimates provided in Table 25.

**Table 25. Cost Estimates**

**Acronyms**    **EA** Each    **LF** Linear Foot    **LS** Lump Sum

Improvement	Notes	Unit	Construction		Design (15%)	
			Low	High	Low	High
<b>ROADWAY DESIGN</b>						
250	<b>Curb Extension / Modify Skewed Intersection</b>	EA	\$65,000	\$390,000	\$9,750	\$58,500
	Per corner. No utility relocations. Assumed 30 percent contingency for storm drainage relocation to include green stormwater infrastructure included in cost. Cost depends on size of intersection, drainage requirements and whether reggrading of intersection is required.					
	<b>Curb Radius Reduction</b>	EA	\$65,000	\$390,000	\$9,750	\$58,500
	Per corner. No utility relocations. Assumed 30 percent contingency for storm drainage relocation to include green stormwater infrastructure included in cost. Cost depends on size of intersection, drainage requirements and whether reggrading of intersection is required.					
	<b>Parking Restrictions</b>	LF	\$5	\$20	\$1	\$3
	<b>Right-Turn Slip Lane Removal(s)</b>	EA	\$65,000	\$390,000	\$9,750	\$58,500
	No utility relocations. Assumed 30 percent contingency for storm drainage relocation to include green stormwater infrastructure included in cost.					
	<b>Protected Intersection</b>	EA	\$520,000	3,000,000	\$78,000	\$585,000
	Per intersection. No utility relocations. Assumed 30 percent contingency for storm drainage relocation to include green stormwater infrastructure included in cost. Cost depends on size of intersection, drainage requirements and whether reggrading of intersection is required.					



Improvement	Notes	Unit	Construction		Design (15%)	
			Low	High	Low	High
<b>CROSSING IMPROVEMENTS</b>						
High Visibility Crosswalk Marking(s)	Cost varies by length of crosswalk and color	LF	\$15	\$25	\$2	\$4
Advance Yield/Stop Line(s)	Thermoplastic paint	LF	\$8	\$20	\$1	\$3
Curb Ramp(s)	No utility relocations. Assumed 30 percent contingency for storm drainage relocation to include green stormwater infrastructure included in cost.	EA	\$4,550	\$13,000	\$683	\$1,950
Pedestrian Refuge Island(s)	Cost varies with size of island.	EA	\$10,000	\$50,000	\$1,500	\$7,500
<b>SIGNS, SIGNALS, AND SIGNAL TIMING</b>						
RRFB	Assumes solar installation. Does not include electrical connection or ongoing electricity costs.	EA	\$60,000	\$100,000	\$9,000	\$15,000
HAWK Beacon	Does not include ongoing electricity costs.	EA	\$500,000	\$800,000	\$75,000	\$120,000
Traffic and Pedestrian Signal Changes	Per intersection. Costs vary by type of change and can include a pedestrian countdown timer, accessible pedestrian signal, leading pedestrian interval, and/or protected left-turn phasing. Low cost assumes a single technician reprogramming a controller with no new equipment installed. High cost includes all new equipment including poles and controller cabinet.	LS	\$2,500	\$1,000,000	\$375	\$150,000
Signage	New sign with foundation and pole	EA	\$375	\$500	\$56	\$75
Speed feedback sign	Assumes solar installation. Does not include electrical connection or ongoing electricity costs.	EA	\$14,000	\$25,000	\$2,100	\$3,750

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Improvement	Notes	Unit	Low	High
<b>EDUCATION</b>				
<b>Bicycle and Pedestrian Skills Training (K-6)</b>	Interactive in-class presentations teach valuable walking and bicycling skills. Each presentation lasts 30-50 minutes (depending on time available) and involves one classroom of students. Customized based on grade level.	<b>Per school day, assuming four classes at one school</b>	\$600	\$1,200
<b>Bicycle and Pedestrian Rodeo (K-6)</b>	On the blacktop, students will have the opportunity to practice safe pedestrian and bicycling behaviors learned during the in-class lessons. Customized based on grade level.	<b>Per event</b>	\$510	\$1,005
<b>Family Bike Night (K-8)</b>	Students and parents come together on campus after school to learn more about biking for transportation, improve bicycling skills, learn proper helmet fit. Attendees can also participate in interactive displays and activities such as bike blender, stationary bike race, and bicycling skills courses. Local bike shops or mobile bike repair may be invited to provide bicycle safety checks, bike repairs, and offer maintenance tips. Typical event can serve up to 400 participants and last 2-3 hours.	<b>Per event</b>	Elements of Family Bike Night can be integrated into other school events at lower cost	\$1,800
<b>Mobile Bike Repair Workshop (K-12)</b>	This mobile program brings experienced mechanics to schools to perform repairs and replace worn-out parts.	<b>Per event</b>	\$650	--
<b>After School Bike Club</b>	Students receive bike safety instruction, learn basic bike maintenance, and practice riding in a group. Culminates in on-street group ride(s) planned by students. Sessions are intended to last up to 2 hours.	<b>Per event</b>	\$425	Depends on number of sessions and frequency
<b>Drive Your Bike Year-Long Program (6-12)</b>	This program aims to increase helmet usage and safe bicycling practices among middle school and high school students. Includes certified instructors teaching "Drive Your Bike" curriculum and administration of pre- and post-instruction tests to evaluate program.	<b>Per year-long program</b>	\$15,000	\$30,000
<b>Parent/Teachers/Volunteer Workshops</b>	Aimed at educating parents about traffic and pedestrian safety, these workshops provide resources and training necessary to lead walking school buses, bike trains, and other activities.	<b>Per event</b>	--	\$500



Improvement	Notes	Unit	Low	High
<b>ENCOURAGEMENT</b>				
<b>Walk and Bike to School Days</b>	Events that put the skills students and parents have learned into practice. Can be ongoing (e.g. recurring “Walk & Roll Fridays”) or semi-annual (e.g. “International Walk and Bike to School Week”). Requires participation of an active school site volunteer.	<b>Per event, depending on scope</b>	\$450	\$2,000
<b>EVALUATION</b>				
<b>Student Travel Tallies</b>	Hand tallies gather information about how students get to school on select dates. Surveys administered at the beginning and throughout the program will help track changes in walking and bicycling behavior. Includes distribution and collection of the forms, teacher training on their use, and data analysis facilitation.	<b>Per hour</b>	\$85	\$125
<b>Parent Travel Surveys</b>	These take-home or online surveys ask for information about factors that affect whether parents allow their children to walk or bike to school, the presence of key safety-related conditions along routes to school, and related background information. Includes coordination with the school to have the surveys distributed and collected, and data entry facilitation.	<b>Per hour</b>	\$85	\$125

# Funding Sources

## LOCAL AND REGIONAL GRANT PROGRAMS

### 2016 Measure B

Santa Clara voters approved a half-cent sales tax in 2016 to fund transportation infrastructure investments. Measure B is expected to raise \$6.3 billion (2017 dollars) over 30 years to fund nine program categories; \$250 million has been allocated towards the Bicycle and Pedestrian Program. Within the Bicycle and Pedestrian Program, funds are divided between capital projects (80 percent), education and encouragement programs (15 percent) and planning studies (5 percent). The education and encouragement funds will be allocated to cities based on a population formula with a \$10,000 annual minimum allocation per city; \$250,000 will be reserved for countywide programs.

*Funds are programmed by VTA.*

### Transportation Fund for Clean Air County Program Manager Fund

The Bay Area Air Quality Management District (BAAQMD) administers funds to the VTA for projects that reduce vehicle emissions including bicycle projects. These funds come from a \$4 vehicle registration surcharge in Bay Area counties and can be used as a match for competitive state or federal programs.

*Funds are programmed by VTA.*

### One Bay Area Grant

The One Bay Area grant program (OBAG) emphasizes funding for projects within Priority Development Areas (PDAs) in the region that are in-line with housing and land-use goals. Projects that are within or provide access to these PDAs could qualify for OBAG grants.

*Funds are programmed by the Metropolitan Transportation Commission (MTC) and the Santa Clara Valley Transportation Authority (VTA).*

### Transportation Development Act Article 3

Transportation Development Act Article 3 (TDA 3) provides funding annually for bicycle and pedestrian projects. Two percent of TDA funds collected within the county are used for TDA 3 projects. MTC policies require that all projects be reviewed by a Bicycle and Pedestrian Advisory Committee or similar body before approval.

*Funds are programmed by VTA.*

### Transportation for Livable Communities Program

Designed to support community-based transportation projects that bring “new vibrancy” to downtown areas, commercial cores, neighborhoods, and transit corridors. The projects resulting from these grants are intended to provide for a range of transportation choices including bicycling, should support connections between transportation and land use, and should be developed through an inclusive community planning process.

*Funds are programmed by MTC.*



### **Vehicle Emissions Reduction Based at Schools Program**

The Vehicle Emissions Reduction Based at Schools (VERBS) program receives funds from MTC's Climate Initiative SRTS Program. The goals of this include reducing greenhouse gases by promoting walking, biking, transit, and carpooling to school. These federal CMAQ funds are allocated to each county based on school enrollment. The VERBS Program places an additional focus on safety and reducing collisions.

*Funds are programmed by VTA.*

### **Bicycle Facilities Grant Program**

Throughout the nine-county Bay Area, the Bicycle Facilities Grant program strives to reduce emissions from on-road vehicles and improve air quality by helping residents and commuters shift to bicycling and walking as alternatives to driving for short distances and first- and-last mile trips.

The Bay Area Air Quality Management District (BAAQMD) has grant programs that fund both on-street facilities and bicycle parking facilities. Funding comes from the BAAQMD's Transportation Fund for Clean Air.

*Funds are programmed by BAAQMD or the VTA.*

### **Climate Initiatives Innovative Grants Fund**

MTC's Climate Initiatives Program promotes innovative ways to reduce greenhouse gas emissions in the Bay Area; and taps federal funding for a pair of competitive grant programs. Innovative grants of \$1 million and up are used to support high-impact projects that can be replicated around the region.

*Funds Programmed by MTC*

### **Lifeline Transportation Program**

Uses both state and federal funds to provide Lifeline grants for projects that meet mobility and accessibility needs in low-income communities across the Bay Area. MTC establishes new guidelines for each cycle of Lifeline grants, but the goal is the same each time: fund community-based transportation projects developed through a collaborative and inclusive process. Lifeline projects must address transportation gaps or barriers identified in community-based transportation plans or other local planning efforts in low-income neighborhoods.

*Funds programmed by MTC*

## STATE AND FEDERAL GRANT PROGRAMS

### Active Transportation Program (ATP) Grant

Approximately every two years, Caltrans offers grant funding for active transportation infrastructure projects. Some SB 1 funds are used to help fund ATP projects. Applicants can include non-infrastructure (programmatic) projects as part of their application including SRTS activities. These include conducting walk audits, developing and implementing Walking School Buses, and “train the trainer” classes. Funding is highly competitive and mainly focuses on communities of concern. The city will need to work directly with the school district(s) and schools to be eligible for this grant application.

*Funds are programmed by the California Transportation Commission (CTC).*

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### Affordable Housing and Sustainable Communities Program

The Affordable Housing and Sustainable Communities Program (AHSC) funds land-use, housing, transportation, and land preservation projects that support infill and compact development that reduces greenhouse gas (GHG) emissions. Projects must fall within one of three project area types: transit-oriented development, integrated connectivity project, or rural innovation project areas. Fundable activities include affordable housing developments, sustainable transportation infrastructure, transportation-related amenities, and program costs.

*Funds are programmed by the Strategic Growth Council and implemented by the Department of Housing and Community Development.*

### Urban Greening Grants

Urban Greening Grants support the development of green infrastructure projects that reduce GHG emissions and provide multiple benefits. Projects must include one of three criteria, most relevantly: reduce commute vehicle miles traveled by constructing bicycle paths, bicycle lanes or pedestrian facilities that provide safe routes for travel between residences, workplaces, commercial centers, and schools. Eligible projects include green streets and alleyways and non-motorized urban trails that provide safe routes for travel between residences, workplaces, commercial centers, and schools.

*Funds are programmed by the California Natural Resources Agency.*

### Highway Safety Improvement Program

Caltrans offers Highway Safety Improvement Program (HSIP) grants every one to two years. Projects on any publicly owned road or active transportation facility are eligible, including bicycle and pedestrian improvements. HSIP focuses on projects that explicitly address documented safety challenges through proven countermeasures, are implementation-ready, and demonstrate cost-effectiveness.

*Funds are programmed by Caltrans.*

### Office of Traffic Safety Grant

The Caltrans Office of Traffic Safety (OTS) makes grants available to local and state public agencies for programs that help them enforce traffic laws, educate the public in traffic safety, and provide varied and effective means of reducing fatalities, injuries, and economic losses from collisions. Funding can be used for safety trainings, bike helmets, and traffic safety campaigns, among other activities.

*Funds are programmed by OTS.*



## OTHER STATE PROGRAMS

### Local Partnership Program

This program provides SB1 funds to local and regional agencies that have passed sales tax measures, developer fees, or other transportation-imposed fees to fund road maintenance and rehabilitation, sound walls, and other transportation improvement projects. Jurisdictions with these taxes or fees are eligible for a formulaic annual distribution of no less than \$100,000. These jurisdictions are also eligible for a competitive grant program. Local Partnership Program funds can be used for a wide variety of transportation purposes including roadway rehabilitation and construction, transit capital and infrastructure, bicycle and pedestrian improvements, and green infrastructure.

*Funds are programmed by the CTC.*

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### Road Maintenance and Rehabilitation Program

Senate Bill 1 (SB1) created the Road Maintenance and Rehabilitation Program (RMRP) to address deferred maintenance on state highways and local road systems. Program funds can be spent on both design and construction efforts. On-street active transportation related maintenance projects are eligible if program maintenance and other thresholds are met. Funds are allocated to eligible jurisdictions.

*Funds are programmed by the State Controller's Office with guidance from the CTC.*

## Implementing Safe Routes to School Improvements

Packaging multiple recommended projects together may help the City bundle low-cost projects or create a competitive submission for a grant funding application. Securing funding for multiple projects at once can help the City of Sunnyvale deliver this Plan's recommendations in a more comprehensive, accelerated manner. Aggregating projects also helps the City meet minimum funding request requirements from larger grant funding applications.

This includes the following packages:

- **Cost prioritization:** To address all low cost improvements recommended at all schools.
- **Equity prioritization:** The City can focus on improvements surrounding schools in disadvantaged areas, including Braly Elementary and Columbia Middle.

• **Safety prioritization:** To address historic collisions near schools, recommendations at Peterson Middle and Fremont High can be implemented.

SRTS projects can be quite competitive on their own as many grant programs in California score grant funding applications competitively if they can demonstrate that they directly increase the safety and comfort for students to walk or bike to school. Grant programs like ATP will score grant funding applications more competitively if they help to address the needs of disadvantaged communities; in Sunnyvale, the competitive schools would be Braly Elementary and Columbia Middle. Additional projects identified in the Bicycle Plan and the Pedestrian Plan could be bundled with improvements around these schools. Table 26 shows the cost of bundling the prioritized SRTS improvements.



**Table 26. Implementation Packages by Prioritization**

Improvement	Qty.	Unit	Unit Cost Low	Unit Cost High	Construction		Design (15%)	
					Total Low	Total High	Design Low	Design High
<b>COST PRIORITIZATION - LOW COST IMPROVEMENTS AT ALL SCHOOLS</b>								
High Visibility Crosswalk (assumes 40 foot crosswalk length)	6720	LF	\$15	\$25	\$100,800	\$168,000	\$15,120.00	\$25,200.00
Red Curb Paint	600	LF	\$5	\$20	\$3,000	\$12,000	\$450.00	\$1,800.00
Signage	27	EA	\$375	\$500	\$10,125	\$13,500	\$1,518.75	\$2,025.00
Striping	1152	LF	\$8	\$20	\$9,216	\$23,040	\$1,382.40	\$3,456.00
Vegetation (varies by project, costs unknown)	-	SF	-	-	-	-	-	-
<b>Total</b>					<b>\$123,141</b>	<b>\$216,540</b>	<b>\$18,471.15</b>	<b>\$32,481.00</b>
<b>EQUITY PRIORITIZATION - IMPROVEMENTS AT BRALY ELEMENTARY AND COLUMBIA MIDDLE</b>								
Curb extension	20	EA	\$65,000	\$390,000	\$1,300,000	\$7,800,000	\$195,000.00	\$1,170,000.00
Speed feedback sign	2	EA	\$14,000	\$25,000	\$28,000	\$50,000	\$4,200.00	\$7,500.00
Curb ramp	3	EA	\$4,550	\$13,000	\$13,650	\$39,000	\$2,047.50	\$5,850.00
Move curb	1	EA	\$65,000	\$390,000	\$65,000	\$390,000	\$9,750.00	\$58,500.00
<b>Total</b>					<b>\$1,406,650</b>	<b>\$8,279,000</b>	<b>\$210,997.50</b>	<b>\$1,241,850.00</b>
<b>SAFETY PRIORITIZATION - IMPROVEMENTS AT PETERSON MIDDLE AND HOMESTEAD HIGH</b>								
Curb extension	8	EA	\$65,000	\$390,000	\$520,000	\$3,120,000	\$78,000.00	\$468,000.00
HAWK	1	EA	\$500,000	\$800,000	\$500,000	\$800,000	\$75,000.00	\$120,000.00
Signal changes	1	EA	\$2,500	\$1,000,000	\$2,500	\$1,000,000	\$375.00	\$150,000.00
Curb ramp	3	EA	\$4,550	\$13,000	\$13,650	\$39,000	\$2,047.50	\$5,850.00
Protected intersection	1	EA	\$520,000	\$3,000,000	\$520,000	\$3,000,000	\$78,000.00	\$450,000.00
<b>Total</b>					<b>\$1,556,150</b>	<b>\$7,959,000</b>	<b>\$233,422.50</b>	<b>\$1,193,850.00</b>



**APPENDIX A**

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# Bicycle Recommendations

Street	Start	End	Proposed Facility Class	Miles
5th St. (private street)	Mathilda Ave.	Bordeaux Dr.	1	0.2
Ahwanee Ave.	Mathilda Ave.	Borregas Ave.	2	0.5
Ahwanee Ave.	Borregas Ave.	Fair Oaks Ave.	2	0.6
Ahwanee Ave.	Fair Oaks Ave.	San Junipero Dr.	3	0.3
Ahwanee Ave.	San Junipero Dr.	San Rafael St.	3	0.4
Alberta Ave.	Hollenbeck Ave.	Sunnyvale-Saratoga Rd.	3	0.5
Alberta Ave. - Norland Dr. - Endicott Dr. - Saskatchewan Dr. - Cheyenne Dr.	Hollenbeck Ave.	Sunnyvale-Saratoga Rd.	3B	0.5
Almanor Ave.	Mary Ave.	Vaqueros Ave.	2B	0.3
Almanor Ave.	Vaqueros Ave.	Mathilda Ave.	2	0.2
Aster Ave.	Evelyn Ave.	Barberry Terr.	2	0.2
Bay Trail Connector	Mathilda Ave.	Bay Trail	1	0.1
Belleville Way	Fremont Ave.	Homestead Rd.	3	1.0
Bernardo Ave.	Ayala Dr.	Olive Ave.	3	0.6
Bernardo Ave.	El Camino Real	Blair Ave.	2B	0.1
Bernardo Ave.	Blair Ave.	Brookfield Ave.	2B	0.1
Bernardo Ave. (Stevens Creek Trail segment)	Remington Dr.	Fremont Ave.	2	0.5
Bernardo Ave. (Stevens Creek Trail segment)	Fremont Ave.	Homestead Rd.	1	1.1
Bernardo Ave.	Brookfield Ave.	Heatherstone Way	2B	0.2
Bike/Ped Bridge	Mountain View	Stevens Creek Trail	1	0.1
Bittern Dr.	Inverness Way	Harwick Dr.	3	0.1
Blackhawk Dr.	Dunholme Way	Locksunart Way	3B	0.4
Blair Ave.	Quetta Ave.	Bernardo Ave.	3B	0.9
Blue Jay Dr.	Blackhawk Dr.	E Homestead Rd.	3B	0.1
Bobwhite Ave.	Fremont Ave.	Bobolink Cir.	3B	0.0
Bobwhite Ave. - Floyd Ave.	Bobolink Cir.	Dunholme Way	3B	0.5
Borregas Ave.	Caribbean Dr.	Java Dr.	2	0.4
Borregas Ave.	Java Dr.	Gibraltar Dr.	2	0.1
Borregas Ave.	Gibraltar Dr.	Moffett Park Dr.	4	0.4
Borregas Ave.	Maude Ave.	Ahwanee Ave.	2B	0.6
Borregas Ave.	Weddell Dr.	Persian Dr.	2B	0.4
Bryant Way	Eleanor Way	Sage Hen Way	3B	0.5
Calabazas Creek Trail	Central Expy.	Monroe St.	1	0.8
Calabazas Creek Trail	Existing Trail	Central Expy.	1	1.2
Caribbean Dr.	Moffett Park Dr.	Bordeaux Dr.	1	1.6
Carlisle Way	Bobwhite Ave.	Mallard Way	3B	0.7
Cascade Dr.	S Bernardo Ave.	Cordilleras Ave.	3	1.2
Caspian Ct.	West Channel	Geneva Dr.	4	0.4
Cezanne Dr. - Cumulus Dr. - Azure St.	El Camino Real	Remington Dr.	3B	0.7
Cordilleras Ave.	Cascade Dr.	Fremont Ave.	3B	0.2

Street	Start	End	Proposed Facility Class	Miles
Crawford Dr.	Spinosa Dr.	Sunnyvale Saratoga Rd.	3B	0.3
Crescent Ave.	Sunnyvale-Saratoga Rd.	Picasso Dr.	3	0.5
Crescent Ave.	Picasso Dr.	Rembrandt Dr.	3	0.0
D St. (private street)	N Mary Ave. Bridge	5th St.	4	0.4
Danforth Dr.	Quetta Ave.	Russett Dr.	3B	0.2
Dartshire Way	Flamingo Way	S Wolfe Rd.	3B	0.4
Duane Ave.	Borregas Ave.	Fair Oaks Ave.	3	0.6
Dunford Way	Oriole Ave.	Teal Dr.	3B	0.4
Dunholme Way	Blackhawk Dr.	Flamingo Way	3B	0.4
East Channel Trail	Lakehaven Ter.	Tasman Dr.	1	0.4
East Channel Trail	Caribbean Dr.	Inverness Ave.	1	4.6
El Camino Real	City Limit	City Limit	4, 1 (Based on ROW)	3.7
El Camino Storm Drain	City Limits	Willow Ave.	1	0.8
El Camino Storm Drain	El Camino Storm Drain	LSAP Future Caltrain crossing	1	0.2
Eleanor Way	Bryant Way	Wolfe Road	3B	0.1
Elmira Dr.	Hanover Ave.	Quetta Ave.	3B	0.1
Evelyn Ave.	521 feet west of	Mary Ave.	4	0.1
Evelyn Ave.	S Bernardo Ave.	521 feet west of Mary Ave.	4	0.4
Evelyn Ave.	Mary Ave.	Sunset Ave.	4	0.2
Evelyn Ave.	Sunset Ave.	Florence St.	4	0.5
Evelyn Ave.	Florence St.	Sunnyvale Ave.	2B	0.3
Evelyn Ave.	Sunnyvale Ave.	S Bayview Ave.	2B	0.2
Evelyn Ave.	S Bayview Ave.	Marshall Ave.	2B	0.1
Evelyn Ave.	Marshall Ave.	Central Ave.	2B	0.1
Fair Oaks Ave.	Ahwanee Ave.	Wolfe Rd.	2	0.4
Finch Way - Londonderry Dr.	Inverness Way	Londonderry Dr.	3B	0.3
Flamingo Way	Dartshire Way	Durholme Way	3B	0.1
Flicker Way - Heron Ave. Route	East Channel Trail	Homestead Rd.	3B	1.2
Fremont Ave.	Belleville Way	SR 85 NB/SB Ramps	4	0.1
Fremont Ave.	SR 85 NB/SB Ramps	SR 85 NB/SB Ramps	4	0.1
Fremont Ave.	S Bernardo Ave.	Wright Ave.	4	0.2
Fremont Ave.	Wright Ave.	Mary Ave.	4	0.2
Fremont Ave.	Oxbow Ct.	Sunnyvale Saratoga Rd.	4	0.9
Fremont Ave.	Oxbow Ct.	Rembrandt Dr.	4	0.6
Fremont Ave.	Rembrandt Dr.	Rousseau Dr.	4	0.1
Fremont Ave.	Rousseau Dr.	Arleen Ave.	4	0.1
Fremont Ave.	Arleen Ave.	Kingfisher Way	4	0.1

Street	Start	End	Proposed Facility Class	Miles
Fremont Ave.	Kingfisher Way	Wolfe Rd.	4	0.1
Fremont Ave.	Wolfe Rd.	El Camino Real	4	0.1
Garner Dr.-Bradford Dr.-Ross Dr.	John W. Christian Greenbelt	Weddell Dr.	3B	0.2
Gibraltar Dr.	Borregas Ave.	Innsbruck Dr.	4	0.3
Hanover Ave.	Heatherstone Way	Elmira Dr.	3B	0.2
Harwick Way	Bittern Dr.	Alberta Ave.	3	0.1
Heatherstone Way	Stevens Creek Trail	Hanover Ave.	3B	1.0
Helena Dr.	Bernardo Ave.	Wright Ave.	3B	0.3
Helena Dr.	Wright Ave.	Samedra St.	3B	0.2
Helena Dr.	Samedra St.	Mary Ave.	3B	0.1
Helena Dr.	Mary Ave.	Lewiston Dr.	3B	0.4
Henderson Ave.	Lily Ave.	Bryant Way	3	0.8
Hollenbeck Ave.	Alberta Ave.	The Dalles	2	0.1
Homestead-Bernardo Connector	Homestead Rd.	Bernardo Ave.	1	0.1
Hyde Park Dr.	Russet Dr.	Spinosa Dr.	3B	0.2
Innovation Way	Moffett Park Dr.	Bordeaux Dr.	4	0.6
Innovation Way	Kifer Rd.	Trail	2	0.2
Innsbruck Dr.	Moffett Park Dr.	Java Dr.	2B	0.2
Innsbruck Dr.	Moffett Park Dr.	Java Dr.	1	0.2
Inverness Way	Bittern Dr.	Teal Dr.	3	1.5
Iowa Ave.	Mathilda Ave.	Sunnyvale Ave.	2B	0.3
Iris Ave.	Fair Oaks Ave.	Gail Ave.	3	0.3
Java Dr.	Crossman Ave.	Mathilda Ave.	4	0.9
Kifer Rd.	Commercial St.	Uranium Dr.	2B	1.5
Kinnewick Dr.	The Dallas Ave.	Homestead Ave.	3B	0.6
La Conner Dr.	Sunnyvale Saratoga Rd.	Tenaka Pl.	3B	0.1
Lakedale Way	Silverlake Dr.	Lakedale Way Crossing	2	0.2
Lawerence Expy.	Arques Ave.	Reed Ave	1	1.0
Lime Dr.	Remington Dr.	Yorktown Dr.	3B	0.5
LSAP Trail	Knifer Rd.	Trail	1	0.2
LSAP Trail	Corvin Dr.	Uranium Dr.	1	0.8
LSAP Trail	Sonora Ct.	Aster Ave.	1	0.1
LSAP Trail	Kifer Rd.	Trail	1	0.1
LSAP Trail	Trail	Sonora Ct.	1	0.5
Lynn Way	Mango Ave.	Ramona Ave.	3	0.0
Mallard Way	Carlisle Way	Dartshire Way	3B	0.1
Manet Dr.	Crescent Ave.	Fremont Ave.	3	0.2
Mango Ave.	W Remington Dr.	Lynn Way	3	0.6
Manila Dr.	Ellis St.	Enterprise Way	2	0.9



Street	Start	End	Proposed Facility Class	Miles
Marion Way	Wolfe Rd.	Oriole Ave.	3B	0.3
Mary Ave.	Almanor Ave.	Becenia Ave.	4	0.3
Mary Ave.	Benecia Ave.	Maude Ave.	4	0.2
Mary Ave.	Maude Ave.	Central Expy.	4	0.5
Mary Ave.	Central Expy.	California Ave.	4	0.1
Mary Ave.	California Ave.	Evelyn Ave.	4	0.2
Mary Ave. Overcrossing	N Mary Ave.	D St.	4	0.5
Mathilda Ave.	5th Ave.	Moffett Park Dr.	4	0.5
Mathilda Ave.	Olive Ave.	El Camino Real	1	0.2
Mathilda Ave.	Iowa Ave.	Olive Ave.	2B	0.1
Mathilda Ave.	Washington Ave.	Iowa Ave.	2	0.2
Maude Ave.	City Boundary	San Angelo Ave.	2B	1.0
Maude Ave.	Borregas Ave.	Fair Oaks Ave.	2	0.1
Moffett Park Dr.	Enterprise Way	East Channel Trail	1	1.7
Morse Ave.	California Ave.	Maude Ave.	3B	0.4
N Britton Ave.	E Duane Ave.	East Channel Trail	3B	0.1
Neighborhood Cut Through	Londonderry Dr.	Homestead Rd.	1	0.1
Nettle Pl.	Poplar Ave.	Ponderosa Ave.	3B	0.1
New Roadway	Lawerence Expy.	New Roadway, Calabazas Creek	2	0.5
New Trail	Mathilda Ave.	Sunnyvale Saratoga Rd.	1	0.2
Norman Dr.	Dunford Way	Bryant Way	3B	0.4
Old San Francisco Rd.	Sunnyvale Ave.	Wolfe Rd.	4	1.0
Parking Lot b/w Motel 6 and Applied Chemicals	Vaqueros Ave.	Mathilda Ave.	1	0.1
Pastoria Ave.	Olive Ave.	El Camino Real	2	0.1
Pastoria Ave.	Evelyn Ave.	Olive Ave.	3	0.7
Persian Dr.	East Java Dr.	Quality Inn Parking Lot	2	0.7
Pome Ave.	Sheraton Dr.	Fremont Ave.	3B	0.4
Ponderosa Ave.	Nettle Pl.	Iris Ave.	3B	0.2
Poplar Ave.	Bryant Way	Nettle Pl.	3B	0.6
Quail Ave.	Dunford Way	Homestead Rd.	3	0.5
Quetta Ave.	Pear Ave.	Elmira Dr.	3B	0.2
Ramona Ave.	Lynn Way	Blair Ave.	3	0.2
Reed Ave.	Wolfe Rd.	Evelyn Ave.	2B	0.6
Reed Ave.	Private Road	Lawrence Expy.	2B	0.2
Rembrandt Dr.	Crescent Ave.	Fremont Ave.	3	0.2
Remington Dr.	Bernardo Ave.	El Camino Real	2B	2.0
Robin Way	Bernardo Ave.	Knickerbocker	3B	0.5
Russet Dr.	Danforth Dr.	Hyde Park Dr.	3B	0.3
Sage Hen Way - Castleton Way	Teal Dr.	Bryant Way	3B	0.2
San Junipero Dr.	Alvarado Ave.	Ahwani Ave.	3B	0.1
San Miguel Ave.	Alvarado Ave.	Ahwani Ave.	3B	0.3

Street	Start	End	Proposed Facility Class	Miles
San Rafael St.	Ahwanee Ave.	Duane Ave.	3	0.3
San Zeno Way	Kifer Rd.	Sonora Ct.	2	0.2
Santa Vittoria Terr.	Kifer Rd.	Sonora Ct.	2	0.2
Sequoia Dr. - Bluebonnet Dr. - Pin Oak Dr.	Iris Ave.	Evelyn Ave.	3B	0.6
Shared-Use Path	Belleville Way	Stevens Creek Trail	1	0.2
Sheraton Dr.	Pome Ave.	Spinosa Dr.	3	0.5
Silverlake Dr.	Lakedale Way	JWC Greenbelt	3B	0.1
Sonora Ct.	Tunnel	Willow Ave.	2	0.3
South Bayview Ave.	Evelyn Ave.	Old San Francisco Rd.	3B	0.6
Spinosa Dr.	Torrington Dr.	Crawford Dr.	3B	0.7
Stevens Creek Trail	Fremont Ave.	Heatherstone Way	1	1.4
Sunnyvale Ave.	Maude Ave.	Arques Ave.	2	0.3
Sunnyvale Ave.	Arques Ave.	California Ave.	2B.4	0.2
Sunnyvale Ave.	California Ave.	Hendy Ave.	2B.4	0.2
Sunnyvale Ave.	Hendy Ave.	Evelyn Ave.	2B.4	0.1
Sunnyvale Ave.	Evelyn Ave.	Washington Ave.	4	0.1
Sunnyvale Ave.	Washington Ave.	McKinley Ave.	2B	0.1
Sunnyvale Ave.	McKinley Ave.	Iowa Ave.	2B	0.1
Sunnyvale Ave.	Iowa Ave.	El Camino Real	2B	0.3
Sunnyvale Saratoga Rd.	El Camino Real	Mathilda Ave.	2B	0.3
Sunnyvale Saratoga Rd.	Mathilda Ave.	Homestead Rd.	4	1.8
Taaffe St.	El Camino Real	Iowa Ave.	3B	0.3
Taaffe St.	Iowa Ave.	Sunnyvale Station	3	0.3
Tasman Dr. (Westbound)	Reamwood Ave.	Calabazas Creek Trail	4	0.1
Teal Dr.	Dunford Way	Castleton Way	3B	0.3
Tenaka Pl.	Alberta Ave.	La Conner Dr.	3B	0.2
The Dallas Ave.	Bernardo Ave.	Hollenbeck Ave.	3	1.0
The Dalles Ave.	Belleville Way	Bernardo Ave.	3	0.1
Ticonderoga Dr.	Bernardo Ave.	Pome Ave.	3B	0.8
Washington Ave.	S Bernardo Ave.	Mathilda Ave.	3	1.1
West Channel Trail	Bordeaux Dr.	Carl Rd.	1	0.9
Willow Ave.	Private Driveway	Reed Ave.	2B	0.1
Willow Ave.	Aster Ave.	Lawrence Expy.	2	0.1
Willow Ave.	Aster Ave.	Private Driveway	2B	0.2
Wolfe Rd.	Fair Oaks Ave.	Britton Ave.	4	0.1
Wolfe Rd.	Britton Ave.	Kifer Rd.	4	0.6
Wolfe Rd.	Kifer Rd.	Evelyn Ave.	4	0.3
Wolfe Rd.	Fremont Ave.	El Camino Real	4	0.1
Wright Ave.	Fremont Ave.	Homestead Rd.	3B	1.0
Wright Ave.	Yorktown Dr.	Fremont Ave.	3B	0.0
Yorktown Dr.	Lime Dr.	Wright Ave.	3B	0.1
Yukon Dr.	Alberta Ave.	Cascade Dr.	3B	0.4

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**APPENDIX B**

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# Bicycle Prioritization

Street	Start	End	Proposed Facility Class	Community Identifier Need
El Camino Real	City Limit	City Limit	4, 1 (Based on ROW)	●
Remington Dr.	Bernardo Ave.	El Camino Real	2B	●
Sunnyvale Saratoga Rd.	Homestead Rd.	El Camino Real	2B, 4	●
Borregas Ave.	Maude Ave.	Carribean Dr.	2B, 4	●
Evelyn Ave.	S Bernardo Ave.	521 feet west of Mary Ave.	4	●
Fremont Ave.	Belleville Way	El Camino Real	4	●
Maude Ave.	City Boundary	Fair Oaks Ave.	2B, 2	●
Moffett Park Dr.	Ellis St	East Channel Trail	1	●
Old San Francisco Rd. - Reed Ave.	Sunnyvale Ave.	Lawrence Expy.	2B, 4	●
Sunnyvale Ave.	El Camino Real	Maude Ave.	2, 2B, 4	●
Almanor Ave.	Mary Ave.	Mathilda Ave.	2B, 2	○
Bernardo Ave.	Heathersone Way	Ayala Dr.	2B, 3	○
Bernardo Ave. - Homestead-Bernardo Connector	Fremont Ave.	Homestead Rd.	1	●
Birdland Bike Routes - Quail Ave. - Teal Dr. - Sage Hen Way - Castleton Way - Bryant Way - Eleanor Way	Homestead Rd.	Bryant Rd.	3, 3B	●
Blue Jay Dr. - Blackhawk Dr. - Dunholme Way - Bobwhite Ave.- Floyd Ave.- Manet Dr.	Homestead Rd.	Crescent Ave.	3B, 3	●
Caribbean Dr.	Moffett Park	Bordeaux	1	●
Cezanne Dr. - Cumulus Dr. - Azure St.	El Camino Real	Remington Dr.	3B	●
Duane Ave.	Borregas Ave.	Fair Oaks Ave.	3	○
East Channel Trail	Ahwانee Ave.	Central Expy.	3B, 1	●
East Channel Trail	Evelyn Ave.	El Camino Real	1	●
East Channel Trail	El Camino Real	Homestead Rd.	1, 3B	○
Fair Oaks Ave.	Ahwانee Ave.	N Wolfe Rd.	2	●
Helena Dr. - Kinnewick Dr.	South Bernardo Ave.	The Dallas Ave.	3B	●
Kifer Rd.	Commercial St.	Uranium Dr.	2B	●
Mathilda Ave.	El Camino Real	Washington St.	1, 2B, 2	●
Poplar Ave. - Nettle Pl. - Ponderosa Ave. - Sequoia Dr. - Bluebonnet Dr. - Pin Oak Dr.	Bryant Way	Evelyn Ave.	3B	●
Steven's Creek Trail	City Limits	Heatherstone Way	1	●
The Dalles Ave. - Alberta Ave. - Bittern Dr.- Inverness Way	Belleville Way	Teal Dr.	3, 2	●
Wolfe Rd.	Fremont Ave.	El Camino Real	4	○
Ahwانee Ave.	Mathilda Ave.	San Rafael St.	2, 3	○
Bernardo Ave.	Fremont Ave.	Remington Dr.	2	●
Calabazas Creek	Central Expy	Monroe St.	1	○
Calabazas Creek Trail	Existing Trail	Central Expy	1	○

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Priority	Collision Reduction - Proximity	Collision Reduction - HIN	Equity	Access to Key Destinations	Cross-Town Connections	Total	Priority
1	1●	1●	1●	1●	1●	1	6 High
1	1●	1●	1●	1●	1●	1	6 High
1	1●	1●	1●	1●	1●	1	6 High
1	1●	1○	0●	1●	1●	1	5 High
1●	1●	1●	1○	0●	1●	1	5 High
1●	1●	1●	1○	0●	1●	1	5 High
1●	1●	1○	0●	1●	1●	1	5 High
1●	1●	1●	1○	0●	1●	1	5 High
1●	1●	1●	1●	1●	1○	0	5 High
1●	1●	1○	0●	1●	1●	1	5 High
0●	1●	1●	1●	1●	1○	0	4 High
0●	1●	1●	1○	0●	1●	1	4 High
1●	1●	1○	0○	0●	1●	1	4 High
1●	1●	1●	1○	0●	1○	0	4 Medium
1●	1●	1●	1○	0●	1○	0	4 Medium
1●	1●	1○	0●	0●	1●	1	4 High
1●	1●	1○	0●	1●	1○	0	4 High
0●	1●	1●	1●	1○	0●	1	4 Medium
1●	1●	1○	0●	0●	1●	1	4 High
1○	0●	0●	0●	1●	1●	1	4 High
0●	1●	1○	0●	1●	1●	1	4 High
1●	1●	1●	1●	1●	0○	0	4 High
1●	1●	1●	1○	0●	1○	0	4 Medium
1●	1●	1○	0●	1○	0●	1	4 High
1●	1●	1●	1○	0●	1○	0	4 High
1●	1●	1●	1○	0●	1○	0	4 Medium
1●	1●	1○	0●	0●	1●	1	4 High
1●	1●	1●	1○	0●	1○	0	4 High
0●	1●	1●	1●	1●	1○	0	4 High
0●	1●	1○	0●	1●	1○	0	3 Medium
1●	1●	1○	0●	0●	1○	0	3 Medium
0○	0●	0●	0●	1●	1●	1	3 Medium
0○	0●	0●	0●	1●	1●	1	3 Medium

Street	Start	End	Proposed Facility Class	Community Identifier Need
East Channel Trail	Caribbean Drive	Lakehaven Ter	1	●
Flicker Way - Heron Ave.- Rembrandt Dr. - Crescent Ave.	Homestead Rd.	Sunnyvale Saratoga Rd.	3B, 3	●
Heatherstone Ave. - Hanover Ave. - Elmira Dr.	Stevens Creek Trail	Quetta Ave.	3B	●
Henderson Ave.	Lily Ave.	Bryant Way	3	○
Lawrence Area Station Plan Trails	Various	Various	1	○
Lawrence Station Area Plan Bikeways - San Zeno Way- Aster Ave. - Sonora Ct. - Santa Vittoria	Kifer Rd.	LSAP Trail	2	●
Mary Ave.	Evelyn Ave.	Almanor Ave.	4	○
Pastoria Ave.	Evelyn Ave.	El Camino Real	2, 3	●
Taaffe St.	El Camino Real	Sunnyvale Station	3, 3B	○
Washington Ave.	S Bernardo Ave.	Mathilda Ave.	3	○
West Channel Trail	Bordeaux Dr.	Carl Rd.	1	○
Wolfe Rd.	Fair Oaks Ave.	Evelyn Ave.	4	○
Wright Ave.- Yorktown Dr.- Lime Dr. - Mango Ave. - Lynn Way - Ramona Ave.	Homestead Rd.	Blair Ave.	3B, 3	●
Blair Ave. - Quetta Ave.	Bernardo Ave.	Elmira Dr.	3B	○
Cascade Dr. - Cordilleras Ave.	S Bernardo Ave.	Fremont Ave.	3, 3B	○
Caspian Ct.	West Channel	Geneva Dr.	4	○
East Channel Trail	Central Expy.	Evelyn Ave.	1	●
Evelyn Ave.			1	○
Garner Dr. - Bradford Dr. - Ross Dr.	John W. Christian Greenbelt	Weddell Dr.	3B	○
Innovation Way	Moffett Park	Bordeaux Dr.	4	○
Java Dr.	Crossman	Mathilda	4	○
Mary Ave. Overcrossing	N Mary Avenue	D Street	4	○
Mathilda Ave.	5th Ave.	Moffett Park Dr.	4	○
Morse Ave.	California Ave.	Maude Ave.	3B	○
Parking Lot between Motel 6 and Applied Chemicals	Vaqueros Ave.	Mathilda Ave.	1	○
South Bayview Ave.	Evelyn Ave.	Old San Francisco Rd.	3B	○
Torrington Dr. - Spinoza Dr. - Crawford Dr.	Hollenbeck Ave.	Sunnyvale Saratoga Rd.	3B	○
Willow Ave.	Reed Ave.	Lawrence Expy	2, 2B	○
5th St. (Private Street)	Mathilda Ave.	Bordeaux	1	○
Alberta Ave. - Norland Dr. - Endicott Dr. - Saskatchewan Dr. - Cheyenne Dr.	Hollenbeck Ave.	Sunnyvale-Saratoga Rd.	3B	○
Bay Trail Connector	Mathilda Ave.	Bay Trail	1	○
Belleville Way	Fremont Ave.	Homestead Rd.	3B	○
Bike/Ped Bridge	Mountain View	SCT	1	○

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Street	Start	End	Proposed Facility Class	Community Identifier Need
Carlisle Way - Mallard Way	Bobwhite Ave.	Dartshire Way	3B	<input type="radio"/>
D St. (Private Street)	N Mary Ave. Bridge	5th St.	4	<input type="radio"/>
Danforth Dr. - Russet Dr. - Hyde Park Dr.	Quetta Ave.	Spinosa Dr.	3B	<input type="radio"/>
Flamingo Way - Dartshire Way	Dunholme Way	S Wolfe Rd.	3B	<input type="radio"/>
Gibraltar Dr.	Borregas Ave.	Innsbruck Dr.	4	<input type="radio"/>
Innsbruck Dr.	Moffett Park Dr.	Java Dr.	2B, 1	<input type="radio"/>
Iowa Ave.	Mathilda Ave.	Sunnyvale Ave.	2B	<input type="radio"/>
Iris Ave.	Fair Oaks Ave.	Gail Ave.	3	<input type="radio"/>
La Conner Dr. - Tenaka Pl. - Yukon Dr.	Sunnyvale Saratoga Rd.	Cascade Dr.	3B	<input type="radio"/>
Manila Dr.	Ellis St.	Enterprise Way	2	<input type="radio"/>
New Trail	Mathilda Ave.	Sunnyvale Saratoga Rd.	1	<input type="radio"/>
Persian Dr.	East Java Dr.	Quality Inn Parking Lot	2	<input type="radio"/>
Robin Way	Bernardo Ave.	Knickerbocker	3B	<input type="radio"/>
San Junipero Dr. - San Miguel Ave.	Duane Ave.	Ahwanee Ave.	3B	<input type="radio"/>
San Rafael St - Indian Wells Ave.	Ahwanee Ave.	Duane Ave.	3, 2	<input type="radio"/>
Silverlake Dr. - Lakedale Way	Lakedale Way Crossing	Greenbelt	3B, 2	<input type="radio"/>
Tasman Dr.	Rreamwood Ave.	Calabazas Creek Trail	4	<input type="radio"/>
Ticonderoga Dr. - Pome Ave. - Sheraton Dr.	Bernardo Ave.	Spinosa Dr.	3B, 3	<input type="radio"/>
Alt Route North of Tasman Dr. Connector	East Java Dr.	Persian Dr.		2 <input type="radio"/>

Priority	Total	Cross-Town Connections	Access to Key Destinations	Equity	Collision Reduction - HIN	Collision Reduction - Proximity	City
Low	1	0	0	0	0	1	0
Low	1	0	1	0	0	0	0
Low	1	0	0	1	0	0	0
Low	1	0	1	0	0	0	0
Low	1	0	0	0	1	0	0
Low	1	0	0	0	0	1	0
Low	1	0	0	0	0	1	0
Low	1	0	0	0	0	1	0
Low	1	0	0	0	0	1	0
Low	1	0	0	0	0	1	0
Low	1	0	0	0	0	1	0
Low	1	0	0	0	0	1	0
Low	1	0	0	0	0	1	0
Low	1	0	0	0	0	1	0
Low	1	0	0	0	0	1	0
Low	1	0	0	0	0	1	0
Low	1	0	0	0	0	1	0
Low	1	0	0	0	0	1	0
Low	1	0	0	0	0	1	0
Low	1	0	0	0	0	1	0
Low	1	0	0	0	0	1	0
Low	0	0	0	0	0	0	0

Intersection Street 1	Intersection Street 2	Design	Community Identified Need	Collision Reduction - Proximity
Borregas Ave.	Maude Ave.	Crossing Improvement	●1	●1
Remington Dr.	El Camino Real	Crossing Improvement	●1	●1
Sunnyvale Ave.	Maude Ave.	Crossing Improvement	●1	●1
Cezanne Dr.	El Camino Real	Crossing Improvement and Traffic Control	○0	●1
Mary Ave.	Evelyn Ave.	Crossing Improvement	●1	●1
Mathilda Ave.	Maude Ave.	Crossing Improvement and Traffic Control	●1	○0
Mathilda Ave.	Moffett Park Dr.	Crossing Improvement	●1	●1
Pastoria Ave.	El Camino Real	Crossing Improvement and Traffic Control	●1	●1
Sunnyvale-Saratoga Rd.	Fremont Ave.	Crossing Improvement	●1	●1
Bernardo Ave.	Evelyn Ave.	Crossing Improvement	●1	●1
Bernardo Ave.	Fremont Ave.	Crossing Improvement	●1	●1
Bernardo Ave.	El Camino Real	Crossing Improvement	○0	●1
Borregas Ave.	Duane Ave.	Crossing Improvement and Traffic Control	●1	●1
East Channel Trail	El Camino Real	Crossing Improvement and Grade Separation	○0	○0
East Channel Trail	Fremont Ave.	Crossing Improvement and Traffic Control	●1	●1
East Channel Trail	Duane Ave.	Crossing Improvement	○0	●1
El Camino Real	Fremont Ave.	Crossing Improvement	○0	●1
Evelyn Ave.	Murphy Ave.	Crossing Improvement	○0	●1
Mary Ave.	Fremont Ave.	Crossing Improvement	●1	●1
Mary Ave.	Remington Dr.	Crossing Improvement and Traffic Control	●1	●1
Mary Ave.	Central Expy.	Crossing Improvement and Traffic Control	○0	●1
Mathilda Ave.	Ahwanee Ave.	Crossing Improvement	●1	○0
Sunnyvale Ave.	Evelyn Ave.	Crossing Improvement	●1	●1
Wolfe Rd.	Kifer Rd.	Crossing Improvement	●1	●1
Wolfe Rd.	Fremont Ave.	Crossing Improvement	●1	○0
Bernardo Ave.	Ayala Dr.	Crossing Improvement and Traffic Control	○0	●1
Borregas Ave.	Carribean Dr.	Crossing Improvement	○0	●1
East Channel Trail	Old San Francisco Rd.	Crossing Improvement	○0	○0
East Channel Trail	John W. Christian Greenbelt	Crossing Improvement	○0	○0
Hollenbeck Ave.	Fremont Ave.	Crossing Improvement	●1	○0
Lawerence Expy.	Kifer Rd.	Crossing Improvement and Grade Separation	●1	○0

Collision Reduction - HIN	Equity	Access to Key Destinations	Cross-Town Connections	Total	Priority
●1	●1	●1	●1	6	High
●1	●1	●1	●1	6	High
●1	●1	●1	●1	6	High
●1	●1	●1	●1	5	High
●1	○0	●1	●1	5	High
●1	●1	●1	●1	5	High
●1	○0	●1	●1	5	High
●1	○0	●1	●1	5	High
●1	○0	●1	●1	5	High
●1	○0	○0	●1	4	High
●1	○0	○0	●1	4	High
●1	○0	●1	●1	4	High
○0	●1	○0	●1	4	High
●1	●1	●1	●1	4	High
●1	○0	○0	●1	4	High
●1	○0	●1	●1	4	High
●1	○0	●1	●1	4	High
●1	○0	●1	●1	4	High
●1	○0	●0	●1	4	High
●1	○0	○0	●1	4	High
●1	○0	●1	●1	4	High
●1	●1	●1	○0	4	High
●1	○0	○0	●1	4	High
●1	○0	○0	●1	4	High
●1	○0	●1	●1	4	High
●1	○0	○0	●1	3	Medium
○0	○0	●1	●1	3	Medium
●1	●1	○0	●1	3	Medium
●1	○0	●1	●1	3	Medium
○0	○0	●1	●1	3	Medium
○0	●1	○0	●1	3	Medium

Intersection Street 1	Intersection Street 2	Design	Community Identified Need	Collision Reduction - Proximity
Manet Dr.	Fremont Ave.	Crossing Improvement	<input type="radio"/> 0	<input checked="" type="radio"/> 1
Manet Dr.	Remington Dr.	Crossing Improvement	<input type="radio"/> 0	<input checked="" type="radio"/> 1
Mary Ave.	Knickerbocker Dr.	Crossing Improvement	<input checked="" type="radio"/> 1	<input checked="" type="radio"/> 1
Mary Ave.	Olive Ave.	Crossing Improvement and Traffic Control	<input type="radio"/> 0	<input checked="" type="radio"/> 1
Mathilda Ave.	Ross Dr.	Crossing Improvement	<input checked="" type="radio"/> 1	<input checked="" type="radio"/> 1
Stevens Creek/SR 85 on- and off-ramps	Fremont Ave.	Grade Separation	<input type="radio"/> 0	<input checked="" type="radio"/> 1
Sunnyvale Ave.	Evelyn Ave.	Crossing Improvement and Traffic Control	<input checked="" type="radio"/> 1	<input checked="" type="radio"/> 1
Sunnyvale Saratoga Ave.	Alberta Ave./Harwick Way	Crossing Improvement	<input type="radio"/> 0	<input checked="" type="radio"/> 1
Sunnyvale-Saratoga Ave.	Cheyenne Dr.	Crossing Improvement and Traffic Control	<input checked="" type="radio"/> 1	<input type="radio"/> 0
Borregas Ave.	John W Christian Greenbelt	Crossing Improvement	<input type="radio"/> 0	<input type="radio"/> 0
East Channel Trail	Carribean Dr.	Crossing Improvement and Grade Separation	<input type="radio"/> 0	<input type="radio"/> 0
East Channel Trail	Iris Ave	Crossing Improvement and Traffic Control	<input type="radio"/> 0	<input type="radio"/> 0
East Channel Trail	Tasman Dr.	Crossing Improvement	<input type="radio"/> 0	<input type="radio"/> 0
East Channel Trail	Evelyn Ave.	Crossing Improvement and Traffic Control	<input type="radio"/> 0	<input type="radio"/> 0
East Channel Trail	Central Expy.	Crossing Improvement and Grade Separation	<input type="radio"/> 0	<input type="radio"/> 0
East Channel Trail	Kifer Rd.	Crossing Improvement and Traffic Control	<input checked="" type="radio"/> 1	<input type="radio"/> 0
East Channel Trail	Wolfe Rd.	Crossing Improvement and Grade Separation	<input type="radio"/> 0	<input checked="" type="radio"/> 1
Fair Oaks Ave.	Weddell Dr.	Crossing Improvement	<input checked="" type="radio"/> 1	<input type="radio"/> 0
Fieldfair Dr.	Fremont Ave.	Crossing Improvement and Traffic Control	<input type="radio"/> 0	<input type="radio"/> 0
Lawerence Expy.	Arques Ave.	Crossing Improvement and Grade Separation	<input type="radio"/> 0	<input type="radio"/> 0
Lawerence Expy.	Reed Ave.	Crossing Improvement and Grade Separation	<input type="radio"/> 0	<input type="radio"/> 0
Mary Ave.	Maude Ave.	Crossing Improvement	<input type="radio"/> 0	<input type="radio"/> 0
Mathilda Ave.	Innovation Way	Crossing Improvement	<input type="radio"/> 0	<input checked="" type="radio"/> 1
Mathilda Ave.	Sunnyvale-Saratoga Ave.	Crossing Improvement	<input type="radio"/> 0	<input type="radio"/> 0
Sunnyvale Ave.	Hendy Ave	Crossing Improvement	<input checked="" type="radio"/> 1	<input type="radio"/> 0
Wolfe Rd.	Maude Ave.	Crossing Improvement	<input type="radio"/> 0	<input checked="" type="radio"/> 1

Collision Reduction - HIN	Equity	Access to Key Destinations	Cross-Town Connections	Total	Priority
●1	○0	○0	●1	3	Medium
●1	○0	○0	●1	3	Medium
●1	○0	○0	○0	3	Medium
●1	○0	●1	○0	3	Medium
●1	○0	○0	○0	3	Medium
●1	○0	○0	●1	3	Medium
●1	○0	○0	○0	3	Medium
●1	○0	○0	●1	3	Medium
●1	○0	○0	○0	3	Medium
●1	○0	○0	●1	3	Medium
●1	○0	○0	○0	3	Medium
●1	○0	○0	●1	3	Medium
○0	○0	●1	●1	2	Medium
○0	○0	●1	●1	2	Medium
○0	●1	○0	●1	2	Medium
○0	○0	●1	●1	2	Medium
●1	○0	○0	●1	2	Medium
●1	○0	○0	●1	2	Medium
○0	○0	○0	●1	2	Medium
○0	○0	○0	●1	2	Medium
●1	○0	○0	○0	2	Medium
●1	○0	○0	●1	2	Medium
○0	●1	○0	●1	2	Medium
○0	○0	●1	●1	2	Medium
○0	○0	●1	●1	2	Medium
●1	○0	○0	●1	2	Medium
○0	○0	○0	●1	2	Medium
○0	○0	○0	●1	2	Medium

Intersection Street 1	Intersection Street 2	Design	Community Identified Need	Collision Reduction - Proximity
East Channel Trail	Persian Dr. / SR 237	Crossing Improvement and Grade Separation	<input type="radio"/> 0	<input type="radio"/> 0
East Channel Trail	Blythe Ave.	Crossing Improvement and Traffic Control	<input type="radio"/> 0	<input type="radio"/> 0
East Channel Trail	Ahwanee Ave.	Crossing Improvement	<input type="radio"/> 0	<input type="radio"/> 0
East Channel Trail	Carlisle Way	Crossing Improvement and Traffic Control	<input type="radio"/> 0	<input type="radio"/> 0
East Channel Trail	Dunholme Way	Crossing Improvement and Traffic Control	<input type="radio"/> 0	<input type="radio"/> 0
East Channel Trail	Arques Ave.	Crossing Improvement and Grade Separation	<input type="radio"/> 0	<input type="radio"/> 0
Kennewick Dr.	Homestead Rd.	Traffic Control	<input checked="" type="radio"/> 1	<input type="radio"/> 0
Lakedale Expressway Bridge	Lakedale Way	Crossing Improvement	<input type="radio"/> 0	<input type="radio"/> 0
Mary Ave Overcrossing	Hwy 101	Grade Separation	<input type="radio"/> 0	<input type="radio"/> 0
Mary Ave.	Homestead Rd.	Crossing Improvement and Traffic Control	<input checked="" type="radio"/> 1	<input type="radio"/> 0
Mary Ave.	Washington Ave.	Traffic Control	<input type="radio"/> 0	<input checked="" type="radio"/> 1
Pome Ave.	Fremont Ave.	Crossing Improvement and Traffic Control	<input type="radio"/> 0	<input type="radio"/> 0
The Dalles	85 Overcrossing	Crossing Improvement and Grade Separation	<input type="radio"/> 0	<input type="radio"/> 0
Bernardo Ave.	Ticonderoga Dr.	Crossing Improvement and Traffic Control	<input type="radio"/> 0	<input type="radio"/> 0
Crawford Dr.	Las Palmas Park	Crossing Improvement	<input type="radio"/> 0	<input type="radio"/> 0
Hollenbeck Dr.	Sheraton Ave.	Traffic Control	<input type="radio"/> 0	<input type="radio"/> 0
Mandarin Dr.	Yorktown Dr	Crossing Improvement	<input type="radio"/> 0	<input type="radio"/> 0
Mary Ave.	Helena Dr.	Crossing Improvement and Traffic Control	<input type="radio"/> 0	<input type="radio"/> 0
Reed Ave.	Evelyn Ave.	Crossing Improvement	<input type="radio"/> 0	<input type="radio"/> 0

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**APPENDIX C**

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# Pedestrian Recommendations

Spot Location	Crossing Typology	Recommended Improvements
Alberta Avenue / Hollenbeck Avenue	Other Signalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination, Install curb extensions or bulb outs on Alberta Avenue Provide additional pedestrian crossing signage and marking, Remove vegetation that may obstruct sight distance
Alberta Avenue / Norland Drive	Other Unsignalized Intersection	Evaluate intersection lighting and illumination, Remove vegetation or other objects that may obstruct sight-distance
Arques Avenue / Commercial Street/ / Deguigne Drive	Other Signalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination, Improve signal head visibility for NB/SB approaches
Bernardo Avenue / Ticonderoga Drive	Other Unsignalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination, Remove vegetation that may obstruct sight-distance
Bernardo Avenue / Evelyn Avenue	Other Signalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination, Improve signal head visibility, Provide enhanced signage and markings for channelized right turn crossing (Right Turn Yield to Pedestrians sign, advanced yield markings), Consider eliminating the channelized right turn lanes
284 Borregas Avenue / Duane Avenue	Other Unsignalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination, Remove vegetation or other objects that may obstruct sight-distance, Consider adding traffic control along Borregas Avenue
California Avenue / Frances Street	Other Unsignalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination
El Camino Real / Bernardo Avenue	Major Road Signalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination, Improve signal head visibility
El Camino Real / Cezanne Drive	Major Road Signalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination (especially east side of Cezanne Drive), Install curb extensions/bulb outs at northwest and northeast corners, Improve signal head visibility
El Camino Real / Fremont Avenue	Major Road Unsignalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination on south side of El Camino Real, Remove vegetation that may obstruct sight-distance, New traffic signal for NB right turn and left turn.

Spot Location	Crossing Typology	Recommended Improvements
El Camino Real / Grape Avenue	Major Road Signalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination, Improve signal head visibility for all approaches, Confirm pedestrian crosswalk signals and activation push buttons meet current standards, Improve overall intersection signal timing, Ensure pedestrian crossing timing meets current national standards
El Camino Real / Helen Avenue	Major Road Unsignalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination
El Camino Real / Henderson Avenue	Major Road Signalized Intersection	Upgrade north and south crosswalks to high visibility, Install directional curb ramps on all corners to reduce corner turn radii, Install sharrows on Henderson Avenue, Install advance stop markings ahead of all approaches, Consider modifying vehicular flow by adding separate left turn phases for both northbound and southbound traffic and installing vehicle detection
El Camino Real / Maria Lane	Major Road Signalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination, Improve signal head visibility
El Camino Real / Mary Avenue	Major Road Signalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination, Improve signal head visibility for NB/SB approaches
El Camino Real / Mathilda Avenue	Major Road Signalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination, Confirm pedestrian crosswalk signals and activation push buttons meet current standards, Ensure pedestrian crossing timing meets current national standards
El Camino Real / Pastoria Avenue/ Hollenbeck Avenue	Major Road Signalized Intersection	Upgrade east leg and west leg crosswalks to white continental crosswalks, Reduce corner radii and install directional curb ramps, Leading pedestrian interval (LPI), Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination, Improve signal head visibility

Spot Location	Crossing Typology	Recommended Improvements
El Camino Real / Poplar Avenue	Major Road Signalized Intersection	<p>Upgrade north and south crosswalks to high visibility.</p> <p>Install directional curb ramps on all corners of intersection to reduce corner turn radii,</p> <p>Install sharrows on Poplar Avenue,</p> <p>Install advance stop markings ahead of all approaches,</p> <p>Evaluate intersection lighting and illumination,</p> <p>Improve signal head visibility for all legs,</p> <p>Confirm pedestrian crosswalk signals and activation push buttons meet current standards,</p> <p>Ensure pedestrian crossing timing meets current national standards</p>
El Camino Real / Remington Drive / Fair Oaks Avenue	Major Road Signalized Intersection	<p>Ensure curb ramps meet ADA standards,</p> <p>Evaluate intersection lighting and illumination,</p> <p>Push back stop bars on all intersection approach legs,</p> <p>Improve signal head visibility,</p> <p>Provide enhanced signage and markings for channelized right turn crossing (Right Turn Yield to Pedestrians sign, advanced yield markings),</p> <p>Consider eliminating the channelized right turn lane</p>
El Camino Real / San Bernardo Avenue	Major Road Signalized Intersection	<p>Ensure curb ramps meet ADA standards,</p> <p>Evaluate intersection lighting and illumination,</p> <p>Improve signal head visibility</p>
286 El Camino Real / Sunnyvale-Saratoga Road	Major Road Signalized Intersection	<p>Ensure curb ramps meet ADA standards,</p> <p>Evaluate intersection lighting and illumination,</p> <p>□</p>
El Camino Real / Taaffe Street	Major Road Unsignalized Intersection	<p>Ensure curb ramps meet ADA standards,</p> <p>Evaluate intersection lighting and illumination,</p> <p>Consider installing a signalized midblock pedestrian crossing</p>
El Camino Real / Wolfe Road	Major Road Signalized Intersection	<p>Ensure curb ramps meet ADA standards,</p> <p>Evaluate intersection lighting and illumination,</p> <p>Improve signal head visibility,</p> <p>Consider adjusting curb return radius,</p> <p>Provide enhanced signage and markings for channelized right turn crossing (Right Turn Yield to Pedestrians sign, advanced yield markings),</p> <p>Consider eliminating the channelized right turn lanes</p>
Evelyn Avenue / Frances Street	Other Signalized Intersection	<p>Ensure curb ramps meet ADA standards,</p> <p>Confirm pedestrian crosswalk signals and activation push buttons meet current standards,</p> <p>Ensure pedestrian crossing timing meets current national standards,</p> <p>Consider adjusted signal timing to include pedestrian-only phase.</p>

Spot Location	Crossing Typology	Recommended Improvements
Evelyn Avenue / Murphy Avenue	Other Unsignalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination Install stop bar and advanced yield markings, Trim vegetation, Install advance yield markings, Consider modify crossing control to provide Rectangular Rapid Flashing Beacon (RRFB)
Evelyn Avenue / Florence Avenue	Other Unsignalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination for south leg, Remove vegetation that may obstruct sight-distance, Consider installing RRFB crossing for east leg
Fair Oaks Avenue / Caliente Drive	Major Road Signalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination, Improve signal head visibility for EB/WB traffic, Curb extension on east leg
Fair Oaks Avenue / Old San Francisco Road	Other Signalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination, Confirm pedestrian crosswalk signals and activation push buttons meet current standards, Remove vegetation that may obstruct sight-distance
Fair Oaks Avenue / Olive Avenue	Other Signalized Intersection	Install curb extensions on east and west legs, Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination (2 luminaires at all corners, LED luminaires), Install stop bars on all intersection approach legs, Improve signal head visibility (1 signal head centered over each lane, retroreflective backplates)
Fair Oaks Avenue / Weddell Drive	Major Road Signalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination, Refresh high-visibility crosswalk markings, Improve signal head visibility, Remove vegetation that may obstruct sight distance
Ferndale Avenue / San Aleso Avenue	Mid-Block Crossing	Consider construction of pedestrian facility to connect San Aleso Avenue with SNAIL Neighborhood (Would require landowner approval and easement)
Ferndale Avenue / San Conrado Terrace	Other Unsignalized Intersection	Consider construction of pedestrian facility to connect Caliente Condos and Ferndale Avenue
Fremont Avenue / Bernardo Avenue	Major Road Signalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination, Improve signal head visibility for all approaches, Confirm pedestrian crosswalk signals and activation push buttons meet current standards, Ensure pedestrian crossing timing meets current national standards, Remove vegetation that may obstruct sight-distance

Spot Location	Crossing Typology	Recommended Improvements
Fremont Avenue / Manet Drive/ Bobwhite Avenue	Other Signalized Intersection	High visibility crosswalks, Median pedestrian refuge island on Fremont Avenue, Protected left turns and turn lanes on Manet Drive/ Bobwhite Avenue, Leading pedestrian interval (LPI), APS improvement, Passive ped and bicycle detection, Green marking in conflict zones, Curb extension on northwest corner, Move 12" vehicle signal heads to improve visibility, Right turn on red restriction for northbound Bobwhite Avenue, Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination, Improve signal head visibility, Construct a center median pedestrian refuge island
Fremont Avenue / Mary Avenue	Major Road Signalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination, Confirm pedestrian crosswalk signals and activation push buttons meet current standards, Ensure pedestrian crossing timing meets current national standards, Remove vegetation that may obstruct sight-distance
Fremont Avenue / Sunnyvale- Saratoga Road	Major Road Signalized Intersection	Install protected intersection, Ensure curb ramps meet current national standards, Evaluate intersection lighting and illumination, Refresh high-visibility crosswalk markings
Fremont Avenue / Wolfe Road	Major Road Signalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination, Improve signal head visibility for north and south legs, Confirm pedestrian crosswalk signals and activation push buttons meet current standards, Ensure pedestrian crossing timing meets current national standards, Remove vegetation that may obstruct sight-distance, Consider adjusting curb return radius
Fremont Avenue / Wright Avenue	Major Road Signalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination, Confirm pedestrian crosswalk signals and activation push buttons meet current standards, Ensure pedestrian crossing timing meets current national standards, Remove vegetation that may obstruct sight-distance
Heron Avenue / Homestead Road	Major Road Signalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination, Improve signal head visibility

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Spot Location	Crossing Typology	Recommended Improvements
Hollenbeck Avenue / Cascade Drive	Other Signalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination on southeast corner, Improve signal head visibility for east and west legs, Remove vegetation that may obstruct sight-distance
Hollenbeck Avenue / Cheyenne Drive	Other Unsignalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination on south or east leg, Remove vegetation that may obstruct sight-distance
Hollenbeck Avenue / The Dalles	Other Unsignalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination on north leg, Remove vegetation that may obstruct sight-distance, Consider installing RRFB at intersection or midblock, south of The Dalles
Hollenbeck Avenue / Danforth Drive	Other Signalized Intersection	Install curb extensions on northwest, northeast, and southeast corners of intersection, Install high visibility crosswalks on all legs of intersection, Evaluate intersection lighting and illumination, Improve signal head visibility, Remove vegetation that may obstruct sight distance
Iowa Avenue / Sunset Avenue	Other Unsignalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination for whole intersection, Remove vegetation that may obstruct sight-distance, Consider installing curb extensions/bulb-outs on east leg
Mary Avenue / Iowa Avenue	Other Signalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination on northwest and southeast corners, Reconfigure west leg crosswalk for better visibility for southbound traffic Remove vegetation or other objects that may obstruct sight-distance
Mary Avenue / Olive Avenue	Other Unsignalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination for whole intersection, Remove vegetation that may obstruct sight-distance, Consider installing signalized pedestrian crossing (HAWK Beacon)

Spot Location	Crossing Typology	Recommended Improvements	
Mary Avenue / Ticonderoga Drive	Other Signalized Intersection	High visibility crosswalks, Protected left turns on Mary Avenue, Leading pedestrian Interval (LPI), Curb extensions on Ticonderoga Drive, Improved street lighting, Adaptive pedestrian signal systems, Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination, Improve signal head visibility for EB/WB approaches, Confirm pedestrian crosswalk signals and activation push buttons meet current standards, Ensure pedestrian crossing timing meets current national standards, Remove vegetation that may obstruct sight-distance	
Mary Avenue / Washington Avenue	Other Signalized Intersection	Install directional curb ramps at all four corners and reduce turning radii at all corners, Upgrade existing crosswalks to high-visibility, Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination, Improve signal head visibility, Remove vegetation that may obstruct sight-distance	
290	Mathilda Avenue / California Avenue	Major Road Signalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination, Provide enhanced signage and markings for channelized right turn crossing (Right Turn Yield to Pedestrians sign, advanced yield markings)
Mathilda Avenue / Del Rey Avenue	Major Road Unsignalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination	
Mathilda Avenue / Evelyn Avenue	Other Unsignalized Intersection	Improve lighting and illumination in underpass	
Mathilda Avenue / Maude Avenue	Major Road Signalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination, Provide enhanced signage and markings for channelized right turn crossing (Right Turn Yield to Pedestrians sign, advanced yield markings), Consider eliminating the channelized right turn lanes	
Mathilda Avenue / Ross Drive	Major Road Signalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination, Improve signal head visibility, Consider pedestrian fence on north and west intersection leg	
Maude Avenue / Fair Oaks Avenue	Other Signalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination, Remove vegetation or other objects that may obstruct sight-distance	
Maude Avenue / Morse Avenue	Other Unsignalized Intersection	Evaluate intersection lighting and illumination, Consider installing curb extensions on Morse Avenue	

Spot Location	Crossing Typology	Recommended Improvements
Maude Avenue / Murphy Avenue	Other Unsignalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination
Maude Avenue / Roosevelt Avenue	Other Unsignalized Intersection	Improve intersection lighting and illumination, Consider installing high-visibility crossing marking on east leg
Maude Avenue / San Angelo Avenue	Other Unsignalized Intersection	Evaluate intersection lighting and illumination
Maude Avenue / Sunnyvale Avenue	Other Signalized Intersection	Confirm pedestrian crosswalk signals and activation push buttons meet current standards, Ensure pedestrian crossing timing meets current national standards.
Fair Oaks Avenue / Evelyn Avenue	Other Signalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination, Improve signal head visibility, Provide enhanced signage and markings for channelized right turn crossing (Right Turn Yield to Pedestrians sign, advanced yield markings), Consider eliminating the channelized right turn lanes
Pastoria Avenue / Iowa Avenue	Other Signalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination, Consider removing right turn lanes and install curb extensions or bulb outs on all intersection legs, Remove vegetation that may obstruct sight-distance
Pastoria Avenue / Olive Avenue	Other Unsignalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination on south and west legs, Remove vegetation that may obstruct sight-distance
Reed Avenue / Sequoia Drive	Other Signalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination, Improve signal head visibility for NB/SB approaches
Remington Drive / Manet Drive	Other Signalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination, Improve signal head visibility, Remove vegetation that may obstruct sight-distance
Remington Drive / Michelangelo Drive	Other Signalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination
South Fair Oaks Avenue / Iris Avenue	Other Signalized Intersection	Ensure curb ramps meet ADA standards, Install curb extensions/bulb outs on Iris Avenue,
Sunnyvale Avenue / California Avenue	Other Signalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination, Improve signal head visibility, Consider redesigning curb return radius
Sunnyvale-Saratoga Road / Remington Drive	Major Road Signalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination, Push back stop bars on all intersection approaches,

Spot Location	Crossing Typology	Recommended Improvements
Tasman Drive / Fair Oaks Avenue	Major Road Signalized Intersection	Ensure curb ramps meet ADA standards, Confirm pedestrian crosswalk signals and activation push buttons meet current standards, Ensure pedestrian crossing timing meets current national standards
Tasman Drive / Recreation Drive - Vienna Drive	Other Signalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination, Install additional pedestrian and light rail crossing signage and markings
Washington Avenue / Frances Street	Other Unsignalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination on south side, Perform all-way stop warrant
Wolfe Road / Iris Avenue	Other Signalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination on east and west legs, Improve signal head visibility for east and west legs, Remove vegetation that may obstruct sight-distance, Consider adjusting curb return radius
Wolfe Road / Gary Avenue	Other Unsignalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination on south and east legs, Remove vegetation that may obstruct sight-distance
Wolfe Road / Marion Way	Other Signalized Intersection	Ensure curb ramps meet ADA standards, Evaluate intersection lighting and illumination, Remove vegetation that may obstruct sight-distance
Wolfe Road / Maude Avenue	Major Road Unsignalized Intersection	Consider eliminating the channelized eastbound right turn lane, Consider constructing control crossing for Wolfe Road
Wolfe Road / Old San Francisco Road/ Reed Avenue	Major Road Signalized Intersection	Ensure curb ramps meet ADA standards, Confirm pedestrian crosswalk signals and activation push buttons meet current standards, Ensure pedestrian crossing timing meets current national standards, Consider adjusting curb return radius

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**APPENDIX D**

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# Pedestrian Prioritization

Intersection Street 1	Intersection Street 2	Design	Zone/Area
E Maude Ave.	N Sunnyvale Ave.	Safe Routes to School	Bishop Elementary School
E Maude Ave.	N Bayview Ave.	Safe Routes to School	Bishop Elementary School
Wolfe Rd.	El Camino Real	Crossing Improvement	El Camino Real
E Maude Ave.	Borregas Ave. / Murphy Ave.	Safe Routes to School	Bishop Elementary School
E Maude Ave.	Bishop Elementary Frontage	Safe Routes to School	Bishop Elementary School
Gail Ave.	Braly Elementary Frontage	Safe Routes to School	Braly Elementary School
EL Camino Real	Hollenbeck Ave. / Pastoria Ave.	Safe Routes to School	Cumberland Elementary School
Old San Francisco Rd.	S Fair Oaks Ave.	Safe Routes to School	Ellis Elementary School
Sunnyvale Saratoga	Fremont Ave.	Safe Routes to School	Fremont High School
El Camino Real	Poplar Ave.	Safe Routes to School	Peterson Middle School
El Camino Real	Henderson Ave.	Safe Routes to School	Peterson Middle School
Mathilda Ave.	Del Rey Ave.	Crossing Improvement	SNAIL Neighborhood Zone
Cezanne Dr.	El Camino Real	Crossing Improvement	El Camino Real
Fair Oaks Ave.	Tasman Dr.	Crossing Improvement	Tasman Dr Corridor
Fair Oaks Ave.	El Camino Real	Crossing Improvement	El Camino Real
Sunnyvale Ave.	El Camino Real	Crossing Improvement	El Camino Real
Maria Ln.	El Camino Real	Crossing Improvement	El Camino Real
Maude Ave.	Mathilda Ave.	Crossing Improvement	SNAIL Neighborhood Zone
Gail Ave.	Iris Ave.	Safe Routes to School	Braly Elementary School
Gail Ave.	Goldenrod Ct.	Safe Routes to School	Braly Elementary School
Cumberland Dr.	Cumberland Elementary Frontage	Safe Routes to School	Cumberland Elementary School
Quetta Ave.	Danforth Dr.	Safe Routes to School	Cumberland Elementary School
E Olive Ave.	Wilson Ave.	Safe Routes to School	Ellis Elementary School
Old San Francisco Rd	Central Ave.	Safe Routes to School	Ellis Elementary School
Sunnyvale Saratoga Rd	Fremont High Frontage	Safe Routes to School	Fremont Hlgh School
W Fremont Ave.	Sydney Dr.	Safe Routes to School	Fremont High School
Alberta Ave.	Richelieu Pl.	Safe Routes to School	Nimitz Elementary
Iris Ave.	Ponderosa Ave.	Safe Routes to School	Ponderosa Elementary School
San Miguel Ave.	Duane Ave.	Safe Routes to School	San Miguel Elementary School
Dunholme Way	Bittern Dr.	Safe Routes to School	Stocklmeir Elementary School
W Remington Dr.	Mango Ave.	Safe Routes to School	Sunnyvale Middle School
Morse Ave.	Maude Ave.	Crossing Improvement	SNAIL Neighborhood Zone
Bernardo Ave.	El Camino Real	Crossing Improvement	El Camino Real
Frances St.	Evelyn Ave.	Crossing Improvement	Downtown
Fair Oaks Ave.	Caliente Dr.	Crossing Improvement	SNAIL Neighborhood Zone
Mary Ave.	El Camino Real	Crossing Improvement	El Camino Real
Wolfe Rd.	Fair Oaks Ave.	Crossing Improvement	SNAIL Neighborhood Zone
Murphy Ave.	Evelyn Ave.	Crossing Improvement	None
Taaffe St.	El Camino Real	Crossing Improvement	El Camino Real
Hollenbeck Ave.	Danforth Dr.	Crossing Improvement	None
Fair Oaks Ave.	Iris Ave.	Crossing Improvement	Braly Park Area
Wolfe Rd.	Wolfe Rd.	Crossing Improvement	Fremont Ave Corridor
San Angelo Ave.	Maude Ave.	Crossing Improvement	SNAIL Neighborhood Zone
Hollenback Ave.	Alberta Ave.	Crossing Improvement	Hollenbeck Ave Corridor
Bernardo Ave.	Evelyn Ave.	Crossing Improvement	None
Mary Ave.	Olive Ave.	Crossing Improvement	Washington Park Area
Gail Ave.	Braly Elementary Frontage	Safe Routes to School	Braly Elementary School
Gail Ave.	Jackpine Ct.	Safe Routes to School	Braly Elementary School
Gail Ave.	Daffodil Ct.	Safe Routes to School	Braly Elementary School

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Community Identified Need	Collision Reduction - Proximity	Collision Reduction - HIN	Equity	Access to Key Destinations	Cross-Town Connections	Total	Priority	Also in Bike Plan
● 1	● 1	● 1	● 1	● 1	● 1	6	High	x
● 1	● 1	● 1	● 1	● 1	● 1	6	High	
● 1	● 1	● 1	● 1	● 1	○ 0	5	High	
● 1	● 1	● 1	● 1	○ 0	● 1	5	High	
● 1	○ 0	● 1	● 1	● 1	● 1	5	High	
● 1	● 1	○ 0	● 1	● 1	● 1	5	High	
						5	High	
● 1	● 1	● 1	○ 0	● 1	● 1	5	High	
● 1	● 1	○ 0	● 1	● 1	● 1	5	High	
● 1	● 1	● 1	○ 0	● 1	● 1	5	High	x
● 1	● 1	● 1	○ 0	● 1	● 1	5	High	x
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○ 0	● 1	● 1	● 1	● 0	● 0	3	Medium	
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● 1	○ 0	● 0	● 0	● 1	● 0	3	Medium	
○ 0	● 0	● 0	● 0	● 1	● 1	3	Medium	
○ 0	● 0	● 0	● 1	● 1	● 1	3	Medium	

Intersection Street 1	Intersection Street 2	Design	Zone/Area
Heatherstone Way	Grape Ave.	Safe Routes to School	Cherry Chase Elementary School
Heatherstone Way	Cherry Chase Elementary Frontage	Safe Routes to School	Cherry Chase Elementary School
S Bernardo Ave.	Heatherstone Way	Safe Routes to School	Cherry Chase Elementary School
Morse Ave.	Glendale Ave.	Safe Routes to School	Columbia Middle School
Morse Ave.	E Ferndale Ave.	Safe Routes to School	Columbia Middle School
Harvard Ave.	Hollenbeck Ave.	Safe Routes to School	Cumberland Elementary School
Quetta Ave.	Harvard Ave.	Safe Routes to School	Cumberland Elementary School
Bernardo Ave.	Helena Dr.	Safe Routes to School	Cupertino Middle School
Bernardo Ave. between N and S Parking Lot	Cupertino Middle	Safe Routes to School	Cupertino Middle School
Bus Loop	Northern Parking Lot	Safe Routes to School	Cupertino Middle School
Coronach Ave.	Helena Dr.	Safe Routes to School	Cupertino Middle School
Gas Station Area	Cupertino Middle School	Safe Routes to School	Cupertino Middle School
Kennewick Dr.	Homestead Rd.	Safe Routes to School	Homestead High School
Lakehaven Dr.	Meadowlake Dr.	Safe Routes to School	Lakewood Elementary School
Meadowlake Dr.	John W. Christian Greenbelt Crossing	Safe Routes to School	Lakewood Elementary School
Cheyenne Dr.	Valcartier Dr.	Safe Routes to School	Nimitz Elementary
Cheyenne Dr.	Saskatchewan Dr.	Safe Routes to School	Nimitz Elementary
Cheyenne Dr.	Revelstoke Dr.	Safe Routes to School	Nimitz Elementary
Rosalia Ave.	Peterson Middle Frontage	Safe Routes to School	Peterson Middle School
Lily Ave.	Henderson Ave.	Safe Routes to School	Ponderosa Elementary School
Ponderosa Ave.	Lantana Dr.	Safe Routes to School	Ponderosa Elementary School
San Miguel	Alvarado Ave.	Safe Routes to School	San Miguel Elementary School
Dunholme Way	Floyd Ave.	Safe Routes to School	Stocklmeir Elementary School
Dunholme Way	Chickadee Ct.	Safe Routes to School	Stocklmeir Elementary School
Dunholme Way	Blackhawk Dr.	Safe Routes to School	Stocklmeir Elementary School
Stocklmeir Elementary Frontage	Dunholme Way	Safe Routes to School	Stocklmeir Elementary School
S Mary Ave.	Knickerbocker Dr.	Safe Routes to School	Sunnyvale Middle School
Mary Ave.	Washington Ave.	Safe Routes to School	Vargas Elementary School
Belleville Way	Parking Lot Entrance	Safe Routes to School	West Valley Elementary School
Belleville Way	West Valley Elementary School Driveway	Safe Routes to School	West Valley Elementary School
Fair Oaks Ave.	Weddell Dr.	Crossing Improvement	None
Sunnyvale-Saratoga Rd.	Remington Dr.	Crossing Improvement	None
Manet Dr.	Remington Dr.	Crossing Improvement	None
Pastoria Ave.	Olive Ave.	Crossing Improvement	Washington Park Area
Norland Dr.	Alberta Ave.	Crossing Improvement	None
Wolfe Rd.	Gary Ave.	Crossing Improvement	Braly Park Area
Remington Dr.	Michelangelo Dr.	Crossing Improvement	None
Wolfe Rd.	Iris Ave.	Crossing Improvement	Braly Park Area
Wolfe Rd.	Old San Francisco Rd.	Crossing Improvement	Braly Park Area
Wolfe Rd.	Marion Way	Crossing Improvement	None
Mary Ave.	Iowa Ave.	Crossing Improvement	Washington Park Area

Community Identified Need	Collision Reduction - Proximity	Collision Reduction - HIN	Equity	Access to Key Destinations	Cross-Town Connections	Total	Priority	Also in Bike Plan
●1	○0	○0	○0	●1	●1	3	Medium	
●1	○0	○0	○0	●1	●1	3	Medium	
●1	○0	●1	○0	○0	●1	3	Medium	
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○0	○0	○0	●1	●1	●1	3	Medium	
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○0	●1	●1	○0	○0	○0	2	Medium	x
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○0	●1	●1	○0	●1	○0	2	Medium	
○0	●1	●1	●1	○0	○0	2	Medium	
○0	●1	●1	●1	○0	○0	2	Medium	
○0	●1	●1	●1	○0	○0	2	Medium	
○0	●1	●1	●1	○0	○0	2	Medium	x
○0	●1	●1	●1	○0	○0	2	Medium	
○0	●1	●1	●1	○0	○0	2	Medium	

Intersection Street 1	Intersection Street 2	Design	Zone/Area
Mathilda Ave.	California Ave.	Crossing Improvement	Downtown
Heron Ave.	Homestead Rd.	Crossing Improvement	None
Roosevelt Ave.	Maude Ave.	Crossing Improvement	SNAIL Neighborhood Zone
Mathilda Ave.	Evelyn Ave.	Crossing Improvement	Downtown
Grape Ave.	El Camino Real	Crossing Improvement	El Camino Real
Mathilda Ave.	El Camino Real	Crossing Improvement	El Camino Real
Fremont Ave.	El Camino Real	Crossing Improvement	El Camino Real
Fair Oaks Ave.	Maude Ave.	Crossing Improvement	SNAIL Neighborhood Zone
Manet Dr.	Fremont Ave.	Crossing Improvement	Fremont Ave Corridor
Mathilda Ave.	Ross Dr.	Crossing Improvement	None
Vienna Dr.	Tasman Dr.	Crossing Improvement	Tasman Dr Corridor
Hollenback Ave.	The Dalles	Crossing Improvement	Hollenbeck Ave Corridor
Fair Oaks Ave.	Evelyn Ave.	Crossing Improvement	None
Hollenbeck Ave.	Cascade Dr.	Crossing Improvement	Hollenbeck Ave Corridor
N Sunnyvale Ave.	Hazelton Ave.	Safe Routes to School	Bishop Elementary School
N Sunnyvale Ave.	Bishop Elementary Frontage	Safe Routes to School	Bishop Elementary School
Del Norte Ave.	San Diego Ave.	Safe Routes to School	Columbia Middle School
Hemlock Ave.	San Diego Ave.	Safe Routes to School	Columbia Middle School
Bernardo Ave.	Cupertino Middle Frontage	Safe Routes to School	Cupertino Middle School
Bernardo Ave.	The Dalles	Safe Routes to School	Cupertino Middle School
Helena Dr.	Mary Ave.	Safe Routes to School	Cupertino Middle School
Helena Dr.	Wright Ave.	Safe Routes to School	Cupertino Middle School
Helena Dr.	Kennewick Dr.	Safe Routes to School	Cupertino Middle School
Homestead Rd.	Bernardo Ave.	Safe Routes to School	Cupertino Middle School
Central Ave.	Ellis Elementary Frontage	Safe Routes to School	Ellis Elementary School
E Olive Ave.	S Fair Oaks Ave.	Safe Routes to School	Ellis Elementary School
E Olive Ave.	Kenmore Ave.	Safe Routes to School	Ellis Elementary School
E Olive Ave.	Ellis Elementary Frontage	Safe Routes to School	Ellis Elementary School
Fairwood Ave.	Redrock Ct.	Safe Routes to School	Fairwood Elementary School
Fairwood Ave.	John W. Christian Greenbelt	Safe Routes to School	Fairwood Elementary School
Fairwood Ave.	Fairwood Elementary Frontage	Safe Routes to School	Fairwood Elementary School
Sandia Ave.	Fairwood Ave.	Safe Routes to School	Fairwood Elementary School
Bernardo Ave.	The Dalles	Safe Routes to School	Homestead High School
Homestead Rd.	Samedra St.	Safe Routes to School	Homestead High School
Mary Ave.	Homestead Rd.	Safe Routes to School	Homestead High School
Lakechime Dr.	School Parking Lot	Safe Routes to School	Lakewood Elementary School
Lakechime Dr.	Meadowlake Dr.	Safe Routes to School	Lakewood Elementary School
Lakefair Dr.	Meadowlake Dr.	Safe Routes to School	Lakewood Elementary School
Silverlake Dr.	John W. Christian Greenbelt	Safe Routes to School	Lakewood Elementary School
Dunford Way	Lochinvar Ave.	Safe Routes to School	Laurelwood Elementary
Teal Dr.	Inverness Way / Lochinvar Ave.	Safe Routes to School	Laurelwood Elementary
Teal Dr.	Laurelwood Elementary Frontage	Safe Routes to School	Laurelwood Elementary
Teal Dr.	Dunfordf Way	Safe Routes to School	Laurelwood Elementary
Cascade Dr.	Selo Dr.	Safe Routes to School	Nimitz Elementary
Cascade Dr.	Los Arboles Ave.	Safe Routes to School	Nimitz Elementary
Cascade Dr.	Sydney Dr.	Safe Routes to School	Nimitz Elementary
Selo Dr.	Nimitz Elementary Frontage	Safe Routes to School	Nimitz Elementary
Bryant Way	Poplar Ave. / Rosalia Ave.	Safe Routes to School	Peterson Middle School
Alvarado Ave.	San Junipero Dr.	Safe Routes to School	San Miguel Elementary School

300



Intersection Street 1	Intersection Street 2	Design	Zone/Area
San Miguel Ave.	Amador Ave.	Safe Routes to School	San Miguel Elementary School
Dublin Way	Floyd Ave.	Safe Routes to School	Stocklmeir Elementary School
Dunholme Way	Condor Way	Safe Routes to School	Stocklmeir Elementary School
Mango Ave.	W Knickerbocker Dr.	Safe Routes to School	Sunnyvale Middle School
Mango Ave.	Sunnyvale Middle Frontage	Safe Routes to School	Sunnyvale Middle School
Carson Dr.	Leota Ave.	Safe Routes to School	Vargas Elementary School
Leota Ave.	School Drop Off Loop	Safe Routes to School	Vargas Elementary School
Mary Ave.	Carson Dr.	Safe Routes to School	Vargas Elementary School
Washington Ave.	Leota Ave.	Safe Routes to School	Vargas Elementary School
Florence St.	Evelyn Ave.	Crossing Improvement	Downtown
Hollenbeck Ave.	Cheyenne Dr.	Crossing Improvement	Hollenbeck Ave Corridor
Wright Ave.	Fremont Ave.	Crossing Improvement	De Anza Area
San Conrado Terr.	Ferndale Ave.	Crossing Improvement	SNAIL Neighborhood Zone
Borregas Ave.	Duane Ave.	Crossing Improvement	SNAIL Neighborhood Zone
Borregas Ave.	Del Norte Ave.	Crossing Improvement	SNAIL Neighborhood Zone
Borregas Ave.	Ahwani Ave.	Crossing Improvement	SNAIL Neighborhood Zone
Mary Ave.	Ticonderoga Dr.	Crossing Improvement	De Anza Area
Mary Ave.	Fremont Ave.	Crossing Improvement	De Anza Area
Sunnyvale Ave.	California Ave.	Crossing Improvement	Downtown
Bernardo Ave.	Fremont Ave.	Crossing Improvement	De Anza Area
Ferndale Ave.	San Aleso Ave.	Crossing Improvement	SNAIL Neighborhood Zone
Sequoia Dr.	Reed Ave.	Crossing Improvement	None
Commercial St.	Argues Ave.	Crossing Improvement	None
Bayview Ave.	Bishop Elementary Frontage	Safe Routes to School	Bishop Elementary School
302	Grape Ave.	Hudson Way	Safe Routes to School
	Grape Ave.	W Knickerbocker Dr.	Safe Routes to School
	Cumberland Dr.	Quetta Ave.	Safe Routes to School
	Piper Ave.	Cumberland Dr.	Safe Routes to School
	E Olive Ave.	Central Ave.	Safe Routes to School
	Mary Ave. Bridge	Western Parking Lot Access	Safe Routes to School
	Lakechime Dr.	Silverlake Dr.	Safe Routes to School
	Kerry Ave.	Kensington Ave. / Lochinvar Ave.	Safe Routes to School
	Los Arboles Ave.	Nimitz Elementary Frontage	Safe Routes to School
	Henderson Ave.	Bryant Way	Safe Routes to School
	Sequoia Dr.	Iris Ave.	Safe Routes to School
	Blythe Ave.	San Juan Dr.	Safe Routes to School
	San Pablo Ave.	Alvarado Ave.	Safe Routes to School
	Dunholme Way	Chukar Ct.	Safe Routes to School
	Carson Dr.	West Valley Elementary Back Entrance	Safe Routes to School
	Fallen Leaf Lane	Louise Ln.	Safe Routes to School
	Bernardo Ave.	Ticonderoga Dr.	Crossing Improvement
	Florence St.	Washington Ave.	Crossing Improvement
	Frances St.	California Ave.	Crossing Improvement

Community Identified Need	Collision Reduction - Proximity	Collision Reduction - HIN	Equity	Access to Key Destinations	Cross-Town Connections	Total	Priority	Also in Bike Plan
○○	○○	○○	○○	●1	●1	2	Medium	
●1	○○	○○	○○	○○	●1	2	Medium	
○○	○○	○○	○○	●1	●1	2	Medium	
●1	○○	○○	○○	○○	●1	2	Medium	
●1	○○	○○	○○	○○	●1	2	Medium	
○○	●1	○○	○○	○○	●1	2	Medium	
○○	○○	○○	○○	●1	●1	2	Medium	
●1	○○	○○	○○	○○	●1	2	Medium	
○○	○○	○○	○○	●1	●1	2	Medium	
○○	○○	○○	○○	●1	○○	1	Low	
○○	○○	●1	○○	○○	○○	1	Low	
○○	●1	○○	○○	○○	○○	1	Low	x
○○	○○	○○	●1	○○	○○	1	Low	
○○	○○	○○	●1	○○	○○	1	Low	x
●1	○○	○○	●1	○○	○○	2	Medium	
●1	○○	○○	●1	○○	○○	2	Medium	
○○	○○	●1	○○	○○	○○	1	Low	
○○	○○	●1	○○	○○	○○	1	Low	x
○○	●1	○○	○○	○○	○○	1	Low	
○○	●1	○○	○○	○○	○○	1	Low	x
○○	●1	○○	○○	○○	○○	1	Low	
○○	●1	○○	○○	○○	○○	1	Low	
○○	●1	○○	○○	○○	○○	1	Low	
○○	●1	○○	○○	○○	○○	1	Low	
○○	●1	○○	○○	○○	●1	1	Low	
○○	○○	○○	○○	○○	●1	1	Low	
○○	○○	○○	○○	○○	●1	1	Low	
○○	○○	○○	○○	○○	●1	1	Low	
○○	○○	○○	○○	○○	●1	1	Low	
○○	○○	○○	○○	○○	●1	1	Low	
○○	○○	○○	○○	○○	●1	1	Low	
○○	○○	○○	○○	○○	●1	1	Low	
○○	○○	○○	○○	○○	●1	1	Low	
○○	○○	○○	○○	○○	●1	1	Low	
○○	○○	○○	○○	○○	●1	1	Low	
○○	○○	○○	○○	○○	●1	1	Low	
○○	○○	○○	○○	○○	●1	1	Low	
○○	○○	○○	○○	○○	●1	1	Low	
○○	○○	○○	○○	○○	●1	1	Low	
○○	○○	○○	○○	○○	●1	1	Low	x
○○	○○	○○	○○	○○	○○	0	Low	
○○	○○	○○	○○	○○	○○	0	Low	
○○	○○	○○	○○	○○	○○	0	Low	

Intersection Street 1	Intersection Street 2	Design	Zone/Area
Sunset Ave.	Iowa Ave.	Crossing Improvement	Washington Park Area
Wolfe Rd.	Maude Ave.	Crossing Improvement	SNAIL Neighborhood Zone

Community Identified Need	Collision Reduction - Proximity	Collision Reduction - HIN	Equity	Access to Key Destinations	Cross-Town Connections	Total	Priority	Also in Bike Plan
0	0	0	0	0	0	0	Low	
0	0	0	0	0	0	0	Low	x



**APPENDIX E**

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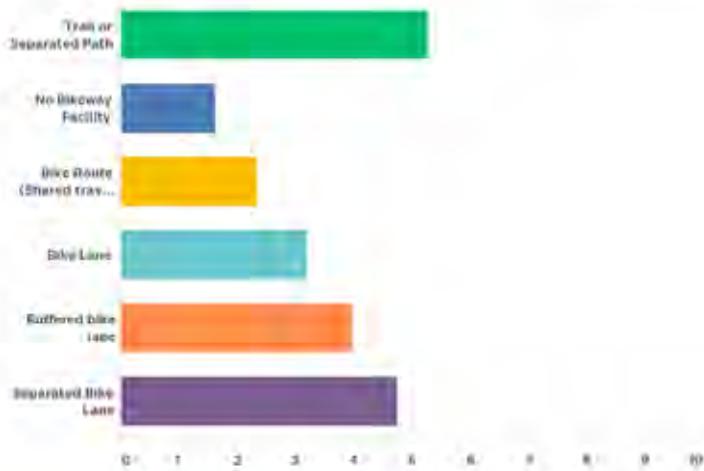
# Outreach Materials

## Community Survey Results

The City of Sunnyvale distributed an online survey to gather input on walking and bicycling challenges, preferences, and opportunities throughout Sunnyvale. The 21-question survey was made available online and advertised at mobile workshops and through City email notifications. The survey was open between September and October 2019. The survey received 944 responses. These responses informed the city's understanding of the public's current bicycling patterns as well as barriers to bicycling in Sunnyvale.

Charts and word clouds summarizing the response to each question have been included in this appendix document.

**Q1 Please rank your comfort on the following bike facilities from most comfortable (1) to least comfortable (6). Each ranking can only be used once.**

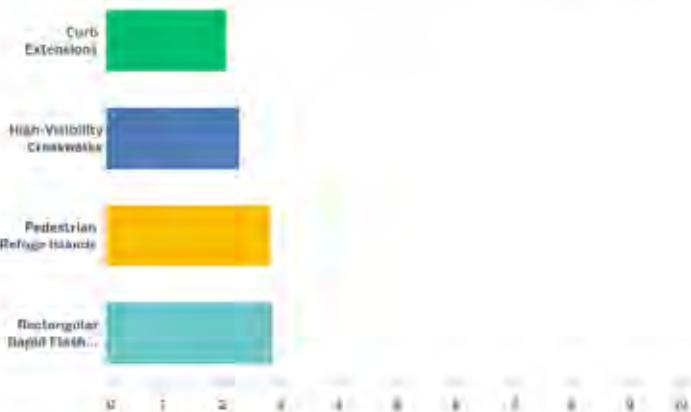


308

**Q2 Please rank your preferred sidewalk features, with 1 being most preferred, and 4 being least preferred. Each ranking can only be used once.**



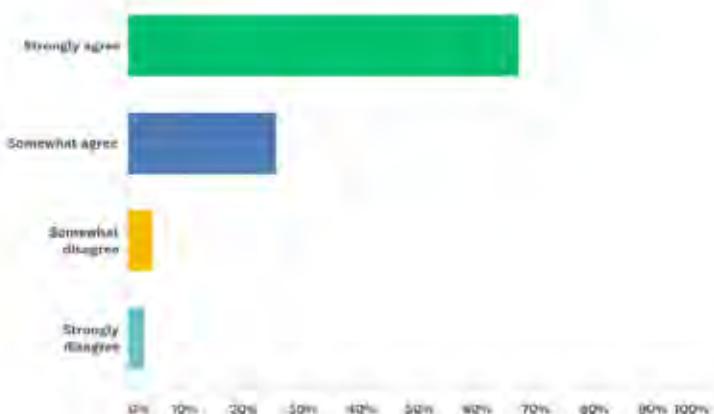
Q3 Please rank the following types of crossing features from most comfortable (1) to least comfortable (4). Each ranking can only be used once.



Q4 Optional: Are there other types of infrastructure or amenities that would make your walking experience more comfortable? Please describe.

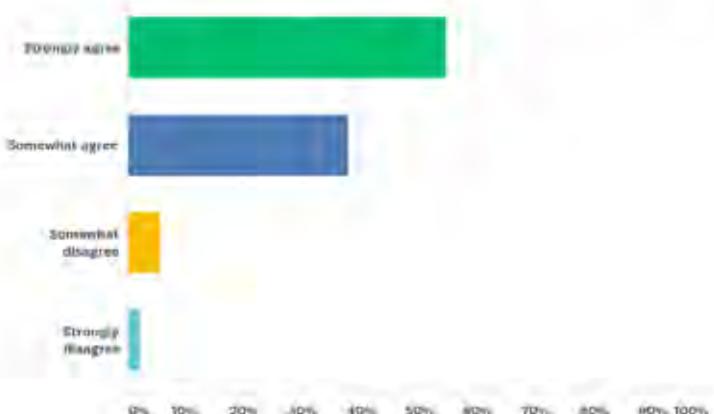
near flags large downtown flashing lights High School example Murphy street think  
Lowering speed limit better across traffic lights Kifer much travel especially encourage  
along trash safe actually paths sharing Close Even without cyclists blocks city  
signs force stop lot drivers lane see Please areas public roads  
look crosswalks use crossing cross walk cars cycle  
pedestrian dangerous sidewalks children  
street time walk trees lights allow traffic narrow bike  
driving make etc Sunnyvale vehicles also space intersections  
neighborhoods need red lights Way safety Stop signs wide people side road  
many less SLOW problem side add signals comfortable pedestrian crossing  
time cross school well speed bumps fast around routes separated nice  
Wider sidewalks near schools speed parking

Q5 Do you agree with the following statement: "I would like to travel by bike more than I do now."

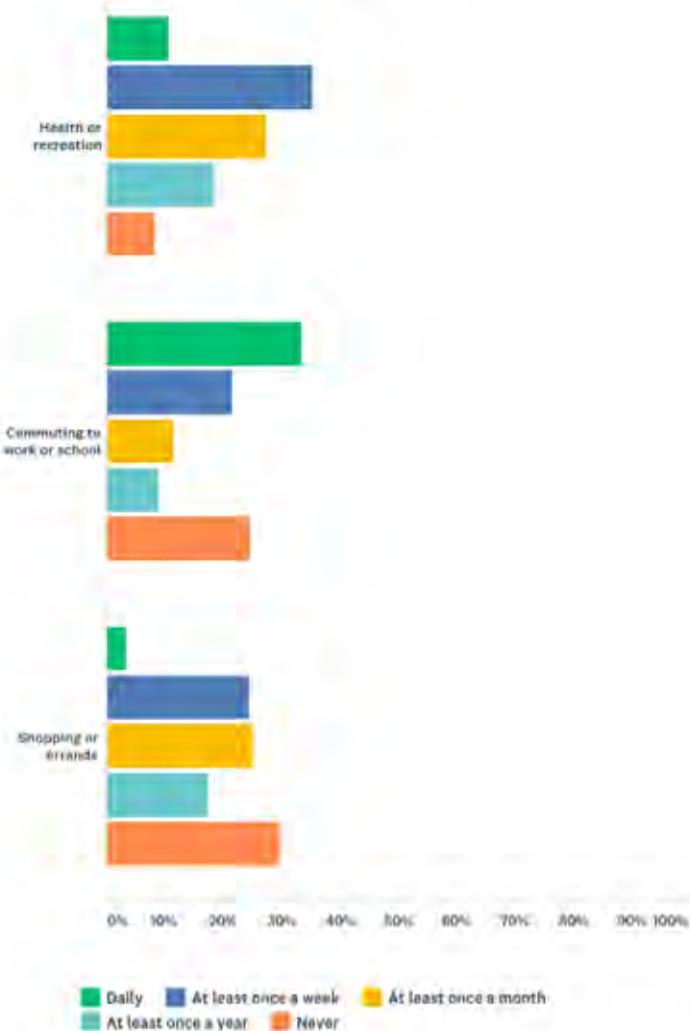


Q6 Do you agree with the following statement: "I would like to walk more than I do now."

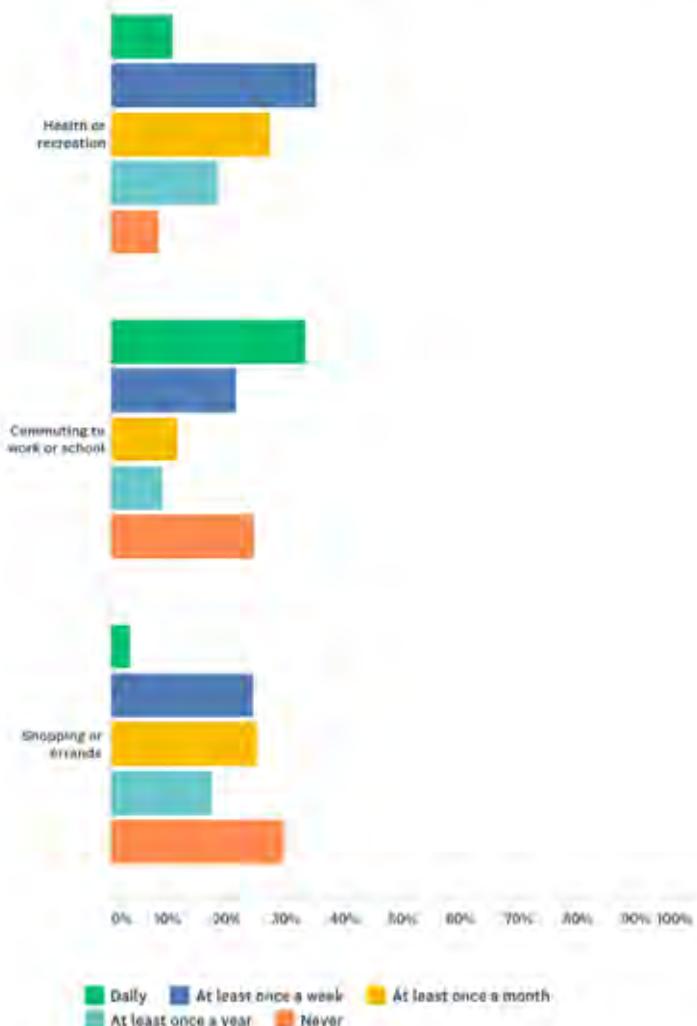
310



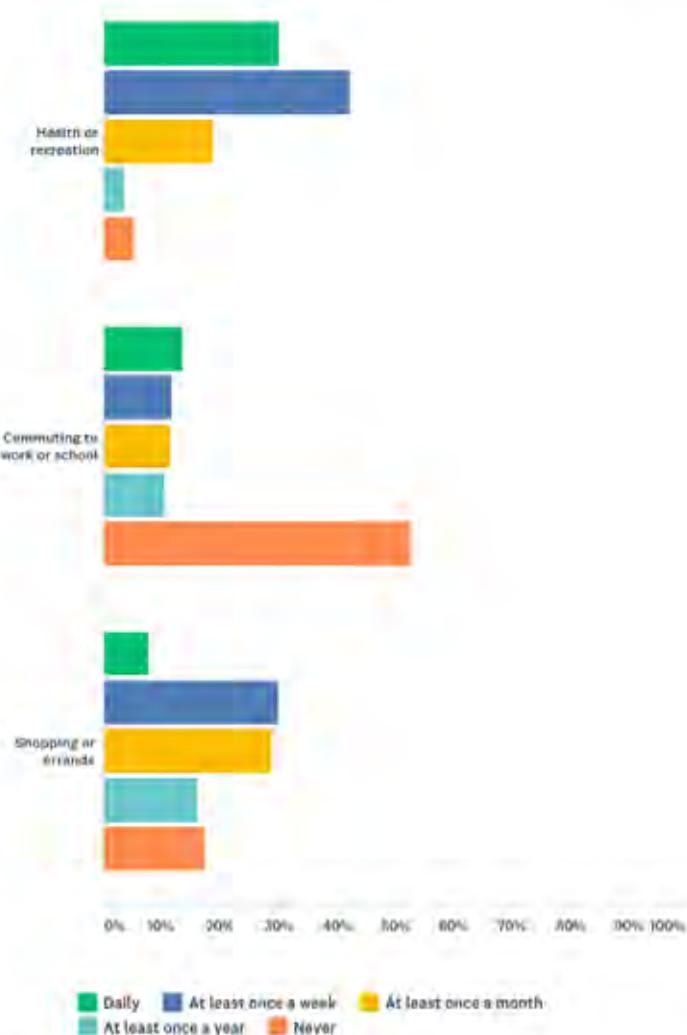
Q7 How often have you bicycled for any of the following trip purposes?



Q7 How often have you bicycled for any of the following trip purposes?



## Q8 How often have you walked for any of the following trip purposes?

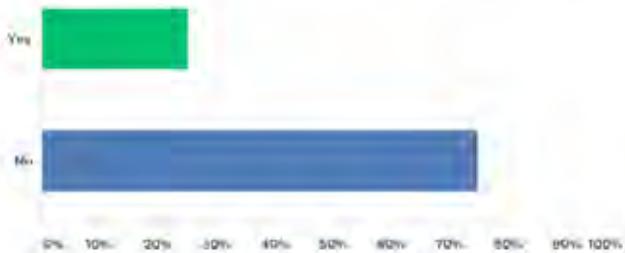


Q9 What would encourage you to walk or bicycle more often?

dedicated bike lanes will example buffered bike lanes crossings safer bicycle driving  
connected places construction destinations business many around lighting stop Way  
ride routes feel safe time help close Mathilda areas Better bike work one  
walking biking cycle drivers shade make route  
protected bike lanes nice safety crosswalks  
**Sunnyvale** Safer roads sidewalks along traffic  
Better bike lanes Better bike racks road shopping cars go  
**walking** lot bike lanes people bikes Distance  
safe Safer streets streets take pedestrians neighborhood  
bicycle encourage parking Safer bike routes paths protected lanes  
commute need trails Safer routes cyclists infrastructure traffic lights  
intersections bike parking school kids often near Also dangerous less  
Camino Real use bike trails especially e.g easier Fair Oaks riding children separated  
parked cars bike paths feel separated bike lanes safe bike lanes

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Q10 Do you regularly use public transit for transportation?

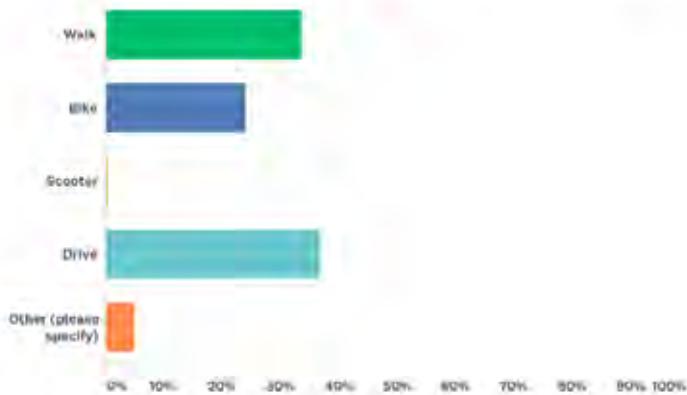


Q11 If so, which station(s) or transit stop(s) do you use most frequently?

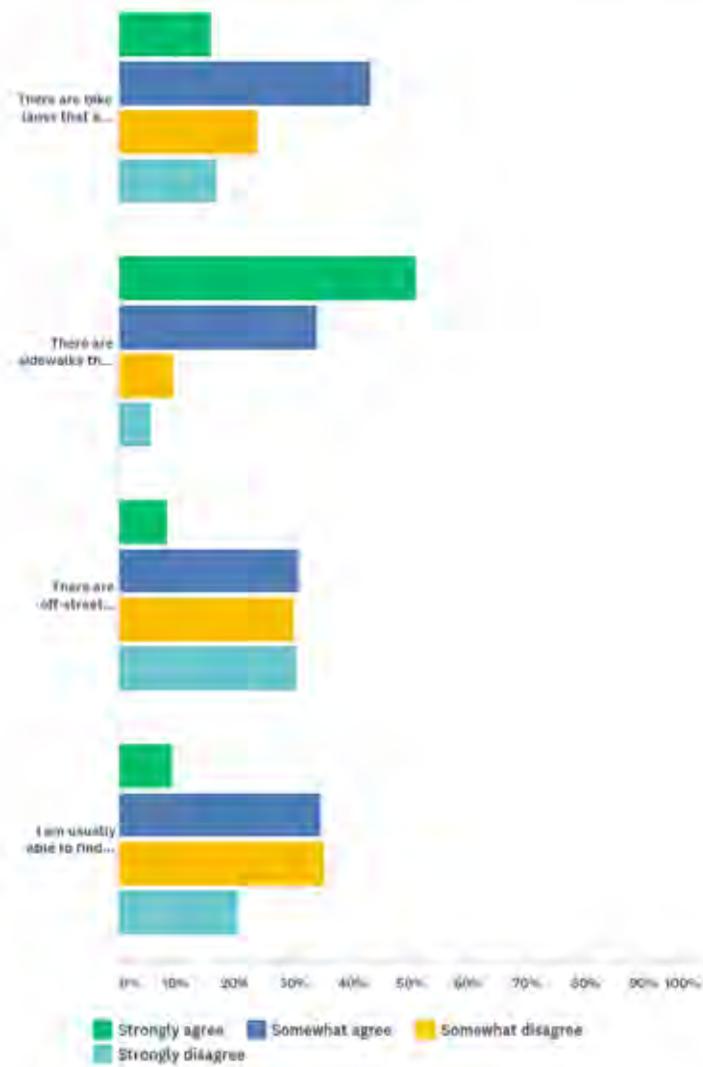
take Wolfe Stevens Creek Wolfe Mathilda Lawrence Caltrain Moffett Park  
Caltrain station transfer Downtown Route light rail ACE Great America  
Mountain View  
Caltrain transit center bus bus stops  
Mountain View Cal Train VTA Bernardo Station  
Camino Real De Anza College Sunnyvale  
Lawrence Caltrain station Sunnyvale Caltrain Crossman  
Lawrence Transit Sunnyvale Caltrain Station  
Lockheed  
Diridon Camino Hollenbeck SF train Martin Pastoria  
Fair Oaks Warm Springs used Sunnyvale Evelyn stop train station N Crossman VTA  
BART Homestead Palo Alto

Q12 How do you most often access transit?

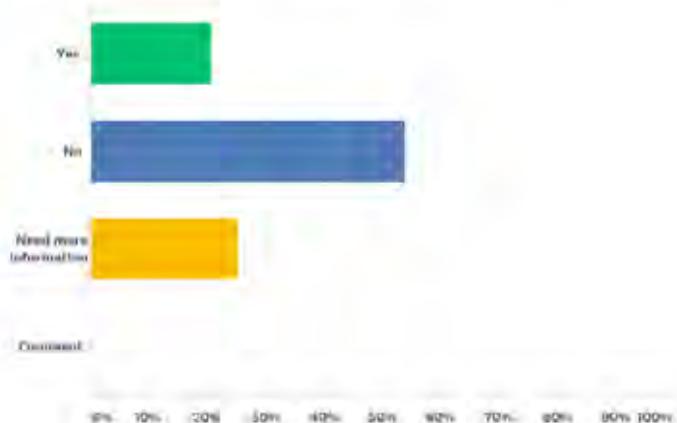
315



**Q13 Please read the following statements and say whether you strongly agree, somewhat agree, somewhat disagree, or strongly disagree.**



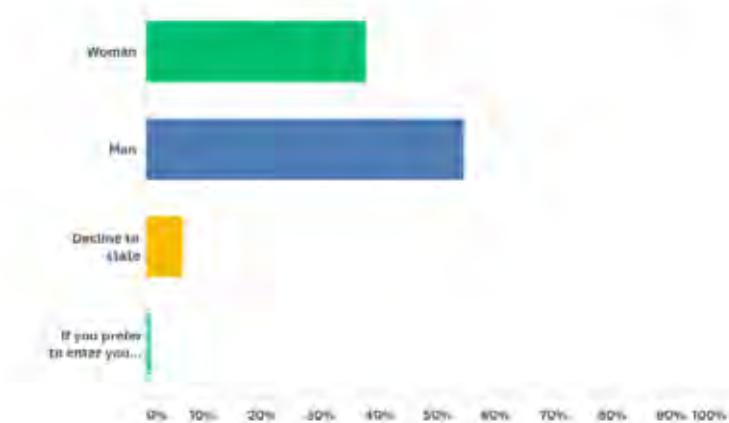
Q14 Would you or your family be interested in taking a class to ride a bicycle more confidently in traffic?



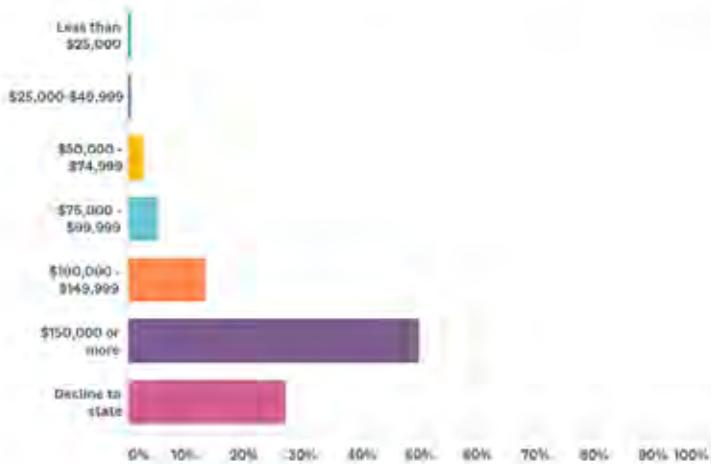
Q15 If you or your family would be interested in taking a bicycle education class, are there specific skills your family is interested in learning?

see years intersections neighborhoods Especially change around kids school better problem  
interested people use visibility sidewalk education rules road hit cars rules bikers turn  
Navigating traffic laws drive learn tips class left turns safe basics school  
take bicycle etc kids issue safety Safe riding ride commute  
traffic make bike ride safely drivers turn left cars stay  
road defensive riding confidently traffic cyclists N bike lanes  
following Safely near need bicyclists hand signals wrong way signal  
practices Street hand family walk skills Teaching kids know trying teach need class  
Defensive riding love team confident think time many children still routes lanes

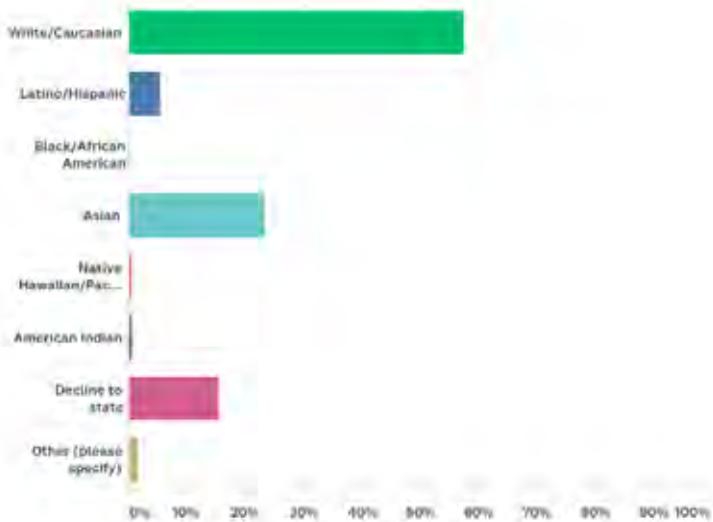
Q16 Which gender do you identify as?



Q18 What was your total household income in the last 12 months?

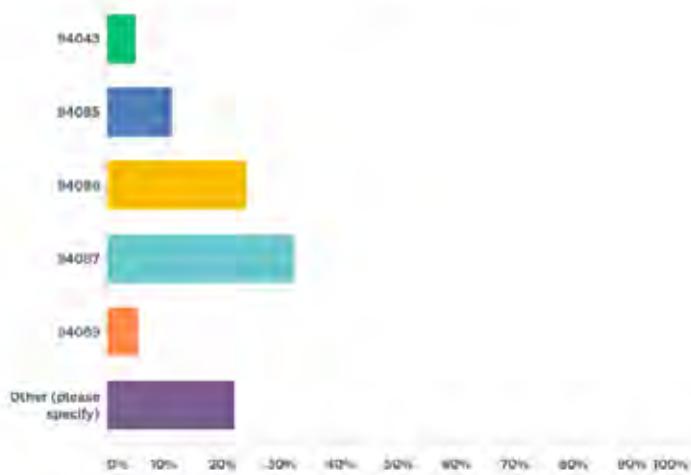


Q19 What is your ethnicity? Please select one or more options that best reflect how you identify.



Q20 Where do you live? Please select your zip code.

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APPENDIX F

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# Design Guidelines

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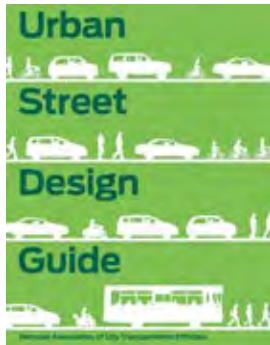
*Chapter I*

# Context

# Guidance Basis

The sections that follow serve as an inventory of pedestrian and bicycle design treatments and provide guidelines for their development. These treatments and design guidelines are important because they represent the tools for creating a pedestrian- and bicycle-friendly, accessible community. The guidelines are not, however, a substitute for a more thorough evaluation by a professional engineer prior to implementation of facility improvements. The following guidelines are referred to in these guidelines.

## National Guidance



*The National Association of City Transportation Officials' (NACTO) Urban Bikeway Design Guide (2012) and Urban Street Design Guide (2013) are collections of nationally recognized street design standards, and offers guidance on the current state of the practice designs.*



**Separated Bike Lane Planning and Design Guide (2015)** is the latest national guidance on the planning and design of separated bike lane facilities released by the Federal Highway Administration (FHWA). The resource documents best practices as demonstrated around the U.S., and offers ideas on future areas of research, evaluation and design flexibility.

## California Guidance



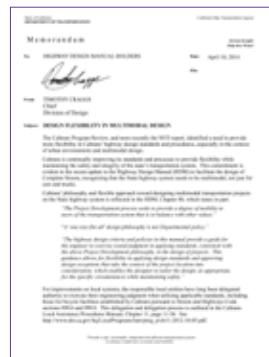
**The California Manual on Uniform Traffic Control Devices (CAMUTCD) (2014)** is an amended version of the FHWA MUTCD 2009 edition modified for use in California. While standards presented in the CA MUTCD substantially conform to the FHWA MUTCD, the state of California follows local practices, laws and requirements with regards to signing, striping and other traffic control devices.



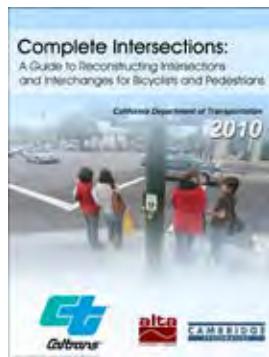
**Main Street, California: A Guide for Improving Community and Transportation Vitality (2013)** reflects California's current manuals and policies that improve multimodal access, livability and sustainability within the transportation system. The guide recognizes the overlapping and sometimes competing needs of main streets.



**The California Highway Design Manual (HDM), 6th Edition (Updated 2019)** establishes uniform policies and procedures to carry out highway design functions for the California Department of Transportation.



**The Caltrans Memo: Design Flexibility in Multimodal Design (2014)** encourages flexibility in highway design. The memo stated that "Publications such as the National Association of City Transportation Officials (NACTO) "Urban Street Design Guide" and "Urban Bikeway Design Guide," ... are resources that Caltrans and local entities can reference when making planning and design decisions on the State highway system and local streets and roads."



**Complete Intersections: A Guide to Reconstructing Intersections and Interchanges for Bicyclists and Pedestrians (2010)** is a reference guide presents information and concepts related to improving conditions for bicyclists and pedestrians at major intersections and interchanges. The guide can be used to inform minor signage and striping changes to intersections, as well as major changes and designs for new intersections.



**The Caltrans Design Information Bulletin 89-01** establishes design criteria and design guidance for Class IV Bikeways for the California Department of Transportation.

# Design Needs of Bicyclists

The facility designer must have an understanding of how bicyclists operate and how their bicycle influences that operation. Bicyclists, by nature, are much more affected by poor facility design, construction and maintenance practices than motor vehicle drivers.

By understanding the unique characteristics and needs of bicyclists, a facility designer can provide quality facilities and minimize user risk.

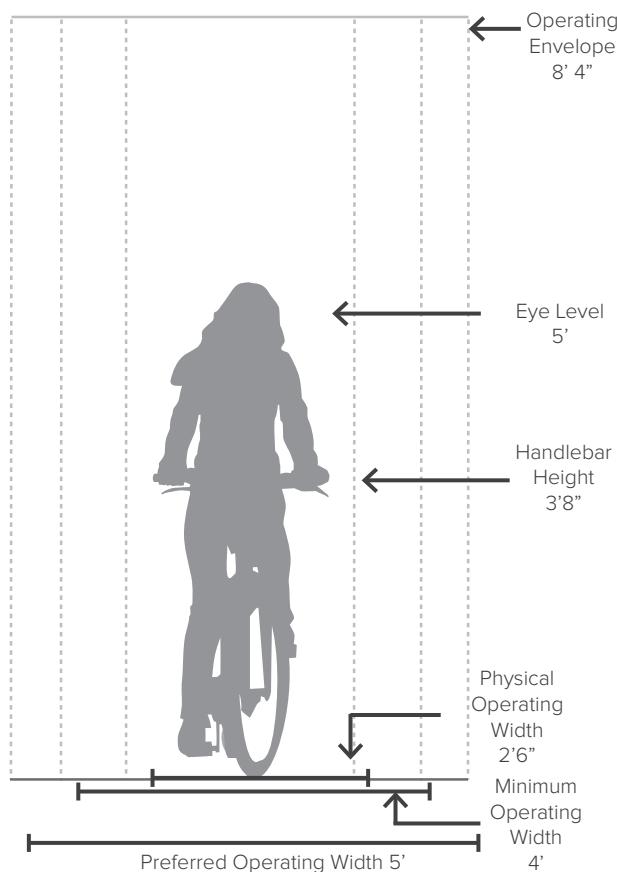
## Bicycle as a Design Vehicle

Similar to motor vehicles, bicyclists and their bicycles exist in a variety of sizes and configurations. These variations occur in the types of vehicle (such as a conventional bicycle, a recumbent bicycle or a tricycle), and behavioral characteristics (such as the comfort level of the bicyclist). The design of a bikeway should consider reasonably expected bicycle types on the facility and utilize the appropriate dimensions.

The Bicycle Rider figure illustrates the operating space and physical dimensions of a typical adult bicyclist, which are the basis for typical facility design. Bicyclists require clear space to operate within a facility. This is why the minimum operating width is greater than the physical dimensions of the bicyclist. Bicyclists prefer five feet or more operating width, although four feet may be minimally acceptable.

In addition to the design dimensions of a typical bicycle, there are many other commonly used pedal-driven cycles and accessories to consider when planning and designing bicycle facilities. The most common types include tandem bicycles, recumbent bicycles, and trailer accessories.

## Bicycle Rider - Typical Dimensions



## BICYCLE AS DESIGN VEHICLE - DESIGN SPEED EXPECTATIONS

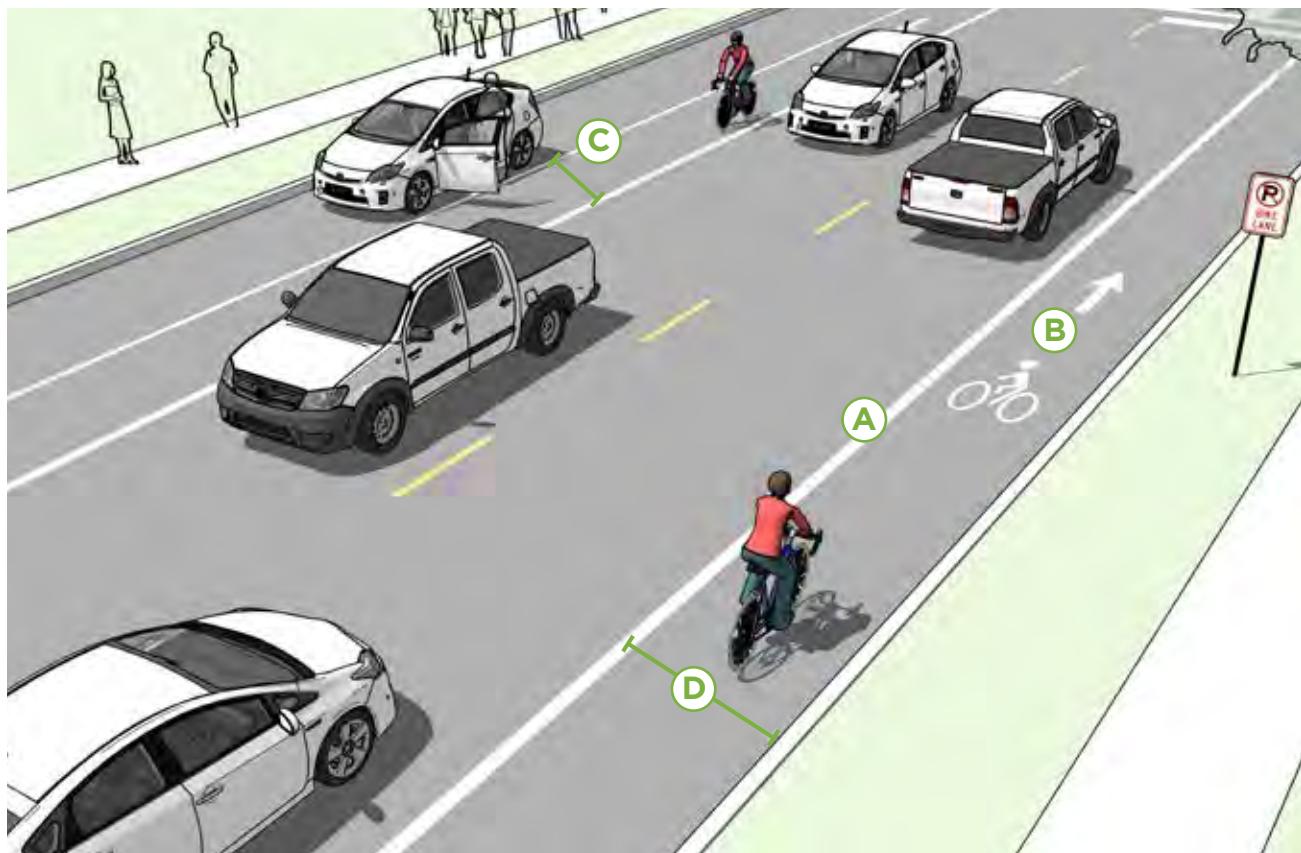
BICYCLE TYPE	FEATURE	TYPICAL SPEED
Upright Adult Bicyclist	Paved level surfacing	8-12 mph*
	Crossing Intersections	10 mph
	Downhill	30 mph
	Uphill	5 -12 mph
Recumbent Bicyclist	Paved level surfacing	18 mph

*Chapter 2*

# On-street Bicycle Toolbox

# Class II Bikeway: Bike Lane

On-street bike lanes (Class II Bikeways) designate an exclusive space for bicyclists through the use of pavement markings and signs. The bike lane is located directly adjacent to motor vehicle travel lanes and is used in the same direction as motor vehicle traffic. Bike lanes are typically on the right side of the street, between the adjacent travel lane and curb, road edge or parking lane.



## Typical Use

- » Bike lanes may be used on most streets with adequate space, but are most effective on streets with moderate traffic volumes  $\leq 6,000$  ADT ( $\leq 3,000$  preferred).
- » Bike lanes are most appropriate on streets with lower to moderate speeds  $\leq 25$  mph.
- » Appropriate for skilled adult riders on most streets.
- » May be appropriate for children when configured as 6+ ft wide lanes on lower-speed, lower-volume streets with one travel lane in each direction.

## Design Features

- (A)** Mark inside line with 6" stripe. (**CA MUTCD 9C.101**)
- (B)** Include a bicycle lane marking (**CA MUTCD Figure 9C-3**) at the beginning of blocks and at regular intervals along the route. (**CA MUTCD 9C.04**)
- (C)** 6 foot width preferred adjacent to on-street parking, (5 foot min.) Mark 4" parking lane line.<sup>1</sup>
- (D)** 5–6 foot preferred adjacent to curb and gutter (4 foot min.) or 4 feet more than the gutter pan width.

<sup>1</sup> Studies have shown that marking the parking lane encourages people to park closer to the curb. FHWA. Bicycle Countermeasure Selection System. 2006.

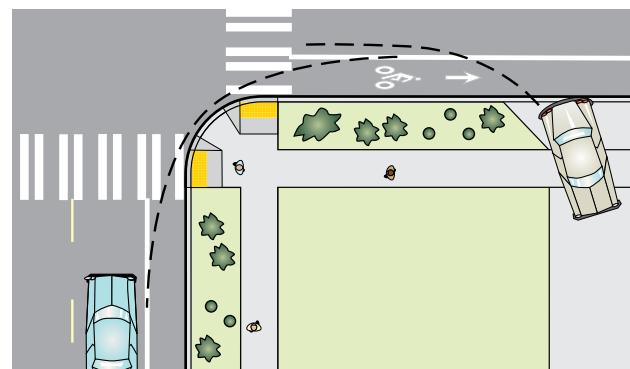
## Further Considerations

- » Bike lane treatments at intersections will vary depending on the presence of on-street parking and right-turn lanes (**2014 CA MUTCD 9C, Rev 5**).
- » On high speed streets, (> 40 mph) the minimum bike lane should be 6 feet (**Caltrans HDM**)
- » It may be desirable to reduce the width of general purpose travel lanes in order to add or widen bicycle lanes.
- » On multi-lane streets, the most appropriate bicycle facility to provide for user comfort may be buffered bicycle lanes or physically separated bicycle lanes.
- » Manhole surfaces should be manufactured with a shallow surface texture in the form of a tight, nonlinear pattern.
- » Manholes, drainage grates, or other obstacles should be set flush with the paved roadway. Roadway surface inconsistencies pose a threat to safe riding conditions for bicyclists. Construction of manholes, access panels or other drainage elements should be constructed with no variation in the surface. The maximum allowable tolerance in vertical roadway surface will be 1/4 of an inch.
- » Place bicycle detector symbol over induction loop detectors or video detection area to indicate appropriate positioning for signal actuation (**CA MUTCD 9C.05**).



Standard Class II Bike Lane

### PLACE BIKE LANE SYMBOLS TO REDUCE WEAR



Bike lane word, symbol, and/or arrow markings (**MUTCD Figure 9C-3**) shall be placed outside of the motor vehicle tread path in order to minimize wear from the motor vehicle path. (**NACTO 2012**)

## Materials and Maintenance

Bike lane striping and markings will require higher maintenance where vehicles frequently traverse over them at intersections, driveways, parking lanes, and along curved or constrained segments of roadway.

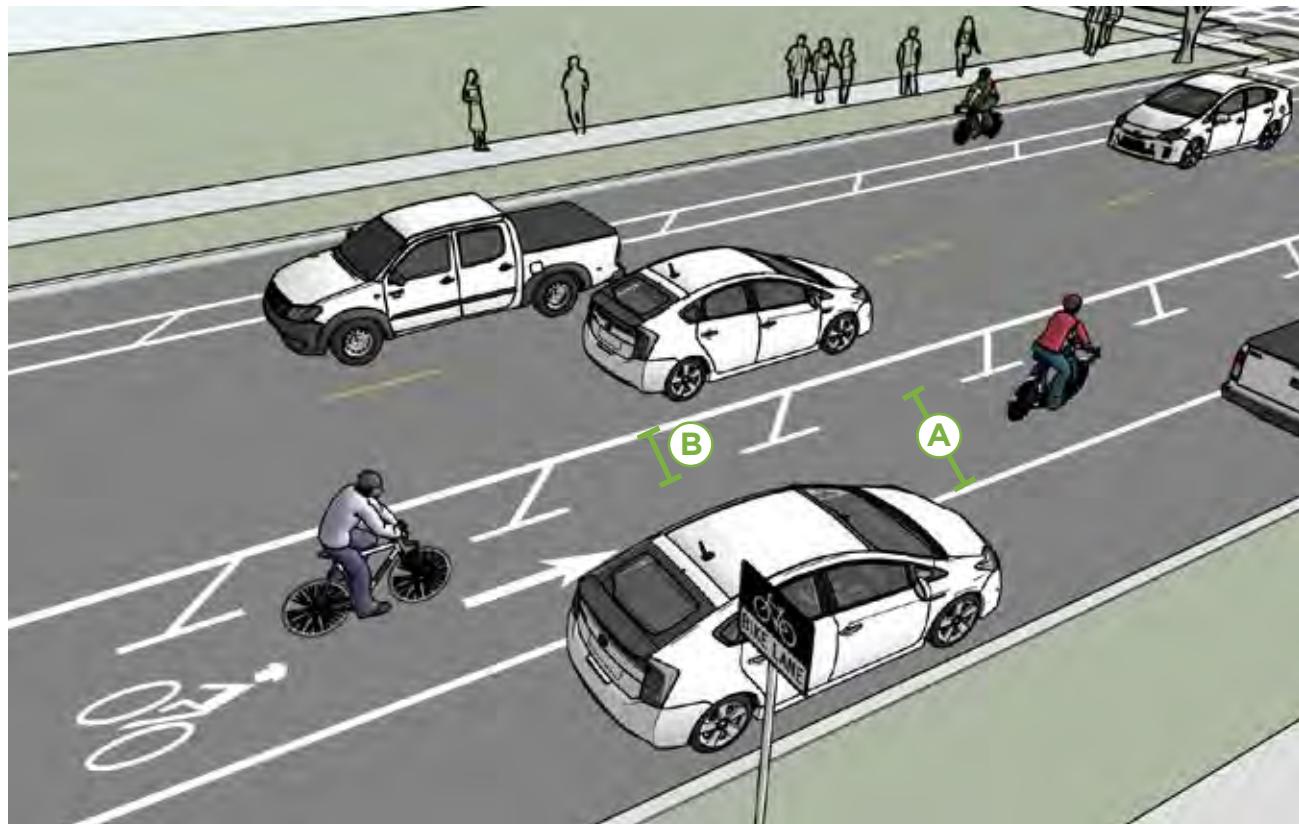
Bike lanes should also be maintained so that there are no pot holes, cracks, uneven surfaces or debris.

## Approximate Cost

The cost for installing bicycle lanes will depend on the implementation approach. Costs can range from \$132,000/mile for simple striping to \$387,000/mile (Costs do not include roadway grinding and overlay or slurry seal).

# Class II Bikeway: Buffered Bicycle Lanes

Buffered bike lanes (Class II Bikeways) are conventional bicycle lanes paired with a designated buffer space, separating the bicycle lane from the adjacent motor vehicle travel lane and/or parking lane.



## Typical Use

- » Anywhere a conventional bike lane is being considered.
- » While conventional bike lanes are most appropriate on streets with lower to moderate speeds ( $\leq 25$  mph), buffered bike lanes are appropriate on streets with higher speeds (+25mph) and high volumes or high truck volumes (up to 6,000 ADT).
- » On streets with extra lanes or lane width.
- » Appropriate for skilled adult riders on most streets.

## Design Features

- Ⓐ The minimum bicycle travel area (not including buffer) is 5 feet wide.
- Ⓑ Buffers should be at least 18" wide. white diagonal markings should be used. **(CA MUTCD 9C-104)**
- » For clarity at driveways or minor street crossings, consider a dotted line.



Buffered bike lanes transition with conflict markings



The use of pavement markings delineates space for cyclists to ride in a comfortable facility.

## Further Considerations

- » Green colored pavement treatments may be used within the lane at locations with higher potential for conflicts.
- » A study of buffered bicycle lanes found that, in order to make the facilities successful, there needs to also be driver education, improved signage and proper pavement markings.<sup>1</sup>

## Materials and Maintenance

Bike lane striping and markings will require higher maintenance where vehicles frequently traverse over them at intersections, driveways, parking lanes, and along curved or constrained segments of roadway.

Bike lanes should be maintained so that there are no pot holes, cracks, uneven surfaces or debris.

## Approximate Cost

The cost for installing buffered bicycle lanes will depend on the implementation approach. Costs can range from \$172,000 per mile for simple striping to \$420,000 per mile (Costs do not include roadway grinding and overlay or slurry seal). However, the cost of large-scale bicycle treatments will vary greatly due to differences in project specifications and the scale and length of the treatment.

<sup>1</sup> Monsere, C.; McNeil, N.; and Dill, J., "Evaluation of Innovative Bicycle Facilities: SW Broadway Cycle Track and SW Stark/Oak Street Buffered Bike Lanes. Final Report" (2011). Urban Studies and Planning Faculty Publications and Presentations.

# Class III Bikeway: Bicycle Boulevards

A Bicycle Boulevard (a type of Class III Bikeway) is a low-speed, low-volume roadway that has been modified, as needed, to enhance comfort and convenience for people bicycling. It provides better conditions for bicycling while maintaining the neighborhood character and neighborhood and emergency vehicle access. Bicycle Boulevards are intended to serve as the primary low-stress bikeway network, providing direct, and convenient routes across Sunnyvale. Key elements of Bicycle Boulevards are unique signage and pavement markings, and traffic calming features to maintain low vehicle volumes, and convenient major street crossings.



## Typical Use

- » Parallel with, and in close proximity to major thoroughfares (1/4 mile or less) on low-volume, low-speed streets.
- » Follow a desire line for bicycle travel that is ideally long and relatively continuous (2-5 miles).
- » Local streets with traffic volumes of fewer than 1,500 vehicles per day. Utilize traffic calming to maintain or establish low volumes and discourage vehicle cut through / speeding.

## Design Features

- » Pavement markings, signage, and other traffic calming treatments necessary to designate a street as a bicycle boulevard.
- » Implement volume control treatments based on the context of the bicycle boulevard, using engineering judgment. Motor vehicle volumes should not exceed 1,500 vehicles per day.
- » Intersection crossings should be designed to enhance comfort and minimize delay for bicyclists, following crossing treatment progression to achieve Level of Traffic Stress 1 or 2.



Shared Lane Marking in Berkeley, CA.

## Further Considerations

- » Bicycle boulevards are established on streets that improve connectivity to key destinations and provide a direct, low-stress route for bicyclists, with low motorized traffic volumes and speeds, designated and designed to give bicycle travel priority over other modes.
- » Bicycle boulevard retrofits to local streets are typically located on streets without existing signalized accommodation at crossings of collector and arterial roadways. Without treatments for bicyclists, these intersections can become major barriers along the bicycle boulevard.
- » Traffic calming can deter motorists from driving on a street. Anticipate and monitor vehicle volumes on adjacent streets to determine whether traffic calming results in inappropriate volumes. Traffic calming can be implemented on a trial basis.

## Materials and Maintenance

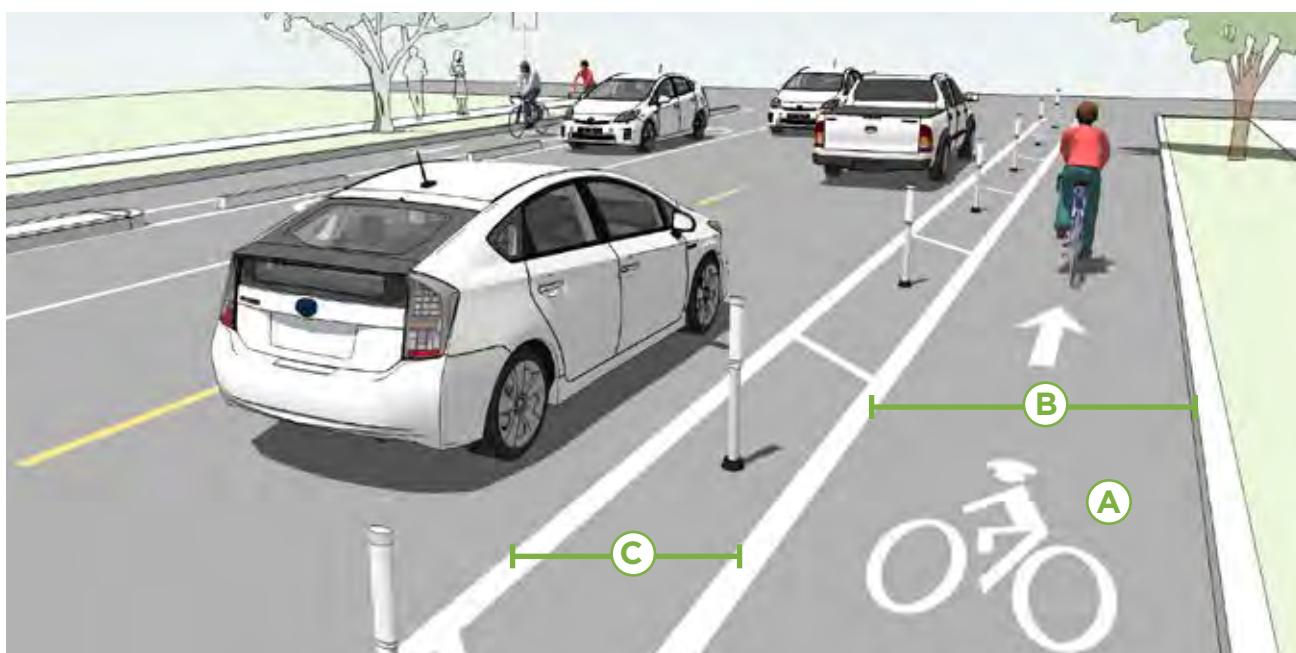
Bicycle boulevards require few additional maintenance requirements to local roadways. Signage, signals, and other traffic calming elements should be inspected and maintained according to local standards. Landscaping will require additional maintenance.

## Approximate Cost

Costs vary depending on the type of treatments proposed for the corridor. Simple treatments such as wayfinding signage and markings are most cost-effective, but more intensive treatments will have greater impact at lowering speeds and volumes, at higher cost. Costs can range from \$75,000 per mile for basic wayfinding and traffic calming to \$1,020,000 per mile for significant traffic calming: traffic circles, curb extensions, traffic signal modifications, wayfinding signage, etc (Costs do not include roadway grinding and overlay or slurry seal).

# Class IV Bikeway: One-Way Separated

One-way separated bikeways (Class IV Bikeways), also known as protected bikeways or cycle tracks, are on-street bikeway facilities that are separated from vehicle traffic. Physical separation is provided by a barrier between the bikeway and the vehicular travel lane. These barriers can include flexible posts, bollards, planter strips, extruded curbs, or on-street parking. Separated bikeways using these barrier elements typically share the same elevation as adjacent travel lanes, but the bikeway could also be raised above street level, at or between street and sidewalk level.



## Typical Use

- » Along streets on where Class II Bikeways would not provide a sufficient level of comfort for people biking due to the following roadway factors: multiple lanes, high bicycle volumes, high motor traffic volumes (9,000-30,000 ADT), higher traffic speeds (25+ mph), high incidence of double parking, higher truck traffic (10% of total ADT) and high parking turnover.
- » Along streets for which conflicts at intersections can be effectively mitigated using parking lane setbacks, bicycle markings through the intersection, and other signalized intersection treatments.
- » On streets with fewer driveways, i.e. in front of single family homes

## Design Features

- (A)** Pavement markings, symbols and/or arrow markings must be placed at the beginning of the separated bikeway and at intervals along the facility based on engineering judgment to define the bike direction. (**CA MUTCD 9C.04**)
- (B)** 7 foot width preferred in areas with high bicycle volumes to facilitate safe passing behavior (5 foot minimum). (**HDM 1003.1(1)**)
- (C)** 2 foot minimum buffer width adjacent to travel lanes (DIB 89, 2015)



Parked cars serve as a barrier between bicyclists and the vehicle lane. Barriers could also include flexible posts, bollards, planters, or other design elements. Source: Bike East Bay.

## Further Considerations

- » Separated bikeway buffers and barriers are covered in the CAMUTCD as preferential lane markings (**section 3D.01**) and channelizing devices (**section 3H.01**). White chevron or diagonal markings should be used in buffers (**section 9C.04**). Curbs may be used as a channeling device, see the section on islands (**section 3I.01**). Grade-separation provides an enhanced level of separation in addition to buffers and other barrier types.
- » Where possible, physical barriers such as removable curbs should be oriented towards the edge of the buffer furthest from the bike lane to provide as much extra width as possible for bicycle use.
- » A retrofit separated bikeway has a relatively low implementation cost compared to road reconstruction by making use of existing pavement and drainage and using a parking lane as a barrier.
- » Gutters, drainage outlets and utility covers should be designed and configured as not to impact bicycle travel.
- » For clarity at major or minor street crossings, consider a dotted line (**CA MUTCD Detail 39A - Bike Lane Intersection Line**) for the buffer boundary where cars are expected to cross.
- » Special consideration should be given at transit stops to manage bicycle and pedestrian interactions, per VTA Transit Guidelines.

## Materials and Maintenance

Bikeway striping and markings will require higher maintenance where vehicles frequently traverse over them at intersections, driveways, parking lanes, and along curved or constrained segments of roadway. Green conflict striping (if used) will also generally require higher maintenance due to vehicle wear.

Additionally, delineators and other separation materials will need to be repaired or replaced when damaged.

Bikeways should be maintained so that there are no pot holes, cracks, uneven surfaces or debris.

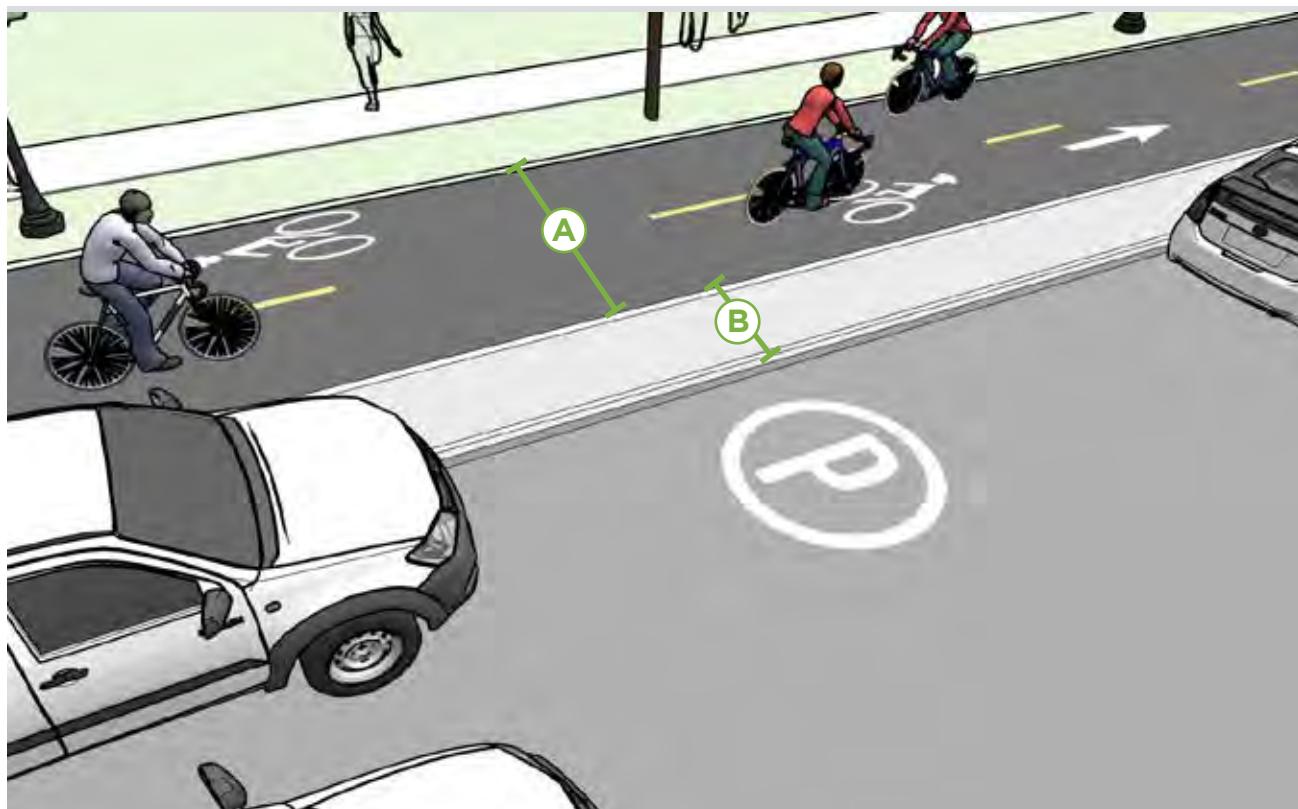
Access points along the facility should be provided for street sweeper vehicles to enter/exit the separated bikeway,

## Approximate Cost

Separated bikeway construction costs can vary drastically depending on the type of separation used, the amount of new curb and gutter, stormwater mitigation, and crossing treatments. Typical construction of a striped protected bikeway with vertical delineators and striped buffer can range from \$300,000 to \$2,313,000 per mile with green conflict markings, traffic signal modification, including signal detection and a raised concrete buffer (Costs do not include roadway grinding and overlay or slurry seal).

# Class IV Bikeway: Two-Way Separated

Two-Way Separated Bikeways (Class IV Bikeways) are bicycle facilities that allow bicycle movement in both directions on one side of the road. Two-way separated bikeways share some of the same design characteristics as one-way separated bikeways, but often require additional considerations at driveway and side-street crossings, and intersections with other bikeways.



## Typical Use

- » Streets with few conflicts such as driveways or cross-streets on one side of the street.
- » Works best on the left side of one-way streets.
- » Streets with high motor vehicle volumes and/or speeds
- » Streets with high bicycle volumes.
- » Streets with a high incidence of wrong-way bicycle riding.
- » Streets that connect to shared use paths.

## Design Features

- Ⓐ 12 foot operating width preferred (10 ft minimum) width for two-way facility.
  - » In constrained locations an 8 foot minimum operating width may be considered (**HDM 1003.1(1)**).
- Ⓑ Adjacent to on-street parking a minimum 3 foot width channelized buffer or island shall be provided to accommodate opening doors (**NACTO, 2012**) (**CA MUTCD 3H.01, 3I.01**).
  - » Additional signalization and signs may be necessary to manage conflicts.

## TWO-WAY SEPARATED BIKEWAY



A two-way facility should be located on the side of the street with fewer driveways, alleys, and/or minor streets.

### Further Considerations

- » On-street bikeway buffers and barriers are covered in the CA MUTCD as preferential lane markings (**section 3D.01**) and channelizing devices, including flexible delineators (**section 3H.01**). Curbs may be used as a channeling device, see the section on islands (**section 3I.01**).
- » A two-way separated bikeway on one way street should be located on the left side.
- » A two-way separated bikeway may be configured at street level or as a raised separated bikeway with vertical separation from the adjacent travel lane.
- » Two-way separated bikeways should ideally be placed along streets with long blocks and few driveways or mid-block access points for motor vehicles.
- » See Caltrans Design Information Bulletin No. 89 for more details.

### Materials and Maintenance

Bikeway striping and markings will require higher maintenance where vehicles frequently traverse over them at intersections, driveways, parking lanes, and along curved or constrained segments of roadway. Green conflict striping (if used) will also generally require higher maintenance due to vehicle wear.

Additionally, delineators and other separation materials will need to be repaired or replaced when damaged.

Bikeways should be maintained so that there are no pot holes, cracks, uneven surfaces or debris.

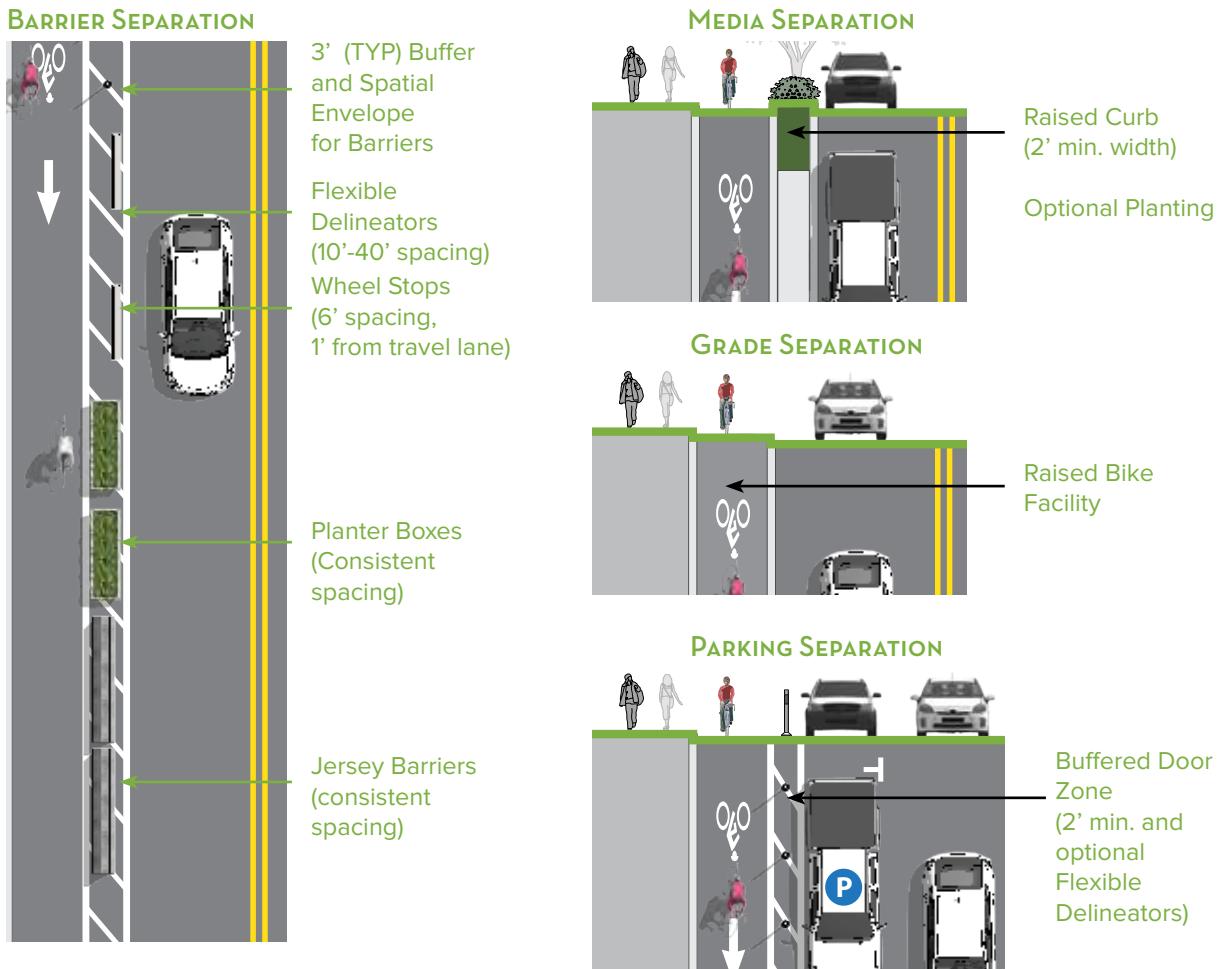
Access points along the facility should be provided for street sweeper vehicles to enter/exit the separated bikeway.

### Approximate Cost

Separated bikeway construction costs can vary drastically depending on the type of separation used, the amount of new curb and gutter, stormwater mitigation, and crossing treatments. Typical construction of a two-way protected bike lane can cost from \$300,000 per mile for flexible delineators and striping to \$2,313,000 per mile including green pavement marking, traffic signal modification, including bike signal detection, and a raised concrete buffer (Costs do not include roadway grinding and overlay or slurry seal).

# Separated Bikeway Barriers

Separated bikeways may use a variety of vertical elements to physically separate the bikeway from adjacent travel lanes. Barriers may be robust constructed elements such as curbs, or may be more interim in nature, such as flexible delineator posts.



## Typical Use

### Appropriate barriers for retrofit projects:

- » Parked Cars
- » Flexible delineators
- » Bollards
- » Planters
- » Parking stops
- » “Armadillos”

### Appropriate barriers for reconstruction projects:

- » Curb separation
- » Medians
- » Landscaped Medians
- » Raised protected bike lane with vertical or mountable curb
- » Pedestrian Refuge Islands



Raised separated bikeways are bicycle facilities that are vertically separated from motor vehicle traffic.

## Design Features

- » Maximize effective operating space by placing curbs or delineator posts as far from the through bikeway space as practicable.
- » Allow for adequate shy distance of 1 to 2 feet from vertical elements to maximize useful space.
- » When next to parking allow for 3 feet of space in the buffer space to allow for opening doors and passenger unloading.
- » The presence of landscaping in medians, planters and safety islands increases comfort for users and enhances the streetscape environment.

## Further Considerations

- » Separated bikeway buffers and barriers are covered in the CA MUTCD as preferential lane markings (**section 3D.01**) and channelizing devices (**section 3H.01**). Curbs may be used as a channeling device, see the section on islands (**section 3I.01**).
- » With new roadway construction a raised separated bikeway can be less expensive to construct than a wide or buffered bicycle lane because of shallower trenching and sub base requirements.
- » Parking should be prohibited within 30 feet of the intersection to improve visibility.

## Materials and Maintenance

Separated bikeways protected by concrete islands or other permanent physical separation, can be swept by smaller street sweeper vehicles.

Delineators and other separation materials will need to be repaired or replaced when damaged.

Access points along the facility should be provided for street sweeper vehicles to enter/exit the separated bikeway.

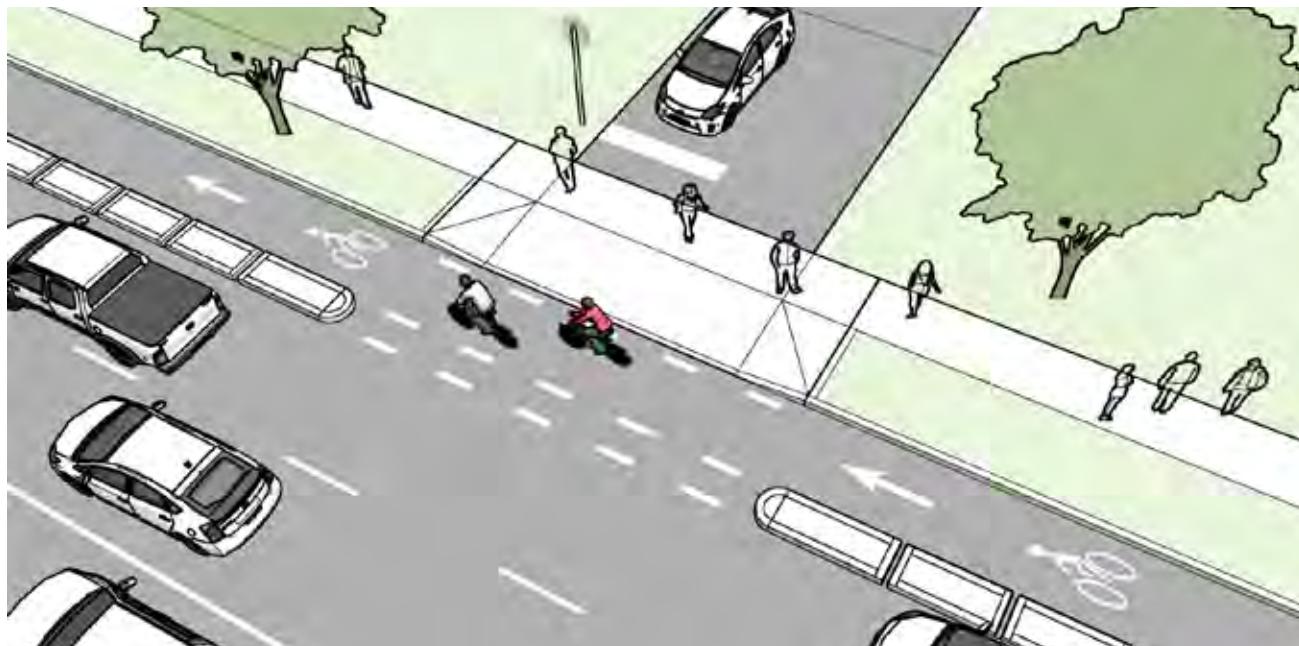
## Approximate Cost

Separated bikeway barrier material costs can vary greatly, depending on the type of material, the scale, and whether it is part of a broader construction project.

# Separated Bikeways at Driveways

The added separation provided by separated bikeways creates additional considerations at driveways when compared to conventional bicycle lanes. Special design guidelines are necessary to preserve sightlines and denote potential conflict areas between modes, especially when motorists turning into or out of driveways may not be expecting bicycle travel opposite to the main flow of traffic.

At driveways, bicyclists should not be expected to stop if the major street traffic does not stop.

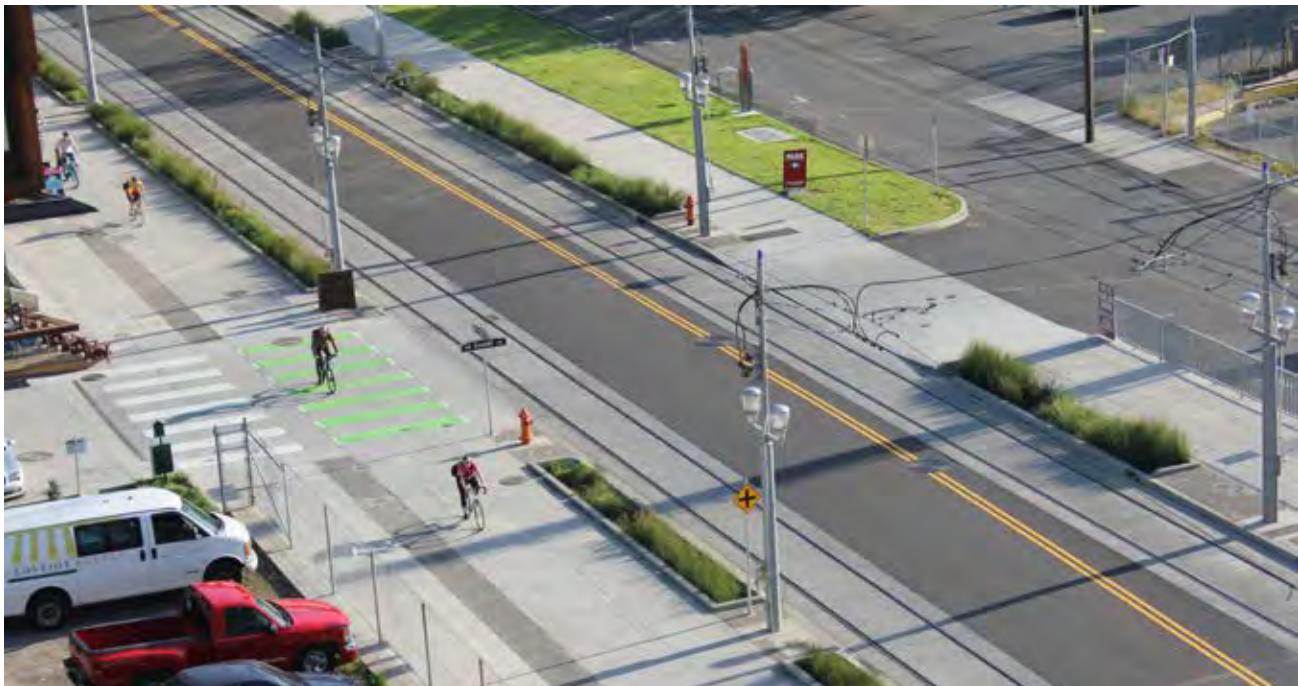


## Typical Use

- » Along streets with separated bikeway where there are driveways.
- » Higher frequency driveways may require additional treatment such as conflict markings and signs.

## Design Features

- » Remove parking to allow for the appropriate clear sight distance before driveways or intersections to improve visibility. The desirable no-parking area is at least 40 feet from each side of the crossing for extended driveways.
- » Colored pavement markings and/or shared line markings through conflict areas at intersections may be considered. The colored surface should be skid resistant and retro-reflective (**CA MUTCD 9C.02.02**).
- » If a raised bikeway is used at driveways, the height of the lane should be maintained through the crossing, requiring automobiles to cross over.



“Intersection crossing markings” may be used at driveways for raised facilities, as illustrated above.

- » Motor vehicle traffic crossing the bikeway should be constrained or channelized to make turns at sharp angles to reduce travel speed prior to the crossing.
- » Driveway crossings may be configured as raised crossings to slow turning cars and assert physical priority of traveling bicyclists.

## Further Considerations

- » Removing obstructions and providing clear sight distance at crossings increases visibility of bicyclists.
- » Treatments designed to constrain and slow turning motor vehicle traffic will slow drivers to bicycle-compatible travel speeds prior to crossing the separated bikeway.

## Materials and Maintenance

Green pavement markings, will require higher maintenance where vehicles frequently traverse over them at driveways.

## Approximate Cost

The cost for installing high visibility colored crossing markings will depend on the materials selected and implementation approach. Typical costs range from \$1.20/sq. ft. installed for paint to \$14/sq. ft. installed for Thermoplastic. Colored pavement is more expensive than standard asphalt installation, costing 30-50% more than non-colored asphalt.

# Protected Intersection

A protected intersection, or “Bend Out” uses a collection of intersection design elements to maximize user comfort within the intersection and promote a high rate of motorists yielding to people bicycling. The protected intersection is typically used to facilitate safe, comfortable transitions of Class IV Bikeways at major intersections, but can be used with other bikeway types as necessary. The design maintains a physical separation within the intersection to define the turning paths of motor vehicles, slow vehicle turning speed, and offer a comfortable place for people bicycling to wait at a red signal.



## Typical Use

- » Streets with separated bikeways protected by wide buffer or on-street parking.
- » Where two separated bikeways intersect and two-stage left-turn movements can be provided for bicycle riders.
- » Helps reduce conflicts between right-turning motorists and bicycle riders by reducing turning speeds and providing a forward stop bar for bicycles.
- » Where it is desirable to create a curb extension at intersections to reduce pedestrian crossing distance.

## Design Features

- Ⓐ Setback bicycle crossing of 19.5 feet allows for one passenger car to queue while yielding. Smaller setback distance is possible in slow-speed, space constrained conditions.
- Ⓑ Corner island with a 15-20 foot corner radius slows motor vehicle speeds. Larger radius designs may be possible when paired with a deeper setback or a protected signal phase, or small mountable aprons. Two-stage turning boxes are provided for queuing bicyclists adjacent to corner islands.
- Ⓒ Use intersection crossing markings.



Protected intersections feature a corner safety island and intersection crossing markings.



Protected intersections incorporate queuing areas for two-stage left turns.

## Further Considerations

- » Pedestrian marked crosswalks may need to be further set back from intersections in order to fit a two-stage turning queue box (minimum 6.5 feet wide).
- » Wayfinding and directional signage should be provided to help bicycle riders navigate through the intersection.
- » Colored pavement may be used within the corner refuge area to clarify use by people bicycling and discourage use by people walking or driving.
- » Intersection approaches with high volumes of right turning vehicles may provide a dedicated right turn only lane paired with a protected signal phase. Protected signal phasing may allow different design dimensions than are described here.

## Materials and Maintenance

- » Green conflict striping (if used) will also generally require higher maintenance due to vehicle wear.
- » Bikeways should be maintained so that there are no pot holes, cracks, uneven surfaces or debris.
- » Bikeways protected by concrete islands or other permanent physical separation, can be swept by street sweeper vehicles with narrow widths.
- » Access points along the facility should be provided for street sweeper vehicles to enter/exit the separated bikeway.

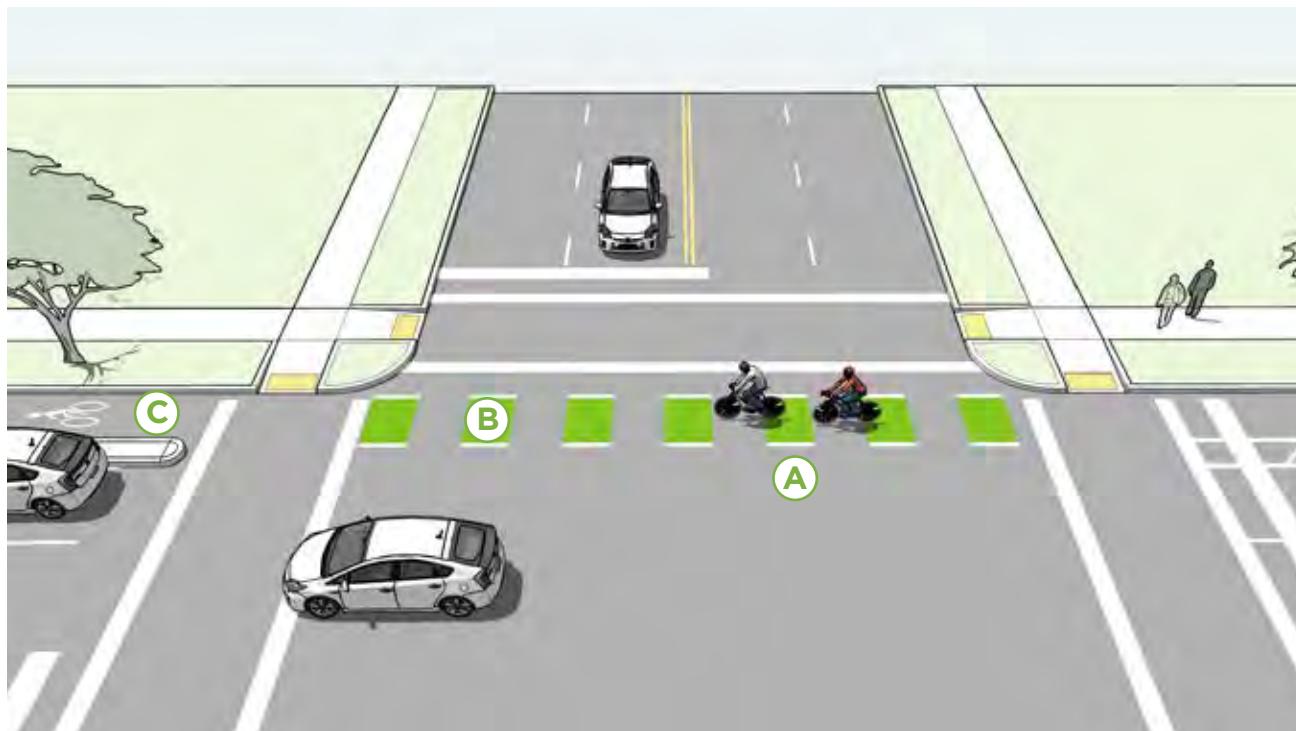
## Approximate Cost

The cost of protected intersection elements vary depending on materials used and degree of implementation desired. Typical costs range from \$750,000 to \$1,500,000 for basic elements that do not require full intersection reconstruction.

- » Complete reconstruction costs comparable to a full intersection.
- » Retrofit implementation may be possible at lower costs if existing curbs and drainage are maintained. Inexpensive materials can be used, such as paint, concrete planters, and bollards.

# Bikeway Extension Markings

Bikeway extension markings, also referred to as “intersection crossing markings,” or “Crossbike” markings guide bicyclists on a direct path through the intersection and provide a clear boundary between the paths of through bicyclists and vehicles in the adjacent travel lane. These optional markings are used to increase the visibility of the bike facility in the intersection, increase awareness of the potential for conflict, and reinforce priority of bicyclists in conflict areas.



## Typical Use

- » May be used at intersections to indicate the expected path of travel for bicyclists, assert bicyclist priority, and highlight the potential for bicyclist and motorist interactions
- » May be used across signalized intersections, stop-controlled cross-streets

## Design Features

- Ⓐ Typical 6" wide white dotted lane line extension striping delineates a continuous path of travel through the intersection. Dotted lines are 2 ft long and spaced 5 ft on center.
- Ⓑ White dotted lines can be supplemented with green-colored pavement to enhance visibility, particularly at conflict areas.
- Ⓒ Must connect a Class IV Bikeway on both ends of the intersection.
  - » The colored surface should be skid resistant and retro-reflective (**CA MUTCD 9C.02.02**).



Bikeway extension markings provide a clear indication of the expected path of the travel of bicyclists through intersections

## Further Considerations

- » Green colored pavement shall be used in compliance with FHWA Interim Approval (FHWA IA-14).<sup>1</sup>
- » Although “Crossbike” markings may be similar in appearance to marked pedestrian crosswalks, they have separate installation requirements, functional intent and application. Furthermore, they do not share the same legal definitions, nor afford the same user protections as marked crosswalks.
- » Markings may be located to avoid vehicle wheel tracking thus reducing wear and maintenance costs.

## Materials and Maintenance

As intended, paint or preformed thermoplastic are placed in locations that are trafficked by vehicles, and are subject to high vehicle wear. Colored pavement treatments will experience higher rates of wear at locations with higher turning vehicles, buses, and heavy trucks. At these locations, green coloring will require more frequent replacement over time.

The life of the green coloring will depend on vehicle volumes and turning movements, but thermoplastic is generally a more durable material than paint.

## Approximate Cost

The cost for installing bikeway extension markings depends on the materials selected and implementation approach, but typical costs are similar to that of marked crosswalks, approximately \$2,000-\$5,000 each, with higher costs for supplementary green-colored thermoplastic.

<sup>1</sup> FHWA. Interim Approval for Optional Use of Green Colored Pavement for Bike Lanes (IA-14). 2011.

*This plan was created by*

