5. Pedestrian Network Improvements

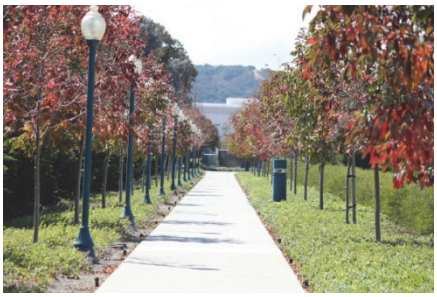
The following chapter presents recommended pedestrian network improvements identified through community input, City staff, and the Needs Analysis Chapter. The proposed improvements are intended to make walking trips more comfortable, enjoyable, and safer for pedestrians of all ages and abilities and all trip purposes.

This chapter presents the following improvement types:

- **Greenway Pedestrian Corridor Network** identifies a corridor network intended to provide a distinguished pedestrian friendly network.
- **Major Infrastructure Improvements** identify locations for sidewalk installation, paths, curb reconstruction, pedestrian scale lighting, and flexible zone parklets.
- **Intersection and Crossing Improvements** identify specific locations for focused improvements including curb ramps, curb extensions, crosswalks, and other pedestrian related improvements.
- **Zoning Code Revisions** identify changes to the zoning code intended to improve the pedestrian environment.
- **Projects and Studies** identify potential improvements for consideration and further analysis.
- **Project Sheets** presents focused improvements at specific locations.

Greenway pedestrian corridors provide high quality pedestrian connections to residential areas, transit, recreation, and retail.

Crossing improvements address pedestrian safety at intersection and midblock crossings.



Major infrastructure improvements include pedestrian scale lighting.

5.1. Greenway Pedestrian Corridor Network

Figure 5-1 presents a recommended Greenway Pedestrian Corridor Network (Greenway Network): a connected network of streets intended to improve pedestrian connections to neighborhood destinations, transit and recreational opportunities and serve high volumes of existing or expected pedestrian activity. The Greenway Network is intended to provide a distinguished pedestrian friendly network.

The network is based, in part, on the Estimating Walking Demand PedINDEX model presented in the Needs Analysis Chapter and includes corridors that have the following characteristics:

- Neighborhood shopping districts
- Transit
- Schools
- Parks and community centers
- Higher density residential development
- Libraries
- Community centers
- Senior centers or senior living facilities

Recommendations

The Greenway Network is a starting point for a pedestrian priority corridor network designed to focus improvements where people are most likely to walk most often. The network should provide high quality pedestrian connections to residential areas, transit, recreation, and retail. The City should consider additional street trees, plantings, wide sidewalks, and public art on many of these corridors.

The City should prioritize pedestrian travel on this network and consider implementation of pedestrian improvements with roadway and planning projects along these corridors.

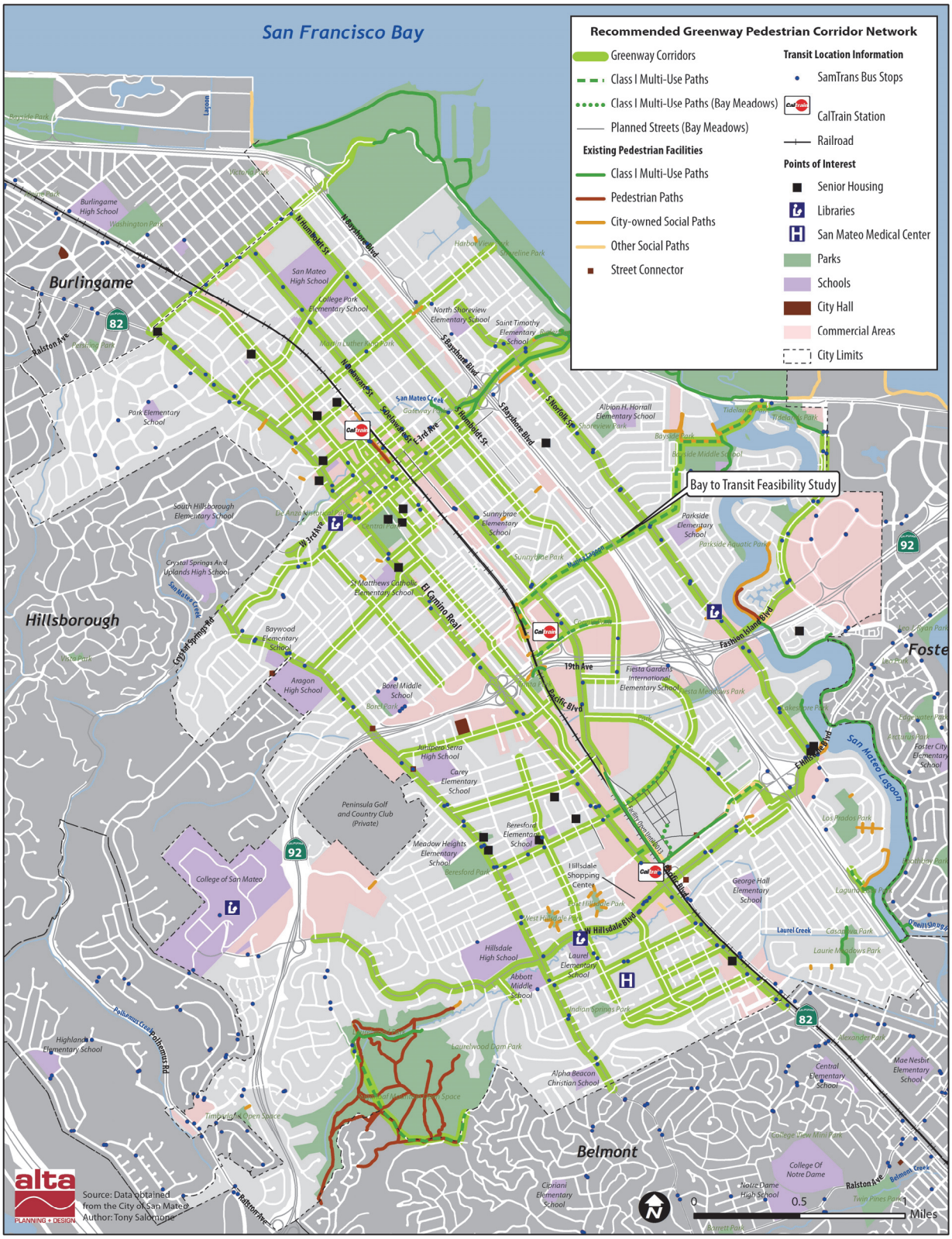


Figure 5-1: Greenway Pedestrian Corridor Network

5.2. Major Infrastructure Improvements

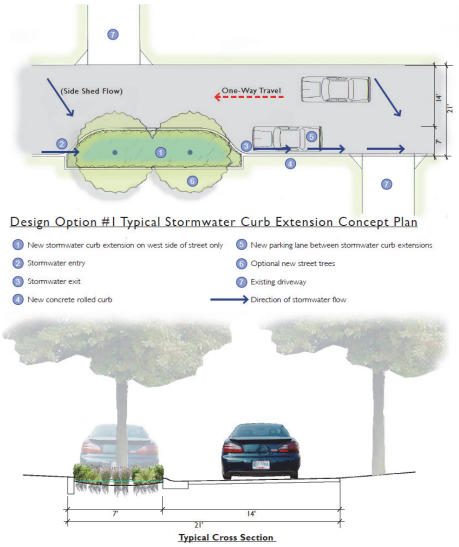
5.2.1. Sidewalk Standards

Standardizing streetscape design by land use can ensure that future development of public rights-of-way in San Mateo's residential, commercial, and mixed use areas meet the City's vision for vibrant, healthy pedestrian environments. With its recommended sidewalk standards, the City seeks to create places that are sensitive to the land use context, distinctive, attractive, and rich in amenities.

Chapter 3 Existing Conditions, Section 3.4.1 describes the recommended sidewalk zones for San Mateo, which include through, planter/furniture, landscape, frontage, and flex-use zones. The Pedestrian Design Guidelines (see **Appendix A**) present sidewalk types for residential, commercial, and mixed use land uses. The sidewalk zones and widths vary by land use, transportation needs, and community needs and desires.

5.2.2. Green Streets

Green Streets is a vision for the public realm that incorporates sustainable practices into streetscape design. While conventional street design results in stormwater runoff entering San Francisco Bay through a series of pipes and culverts, Green Street design uses pervious paving, bioswales, rain gardens and similar tools to capture and filter stormwater. The elements of green street design can be incorporated into pedestrian facilities and traffic calming treatments, increasing safety and providing a more pleasant walking environment. Green street design can also reduce the amount of runoff that enters the storm drain system, reducing polluted outflow to San Francisco Bay.



A demonstration Green Streets Project on Holly Street in San Mateo County
Source: San Mateo County Sustainable Green Streets and Parking Lots Design Guidebook

Recommendation

This Plan recommends the City of San Mateo implement green street design where feasible on projects identified in this Plan. The San Mateo Countywide Water Pollution Prevention Program published the San Mateo County Sustainable Green Streets and Parking Lot Design Guidebook (2009) and can serve as a valuable reference for the City.

http://www.flowstobay.org/ms_sustainable_guidebook.php

5.2.3. Sidewalk Installation

People who report having access to sidewalks are 28% more likely to be physically active.

Brownson, R. et al. 2001. "Environmental Determinants of Physical Activity in the United States." American Journal of Public Health. 91:1.

The majority of the City street network includes sidewalks on both sides of the street; however there are a number of streets that do not have sidewalks and present gaps in the network (see **Figure 3-5** in the Existing Conditions Chapter). Areas without sidewalks (sidewalk gaps) may force pedestrians to walk in the roadway which can be problematic on streets with higher traffic volumes. Sidewalk gaps also present a serious mobility issue for those who use assistive devices.

While not all streets with sidewalk gaps have a high need or demand for sidewalks, there are a number that would benefit from sidewalks. Cul-de-sac streets are not a high priority for sidewalks because there is no through traffic and they have low traffic volumes. The San Mateo Park neighborhood in the northwest area of the City does not have sidewalks but also has too little through traffic and low traffic volumes to prioritize sidewalk installation.

Recommendations

This Plan recommends the City prioritize sidewalk installation citywide. As a first priority, the City should install sidewalks identified in **Table 5-1.** The recommended streets are through streets that would benefit from separating pedestrians from vehicle traffic. While it is recommended sidewalks be installed on both sides of the identified segments, available space and parking concerns suggest installation of sidewalks may be feasible on only one side of the roadway. In addition, the City should install sidewalks with all new development projects and as requested by the community.

Table 5-1: Recommended Locations for Sidewalk Installation

Street	Start	End	Description/Need
El Camino Real (northbound)	39th Ave	37th Ave	Bus stop
Hacienda St	Louise Ln	31st Ave	High traffic volume, Community identified need
Pacific Ave	19th Ave	New Development	Transit access
41st Ave	Hacienda St	Colegrove St	Through street
40th Ave	Hacienda St	Beresford St	Through street

5.2.4. Paths

Class I Multi-Use Paths provide for pedestrian and bicycle travel on a paved right of way completely separated from streets. These facilities

are popular recreational corridors and many also serve as commuter corridors.

Recommendations

The San Mateo Bicycle Master plan includes a number of recommended Class I Bicycle Paths. These facilities will also serve and enhance the pedestrian environment and are incorporated in to this Plan. Also recommended is improvement to an existing paved path to the Hayward Park Caltrain Station from 17th Avenue. Though a walk area exists, it is not easily accessible to those who use assistive devices. Additionally, it does not have pedestrian friendly supportive features including pedestrian scale lighting. **Table 5-2** lists recommended paths.

Table 5-2: Recommended Locations for Pedestrian Paths

Facility Type	Location	From	To	Length (Miles)
Class I	28th Ave Extension	El Camino Real	New Delaware St	0.09
Class I	31st Ave Extension	El Camino Real	Caltrain	0.22
Class I	Bay to Transit Path Feasibility Study	17th Ave	Anchor Rd	1.82
Class I	Concar Dr	Pacific Blvd	S Grant St	0.43
Class I	Franklin Path	Pacific Boulevard	Hillsdale Boulevard	0.17
Class I	Laguna Vista Path	Los Prados	Laguna Vista	0.10
Class I	Laurel Woods/ Sugarloaf Park Path	Laurelwood Dr	Laurel Creek Rd	0.88
Pedestrian Path	Hayward Park Caltrain Station	17th Ave	Caltrain Station	0.21
Crossing	Hillsdale Overcrossing	S. Norfolk Street	Hillsdale Boulevard	0.33
			Total Path Miles	**4.25**

5.2.5. Rolled Curb to Vertical Curb

The City of San Mateo has a number of neighborhoods with rolled curbs. Rolled curbs make it easy for cars to park on the curb face, potentially obstructing pedestrian activity along the sidewalk. Rolled curbs exist primarily within single-family neighborhoods.

Rolled curbs were noted by the community as problematic in the North Shoreview neighborhood in the northeast section of the city as well as near San Mateo Medical Center. Vehicles blocking sidewalks are a concern for all pedestrians, particularly for those who use assistive devices.

Recommendation

This Plan recommends the City consider the conversion of rolled curbs to vertical curbs during roadway reconstruction projects. This

conversion shall only occur following an engineering analysis to determine if there is ample roadway width.

5.2.6. Pedestrian Scale Lighting

Pedestrian scale lighting is a category of lighting with frequent lampposts of lower height that illuminate the pedestrian walking area. It typically includes shorter poles, 12 to 15 feet tall, directly above pedestrian walkways. Combined, street and pedestrian lighting increase visibility of pedestrians for motor vehicles at night, promote perceived personal security for pedestrians, illuminate potential hazards, and can help create a vibrant and inviting streetscape.

The City of San Mateo has invested in pedestrian scaled lighting; however community surveys indicate a need for additional pedestrian lighting. Results from the *North Central Community Based Transportation Plan* survey as well as the survey conducted for this Plan indicate a need for lighting in North Central San Mateo and near retail, transit and other civic facilities.

Recommendations

This Plan recommends the City install pedestrian scale lighting along the corridors presented in **Figure 5-2.** A detailed table of recommended corridors is presented in **Appendix F**.

For the price of one mile of four-lane urban highway, around $50 million, hundreds of miles of bicycle and pedestrian infrastructure can be built, an investment that could complete an entire networkof active transportation facilities for a mid-sized city.

Gotschi, Thomas and Kevin Mills. 2008. Active Transportation for America, Rails to Trails Conservancy.

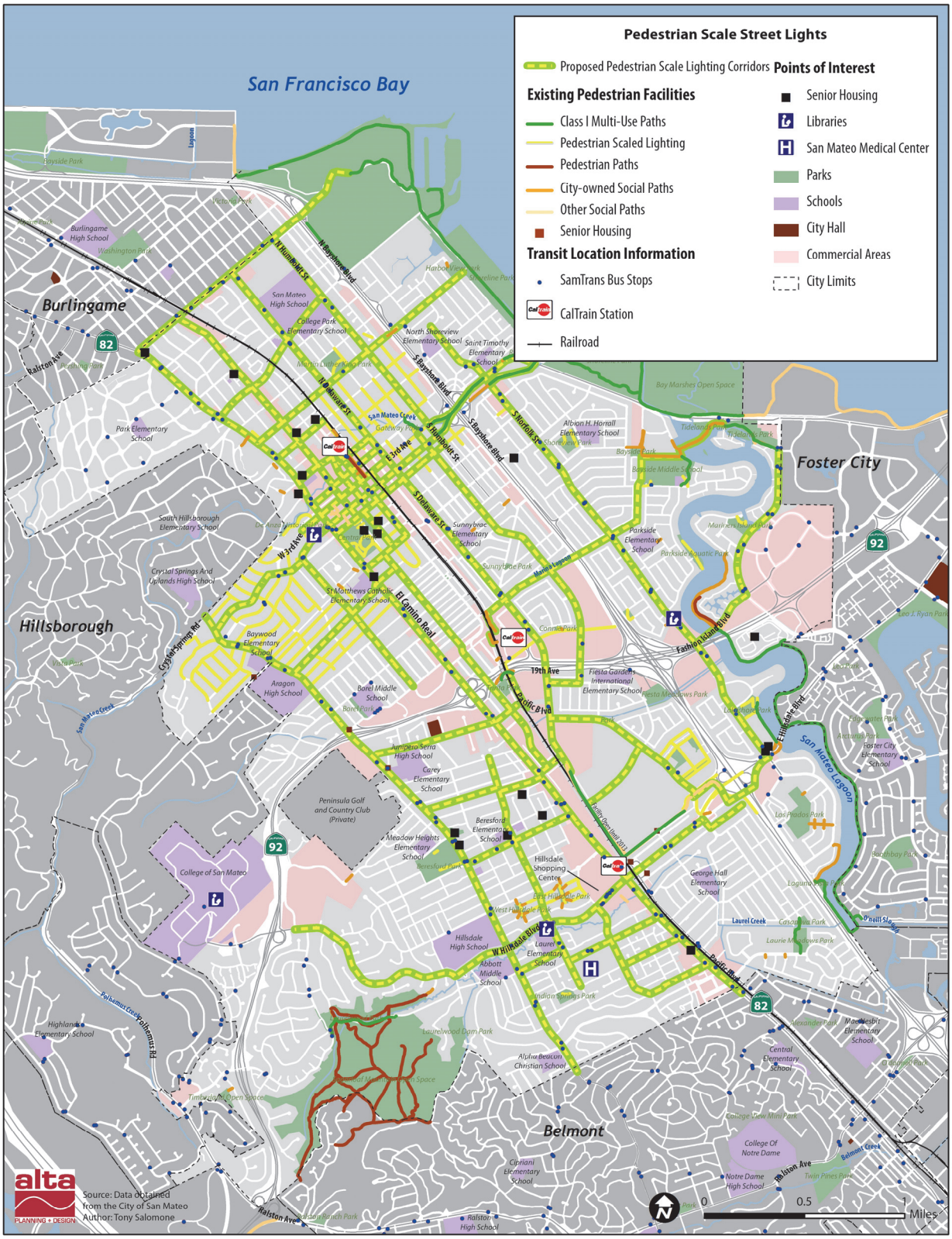


Figure 5-2: Recommended Locations for Pedestrian Scale Street Lights

5.2.7. Flexible Zone Parklet Pilot Program

Parklets are the temporary repurposing and transformation of on-street parking spaces to extend the sidewalk and create more room for pedestrian amenities or outdoor seating for adjacent restaurants and cafes. The spaces are often in the public right-of-way between the curb and travel lanes in commercial and retail areas. They occupy on-street parking spaces and excess roadway area. The parklets are intended to increase public space, enhance the pedestrian environment, and improve corridor aesthetics.

Parklets have been implemented successfully in New York City and San Francisco (**Figure 5-3**). The City of Oakland is in the process of developing parameters for their own program and expects implementation by 2012.

Figure 5-3: Parklet in San Francisco

Image source: http://sfpavementtoparks.sfplanning.org/noe_valley_parklets.html

Recommended Parklet Locations

Parklets should be implemented only in areas that have limited public space, narrow sidewalks, or no parks. The areas should have existing conditions that will attract people to the space, such as retail and high pedestrian activity. Parklets can be sponsored and implemented by community benefit districts, storefront business owners, non-profit institutions, and community organizations.

In addition to areas that lack public space and have the potential for open space demand, the following characteristics are recommended for parklet locations:

- Streets with speed limits under 25 mph
- Streets with parking lanes
- Site is not in front of a fire hydrant or would restrict access to utility covers and valves
- Site should be a minimum of two parking spaces or equivalent

Parklet Design Requirements

The parklet design should be an aesthetic improvement to the streetscape and be made of durable high quality materials. Other design requirements include:

- Maximum of six-foot width where there is parallel parking (angled parking areas should be considered on a case by case basis) (see **Figure 5-4**)
- Deck should be flush with the curb, half inch gap maximum
- Wheel stops should be placed four-feet from either end of the parklet and one-foot from the curb
- Reflective hit-posts should be placed on the street side corners
- Provide access to gutter area for cleaning
- Provide access underneath the parklet for drainage
- Outside or street side edge should be visually permeable, railing may be required
- Public seating should be strongly encouraged.

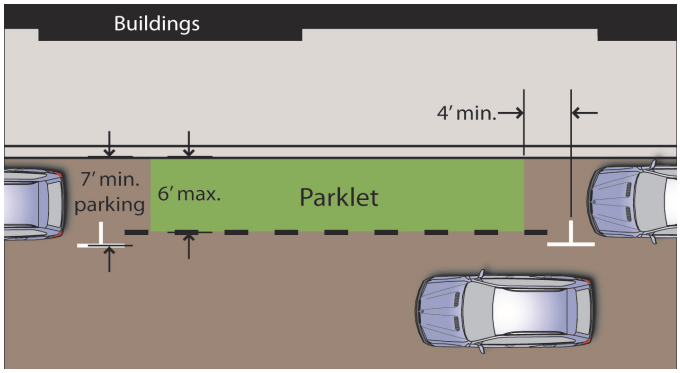


Figure 5-4: Example Parklet Plan

Parklet Implementation Steps

San Francisco and Oakland permit parklets through an encroachment permit application process. Applicants must submit the permit application, site plans and programming, construction schedule and documented community support. Additionally, the applicant must pay for the permit, removal of any parking meters, site inspection, and annual permit renewal fees.

- Applications must also provide insurance, maintenance, and oversight over movable items. Permit holders in San Francisco must provide:
- Evidence of at least $1 million in liability insurance (the same requirements as sidewalk café tables and chairs), naming the City as an additional insured.

- Maintenance agreement noting they will keep all plants in good health and the parklet free of debris and grime. The permit holder must also rinse out the area underneath at least once a week.
- Oversight of movable items. Movable items must be either locked down or taken inside at night.

The City of San Mateo should develop a permit process for parklets and modify its encroachment permit process to outline the steps needed to receive a permit.

Pilot Parklet Locations

The following locations presented in **Table 5-3** are recommended for pilot parklet locations. Other locations in Downtown may also be considered on a case by case basis.

Table 5-3: Recommended Locations for Pilot Parklets

Location	Description and Need
3rd Avenue between B Street and Ellsworth Avenue	Narrow sidewalks. Limited public space. High pedestrian activity.
25th Avenue between Flores Street and Hacienda Street	Narrow sidewalks. Limited public space. Improve corridor aesthetics.
B Street between Baldwin and 4th Street	Angled parking spaces. Limited public space. High pedestrian activity. Retail outlets that would benefit from additional space for customers.

5.2.8. Americans with Disabilities Act Transition Plan

Title II of the Americans with Disabilities Act (ADA) dictates that a public entity must evaluate its services, programs, policies, and practices to determine whether they are in compliance with the nondiscrimination regulations of the ADA. A public agency is required to prepare a transition plan if physical or structural modifications are required to provide access to programs or services. A transition plan is limited to evaluating physical barriers; however, an analysis of the programs and services rendered by the City is also important to determine what changes are necessary. The transition plan documents what actions the City has taken or will take to alter its facilities.

Generally, the transition plan lists existing barriers in public rights-of-way under the City's jurisdiction, and it further schedules which barriers are to be removed to provide access for individuals with disabilities to City programs.

A transition plan is required by Department of Justice regulations to address the following aspects of accessibility:

(1) If a public entity has responsibility or authority over streets, roads, or walkways, its transition plan shall include a schedule for providing curb ramps or other sloped areas where pedestrian walks cross curbs, giving priority to walkways serving entities covered by the ADA, including State and local government offices and facilities, transportation, places of public accommodation, and employers, followed by walkways serving other areas.

(2) The transition plan shall identify physical obstacles in the public entity's facilities that limit the accessibility of its programs or activities to individuals with disabilities;

(3) The transition plan shall describe the methods that will be used to make the facilities accessible; and

(4) The transition plan shall specify the schedule for taking the steps necessary to achieve compliance with the ADA and, if the time period of the transition plan is longer than one year, identify steps that will be taken during each year of the transition period.

Streets, sidewalks, and curb ramps may themselves represent a "program" of public pedestrian activities that are essential to the usage and enjoyment of the City's built environment.

Recommendation

The City of San Mateo has an inventory of curb ramps and installs curb ramps as part of larger roadway improvement projects. The City has initiated the process to develop an ADA Transition Plan and this Citywide Pedestrian Master Plan supports the development.

5.2.9. Pedestrian Safety Assessment

In 2011, the City conducted a pedestrian safety assessment in conjunction with Pedestrian Master Plan. The assessment includes a guide suggesting additional ways to improve pedestrian safety.

Recommendation

This Plan recommends the City support the guidelines and spot improvements in this assessment.

5.3. Intersection and Crossing Improvements

5.3.1. All Intersections

Curb Ramps

Curb ramps bridge the transition between a sidewalk and the street and are important for those using assistive mobility devices and those with strollers. Raised truncated domes provide a cue to visually-impaired pedestrians that they are entering a street or intersection.

The City of San Mateo has a process for prioritizing and constructing curb ramps that includes installation whenever roadways are resurfaced or reconstructed and upon request (as funding allows).

As part of the City's development of an ADA Transition Plan and its recent inventory of condition, location and ADA-accessibility of curb ramps, the City will continue to install curb ramps throughout San Mateo.

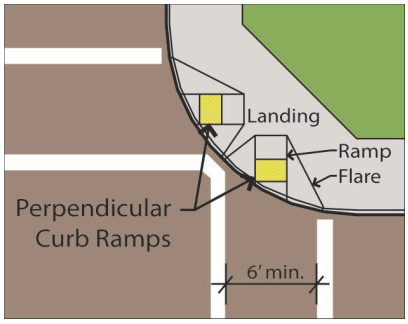


Figure 5-5: Perpendicular Curb Ramp

Truncated domes are pads on the ramp of curb return that have raised bumps to warn pedestrians with visiual impairments that they are entering the roadway. California state requirements call for 70% contrast between dome panels and adjacent concrete.

Recommendations

This Plan recommends the City adopt perpendicular curb ramps (**Figure 5-5**) as its preferred standard and install curb ramps citywide. As a first priority, perpendicular curb ramps should be installed on community identified locations and City collector and arterial streets. Priority should be given to locations near senior facilities. Although the City is not required to install truncated domes on existing curb ramps constructed prior to 2002, this Plan recommends the City install these devices on all the Greenway Corridors described in Section 5.1.

Curb Extensions

Curb extensions are an effective method to improve pedestrian visibility and reduce pedestrian crossing time. Curb extensions (**Figure 5-6**) extend the sidewalk or curb line out into the parking lane, reducing the effective street width. Despite their advantages, curb extensions can require major re-engineering of the street and can be costly. Curb extensions can only be used where there is on-street parking and they should not encroach into bicycle lanes.

The location of planned curb extensions should include a number of considerations. Curb extensions should be designed so they allow buses to complete turning movements and load and unload passengers safely. Curb extension geometry should allow mechanical street sweepers to clean transitions from the parking lane to the extended curb. Curb extensions may also require storm drainage re-engineering.

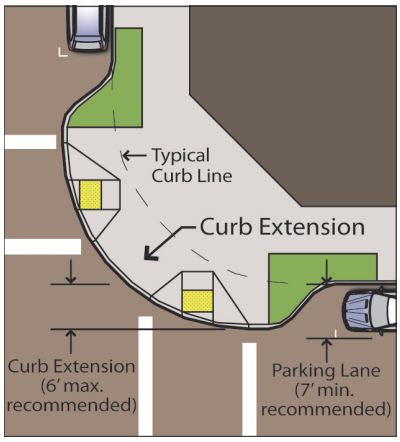


Figure 5-6: Curb Extension

Recommendations

This Plan recommends the City institute a policy to install curb extensions at uncontrolled marked crosswalks citywide. It is also recommended the City prioritize installation of curb extensions at the locations presented in **Table 5-4**. The locations were selected based on a number of factors, including pedestrian related collision history, vehicle volume, and pedestrian demand.

Table 5-4: Recommended Locations for Curb Extensions

Intersection	Corner	Number of Curb Extensions
W Hillsdale Blvd & Edison St	All	3
W 39th Ave & Edison St	All	4
39th Ave & El Camino Real	Northwest	1
37th Ave & El Camino Real	Southwest	1
2nd Ave & El Camino Real	Northeast Southeast	2
3rd & El Camino Real	All	4
El Camino Real & Baywood Ave/Baldwin Ave	Northwest Southwest Southeast	3
N Ellsworth Ave & Tilton Ave	All	4
El Camino Real & El Cerrito/Tilton Ave	All	4
B Street & Tilton Ave	Southeast	1
B Street & Baldwin Ave/Caltrain Entrance	All	4
B St & 3rd Ave	Southeast Southwest	2
El Camino Real & 4th Ave	Northeast Southeast	2
San Mateo Dr & 2nd Ave	All	4
N Delaware St & Monte Diablo Ave	All	4
N Delaware St & 1st Ave	All	4
N Delaware St & 3rd Ave	Southeast	1
N Fremont St & 2nd Ave (north)	Northeast Southeast	2
N Fremont St & 2nd Ave (south)	All	4
N Fremont St & 3rd Ave	Northwest	1
Monte Diablo Ave & N Fremont St	North leg	1

High Visibility Crosswalks

There are a number of different marked crosswalk types, including continental and ladder. These are considered high visibility crosswalks because they are more noticeable to drivers. High visibility crosswalks are typically used where there is existing or anticipated high pedestrian activity, where slower pedestrians are expected, at uncontrolled crossings, and where high numbers of pedestrian related collisions have occurred.

The City currently uses both continental and ladder crosswalks for high visibility.

Recommendations

This Plan recommends the City adopt a single high visibility crosswalk design. This Plan recommends the continental crosswalk (**Figure 5-7** and **Figure 5-8**) as the standard. This Plan also recommends the city prioritize installation of high visibility crosswalks at the location types listed in **Table 5-5**. **Figure 5-9** maps the locations and a detailed table is presented in **Appendix F**.

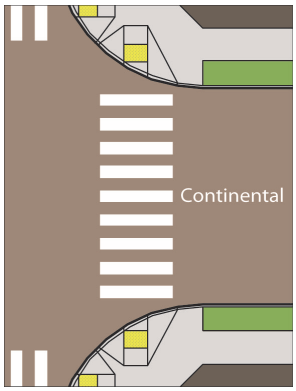


Figure 5-7: High Visibility Continental Crosswalk

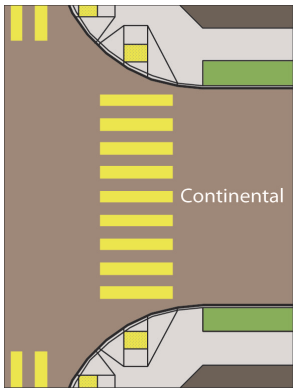


Figure 5-8: High Visibility School Area Continental Crosswalk

Table 5-5: Recommended High Visibility Crosswalk Locations

Location	Rationale
Senior living facilities and senior centers (within 1/8th mile)	Seniors do not walk as quickly as others and high visibility crosswalks near senior living facilities and senior centers will improve senior visibility.
Retail corridors	Retail corridors are places where there is existing and anticipated high pedestrian activity. As presented in the Existing Conditions and Needs Analysis chapters, the majority of pedestrian related collisions occurred Downtown and along El Camino Real, Alameda de las Pulgas, Delaware Street, East Poplar Avenue, and West Hillsdale Boulevard. The recommended locations for high visibility crosswalks are based on the collision data.
Uncontrolled crossings	Studies show that marked crosswalks at uncontrolled locations have a higher frequency of pedestrian collisions on roadways with more than two travel lanes.[30] This Plan recommends all marked crosswalks at uncontrolled locations have high visibility striping.
Adjacent to school buildings and grounds	California law requires a marked crosswalk in a roadway contiguous to a school building or school grounds be yellow. This Plan recommends these crosswalks be high visibility to improve student visibility.
High pedestrian related collision areas	High numbers of pedestrian collisions in comparision to locations citywide can indicate the need for improved visibility of pedestrians among motorists.

[30] Zegeer, C., Stewart, J., and Huang, H. Safety Effects of Marked vs. Unmarked Crosswalks at Uncontrolled Locations. Report No.FHWA-RD-01-142, Federal Highway Administration, McLean, VA, May 2001.

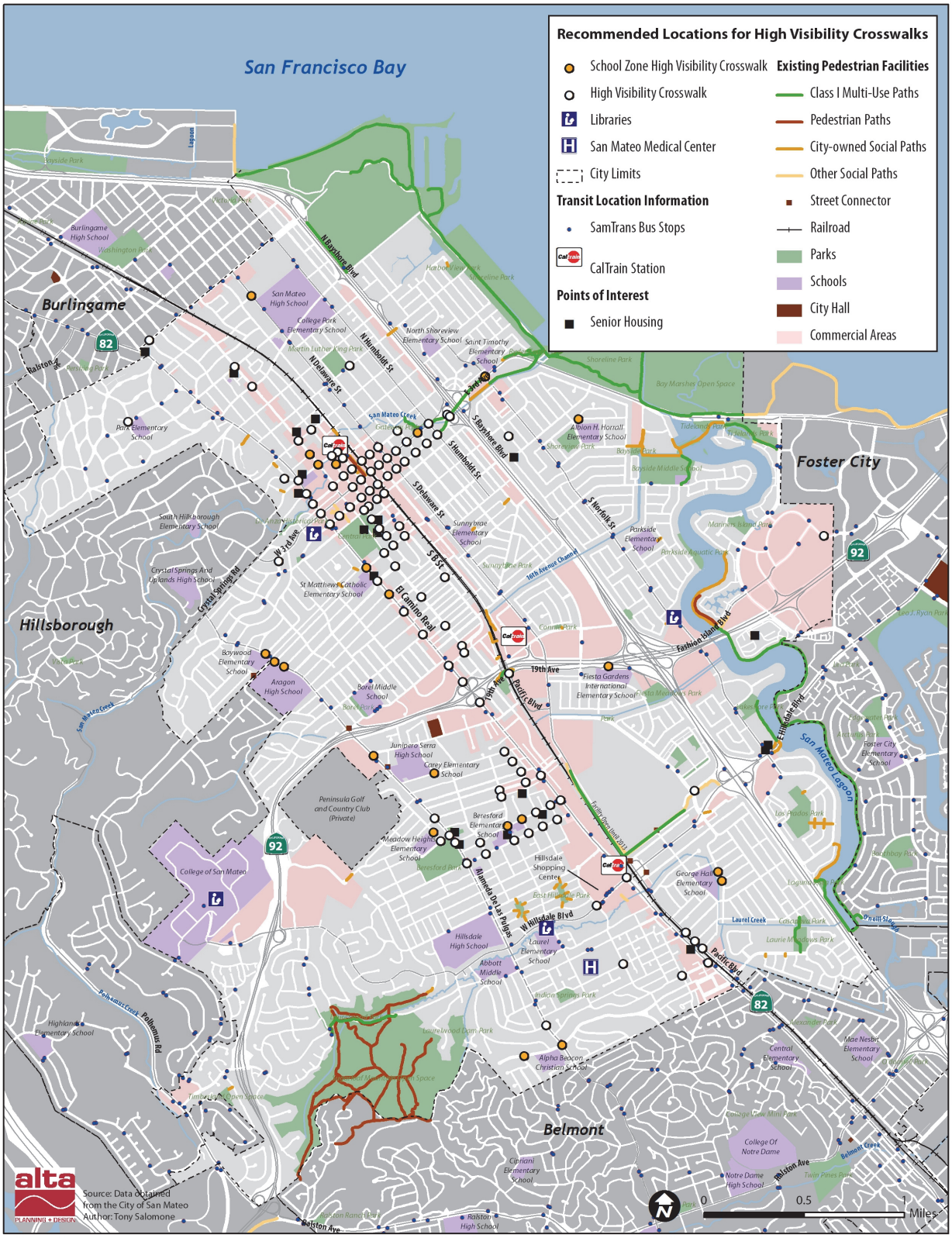


Figure 5-9: Recommended Locations for High Visibility Crosswalks

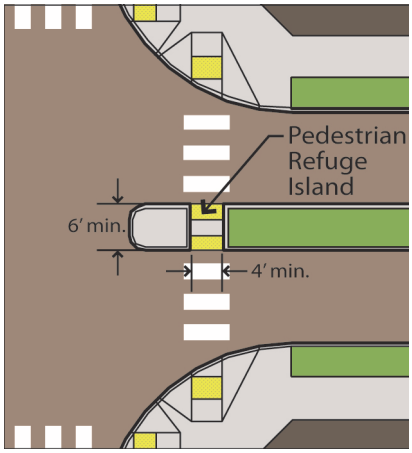


Figure 5-10: Refuge Island

Pedestrian Refuge Island Design Standards

Pedestrian refuge islands (**Figure 5-10**) are raised islands in the middle of the roadway that create a protected space where people may safely pause or wait while crossing a street. Pedestrian refuge islands enable pedestrians to cross one or two lanes at a time and are especially helpful as resting areas for seniors, persons with disabilities, children, and others who may need to cross a street in more than one stage. At signalized intersections, they allow slow moving pedestrians to cross in two phases. At unsignalized locations, they enable pedestrians to negotiate vehicles from only one direction at a time. An island used for pedestrian refuge should be raised with an ADA compliant, accessible passage through for pedestrians. Raised pedestrian refuge islands can be provided in painted center medians, transit boarding islands, and corner islands.

Recommendations

Pedestrian refuge islands should be considered:

- Along streets with high pedestrian activity
- Where crossing distances are long (60 feet or greater)
- Near and within retail areas, civic and institutional uses, schools, senior housing, and senior centers
- At unsignalized intersections serving a large number of pedestrian trips

Minimum Dimensions

A pedestrian refuge island shall be a minimum of four feet wide and six feet long. It may be appropriate to construct a wider median to commensurate with high traffic speeds and volumes in addition to accommodating public transit and anticipated future needs.

Pedestrian Islands versus Curb Extensions

Pedestrian refuge islands and curb extensions both improve comfort and safety for crossing pedestrians. Under certain conditions, pedestrian refuge islands may be preferable to curb extensions, or it may be preferable to use pedestrian refuge islands rather than curb extensions. Conditions where it may be preferable to use a pedestrian refuge island include:

- On roadways with multiple lanes (that is, four lanes or more) of traffic[31]
- Where two-way left-turn lanes are present
- Where a median would serve as important design function, such as a gateway feature
- Where there is an existing median
- Where bicycle lanes are present, but onstreet parking is not present
- Where excessively wide travel lanes or turn lanes are present

Engineering constraints, including street drainage, should also be considered when determining whether to install a refuge island or a curb extension.

This Plan recommends the City adopt a refuge island standard design. The design should meet the Caltrans standard minimums.

5.3.2. Controlled Intersections

Audible Signals

Audible signals emit sounds to guide visually impaired pedestrians by indicating when to cross. Different audible signals are usually used to also indicate crossing direction. Sounds are activated by the pedestrian push button. The California Manual on Uniform Traffic Control Devices (CA MUTCD) states the installation of audible signals should be based on an engineering study that considers:

- Potential demand for accessible pedestrian signals
- A request for accessible pedestrian signals
- Traffic volumes during times when pedestrians might be present; including periods of low traffic volume or high right turn-on red volumes
- The complexity of traffic signal phasing (such as split phases, protected turn phases, leading pedestrian intervals, and exclusive pedestrian phases)
- The complexity of intersection geometry

Recommendation

This Plan recommends the City consider audible signals near senior centers and living facilities and near homes of those who are visually impaired. The current Draft PROWAG (Public Rights of Way

[31] Federal Highway Administration 2002b, p.72

Guidelines) include requirements for audible pedestrian signals at new and modified intersections. The City of San Mateo shoud comply with these requirements when adopted.

Advance Stop Bars

Advance stop bars increase pedestrian visibility by stopping motor vehicles in advance of marked crosswalks at stop controlled or signalized intersections. **Figure 5-11** illustrates an advance stop bar. Advance stop bars help prevent vehicle encroachment into a crosswalk and allows drivers to better see pedestrians, particularly where there are more than two lanes of travel in each direction.

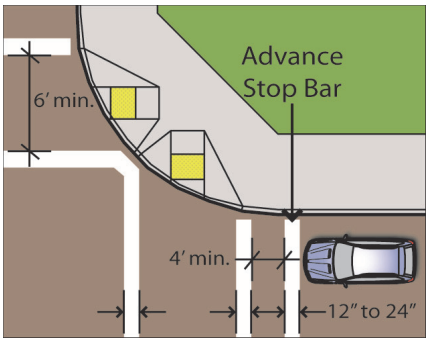


Figure 5-11: Advance Stop Bar

Recommendations

This Plan recommends the City install advance stop bars at all stop controlled or signalized intersections in Downtown and along retail corridors including 25th, 37th, and 41st Avenues. The City should prioritize installation of advance stop bars at intersections with high pedestrian activity and those with a history of pedestrian related collisions. The recommended priority locations are presented in **Table 5-6.**

Table 5-6: Recommended Locations for Advance Stop Bars

Intersection	Travel Direction	Number of Bars
W Hillsdale Blvd & Edison St	All	4
W 39th Ave & Edison St	All	4
W 39th Ave & Colegrove St	All	4
37th Ave & El Camino Real	Northbound Westbound	2
2nd Ave & El Camino Real	All	3
El Camino Real & Baywood Ave/Baldwin Ave	Northbound Southbound Westbound	3
El Camino Real & El Cerrito/Tilton Ave	Northbound Southbound	2
El Camino Real & 39th Ave	Northbound Southbound	2
B Street & Tilton Ave	Northbound	1
B Street & Baldwin Ave/Caltrain Entrance	All	4
San Mateo Dr & 2nd Ave	All	4
N Delaware St & Monte Diablo Ave	All	4
N Delaware St & 1st Ave	All	4
N Delaware St & 3rd Ave	All	4
N Fremont St & E 3rd Ave	All	4
Monte Diablo Ave & N Fremont St	All	3

Regulatory Signage at Signalized Intersections

The use of regulatory pedestrian signs, such as MUTCD sign R10-3e, can help educate or remind pedestrians how to properly interpret the symbols on pedestrian countdown signal heads. Specifically, pedestrians should only start to cross the street when they have the white walk symbol and not when the flashing or solid hand is displayed.

Recommendation

This Plan recommends installation of MUTCD sign R10-3e or other comparable sign immediately above or incorporated in pedestrian pushbutton units. See **Figure 5-12** for an illustration of this sign.

Figure 5-12: Pedestian R10-3e Sign

5.3.3. Citywide Signal Timing

Traffic signal timing is the amount of time each phase of a signal is allotted for vehicles, bicycles, and pedestrians to cross. The City of San Mateo currently employs a standard walking speed of four feet per second. The 2012 *California Manual on Uniform Traffic Control Devices* (CA MUTCD) and the *National MUTCD* permit a signal crossing time of 3.5 feet per second, which would increase the time for the walking phase.

Recommendation

This Plan recommends the City of San Mateo adopt a standard signal timing of 3.5 feet per second except at certain locations described below.

Signs such the R10-3e at traffic signals with pedestrian countdown signal heads and push buttons inform pedestrians of when to cross the street so that they complete their crossing before the signal changes. The bottom panel must be eliminated where the pedestrian signal timing is non-actualed an the pedestrian push button is used solely to activate accessible pedestrian signals.

Signal Timing Near Senior Living Facilities and Schools

Seniors and young children do not walk as quickly as others. It is anticipated that by 2017, over 35 percent of San Mateo's population will be age 50 or over. The City's *Aging Well, San Mateo* (2009) report found the likelihood of being able to drive decreases with age. Maintaining mobility for seniors will be an important goal in the coming years.

The US Department of Transportation (US DOT) and the Federal Highway Administration (FHWA) recommend in the *Older Driver Highway Design Handbook* a signal timing of 2.8 feet per second to accommodate older pedestrians.[32] The FHWA[33] and the Metropolitan Transportation Commission[34] also recommend a slower crossing rate

[32] FWHA *Older Driver Highway Design Handbook*. www.fhwa.dot.gov/publications/research/safety/97135/rec1.cfm#n

where concentrations of children are expected. The 2012 CA MUTCD permits the use of a signal timing of 2.8 feet per second hwere older or disabled pedestrians routinely use the crosswalk. Using a slower walking rate to calculate the pedestrian walking phase means the walk phase will be longer and pedestrians will have more time to cross the street.

Recommendations

This Plan recommends the City adjust signal timing within an eighth of a mile (660 feet) of all senior centers, senior living facilities and schools to 2.8 feet per second. **Table 5-7** presents the intersections recommended for this timing adjustment.

[33] FHWA *Traffic Signal Timing Manual*, Section 5.3 Pedestrian Timing Intervals. ops.fhwa.dot.gov/publications/fhwahop08024/chapter5.htm
[34] MTC *Safety Toolbox: Engineering*, Signal Timing for Pedestrians. www.mtc.ca.gov/planning/bicyclespedestrians/tools/signalTiming/index.htm

Table 5-7: Recommended Signal Timing Adjustments Locations Near Senior Facilities and Schools

Intersection	Within 1/8 Mile of Senior Facility	Within 1/8 Mile of School
19th Ave & Fashion Island Blvd	--	X
19th Ave & Ginnever St	--	X
1st Ave & Ellsworth Ave	--	X
20th Ave & Alameda de las Pulgas	--	X
25th Ave & El Camino Real	X	--
27th Ave & El Camino Real	X	--
2nd Ave & El Camino Real	X	X
2nd Ave & Ellsworth Ave	--	X
2nd Ave & San Mateo Dr	--	X
41st Ave & El Camino Real	X	--
4th Ave & San Mateo Dr	X	--
5th Ave & B Street	X	--
5th Ave & El Camino Real	X	--
5th Ave & San Mateo Dr	X	--
9th Ave & El Camino Real	X	X
Aragon Blvd & Alameda De Las Pulgas	--	X
Baldwin Ave & Ellsworth Ave	--	X
Baldwin Ave & San Mateo Dr	X	X
Baywood Ave / De Sabla Rd / Baldwin Ave & El Camino	X	X
California & Oak Grove	--	X
Crystal Springs Rd & El Camino Real	X	X
El Camino Real & Peninsula	X	--
Fashion Island Blvd & Hwy 101	--	X
Hillsdale Blvd & Clearview	--	X
Hillsdale Blvd & Hwy 101 Off Ramp	X	--
Hillsdale Blvd & Norfolk St	X	--
Hillside & Cabrillo	--	X
Hwy 92 Eastbound On Ramp & Alameda De Las Pulgas	--	X
J Hart Clinton Dr / 3rd Ave & Norfolk St	--	X
J Hart Clinton Dr At St Timothy's Church & Creekside Apts	--	X
Kentucky Ave & Alameda De Las Pulgas	--	X
Nevada Ave & Alameda De Las Pulgas	--	X
Nevada Ave & Alameda De Las Pulgas	--	X
Poplar Ave & Delaware St	--	X
Poplar Ave & Humboldt St	--	X
Poplar Ave & San Mateo Dr	X	X
Tilton Ave & San Mateo Dr	X	--

Signal Timing on El Camino Real

El Camino Real is a major north-south corridor and bisects the City of San Mateo. The corridor bounds downtown San Mateo, and is adjacent to transit and many local retail districts. El Camino Real is a

community identified barrier and collision data shows it is the corridor with the most pedestrian related collisions in the City. Caltrans has jurisdiction over El Camino Real and any improvements to this roadway must be approved by Caltrans.

Recommendations

This Plan recommends the City work with Caltrans to expedite signal timing modification to 3.5 feet per second at the intersections along El Camino Real identified in **Table 5-8** that are not within an eighth of a mile of a school or senior facility. The City should also work with Caltrans to modifiy signal timing near schools and senior centers to 2.8 feet per second. This Plan recognizes the two recommended signal timing modifications may be a challenge for the signal system and will work with Caltrans regarding this potential issue.

Further, the City should work with Caltrans to adjust signal timing at El Camino Real and 31st Avenue to consider level of service for all users.

Table 5-8: Signal Timing Adjustments Locations on El Camio Real

Cross Street	Within 1/8 Mile of Senior Facility	Within 1/8 Mile of School	Recommended Signal Timing (feet per second)
Baldwin Avenue	X	X	2.8
Barneson Avenue	--	--	3.5
Bellevue Avenue	--	--	3.5
Poplar Avenue	--	--	3.5
Tilton Avenue	--	--	3.5
2nd Avenue	X	X	2.8
3rd Avenue	--	--	3.5
4th Avenue	--	--	3.5
5th Avenue	X		2.8
9th Avenue	X	X	2.8
12th Avenue	--	--	3.5
17th Avenue	--	--	3.5
20th Avenue	--	--	3.5
25th Avenue	X	--	2.8
27th Avenue	X	--	2.8
28th Avenue	--	--	3.5
31st Avenue	--	--	3.5
37th Avenue	--	--	3.5
41st Avenue	X	--	2.8
42nd Avenue	--	--	3.5

5.3.4. Uncontrolled Intersections

Advance Yield Lines

Advance yield lines indicate the point where vehicles should yield at uncontrolled locations. **Figure 5-13** illustrates the yield line. Yield lines should be accompanied by "Yield Here" sign. These markings are most effective in midblock locations, where there is no intersection.

As with advance stop bars, yield lines help prevent vehicle encroachment into the crosswalk and allow drivers to better see pedestrians, particularly where there are more than two lanes of travel in each direction.

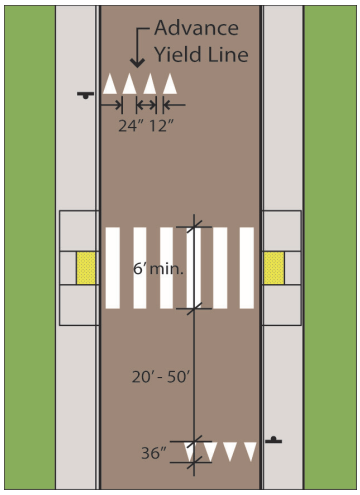


Figure 5-13: Advance Yield Line

Recommendations

This Plan recommends installation of advance yield lines at all midblock uncontrolled marked crossings.

Crossing Beacons

Studies show pedestrian crossing beacons improve driver yield rates and reduce the number of pedestrian related collisions at marked crosswalks at uncontrolled locations.[35] There are two types of crossing beacons recommended for use in the City of San Mateo: the pedestrian hybrid beacon and the rectangular rapid flash beacon.

Figure 5-14: Pedestrian Hybrid Beacon (HAWK)

Pedestrian hybrid beacons, also known as a HAWK (High intensity Activated crossWalK) Signal includes three signal sections, two red circular indications above one yellow circular indication (**Figure 5-14**). The signal is dark until activated. When activated, the signal flashes yellow to inform drivers to stop. The signal then becomes solid yellow followed by a duel solid red. It then displays alternating red flashing as the pedestrian signal head reads DON'T WALK. Pedestrian hybrid beacons have been approved by the Federal Highway Administration (FHWA) and incorporated into the 2012 CA MUTCD.

Figure 5-15: Rectangular Rapid Flashing Beacon (RRFB)

Rectangular rapid flashing beacons (RRFB) are also pedestrian actuated devices; however they are mounted adjacent to the roadway (**Figure 5-15**). The beacon lights are rectangular LED lights installed below a pedestrian crosswalk sign that flash in an alternating pattern when activated. The beacon is dark when not activated. Caltrans has received approval from the FHWA for use of RRFBs on a blanket basis

[35] FHWA. *Safety Effectiveness of the HAWK Pedestrian Crossing Treatment*. July 2010.

at uncontrolled pedestrian and school crosswalk locations in California, including State highways and all local jurisdictions' roadways.[36]

Recommendations

This Plan recommends installation of crossing beacons at all uncontrolled arterial crossing locations. The intersections listed in **Table 5-9** should be prioritized for implementation as an interim improvement. Section 5.5.5 recommends signal warrant studies for both intersections.

Table 5-9: Recommend Locations for Pedestrian Beacons

Location	Improvement	Description and Need
El Camino Real at 22nd Avenue	Pedestrian Hybrid Beacon	Uncontrolled marked crosswalk on major arterial. Nearest controlled crossings at 20th and 25th Avenues.
El Camino Real at 39th Avenue	Pedestrian Hybrid Beacon	Uncontrolled marked crosswalk on major arterial. Nearest controlled crossings at 37th and 41st Avenues. SamTrans bus stop. Access to San Mateo Medical Center

5.3.5. Midblock Crossing Improvements

Midblock crossing improvements can help increase the visibility of pedestrians to motorists and improve the pedestrian experience. Where there are no marked midblock crossings, these improvements can provide better pedestrian visibility. The City has a number of existing marked crosswalks at uncontrolled midblock locations as well as a need for new midblock crossings.

Recommendations

A number of the existing midblock crosswalks are not located in the pedestrian desired path of travel which may result in pedestrian activity outside the marked crosswalks. Others were identified by the community as having poor visibility. **Table 5-10** presents the recommend midblock crossing improvements.

[36] Approval number IA-11-83-RRBF-California Statewide.

Table 5-10: Recommended Locations for Uncontrolled Midblock Crossing Improvements

Location	Improvement	Description and Need
1st Avenue between B St and Claremont St	High Visibility Crosswalk Advance Yield Line	Important connection to Caltrain.
B Street between 2nd and 3rd Ave	High Visibility Crosswalk Advance Yield Line Curb Extensions In-Pavement Flashers	No existing crossing; however important connection between theater and retail.
W. Hillsdale Blvd between Hacienda St and Edison St	In-Pavement Flashers In-Pavement Pedestrian Yield Sign Advance Yield Line	Uncontrolled crossing on an arterial street. Community identified challenge area.
25th Avenue between Hacienda St and Flores St	High Visibility Crosswalk Curb extensions In-Pavement Flashers In-Pavement Pedestrian Yield Sign Advance Yield Line	Curb extensions, in-pavement flashers, and signage will improve visibility.
37th Ave between El Camino Real and Colegrove St	Relocate crossing 150 feet to west Curb extensions In-Pavement Flashers In-Pavement Pedestrian Yield Sign Advance Yield Line	Existing crosswalk is 120 feet from another along El Camino Real. Existing potential for crowding from cars queued at El Camino Real traffic signal.

5.4. Zoning Code Revisions

The following lists revisions to the San Mateo Zoning Code. Deletions are shown with a strike-through and additions are underlined. These revisions are intended to improve pedestrian mobility, safety and environment.

Revision to 27.38 CBD Districts - Central Business District

27.38.090 OPEN SPACE REQUIREMENTS. Open space shall be provided in an amount equal to one percent of the nonresidential floor area of the project, not including parking, provided that there shall be no requirement for open space where the resulting open space would be less than ~~500~~ 200 square feet.

This required open space shall be usable open space located at ground level directly accessible to a public sidewalk with a minimum width along the sidewalk of twenty-five feet (25'). Fifty percent (50%) of the required open space shall be unshaded between noon and 2:00 p.m. at the Spring and Fall equinox except where the open space is already shaded by an existing building and no other opportunities exist on the site. This open space area shall include provisions for public use facilities, such as seating for the public in the public areas. (Ord. 2001-28 § 1, 2001; Ord. 1986-14 § 1 (part), 1986).

Revision to 27.64 Off-street Parking and Loading

27.64.023 PARKING -- PROHIBITED ON LAWNS, FLOWERS, SIDEWALK. It shall be unlawful to park a motor vehicle, trailer, unmounted camper or boat (1) upon any lawn or landscaped area, including an area of flowers or shrubs, (2) upon an area of decorative rocks, stones, chips, bark, or the like, unless such area of decorative rocks, stones, chips or bark was in place and used for parking of a motor vehicle, trailer, unmounted camper or boat prior to July 19, 1993, or (3) upon the sidewalk, thereby impeding the pedestrian right of way. Nothing herein shall be construed to prohibit parking on a driveway. For this section, a D~~d~~riveway shall mean ~~that~~ the area from the ~~street~~ property line to the garage or carport ~~which traverses the curb but (or rolled curb) and which is identical to width to the curb cut (or rolled curb) or such area that is approved as a driverway pursuant to this Code~~. This provision shall apply to parcels being used for single family or duplex residences. (Ord. 1993-11 § 1, 1993).

Revision to 27.84 Fences, Trees and Hedges

27.84.040 FENCE OR HEDGE -- BRANCH EXTENSION. No person shall permit branches or trees or shrubs to extend ~~within eight (8) feet~~

~~from the ground~~ over any portion of the public sidewalk unless providing a minimum eight (8) foot vertical clearance. No person shall permit branches or trees or shrubs to extend ~~or within twelve (12) feet from the ground~~ over any portion of a ~~residential~~public street ~~abutting the property on which the tree is growing, or within~~unless providing a minimum fourteen (14) ~~feet~~foot vertical clearance ~~on streets designated as truck routes, except that portion within three (3) feet from the curb line of any of the foregoing~~. No person shall permit branches or shrubs to extend over the sidewalk rendering the sidewalk width is less than 4 feet. (Ord. 1992-16 § 19 (part), 1992).

Revision to 27.87 Outdoor Restaurant Seating and Merchandise Display

Sections:

27.87.010 Purpose.

27.87.020 Requirements.

27.87.030 Development standards and conditions of use.

27.87.040 Off-street parking and loading.

27.87.010 PURPOSE. The purpose of this chapter is to regulate the use of public sidewalks for restaurant seating and the use of private property for outdoor display of merchandise accessory to existing businesses. This chapter is not intended to regulate outdoor restaurant seating on private property or the use of public right-of-way for street fairs or other events otherwise regulated under Section 17.08.120 of the Municipal Code. (Ord. 1994-24 § 1 (part), 1994).

27.87.020 REQUIREMENTS.

(a) Restaurant seating on public sidewalks. Restaurant seating located on public sidewalks (in the public right-of-way) are allowed in ~~Neighborhood Commercial (C1) and Central Business (CBD)~~ all Zoning Districts for legally permitted restaurants, subject to meeting the development standards and conditions listed below and approval of an encroachment permit from the Department of Public Works. Nothing is intended to prevent the placement of conditions on the encroachment permit as deemed appropriate.

(b) Outdoor merchandise display. Outdoor display of merchandise accessory to an existing business which occupies a building is permitted on private property in Neighborhood Commercial (C1) and Central Business (CBD) Districts. Such display is not permitted in the public right-of-way. (Ord. 1994-24 § 1 (part), 1994).

Revision to 27.87.030 DEVELOPMENT STANDARDS AND CONDITIONS OF USE.

(a) Restaurant seating. Restaurant seating located on public sidewalks must meet the following standards and conditions of use:

(1) Clearance. The physical extent of the seating encroachment must be located so as to permanently maintain a minimum sidewalk ~~clearance~~ pedestrian through zone of ~~5~~ 4 feet, free and clear between: A) the outer boundary of the seating area and any physical obstruction, such as light standards, parking meters, news racks, trees, curb or other barrier, and B) the entryways or display window of adjacent businesses, unless authorized by the adjacent business.

(2) Physical delineation of seating area. The physical extent of the seating encroachment may be clearly delineated by physical means, which, if either required or voluntarily placed, shall be approved as part of the encroachment permit and designed to be decorative, durable, removable and minimize tripping hazards.

(3) Other limitations. Tables, seating and any approved physical barriers to delineate the seating area are the only items permitted to be located ~~within the public right of way~~ on the sidewalk. These items shall be removed from the public sidewalk at the close of business each day. Other items, such as busing stations, are not permitted on public sidewalks.

(4) Liability insurance. Applicants for restaurant seating ~~within the public right of way~~ on the public sidewalk shall provide liability insurance providing endorsements showing the City of San Mateo as additional insured on the policy, in an amount determined by the City Attorney's Office. Encroachment permits issued under authority of this Chapter shall be valid only during the term of liability insurance coverage.

(5) Site maintenance. Sidewalk seating areas shall be maintained free of litter, refuse and debris. The area shall be scrubbed and mopped to remove any food or drink stains on a daily basis. Such cleaning shall be performed in accordance with the City's Storm Water Management and Discharge Control Program, which prohibits any discharge other than storm water into the storm water drainage system. The applicant shall post maintenance security in a form and amount determined upon issuance of the encroachment permit. Failure to maintain the site shall be cause for termination of the encroachment permit.

(6) Encroachment fee. The applicant shall pay an annual fee in the amount set forth in the Comprehensive Fee Schedule.

(b) Merchandise display. Merchandise display on private property must meet the following standards:

(1) Private property. Outdoor merchandise display shall be maintained completely on private property in the immediate vicinity of the store entryway, such as in recessed entryways or along storefronts.

(2) Accessibility. Merchandise display areas shall maintain accessibility requirements for the disabled. (Ord. 1994-24 § 1 (part), 1994).

Revision to 27.87.040 OFF-STREET PARKING AND LOADING.

Off-street parking and loading shall not be ~~is not~~ required for: 1) outdoor restaurant seating in the public right-of-way, and 2) ~~and~~ outdoor merchandise display on private property. (Ord. 1994-24 § 1 (part), 1994).

5.5. Projects and Studies

While the major infrastructure, intersection and crossing improvements will improve pedestrian mobility and comfort in San Mateo, additional projects and studies are needed to fully address needed pedestrian improvements. The following projects further accommodate pedestrians, and in the case of infrastructure improvements, need additional study.

5.5.1. Downtown Streetscape Master Plan

A streetscape master plan provides cohesive design guidelines and standards for many elements of the streetscape environment including street furniture, street trees and other landscaping, gateways, and many other elements that are found in the public right-of-way.

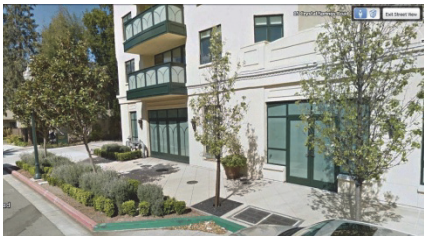
Attractive streetscapes benefit communities in many ways including economic, environmental, and visual benefits. Well planned streetscapes also greatly enhances the pedestrian experience.

Recommendation

This Plan recommends the City of San Mateo develop a Downtown Streetscape Master Plan that includes focus on enhancing the pedestrian environment.

5.5.2. San Mateo Medical Center Neighborhood Pedestrian Access and Circulation Study

Pedestrian access and circulation studies examine pedestrian mobility challenges and opportunities to and within a designated area. The San Mateo Medical Center neighborhood is a diverse neighborhood with a number of pedestrian attractors and generators. The San Mateo County Medical Center and hospital is the City's second largest employer, which results in a high number of pedestrian related trips. The adjacent Hillsdale Garden Apartments, a high density residential complex, and the nearby Hillsdale Shopping Center add to the neighborhood's pedestrian destination points. A SamTrans transit hub at the Hillsdale Shopping Center also generates a high number of pedestrian trips from the hub to the Medical Center for patients, visitors and employees. Pedestrian concerns in this neighborhood relate to high traffic volumes, narrow streets, and rolled curbs. Cars often park rolled on to the sidewalk, blocking pedestrian access.



Versailles Senior Living on Crystal Springs Road has a landscaped buffer extending from the sidewalk

Recommendation

This plan recommends the City conduct a pedestrian access and circulation study to improve pedestrian conditions to and through the area.

5.5.3. Utility Boxes in the Public ROW Best Practices

Utility boxes house telecommunications equipment for television, phones, internet, and traffic signal controls and are often in the public right-of-way on the sidewalk. While these services are valued by the San Mateo community, the utility boxes typically reduce the pedestrian travel through zone and can detract from the streetscape aesthetic.

Recommendation

This plan recommends the City conduct a best practices review of how to integrate utility boxes in the public right-of-way.

5.5.4. Suggested Routes to School Maps

Suggested routes to school maps provide school officials, parents, and students with a tool to help plan the walking and bicycling routes to and from school. There are over 11,000 K-12 students enrolled in San Mateo schools and these types of maps will encourage more families and students to walk and bike to school rather than drive. Communities throughout the San Francisco Bay Area including Los Altos, Milpitas and San Rafael have used these maps as part of comprehensive Safe Routes to School programs to increase the number of students walking and biking to school.

Recommendation

As shown in **Figure 5-16**, this Plan recommends the City develop suggested routes to school maps that include identification of suggested routes, crossing locations, traffic controls, crossing guard locations, and the presence of sidewalks, paths and bikeways along routes to each school.

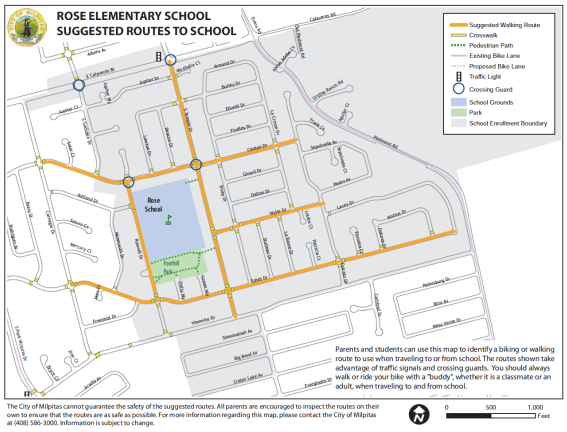


Figure 5-16: Example Suggested Routes to School Map (Milpitas, CA)

5.5.5. Development and Work Zone Regulations

The Americans with Disabilities Act and the 2012 CA MUTCD Part 6: Temporary Traffic Controls require accommodations for pedestrians where construction, alteration, maintenance, or other temporary conditions obstruct pedestrian access. Alternate routes must be provided.

Recommendation

The Plan recommends that the City provide a handout for development projects and road construction activities to ensure pedestrian accessibility guidelines are met.

5.5.6. Traffic Calming Considerations

Traffic calmining is a key aspect of the City's Neighborhood Traffic Management Plan (NTMP). The goal of that Plan is to make San Mateo neighborhood streets more livable by reducing speed and traffic volumes. Installation of traffic calming devices identified in the NTMP require a traffic study to determine if the following criteria are met:

- Average speed is seven (7) miles over the posted speed limit
- 1,000 or more cars travel on the road per day

Recommendation

This Plan recommends, in addition to the above mentioned criteria, that the City should also consider pedestrian safety and pedestrian related traffic collision data when evaluating appropriateness for traffic calming devices.

5.5.7. Requirements for Large Scale Development Projects

While the City of San Mateo has had a number of large scale development projects, it has no citywide pedestrian design standards for these project types.

The City should establish citywide requirements for the improvement of the public right-of-way associated with large-scale development projects by developing and adopting a pedestrian design toolkit. The requirements will ensure that the public right-of-way is safe, accessible, convenient and attractive to pedestrian use and travel. The pedestrian design toolkit would govern the design, location, and dimensions of all pedestrian and streetscape items in the public right-of-way, including but not limited to sidewalks, crosswalks, curb ramps, refuge islands, street trees, lighting, and site furnishings.

Together, these elements can create a streetscape that is vibrant, colorful, and visually interesting; a comfortable and usable space for people; and with ecological benefits.

The toolkit should be consistent with and build upon the sidewalk development standards contained in this Citywide Pedestrian Master Plan. The design and placement of pedestrian elements would also be required to meet applicable Caltrans, MUTCD, and ADA standards.

The City should identify the types of development projects subject to the implementation of the toolkit by establishing applicable minimum thresholds through consultation with the public. Project proponents that meet these thresholds should be required to submit a streetscape plan to the Planning Division. The Planning Division, Public Works and Parks and Recreation would ensure compliance with these thresholds and how these elements relate to proposed new construction and site work on the developed properties.

As a model, the City of San Francisco requires development projects to include streetscape and pedestrian improvements on all publicly accessible rights-of-way directly fronting the property. In San Francisco, the required improvements vary by district and improvement type.

Recommendation

This Plan recommends the City develop and adopt a pedestrian design toolkit for improvements of the public right-of-way associated with large-scale development projects.

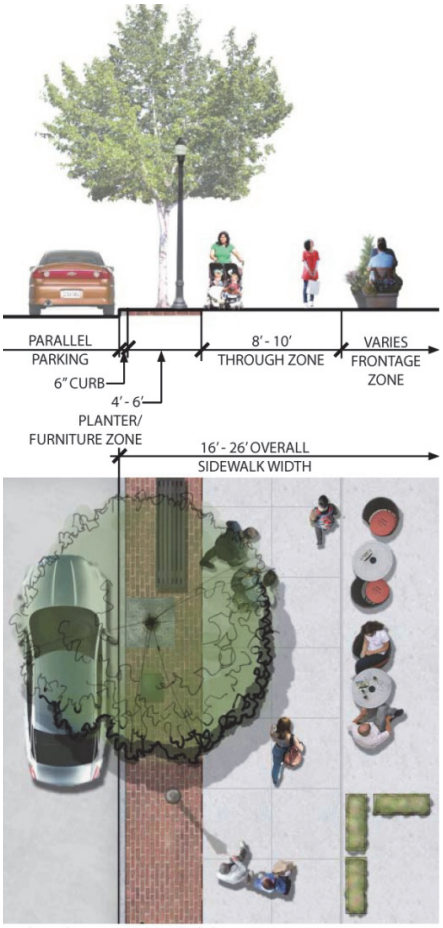


Figure 5-17: Example Requirements for Large Scale Development Projects

5.5.8. Bay to Transit Trail Feasibility Study

The Bay to Transit Trail project envisions development of a paved two-mile pedestrian and bicycle pathway along the existing city-owned creek drainage channel from the Hayward Park Caltrain Station to the regional San Francisco Bay Trail (see **Figure 5-18**). The project addresses a variety of issues regarding pedestrian and bicycle network connectivity and increasing access to transit, schools and recreational opportunities near the San Francisco Bay. The project would serve a historically underserved area and would include a multi-lingual outreach effort to collect public input regarding the design of the path.

Recommendation

This Plan recommends that the City conduct a feasibility study in order to study potential issues, including:

- Right of way
- Site engineering
- Safety
- Security
- Delivery of emergency vehicles
- Maintenance/ operations
- Community interests/needs
- Privacy

The feasibility study can address these issues, and other unknown variables associated with the development of trail

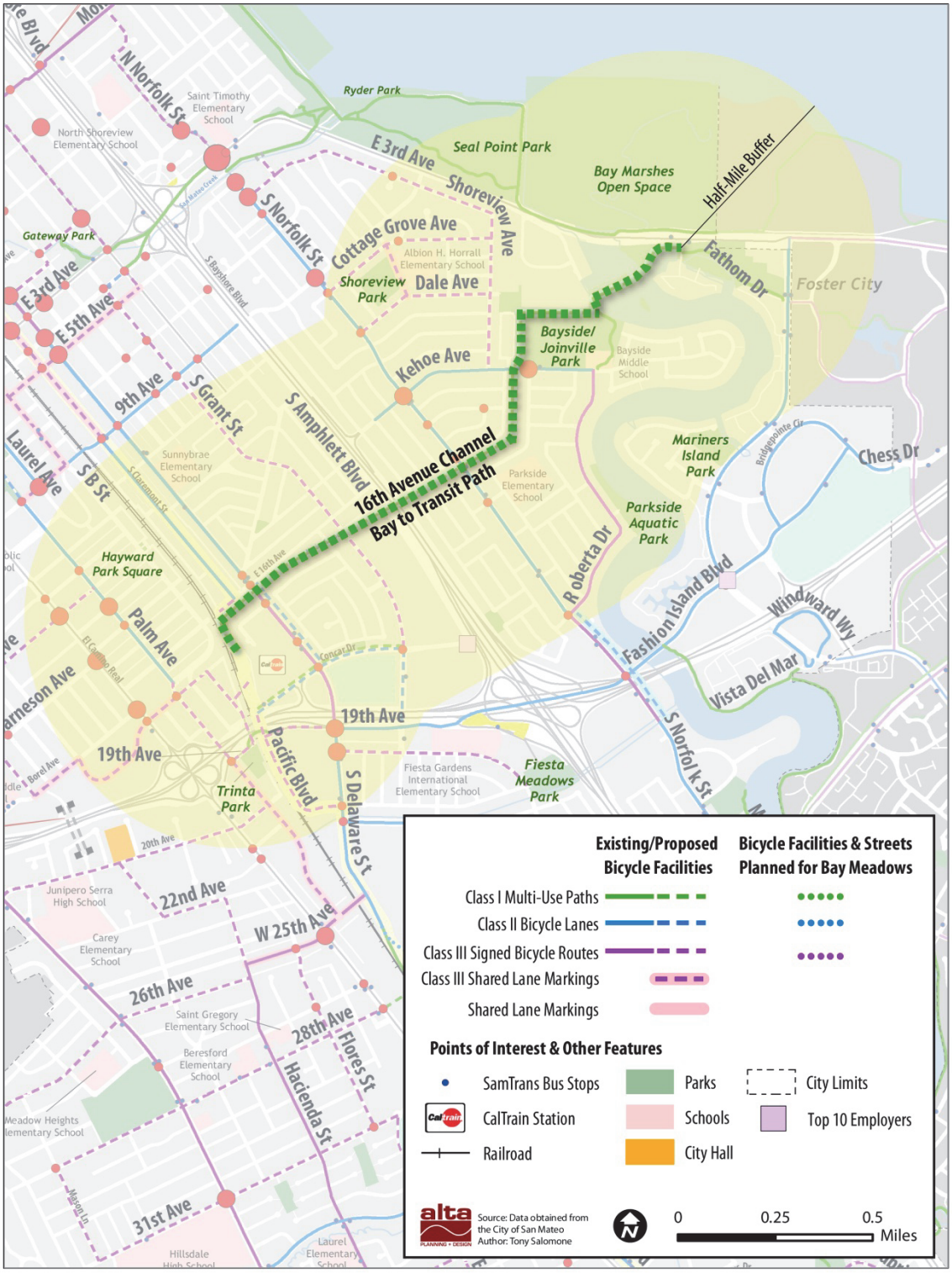


Figure 5-18: Bay to Transit Feasbility Study Area

5.5.9. Lead Pedestrian Interval Study

Many of the pedestrian related collisions reviewed as part of this plan occurred when the pedestrian was in a marked crosswalk in downtown and on El Camino Real adjacent to Downtown and at 25th and 37th Avenues. This indicates a need for improved pedestrian visibility. One method to improve pedestrian visibility is to implement a lead pedestrian interval (LPI). A lead pedestrian interval is a tool where traffic signals are programmed to give pedestrians a walk indication before vehicles receive the green light to proceed. Crossing with this "head start" allows pedestrians to be more visible to motorists approaching the intersection. LPI signal timing typically allows pedestrians to start 2-4 seconds before vehicles.

Recommendation

This Plan recommends the City study the feasibility of installing LPI's at Downtown intersections from Tilton Avenue to 5th Avenue and from El Camino Real to Delaware Street; as well as at Delaware and 25th and 37th Avenues. A LPI along El Camino Real will require coordination with Caltrans.

5.5.10. Downtown Pedestrian Recall Study

The Third Street Promenade in Santa Monica (Source: downtownsm.com)

Most, but not all traffic signals in Downtown currently have a pedestrian recall phase, meaning pedestrians are automatically given a walk phase with each cycle of the light and do not need to push a button to request a walk phase. Given the high volume of pedestrian activity observed in Downtown San Mateo during preparation of this Plan, all signals within Downtown should include a pedestrian recall phase.

Recommendation

This Plan recommends the City conduct a study to include a pedestrian recall phase at all signalized intersections in Downtown. MUTCD sign R10-2 should be installed at all signalized intersections with a pedestrian recall phase, replacing MUTCD sign R10-4. See **Figure 5-19**.

5.5.11. B Street Closure Study

On streets with high pedestrian volumes and destionations, closing the street to motor vehicles can provide a lively public space for walking, shopping, entertaining, and street life. One example is the 3rd Street Promenade in Santa Monica, a pedestrian shopping district and performance venue that has been highly successful. Similar treatment may enliven B Street in San Mateo.

Recommendation

The Plan recommends a study of alternatives for a car-free B Street, either on a temporary basis – for instance, after certain hours, on holidays, weekend and/or during special events – or permanently.

5.5.12. 3rd Avenue & Norfolk Street Intersection Improvement Study

The 3rd Avenue Median Path entrance at Norfolk Street (**Figure 5-20**) had high number of pedestrian related collisions in the past eight years (2001-2009). The path entrance is in the center of the roadway and requires bicyclists and pedestrians to awkwardly enter or leave the path using a number of turning movements.

Recommendation

The recommended improvement for this intersection is to initiate a study to improve access to the path entrance. Possible improvements may include signage and striping. The improvement study may review similar intersection configurations with median paths including in Brooklyn, New York.

5.5.13. El Camino Real at 22nd and 39th Avenues Traffic Signal Warrant Studies

El Camino Real has uncontrolled marked crosswalks at 22nd and 39th Avenues. The 22nd Avenue crossing connects pedestrians to commercial businesses on both the east and west sides of El Camino Real. The nearest controlled crossings are at 20th and 25th Avenues. The 39th Avenue crossing connects pedestrians to SamTrans bus stops as well as to the San Mateo Medical Center. The nearest controlled crossings are at 37th and 41st Avenues.

Recommendation

This Plan recommends the City coordinate with Caltrans and conduct a traffic signal study to determine the impact of a traffic signal installation at El Camino Real and 22nd Avenue and at El Camino Real and 39th Avenue.

Should the 22nd and/or 39th Avenue crossing locations not meet signal warrant requirements, other recommendations may be considered. Potential crossing improvements at the 39th Avenue/El Camino Real intersection are detailed in **Appendix D** and include relocating the crosswalk to the north side of the

Figure 5-19: Caltrans R10-4 Sign
MUTCD sign R10-2 should be placed at all downtown traffic signals that include a pedestrian recall phase, replacing MUTCD sign R10-4.

Figure 5-20: 3rd & Norfolk Intersection

intersection, installation of a pedestrian hybrid beacon, and installation of a pedestrian refuge island.

5.5.14. Peninsula Avenue and Bayshore Boulevard Intersection Improvement Study

The Peninsula Avenue/Bayshore Boulevard intersection has limited sidewalks and one marked crosswalk. Pedestrians cannot directly cross Bayshore Boulevard from the south side of Peninsula Avenue, which is the desired path of travel for both eastbound and southbound pedestrians.

Recommendation

This Plan recommends a study to improve access and pedestrian circulation at the intersection. Possible improvements include a marked crosswalk on south leg of the intersection and installation of a sidewalk on the unpaved southeast corner. Opportunities to incorporate stormwater treatment and drought-tollerant landscaping could also be explored.

5.5.15. Highway 92 Crossing Study

Highway 92 is a barrier to pedestrian travel between El Camino Real and Alameda de las Pulgas and prevents pedestrian north-south access across the City west of El Camino Real.

Recommendation

This Plan recommends the City conduct a feasibility study to determine the opportunities and challenges of a crossing near Edinburgh Street.

5.5.16. Railroad Crossing Study

The rail tracks that run through the City are a community identified barrier. Pedestrian crossings are limited between 9th Avenue and Highway 92 and between Highway 92 and 42nd Avenue. The lack of crossings limits east-west activity and access to retail and employment.

Recommendation

The City should consider additional pedestrian crossings between 9th and 42nd Avenues. Crossings may be considered with the current configuration and with any future development proposals.

5.5.17. El Camino Real Sidewalk Width Study

El Camino Real is an important pedestrian corridor with potential for significant walking activity; however, it is also a community identified challenge area. One challenge is the existing narrow sidewalks.

Recommendation

The City should consider a study to widen sidewalk width on El Camino Real within City limits. This study will require coordination with Caltrans.

5.6. Project Sheets and Audit Recommendations

This Plan includes eleven specific project improvement sheets and audit recommendations for stand-alone intersection, crosswalk, or corridor projects throughout San Mateo. These projects will involve unique improvements or have more specific detail than in the previous categories.

5.6.1. Project Sheets

The following eleven project sheets provide a summary of site specific recommendations. The locations were selected based on community identified need and collision analysis.

1. 3rd Avenue and Norfolk Street Intersection Improvement
2. 3rd Avenue and Parrott Drive Intersection Improvement
3. El Camino Real and Highway 92 Intersection Improvement
4. Hayward Park Caltrain Station Path at 17th Avenue Improvement
5. Alameda de Las Pulgas and 20th Avenue Intersection Improvement
6. El Camino Real and 22nd Avenue Intersection Improvement
7. Bridgepointe Circle Midblock Crossing Improvement
8. Franklin Parkway at Saratoga Drive Intersection Improvement and Study
9. Alameda de las Pulgas Road Diet (Barneson Avenue to Crystal Springs Road)
10. Norfolk Street Midblock Crossing Improvement

3rd Avenue and Norfolk Street Intersection Improvement

This project is designed to improve pedestrian visibility and safety. These intersection improvements will allow pedestrians to more quickly clear the median path waiting area and provide more pedestrian visibility. Wayfinding will direct pedestrians to the adjacent canal Class I path.

Existing Issues

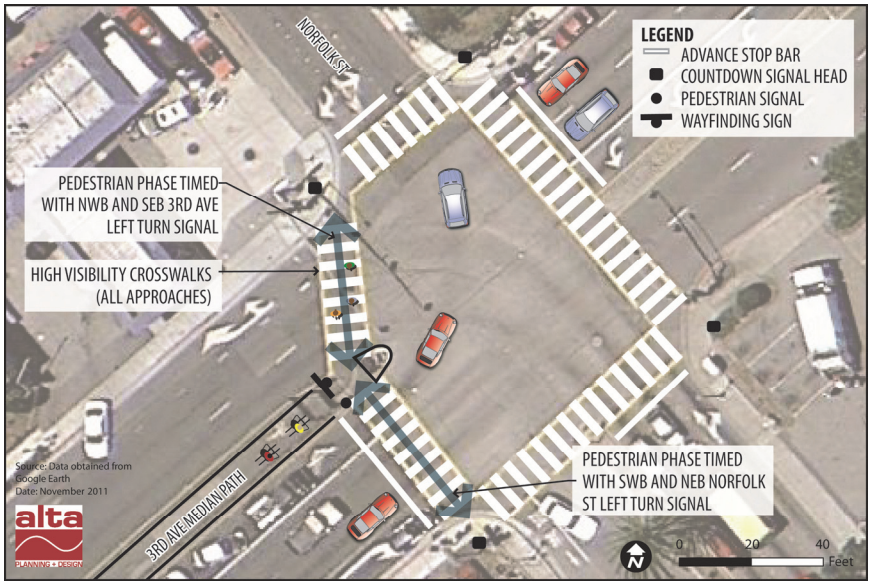
Community-identified challenge area
High pedestrian collision area
Median path waiting area confined and has long waits

Existing Conditions

Project Description

Pedestrian phase allows crossing east leg of intersection during left turn phases
High visibility crosswalks
Advance stop bars
Pedestrian countdown signals (all approaches)
Wayfinding signs

Project Illustration



Project Benefits

Minimizes pedestrian and bicycle wait time and congestion in median
Improved pedestrian visibility and discourages vehicle encroachment into crosswalks
Wayfinding enhances connections the Shoreline Park paths with the 3rd Avenue median path

Cost Estimate

High visibility crosswalks (4) - $4,800
Pedestrian countdown signals (10) - $8,000
Wayfinding: $300
Advance stop bars (4): $800
Signal phase study and adjustment: $20,000
Total: $33,900

City of San Mateo Pedestrian Master Plan

3rd Avenue and Parrott Drive Intersection Improvement

This project is designed to provide more pedestrian friendly intersections with realigned curbs and shorter crossings. Improvements also provide enhanced crossings, enlarged green space, and improved bicycle lane striping.

Existing Conditions

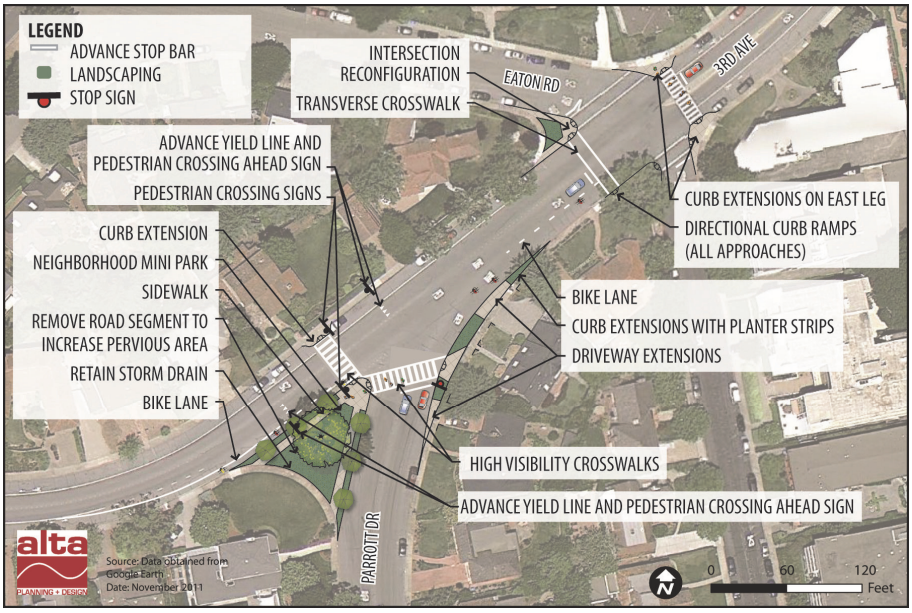
Existing Issues

Community identified challenge area
Wide turn radii encourages fast motor vehicle speeds
No marked pedestrian facilities on existing island green space
Lack of crosswalks

Project Description

Reconfigure intersection at Eaton Road (reduced curb radii west corner; curb extensions east leg; transverse crosswalk east approach; diagonal curb ramps and advance stop bars all approaches)
Green space at Parrott Drive (mini park replaces slip lane on southwest approach; high visibility crosswalk south approach; curb extensions and planting areas southeast approach; advance stop bars all approaches)
Bike lanes on the south side of 3rd Avenue through the project area on the south side of 3rd Avenue through the project area

Project Illustration



Project Benefits

Increased public park space
Reduced motor vehicle speeds
Improved pedestrian visibility and safety
Enhanced connectivity to Downtown, De Anza Historical Park and San Mateo Public Library

Cost Estimate

Mini-park: $155,000
High visibility crosswalks (2): $2,400
Transverse crosswalk (1): $1,000
Advance stop bars (4): $800
Advance yild lines (2): $600
Pedestrian signage (5): $1,500
Curb extensions (4): $100,000
Sidewalk extension: $18,000
Planter strip: $10,000
Bike lane: $400

Total: $289,400

El Camino Real and Highway 92 Intersection Improvement

This project improves pedestrian visibility at the Highway 92 on- and off-ramps for Highway 92 along El Camino Real. Pedestrian-scale lighting, signs, and high-visibility crosswalks would improve safety and connectivity.

Existing Issues

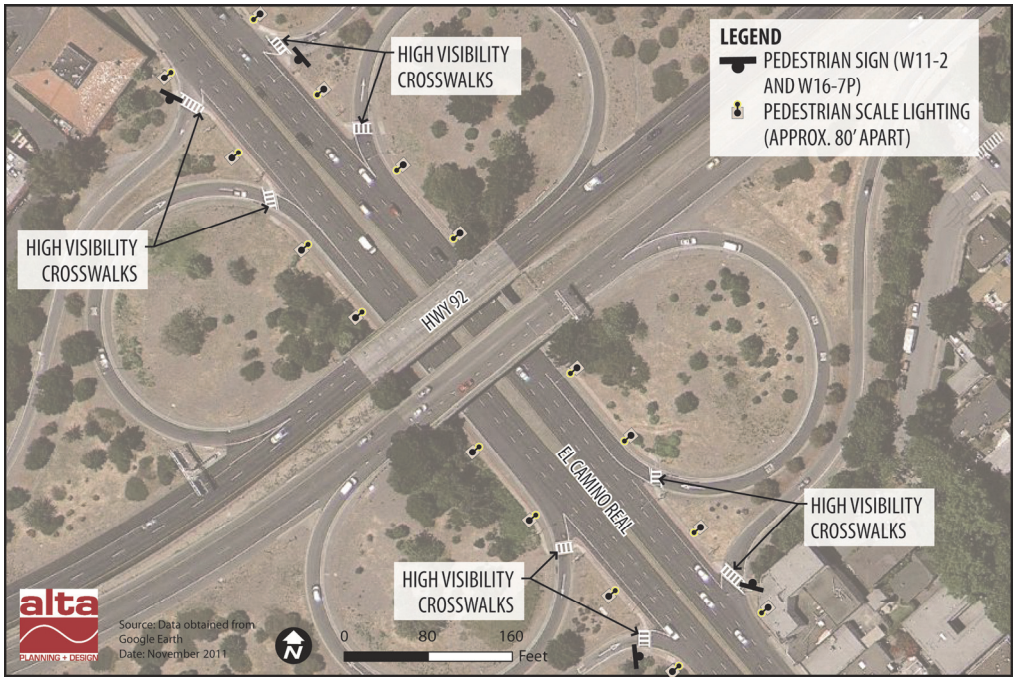
Community-identified challenge area
Limited pedestrian visibility

Project Description

High visibility crosswalks across all Hwy 92 on- and off-ramps at El Camino Real
Pedestrian signs
Pedestrian scale lighting

Existing Conditions

Project Illustration



Project Benefits

Improves pedestrian visibility at Highway 92 on- and off-ramps
Improves connections to shopping areas north and south of Highway 92

Cost Estimate

High visibility crosswalks (8): $9,600
Pedestrian signage (8): $2,400
Pedestrian scale lighting (32): $288,000

Total: $300,000

City of San Mateo Pedestrian Master Plan

Hayward Park Caltrain Station Path at 17th Avenue Improvement

This project adds a pedestrian path and improved landscaping to an existing Hayward Park Caltrain Station access path. Pedestrian-scale lighting, wayfinding signs, and other improvements would guide pedestrians to Caltrain and enhance the environment.

Existing Issues

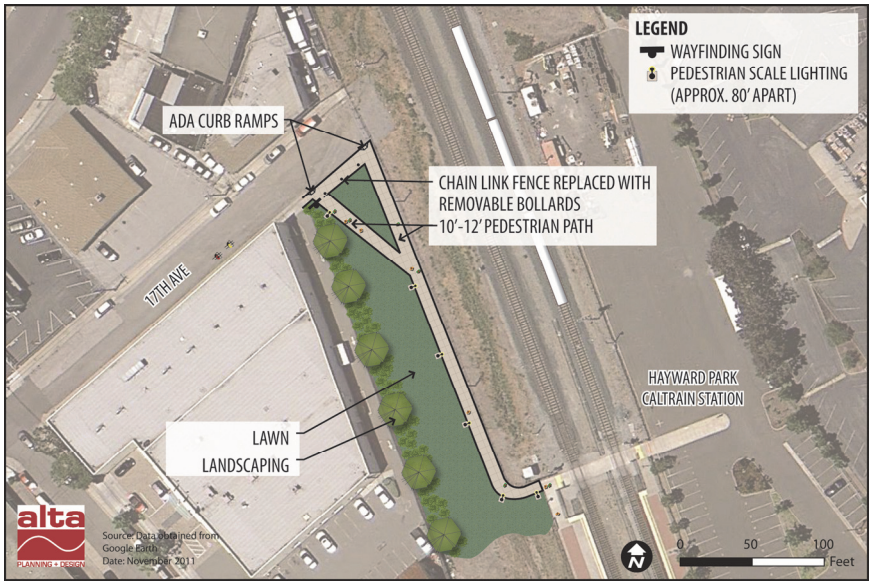
Lack of ADA improvements
Lack of landscaping
Personal safety concerns

Existing Conditions

Project Description

Pedestrian path accessing the Hayward Park Caltrain Station
Chain link fence replaced with removable bollards
Curb ramps on 17th Avenue
Pedestrian-scale lighting
Wayfinding signs Caltrain station

Project Illustration



Project Benefits

Encourages non-motorized access to transit
Provides a safer, accessible, and more pleasant walking environment

Cost Estimate

Curb ramp (2): $8,000
Wayfinding (1): $300
Pedestrian scale lighting (7): $63,000
Upgrade path: $64,200
Landscaping: $320,000

Total:$455,500

City of San Mateo Pedestrian Master Plan

Alameda de las Pulgas and 20th Avenue Improvement

This intersection is a key part of the route to Junipero Serra High School and other neighboring schools. High-visibility crosswalks, curb extensions, and curb ramps are recommended to improve walking conditions and meet ADA requirements.

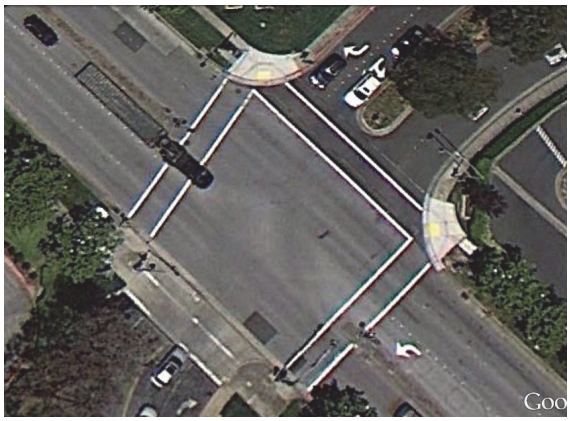
Existing Issues

School area (Junipero Serra High, Aragon High, and Borel Middle)
High pedestrian collision area – crash history indicates pedestrian vulnerability in the crosswalks
Median in Alameda de las Pulgas extends into crosswalk on south side

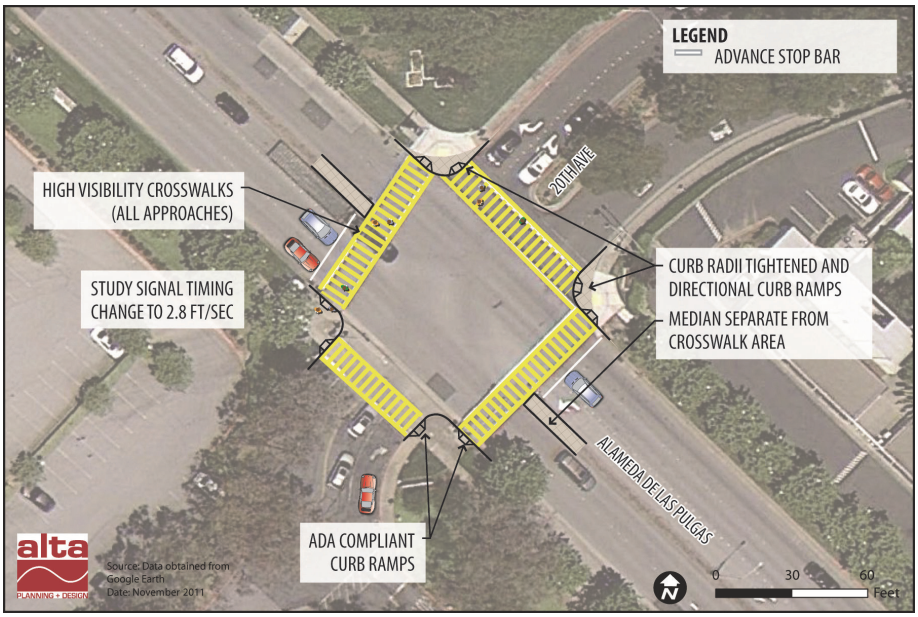
Project Description

Reconfigure curb radii (west approaches)
High visibility crosswalks (all approaches)
Leading pedestrian intervals (if warranted and feasible)
Pedestrian signal timing assumes a walking speed of 2.8 feet per second
Median separated from crosswalk

Existing Conditions



Project Illustration



Project Benefits

Increases pedestrian visibility
Enhances safe routes to high school
Meets ADA requirements

Cost Estimate

High visibility crosswalk (4): $4,800
Curb ramp (8): $32,000
Advance stop bars (2): $400
Tighten curb radii (2): $50,000
Remove median from crosswalk: $15,000

Total: $102,200

City of San Mateo Pedestrian Master Plan

El Camino Real and 22nd Avenue Intersection Improvement

This project provides an enhanced crossing of El Camino Real in an area where few other pedestrian crossings exist. Recommendations at this mid-block crossing improve motorist yielding behavior and minimize pedestrian jaywalking.

Existing Conditions

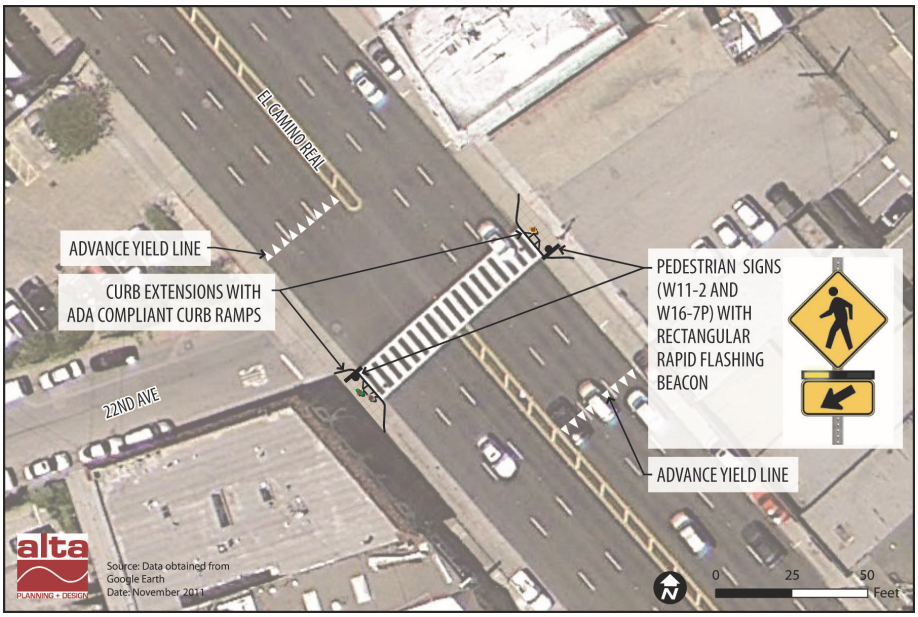
Existing Issues

Frequent pedestrian collision area, including a fatality
Existing uncontrolled crossing with marked crosswalk across six travel lanes
Low motorist yield rate
Existing curb ramps do not meet ADA accessibility standards
Nearest controlled crossing over 850 feet away
Prevalence of jaywalking supports need for improved crossing facilities

Project Description

Rapid rectangular flashing beacons (both approaches)
Curb extensions with ADA compliant curb ramps
Pedestrian crossing signs

Project Illustration



Project Benefits

Increases motorist compliance with pedestrian right-of-way
Improves safety for pedestrian crossings

Resources

FHWA Safer Journey Countermeasures: 3,23

Cost Estimate

Advance yield lines (2): 600
Curb extensions (2): $50,000
Curb ramps (2): $8,000
Rectangular rapid flashing beacons (2): $30,000
Pedestrian Signage (2): $600

Total: $88,600

City of San Mateo Pedestrian Master Plan

Bridgepointe Circle Midblock Crossing Improvement

A new high-visibility crosswalk across Bridgepointe Circle - Chess Drive will provide a marked pedestrian crossing between two distant crossings along preferred pedestrian path of travel.

Existing Conditions

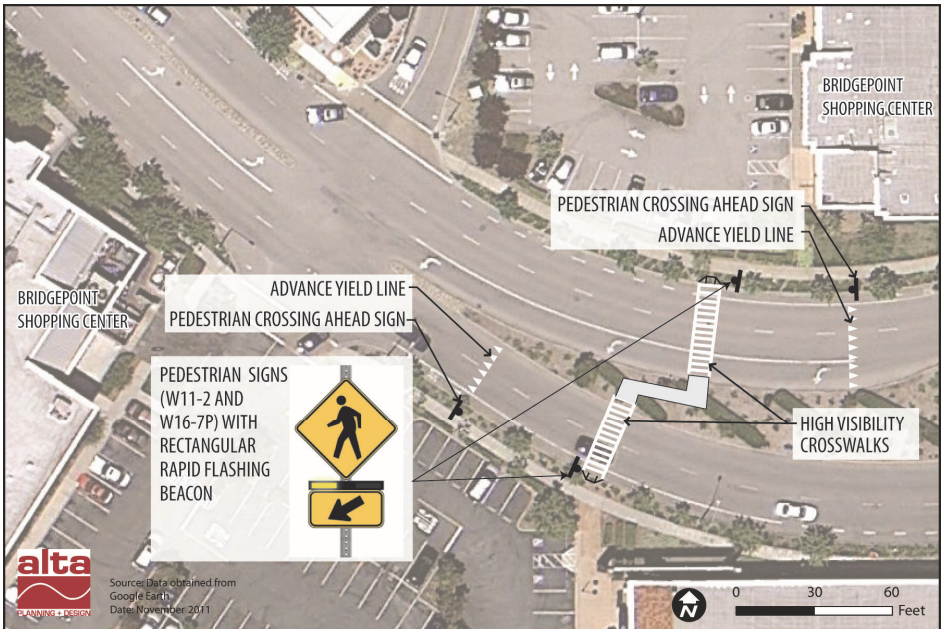
Existing Issues

Uncontrolled crossing of major arterial
Nearest controlled crossings over 400 feet in either direction.

Project Description

Walkway aligned to increase pedestrian visibility
Rectangular rapid flashing beacons
Pedestrian crossing signs

Project Illustration



Project Benefits

Provides a needed mid-block crossing of this arterial street, improving pedestrian efficiency. Off-set design increases the visibility of oncoming traffic.

Resources

FHWA: Pedestrian and Bicyclist Safety and Mobility in Europe, Chapter 3
Federal MUTCD

Cost Estimate

Advance yield lines (2): $600
Curb ramps (2): $8,000
High visibility crosswalk: $2,400
Path through median: $25,000
Pedestrian signage (2): $600
Rectangular rapid flashing beacons (4): $60,000

Total: $96,600

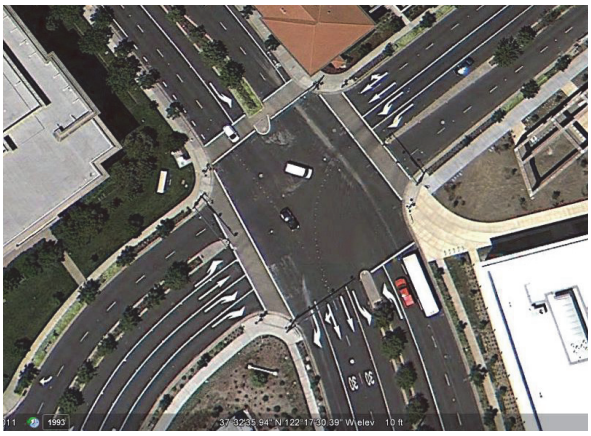
Franklin Pkwy at Saratoga Drive Crossing Improvement and Study

This project improves connections between an existing and a proposed multi-use path on Franklin Parkway at Saratoga Drive. The lack of a pedestrian crossing on the south leg, where the multi-use paths meet, is a gap in the network with important connections to the planned Hillsdale Pedestrian/Bicycle Overcrossing.

Existing Issues

Proposed and existing multi-use path on south side of Franklin Parkway west of Saratoga Dr will not connect
Lack of crosswalk at preferred crossing leg between two paths
Network gap to planned Hillsdale Pedestrian/Bicycle Overcrossing

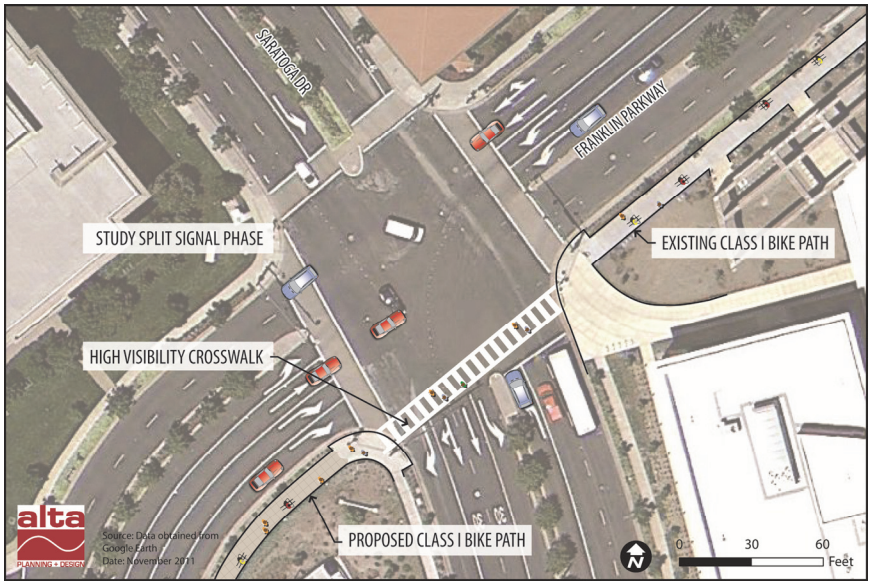
Existing Conditions



Project Description

High visibility crosswalk (south leg)
Split signal phase study

Project Illustration



Project Benefits

Reduced number of crossings for trail users
Significantly shortens trail user travel distance
Improved path user visibility
Reduced unsafe crossing behavior

Cost Estimate

Study: $15,000
High visibility crosswalk: $1,200

Total: $16,200

Alameda de las Pulgas Road Diet (Barneson to Crystal Springs)

This project improves the pedestrian environment with reallocation of roadway space and wider sidewalks.

Existing travel lane configuration results in high vehicular speeds and an uncomfortable pedestrian environment. This project reapportions roadway space and enhances a key route to Baywood Elementary and Aragon High.

Existing Issues

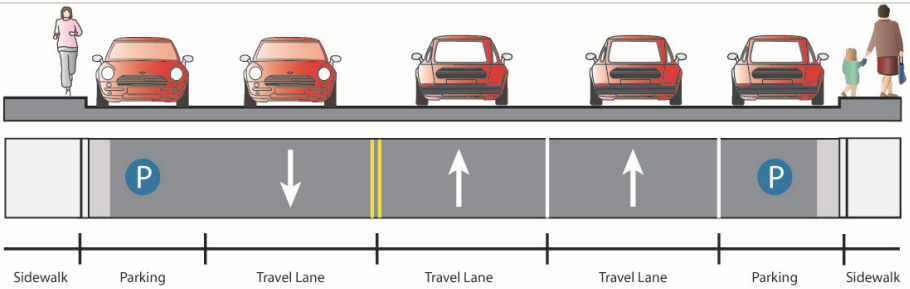
School area (Baywood Elementary, Aragon High, and Borel Middle School)
Wide roadway encourages high motor vehicle travel speeds
Senior facilities and Borel Park nearby

Project Description

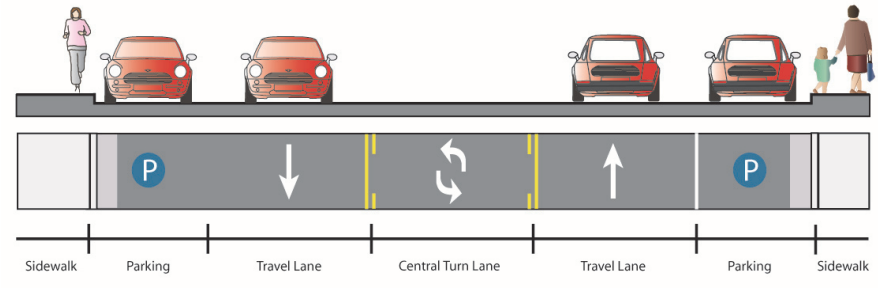
Road diet reduces road to two travel lanes and two-way left turn lane (see sections next page)
Wider sidewalk or bike lanes along corridor
Wider sidewalks at Baywood Elementary
Consider landscaped pedestrian refuge island at crossing at Alameda de las Pulgas and Kentucky Avenue
Shared Lane Markings

Existing Conditions

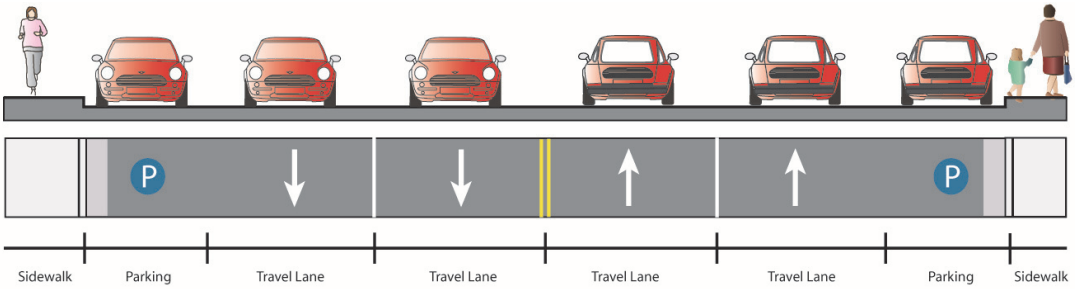
Project Illustration



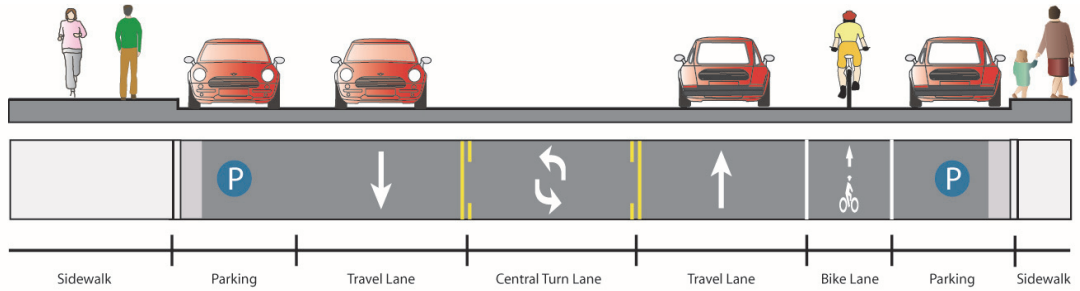
Alameda De La Pulgas - Existing Section A - A' (facing northwest)



Alameda De La Pulgas - Proposed Section A - A' (facing northwest)



Alameda De La Pulgas - Existing Section B - B' (facing west)



Alameda De La Pulgas - Proposed Section B - B' (facing west)
(Left side shows wide sidewalk option; right side shows bike lane option)

Project Benefits

Reduces the number of conflict points
Provides dedicated space for pedestrians and/or bicyclists

Resources

FHWA: Evaluation of Lane Reduction "Road Diet" Measures on Crashes, 2010

Cost Estimate

Study: $10,000
Restriping: $14,700
Widen sidewalk: $51,000
Replace/reconfigure signals/poles: TBD
Total: $95,800

Norfolk Street Midblock Crossing Improvement

This project improves the pedestrian environment with the reallocation of roadway space and increased pedestrian visibility.

Existing Issues

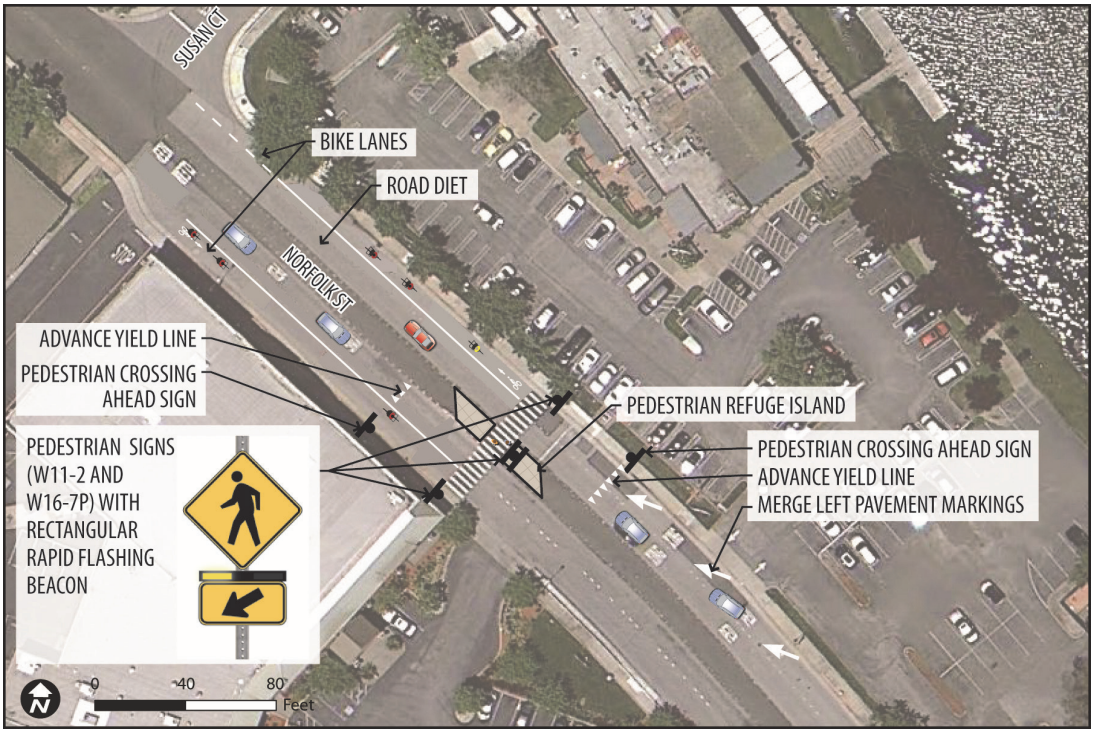
Uncontrolled pedestrian crossing and four travel lanes
Crossing is adjacent to busy commercial driveway
Crossing provides key access to commercial activity and SamTrans bus stop

Project Description

Road diet
Bike lanes
Pedestrian refuge island
Rectangular rapid flashing beacons
Pedestrian crossing signs
Advance yield lines

Existing Conditions

Project Illustration



Project Benefits

Enhances mid-block crossing, improving pedestrian visibility.
Improves onstreet bicycle circulation

Cost Estimate

Bike lanes: $1000
Pedestrian refuge island: $30,000
Rectangular rapid flashing beacons: $60,000
Pedestrian crossing signs: $600
Advance yield lines: $600
Pedestrian lighting (2): $18,000

Total: $110,200

City of San Mateo Pedestrian Master Plan

5.6.2. Walking Audit Recommendations

As described in Section 4.4 in the Needs Analysis Chapter, three routes were selected for a walking audit as part of the development of this Citywide Pedestrian Master Plan. A walking audit is a walking workshop that examines intersections along routes in either a neighborhood or along a corridor. The following three areas were selected based on pedestrian related collisions:

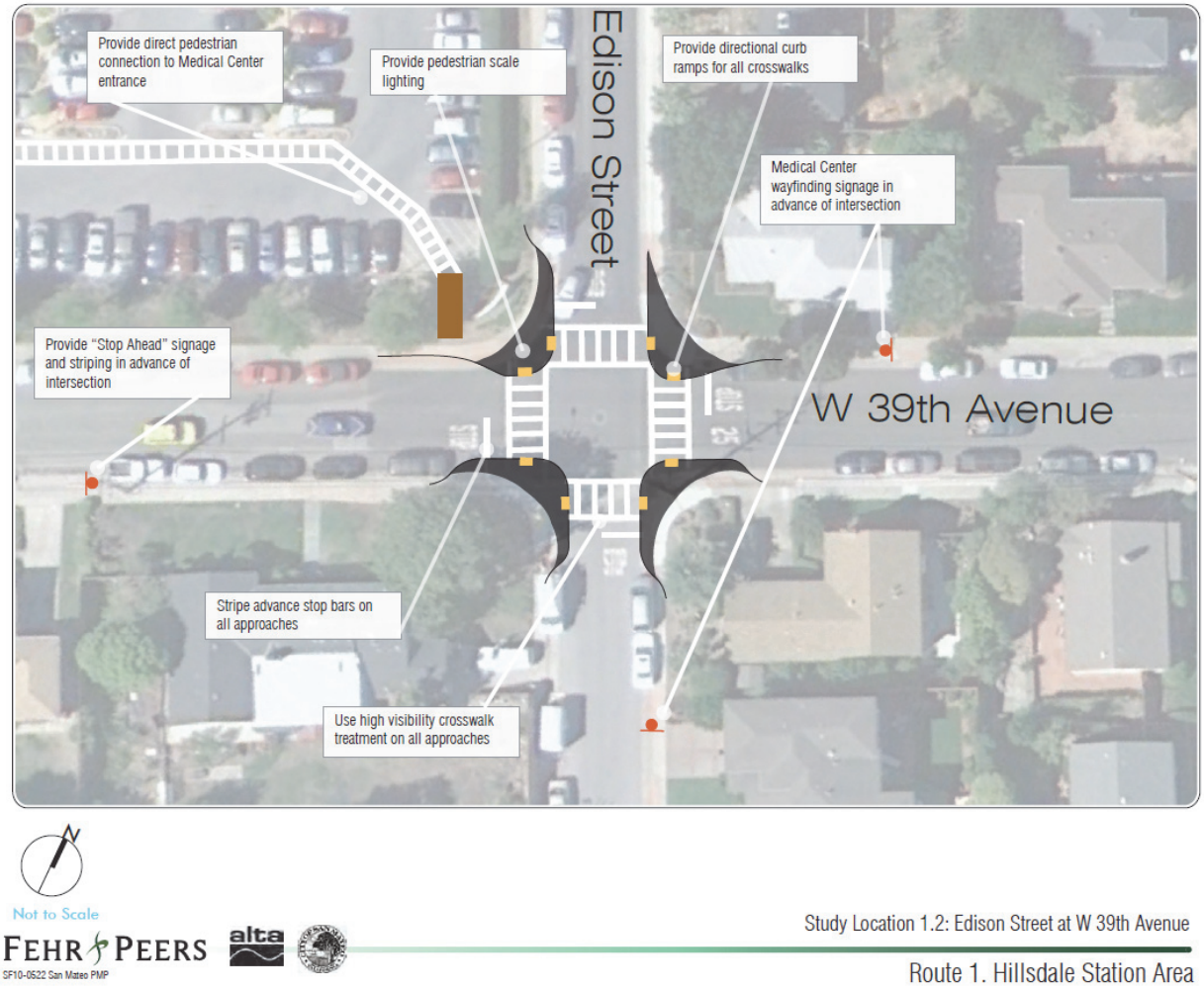
- Hillsdale Station Area: Edison Street, W 39th Avenue, El Camino Real, and Hillsdale Boulevard
- Downtown: El Camino Real, Tilton Avenue, B Street, and W 4th Avenue
- North Central: Monte Diablo Avenue, Delaware Street, E 3rd Avenue, and Fremont Street

The following pages outline a summary of the walking audit recommendations. Individual projects identified in these sheets area also presented in Section 5.2 and 5.3. Detailed recommendations are presented in **Appendix D**.

Walking Audit Project A. Edison Street at W Hillsdale Boulevard

Note: See Appendix D for the full text of the Walking Audit, including recommended improvements and full page graphics.

Walking Audit Project B. Edison Street at W 39th Avenue

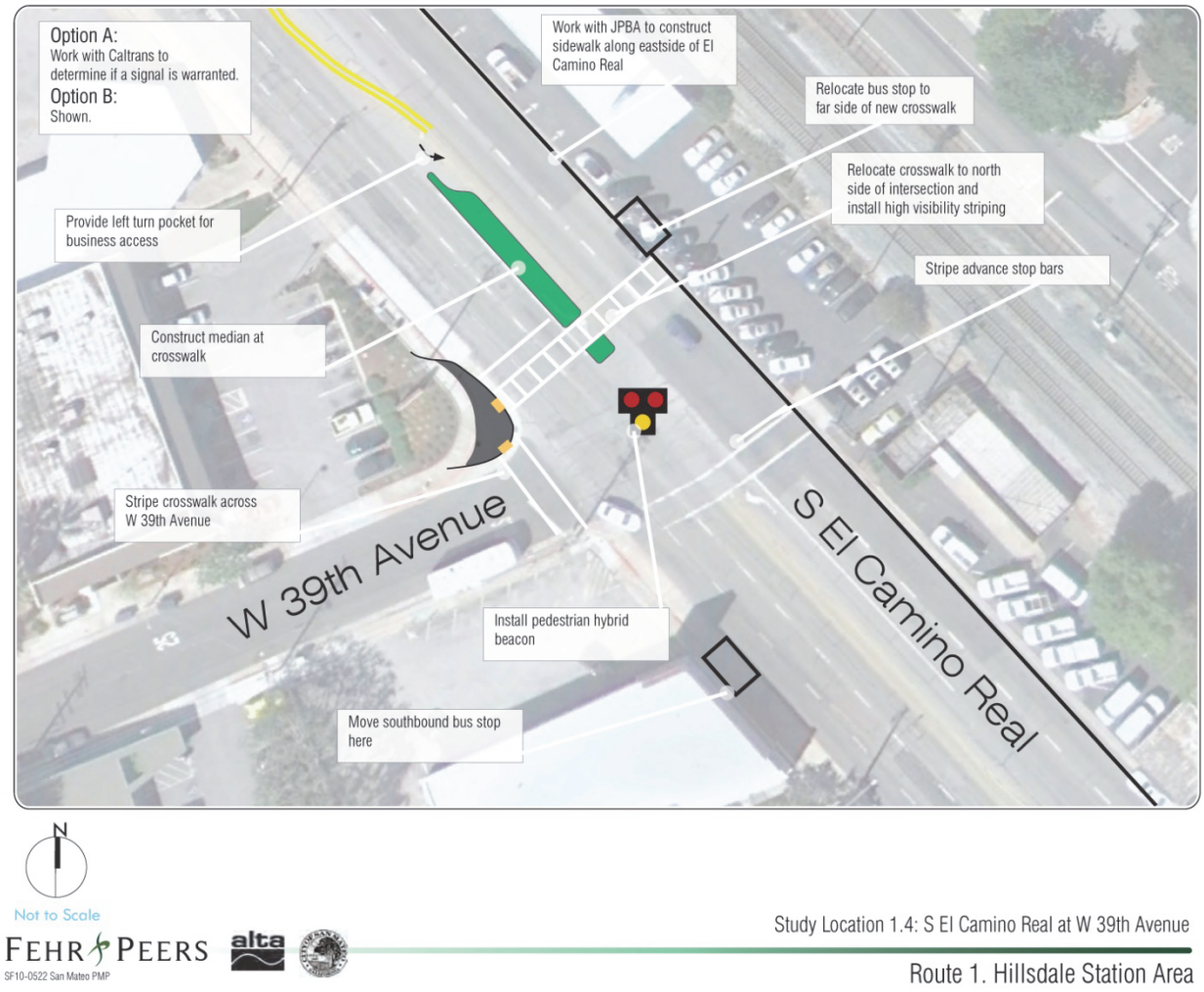


Note: See Appendix D for the full text of the Walking Audit, including recommended improvements and full page graphics.

Walking Audit Project C. Congreve Street at W 39th Avenue

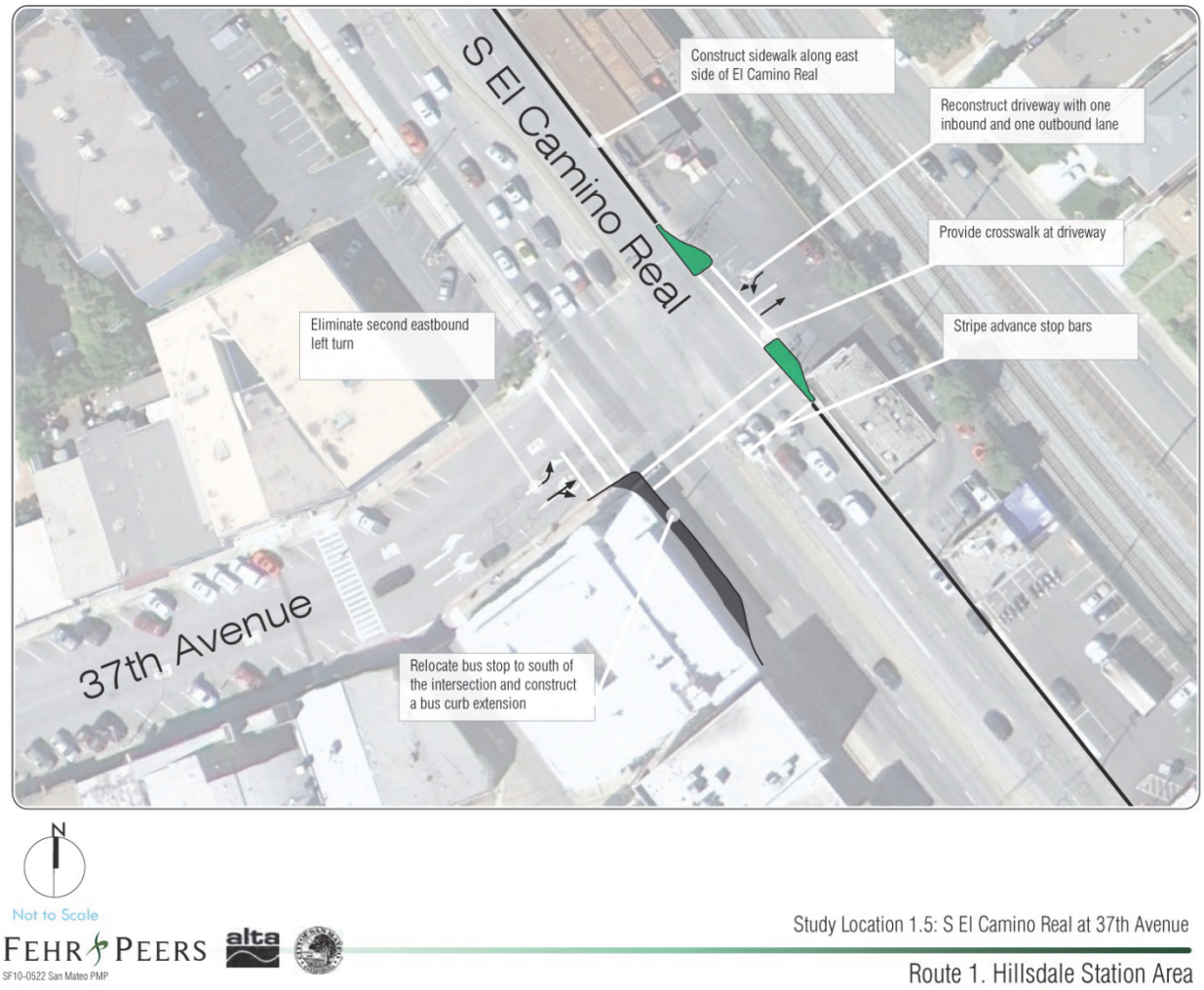
Note: See Appendix D for the full text of the Walking Audit, including recommended improvements and full page graphics.

Walking Audit Project D. El Camino Real at W 39th Avenue



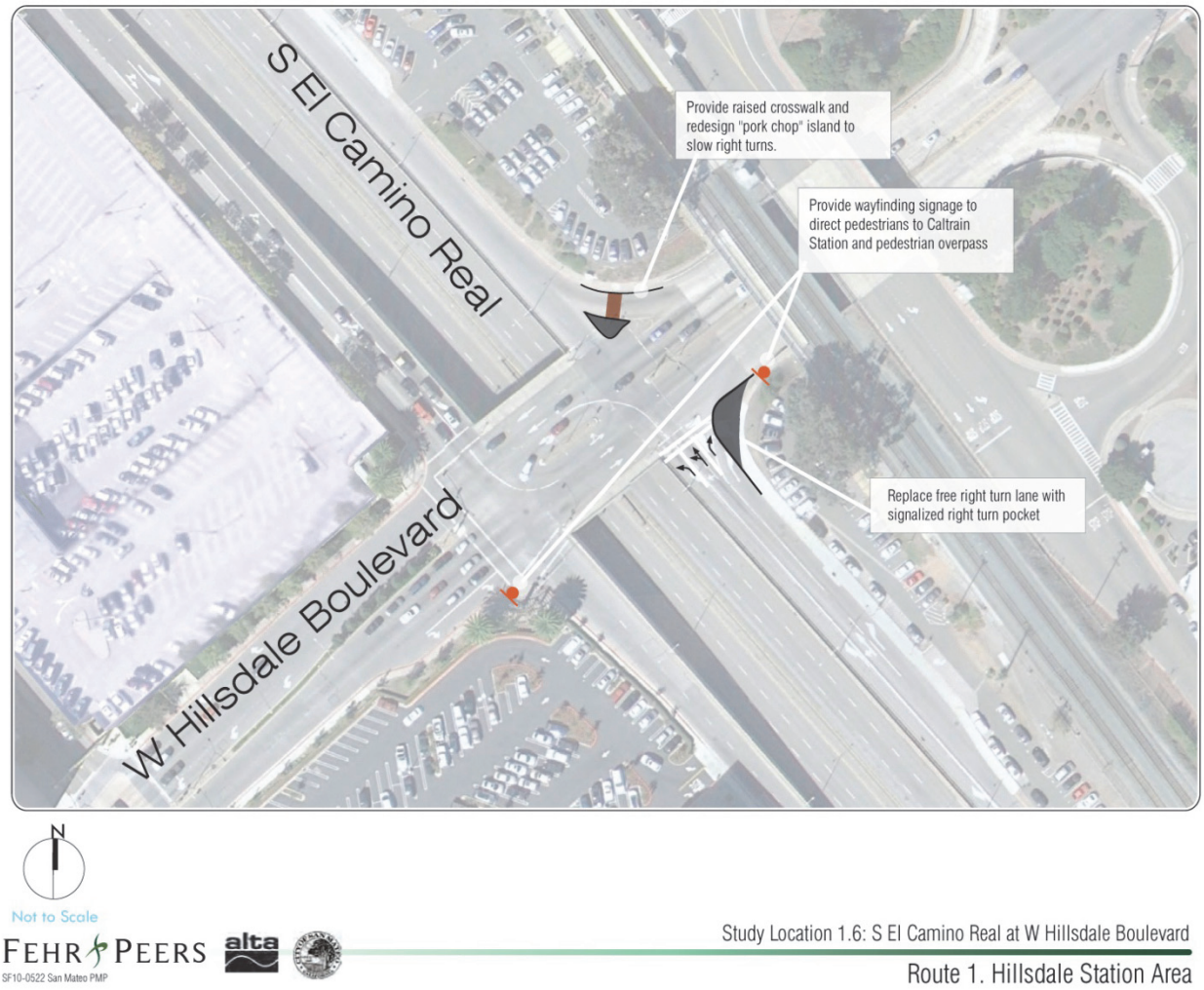
Note: See Appendix D for the full text of the Walking Audit, including recommended improvements and full page graphics.

Walking Audit Project E. S El Camino Real at 37th Avenue



Note: See Appendix D for the full text of the Walking Audit, including recommended improvements and full page graphics.

Walking Audit Project F. S El Camino Real at W Hillsdale Boulevard

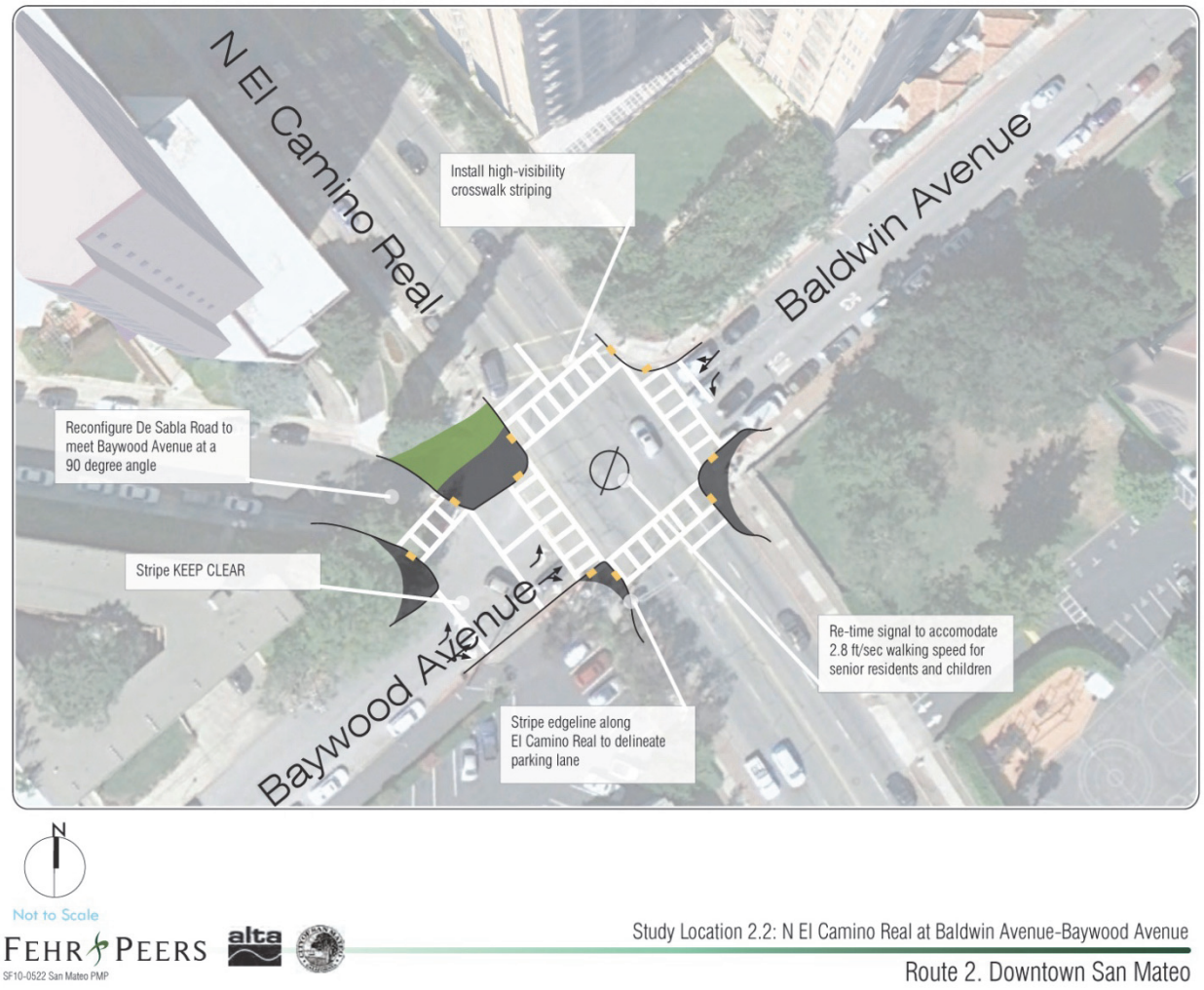


Note: See Appendix D for the full text of the Walking Audit, including recommended improvements and full page graphics.

Walking Audit Project G. S El Camino Real at 2nd Avenue

Note: See Appendix D for the full text of the Walking Audit, including recommended improvements and full page graphics.

Walking Audit Project H. N El Camino Real at Baldwin Avenue – Baywood Avenue

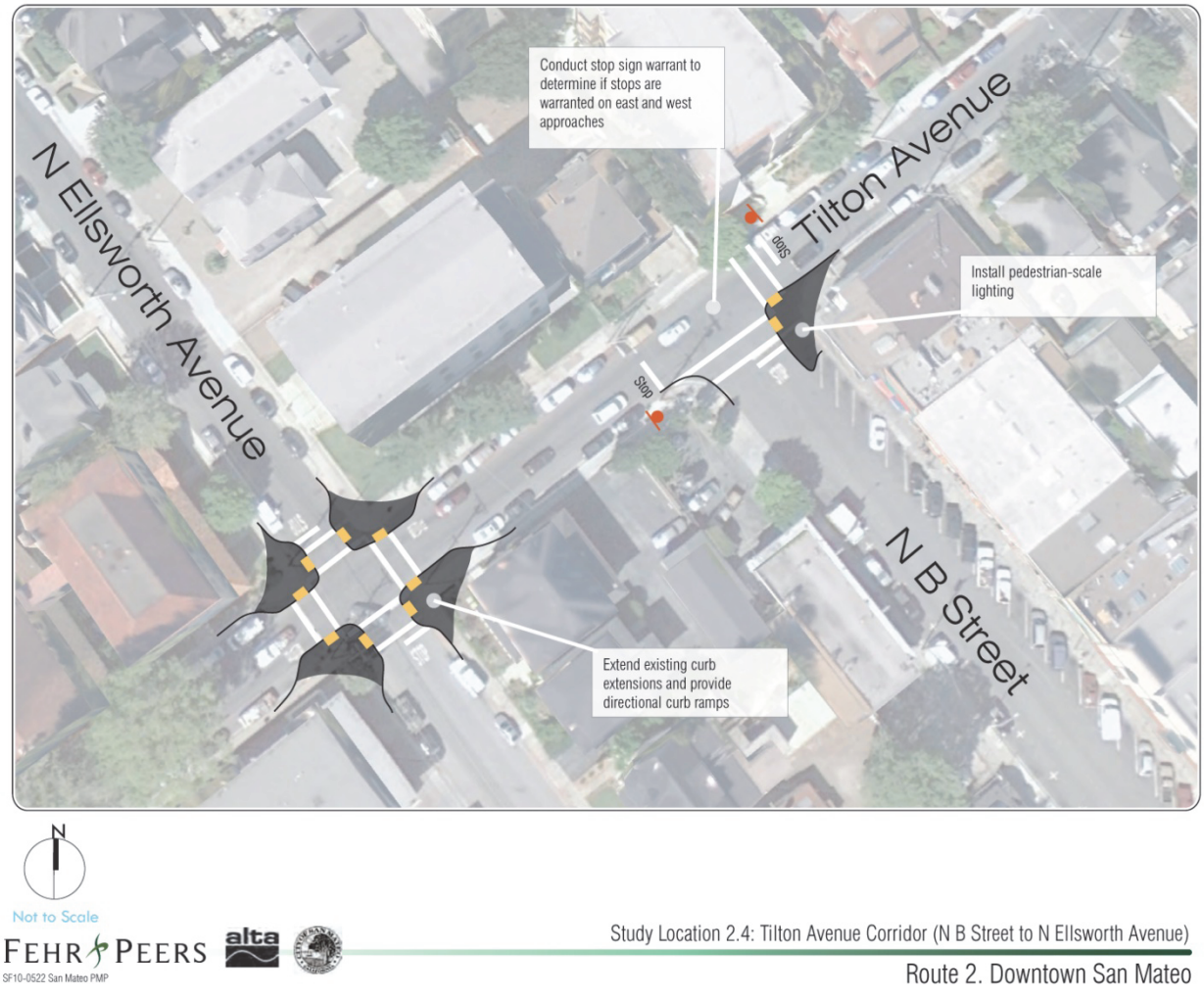


Note: See Appendix D for the full text of the Walking Audit, including recommended improvements and full page graphics.

Walking Audit Project I. N El Camino Real at Tilton Avenue – El Cerrito Avenue

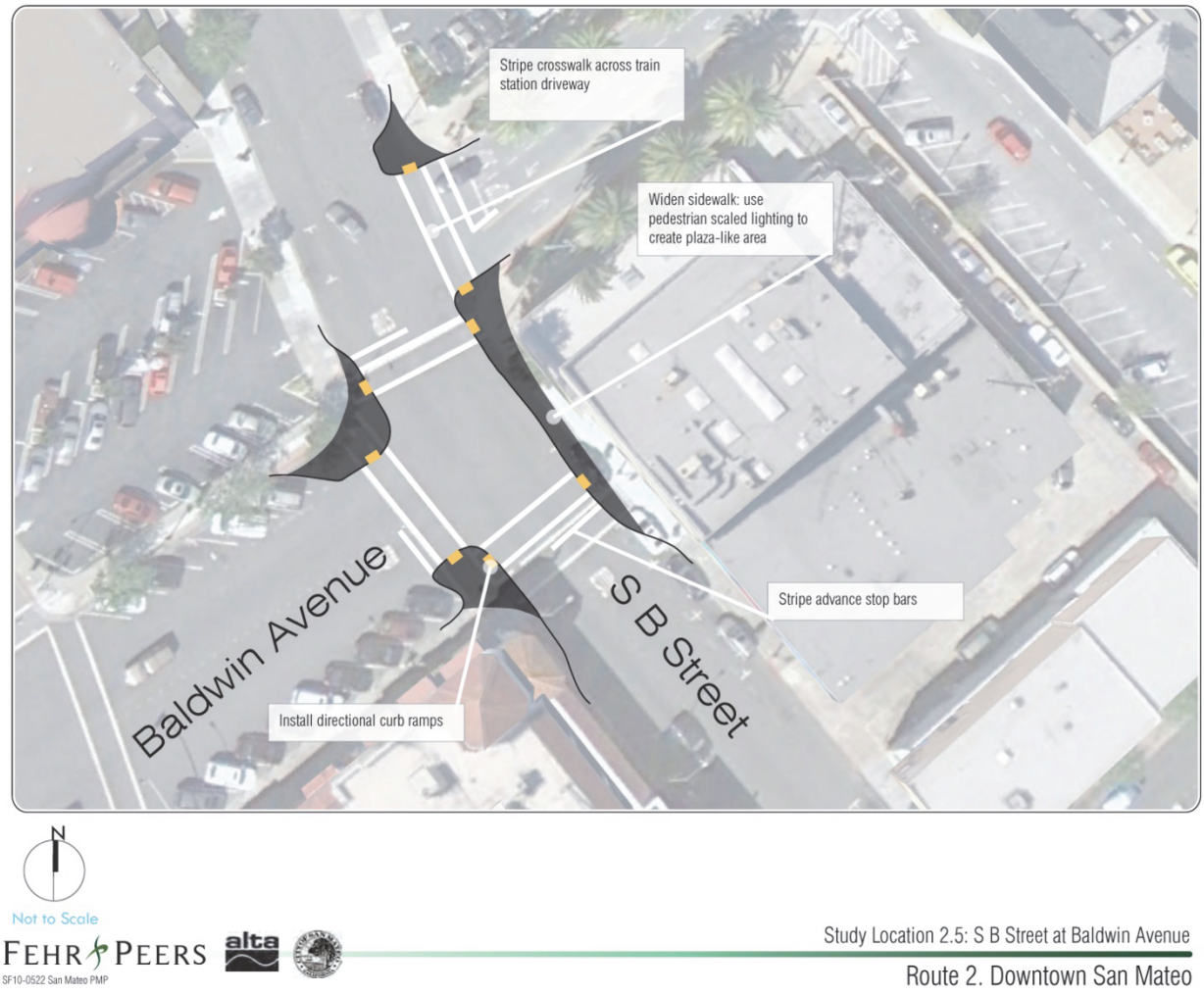
Note: See Appendix D for the full text of the Walking Audit, including recommended improvements and full page graphics.

Walking Audit Project J. Tilton Avenue Corridor (Northbound B Street to N Ellsworth Avenue)



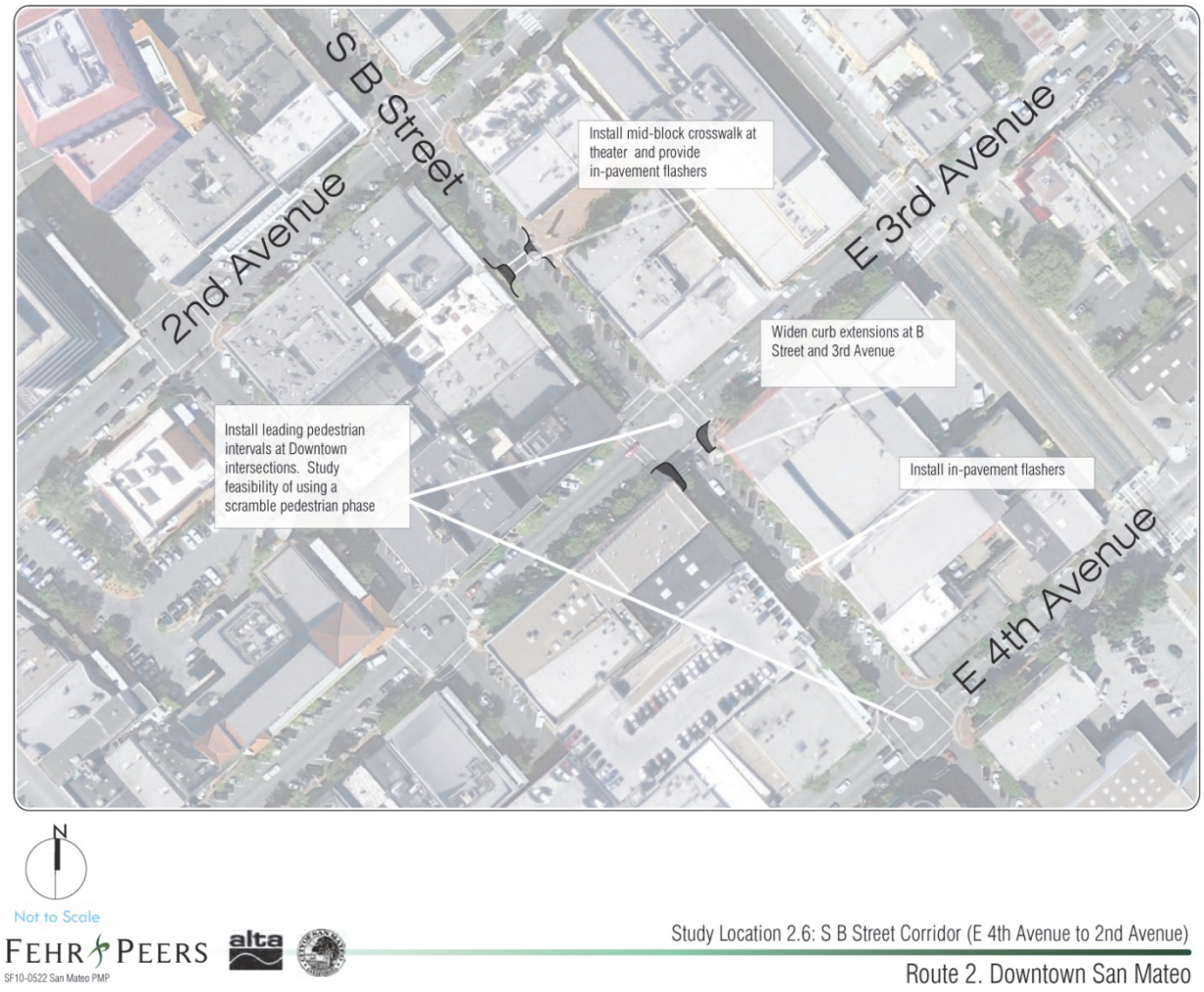
Note: See Appendix D for the full text of the Walking Audit, including recommended improvements and full page graphics.

Walking Audit Project K. South B Street at Baldwin Avenue



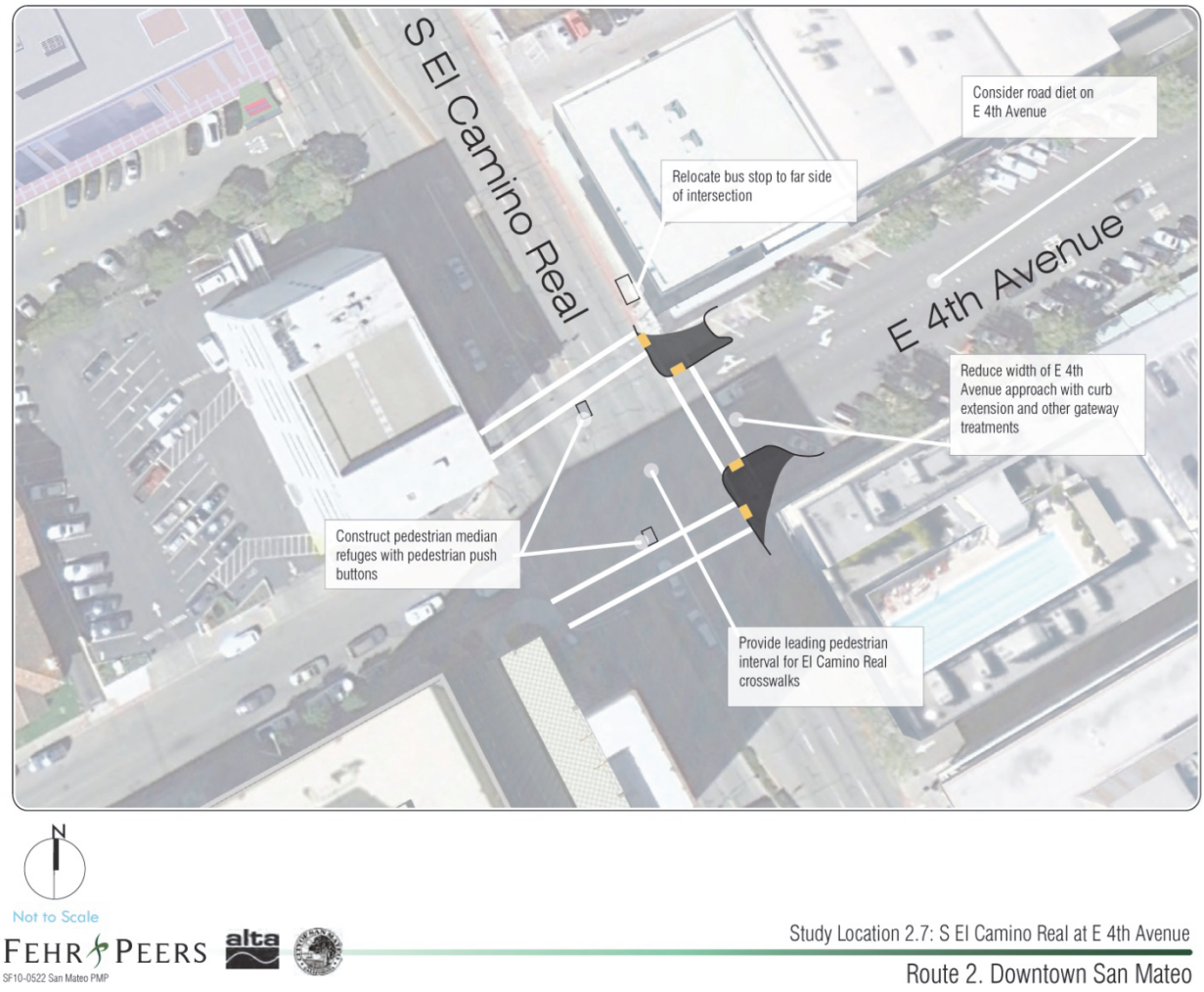
Note: See Appendix D for the full text of the Walking Audit, including recommended improvements and full page graphics.

Walking Audit Project L. South B Street Corridor (East 4th Avenue to 2nd Avenue)



Note: See Appendix D for the full text of the Walking Audit, including recommended improvements and full page graphics.

Walking Audit Project M. South El Camino Real at East 4th Avenue



Note: See Appendix D for the full text of the Walking Audit, including recommended improvements and full page graphics.

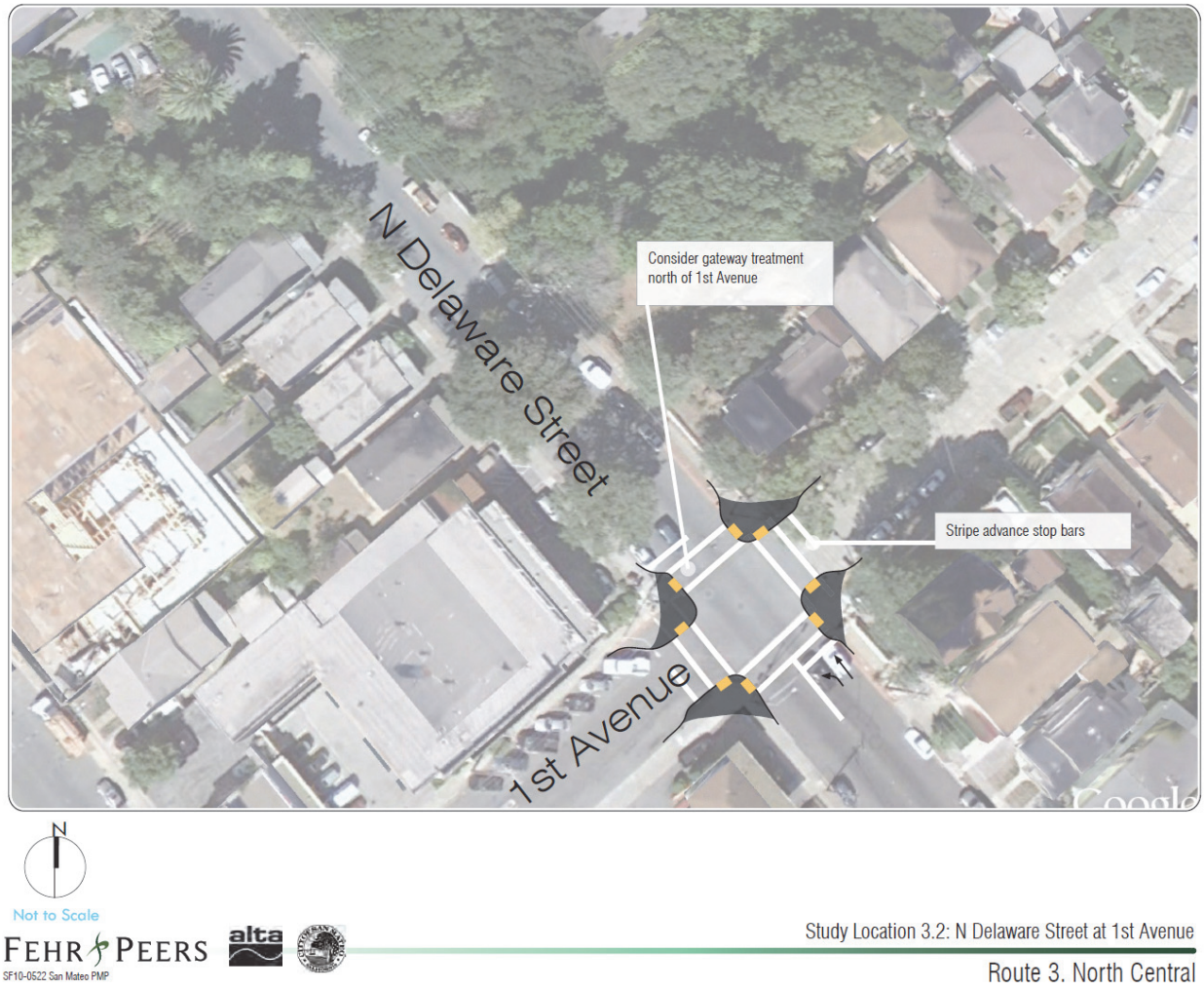
Walking Audit Project N. South San Mateo Drive at 2nd Avenue

Note: See Appendix D for the full text of the Walking Audit, including recommended improvements and full page graphics.

Walking Audit Project O. North Delaware Street at Monte Diablo Avenue

Note: See Appendix D for the full text of the Walking Audit, including recommended improvements and full page graphics.

Walking Audit Project P. North Delaware Street at 1st Avenue

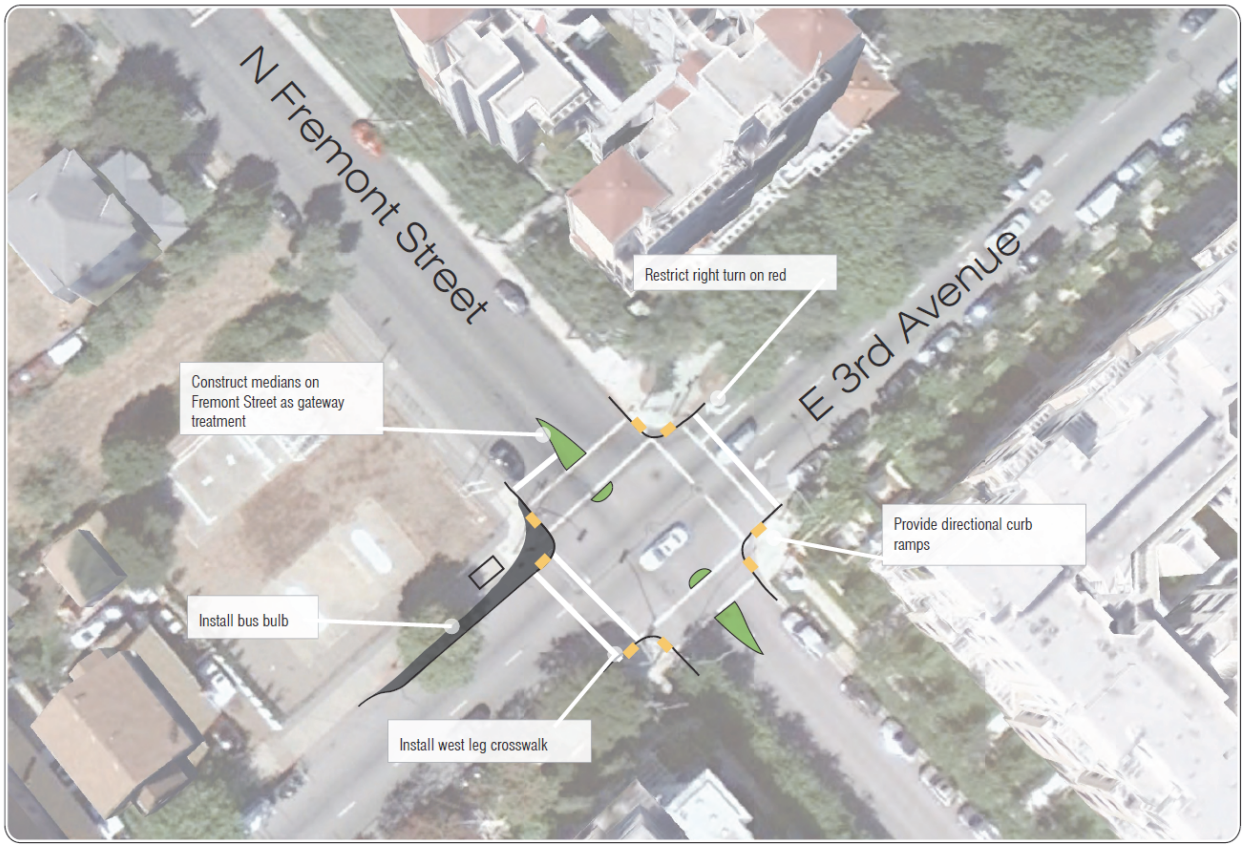


Note: See Appendix D for the full text of the Walking Audit, including recommended improvements and full page graphics.

Walking Audit Project Q. North Delaware Street at East 3rd Avenue

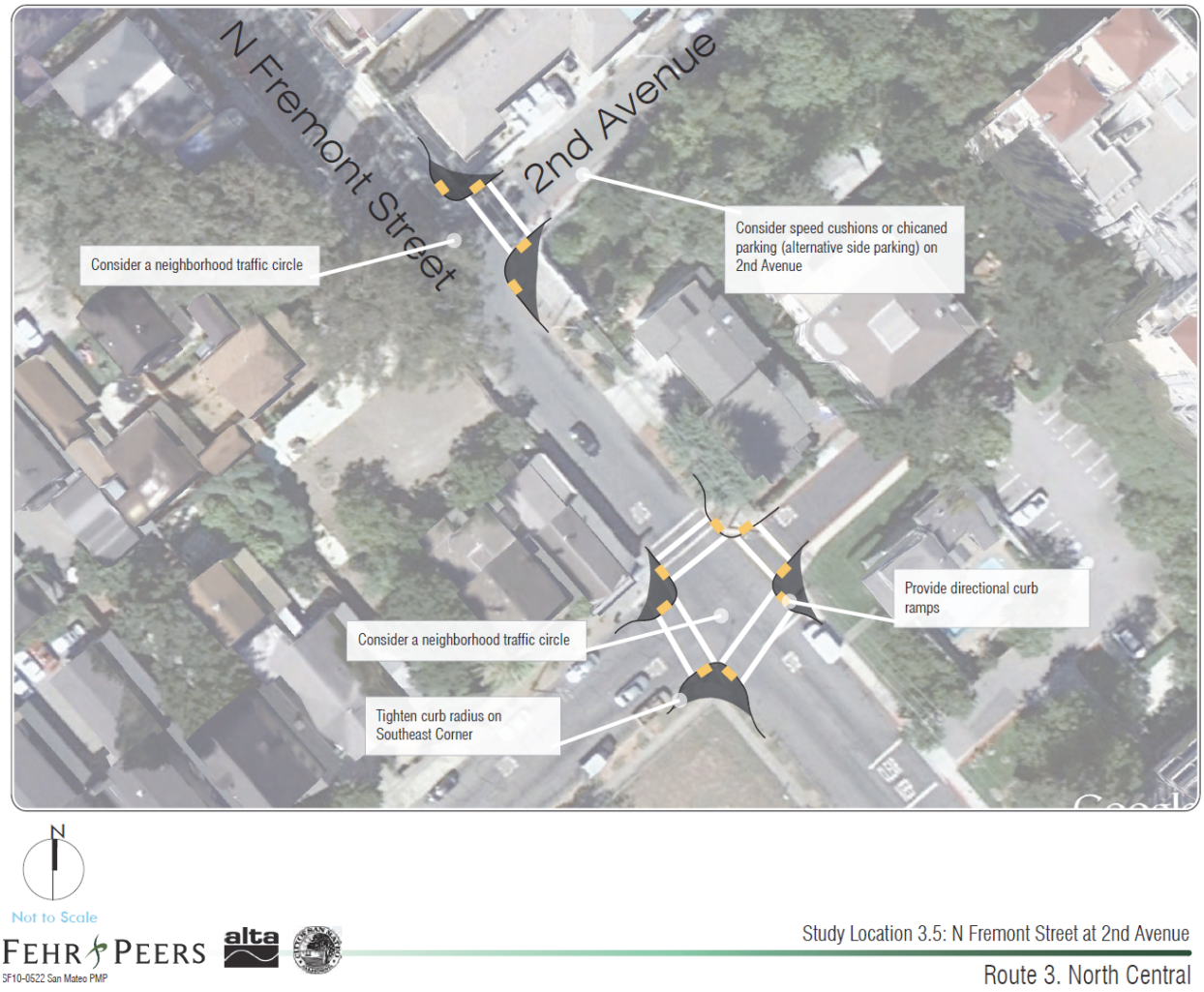
Note: See Appendix D for the full text of the Walking Audit, including recommended improvements and full page graphics.

Walking Audit Project R. North Fremont Street at East 3rd Avenue



Note: See Appendix D for the full text of the Walking Audit, including recommended improvements and full page graphics.

Walking Audit Project S. North Fremont Street at 2nd Avenue



Note: See Appendix D for the full text of the Walking Audit, including recommended improvements and full page graphics.

Walking Audit Project T. North Fremont Street at Monte Diablo Avenue

Note: See Appendix D for the full text of the Walking Audit, including recommended improvements and full page graphics.

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