

SOUTH SAN FRANCISCO PEDESTRIAN MASTER PLAN



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TABLE OF CONTENTS

Chapter 1: Planning Context.....	I-1
1.1 Citywide Plans	I-2
1.2 County Plans	I-6
1.3 Regional Plans.....	I-9
1.4 Statewide Initiatives and Plans	I-11
1.5 Federal Initiatives.....	I-13
Chapter 2: Existing Pedestrian Environment.....	II-1
2.1 South San Francisco Today.....	II-1
2.2 Pedestrian Collision Reports.....	II-5
2.3 Existing Programs, Policies and Practices Benchmarking Analysis.....	II-10
Chapter 3: Existing Conditions	III-1
3.1 Pedestrian Needs	III-1
3.2 Walking in South San Francisco	III-2
3.3 Pedestrian Environment.....	III-5
3.4 Identification of System Gaps	III-12
3.5 Summary of Opportunities and Constraints.....	III-17
Chapter 4: Recommended Improvements	IV-1
4.1 Introduction.....	IV-1
4.2 Citywide Project Recommendations.....	IV-1
4.3 Site-Specific Recommendations	IV-5
Chapter 5: Concept Plans	V-1
5.1 Citywide Sidewalk Gap Closure Project	V-1
5.2 Neighborhood Retail Corridor	V-4
5.3 BART Station and El Camino High School Access Improvements	V-6

TABLE OF CONTENTS

5.4 Residential Neighborhood Traffic Calming Improvements	V-8
5.5 Residential Neighborhood Traffic Calming Improvements	V-10
5.6 Complete Streets/Gateway Improvements	V-12
5.7 Centennial Way Access Improvements	V-15
5.8 Prototypical Arterial intersection Improvements.....	V-17
Chapter 6: Policy Framework	VI-1
6.1 Goals & Objectives	VI-1
Chapter 7: Funding and Implementation.....	VII-1
7.1 Planning Implementation.....	VII-1
7.2 Funding.....	VII-12
7.3 Implementation Steps	VII-20
Chapter 8: Support Programs.....	VIII-1
8.1 Existing Programs.....	VIII-1
8.2 Recommendations	VIII-3
Appendix A: South San Francisco Pedestrian Design Guidelines.....	A-1
Complete Streets	A-1
Streets and Sidewalks	A-2
Crosswalk Installation Guidelines.....	A-10
Uncontrolled Intersections and Mid-block Crossing Treatments	A-10
Controlled Crossing Treatments / Intersection Design	A-23
Resource Documents	A-34
Appendix B: Ranked Projects.....	B-1
Appendix C: Detailed Cost Estimates	C-1

1 PLANNING CONTEXT

CHAPTER 1: PLANNING CONTEXT

This chapter summarizes the policies in existing planning documents related to pedestrian activity in South San Francisco, and summarizes how future infrastructure investments will improve the City's pedestrian conditions. The existing plans have been grouped into City-wide plans, County Plans, Regional Plans, State Plans and Federal Initiatives. Table 1 lists the existing planning and policy documents that are addressed in this chapter.

Table I-1: Summary of Relevant Plans and Policies

City-wide Plans	County Plans	Regional Plans	Statewide Initiatives and Plans	Federal Initiatives	
City of South San Francisco General Plan	San Mateo County Comprehensive Bicycle and Pedestrian Plan	San Francisco Bay Trail	Caltrans' Complete Streets Policy	Department of Transportation Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations	
South San Francisco El Camino Real Master Plan	South San Francisco/San Bruno Community-Based Transportation Plan Draft	Grand Boulevard Plan	California Complete Streets Act		
El Camino Real / Chestnut Avenue Area Plan		MTC Complete Streets and Routine Accommodation Policy	Assembly Bill 32 and State Bill 375		
South San Francisco Bicycle Master Plan		Regional Ferry Plan	Assembly Bill 1581 and Caltrans' Policy Directive 09-06		
Caltrain Station Area Plan (forthcoming)			High Speed Rail Plan		
East of 101 Area Plan			Strategic Growth Council Health in All Initiative		
Traffic Calming Plan					
MTC Walking and Bicycling Training, South San Francisco					
El Camino Real Signal Timing Program					

1 PLANNING CONTEXT

1.1 CITYWIDE PLANS

A number of local and regional plans and studies address the pedestrian environment in South San Francisco. This section discusses adopted plans and policies that relate to pedestrians in South San Francisco. These documents set precedent for how the City plans for and manages its walking infrastructure.

City of South San Francisco General Plan (General Plan, October 1999)

Vision	<ul style="list-style-type: none">• Pedestrian facility improvements will improve safety for pedestrians and also encourage the use of alternative modes• Improve pedestrian connections across Hwy 101• Establish pedestrian routes between and through residential neighborhoods, and to transit centers
Guiding Policy	<ul style="list-style-type: none">• Exempt development within one-quarter mile of a Caltrain or BART station, or a City-designated ferry terminal, from LOS standards.• Accept LOS E or F if the uses resulting in the lower level of service are of clear, overall public benefit• As part of redesign of South Linden Avenue, provide continuous sidewalks on both sides of the street, extending through the entire stretch of the street from San Bruno BART Station to Downtown.• The General Plan recommends locations for traffic calming as part of development in Lindenville or East of 101: require project proponents to provide sidewalks and street trees as part of frontage improvements for new development and redevelopment projects.• The General Plan recommends improvements to pedestrian connections between the rail stations and the surroundings: install handicapped ramps at all intersections as street improvements are being installed; construct wide sidewalks where feasible to accommodate increased pedestrian use; providing intersection “bulbing” to reduce walking distances across streets in Downtown, across El Camino Real and Mission Road, and other high use areas; continue with the City’s current policy of providing pedestrian facilities at all signalized intersections; and provide landscaping that encourages pedestrian use.

1 PLANNING CONTEXT

South San Francisco El Camino Real Master Plan (ECRMP, July 2006)

Existing conditions	<ul style="list-style-type: none"> • Many El Camino Real intersections within the corridor are between 115 and 140 feet in width, and pedestrians must cross three lanes of traffic to reach a median • Between Arlington Drive and Hickey Blvd there are guardrails on each side and no pedestrian amenities • There are a limited number of street trees adjacent to sidewalks • Pedestrian amenities are present within the corridor, but not contiguous
Planned and Proposed Streetscape improvements	<ul style="list-style-type: none"> • Arlington Drive to Hickey Blvd – streetscape improvements, improved signage, pedestrian links to Hickey Blvd, and improved safety of crossing at El Camino and Arlington Drive • Hickey Blvd to BART – improved signage to BART station, landscaping and street trees, street furniture such as bus shelter • BART to Arroyo Drive – sidewalk extension, infill planting in median and adjacent hillside, unified median and streetscape design • Arroyo Drive to West Orange Avenue – improve street trees, install barriers to prevent midblock pedestrian crossings, improve crossing safety at intersection of El Camino Real and Westborough Blvd, install signalized intersection at Southwood Drive • West Orange Avenue to Francisco Drive – traffic calming near the high school, sidewalk and curb repair/improvement and installation where necessary, marked pedestrian crossings and accessibility at Francisco Drive, improve aesthetics of median barrier • Francisco Drive to Noor Avenue – create pedestrian connections to San Bruno BART station ½ mile to the south, improve transitions south of Spruce, add landscaping and gateway marking, address large setbacks on private property with public art or other streetscape improvements
Design Goals and Objectives	<ul style="list-style-type: none"> • Improve streetscape aesthetics • Increase pedestrian circulation and safety: provide accessible sidewalks throughout the corridor; expand sidewalks at intersections to reduce crossing length; install additional signaled crosswalks; provide shade and bus shelters; install pedestrian barriers along medians to discourage unsafe midblock crossing; buffer sidewalks with parking and vegetation • Increase the use of the public transit system with more visibility and pedestrian amenities • Recapture vehicular right of way in areas in excess of current Caltrans standards for pedestrian facilities and traffic calming • Create an identifiable streetscape that focuses on South San Francisco’s unique character



1 PLANNING CONTEXT

<p>Design Concept Descriptions</p>	<ul style="list-style-type: none">• Throughout corridor – install street trees and remove billboards to improve pedestrian environment; install bus shelters.• Arlington Drive to Hickey Blvd – ADA compliant sidewalks on north east side of El Camino Real; 5’ sidewalk with a retaining wall on west side; prune trees and remove billboard to improve visibility; provide lighting, street trees, and street furniture.• Hickey Blvd to BART – install median from corner of Hickey to Costco Drive; reduce lane widths and widen sidewalks on both sides; install wayfinding signage to BART station; require landscaping frontage improvements for development and permit applications.• BART to Arroyo Drive – install sidewalk from Greedridge stairs to Arroyo Drive; remove on street parking between BART and the north entrance of Kaiser to install expanded sidewalks and street trees; encourage Kaiser to maintain planting area; create plaza on El Camino Real frontage road.• Arroyo Drive to West Orange Avenue – install street trees and low screen fence along Buri-Buri parking lot; install street trees on west side from West Borough St to 1st Ave; install four-way signalized intersection at 1st Ave; install sidewalk bulb-outs on east side of 1st Ave intersection; widen sidewalk and add street trees on west side from 1st Ave to mid-block.• West Orange Avenue to Francisco Drive – widen sidewalk on east side from West Orange Ave to Ponderosa Dr; install sidewalk on east side along high school and from Cortez Ave to Francisco Dr; Provide bulb-outs at intersection of Country Club Rd.• Francisco Drive to Noor Avenue – remove parking and widen sidewalk along See’s Candies; create dense canopy of trees, accent nosing, and signage on both sides of street at city gateway; widen sidewalks on both sides of gateway.
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1 PLANNING CONTEXT

El Camino Real / Chestnut Avenue Area Plan (ECR/CAP, July 2011)

<p>Vision for El Camino corridor from SSF BART station to Chestnut Ave</p>	<ul style="list-style-type: none"> • Higher density residential development and additional retail, office and public space • Increase pedestrian focus • Increase commercial activity for both destination and neighborhood serving retail • Add continuous green space along Centennial Way and along BART right of way, to serve as a connector • Create pedestrian connections along Mission Road and El Camino Real
<p>Existing conditions for El Camino corridor from SSF BART station to Chestnut Ave</p>	<ul style="list-style-type: none"> • Pedestrians have access to BART station from El Camino Real

East of 101 Area Plan (July 1994)

The East of 101 Area Plan focuses on the unique character and economic resources located east of U.S. 101. The plan outlines circulation goals for future development in the East of 101 Area, which include minimizing vehicular impact, encouraging transportation modes other than single occupancy vehicles, and promoting use of public transit and shuttles to and within the area. The plan also includes a design element and policies that identify the need for a streetscape plan for several key streets and encourages campus planning (e.g. Genentech Master Plan).

South San Francisco Bicycle Master Plan (2011)

A detailed Bicycle Master Plan was adopted by the City Council in 2011. This plan prioritizes improvements and will eventually be adopted as an amendment to the City of South San Francisco General Plan Transportation and Circulation Element.

Downtown Station Area Plan (forthcoming)

The Downtown South San Francisco Station Area Plan will focus on improving access and connectivity between the station, the downtown area near Grand Avenue and Airport Boulevard, and employment centers east of U.S. 101.

Traffic Calming Plan

The City of South San Francisco has established an ongoing Traffic Calming program, accompanied by a local Traffic Calming Plan. This program was developed to provide policies and procedures that will act as guidelines to address traffic complaints related to excessive speeding, cut-through traffic, and high vehicular volumes while maintaining pedestrian and vehicular safety. The Traffic Calming Plan provides a toolkit for implementing solutions, however the City has no dedicated funding source for implementation at the present time.

1 PLANNING CONTEXT

MTC Walking and Bicycling Training, South San Francisco (presented October 2010)

A series of trainings with a focus on improving the Pedestrian and Bicycle environments was presented to practicing transportation, urban planning, engineering and design professionals from South San Francisco and adjacent jurisdictions. The presentation focused on a number of planning tools and design innovations that may increase pedestrian safety and mobility throughout the city. These include: scramble treatments at intersections to allow for diagonal pedestrian crossing; leading pedestrian signals to give pedestrians a head start on turning vehicles; advance yield and limit lines at pedestrian crossings to improve visibility from approaching vehicles; flashing beacons and High Intensity Activated Crosswalk (HAWK) to alert approaching vehicles when a pedestrian is in the intersections; split pedestrian crossover to reduce crossing distance and improve visibility and wide or confusing intersections; and ADA innovations and updates at push button crosswalks.

El Camino Real Signal Timing Program

South San Francisco and MTC have developed optimized signal timing plans for seven intersections along El Camino Real, and three intersections along Chestnut Avenue/ Westborough Boulevard near El Camino Real. The project goal was to develop signal coordination plans for AM, mid-day and PM peak periods to improve timing and reduce vehicle delay. Pedestrian signal timing at crosswalks was adjusted to accommodate a slower walking speed, and the new signal timing reduces transit travel time on the corridor.

1.2 COUNTY PLANS

This section describes the plans and policies related to pedestrian activity within San Mateo County.

San Mateo County Comprehensive Bicycle and Pedestrian Plan (SM CCBP, September 2011)

The San Mateo County Comprehensive Bicycle and Pedestrian Plan (SM CCBP) was adopted by the City/County Association of Governments of San Mateo County (C/CAG) and the San Mateo County Transportation Authority (SMCTA) in September 2011. This plan addresses the planning, design, funding and implementation of bicycle and pedestrian projects of countywide significance by updating the 2000 San Mateo County Comprehensive Bicycle Route Plan, and adding a pedestrian component. The City's Bicycle Master Plan and the forthcoming Pedestrian Plan provide more up-to-date and accurate network maps and policies.



1 PLANNING CONTEXT

Existing Conditions for all of San Mateo County	<ul style="list-style-type: none">• The largest population and employment densities in the county are concentrated along the El Camino Real corridor• A Class I path has been constructed between South San Francisco and San Bruno BART as part of the Colma-Millbrae Bikeway Project• Employment density around SSF Caltrain station is high on the east side of the freeway• Multi-use paths (Class I facilities) are in place along the bay shoreline and between the South San Francisco and San Bruno BART stations, but there is less coverage extending beyond the transit centers and limited opportunity given the development pattern
Goals to improve active transportation	<ul style="list-style-type: none">• Goal 1: A Comprehensive Countywide System of Facilities for Bicyclists and Pedestrians• Goal 2: More People Riding and Walking for Transportation and Recreation• Goal 3: Improved Safety for Bicyclists and Pedestrians• Goal 4: Complete Streets and Routine Accommodation of Bicyclists and Pedestrians• Goal 5: Strong Local Support for Non-Motorized Transportation

The vision most relevant to South San Francisco will be implemented through the countywide Grand Boulevard Initiative, a regional collaboration dedicated to revitalizing the El Camino Real corridor through San Mateo and Santa Clara Counties (see Regional Plans, below, for details).

1 PLANNING CONTEXT

South San Francisco/San Bruno Community-Based Transportation Plan Draft (SSF-SB CBTP, January 2011)



Existing Conditions in South San Francisco	<ul style="list-style-type: none"> • The east portion of South San Francisco is not well served by public transit • Several major employers are located east of Hwy 101; major retail is mostly located along the El Camino Real and BART corridors • Residents need increased sense of security while walking and more pedestrian amenities and streetscape improvements
Transportation Strategies	<ul style="list-style-type: none"> • Improve transit stops and amenities; and improve transit affordability for low income users • Implement improvements such as pedestrian count down signals, additional crossing time, sidewalk and accessibility improvements, street lighting, benches, and median refuges • Link Caltrain station to Grand Avenue and downtown South San Francisco with pedestrian connections
Specific locations for Traffic Calming	<ul style="list-style-type: none"> • Across U.S. Route 101 from downtown South San Francisco to the South San Francisco Caltrain station and east of U.S. Route 101 (South San Francisco) • Westborough Boulevard between Camaritas Avenue and Junipero Serra Boulevard • El Camino Real from Hickey Boulevard to Serramonte Boulevard
Gaps in the pedestrian environment	<ul style="list-style-type: none"> • Across U.S. Route 101 from downtown South San Francisco to the South San Francisco Caltrain station and east of U.S. Route 101 (South San Francisco) • Westborough Boulevard between Camaritas Avenue and Junipero Serra Boulevard • El Camino Real from Hickey Boulevard to Serramonte Boulevard

1 PLANNING CONTEXT

1.3 REGIONAL PLANS

The Plans summarized in this section affect jurisdictions throughout the nine county Bay Area region, including the City of South San Francisco.

San Francisco Bay Trail (Ongoing)

The Bay Trail is a planned continuous multi-use trail that, when complete, will encircle San Francisco and San Pablo bays. Approximately 500 miles long, the trail's planned alignment connects the bay shoreline of all nine Bay Area counties, links 47 cities, and crosses all the toll bridges in the region. The alignment includes a continuous "spine" along or near the shoreline and many short "spurs" to the waterfront itself. Planning for the Bay Trail is coordinated by the nonprofit San Francisco Bay Trail Project, a project of the Association of Bay Area Governments.



To date, approximately 290 miles of the Bay Trail alignment have been developed as either off-street paths or on-street bicycling lanes or routes. South San Francisco's bay waterfront is home to a Class I section of the Bay Trail, running between San Bruno Point and Oyster Cove. The City of South San Francisco has completed its portion of the Trail with the exception of a vacant parcel near North Access Road. The City will review the Bay Trail within areas subject to sea level rise.

Grand Boulevard Initiative (ongoing)

The Grand Boulevard Initiative focuses on encouraging multimodal access and a boulevard street environment along El Camino Real in both San Mateo and Santa Clara Counties. Street Design Guidelines for street improvement projects promote the basic elements of the Grand Boulevard vision, with common Design Issues and accompanying Recommendations.



<p>Vision for San Mateo County</p>	<ul style="list-style-type: none"> Grand Boulevard Initiative is a regional collaboration dedicated to dramatically intensifying the development within portions of the El Camino Real corridor through San Mateo and Santa Clara Counties
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1 PLANNING CONTEXT

<p>Shorter blocks with median-obstructed crossings are more common in San Mateo County</p>	<ul style="list-style-type: none"> • Signalized mid-block and/or median-obstructed crossings in node areas should be installed to provide for a maximum distance between crossings of approximately 660 feet (1/8 mile), or a 3.5-minute walk. • In addition to traffic and countdown pedestrian signals, sidewalk bulb-outs, advanced stop lines, safety lighting, and special paving treatments should be provided to encourage walking.
<p>Pedestrian crossing distances on SR 82 are relatively long</p>	<ul style="list-style-type: none"> • At signalized crossings 80 feet long or greater, or at un-signalized intersection crossings, pedestrian refuge islands should be installed as local conditions allow.
<p>Existing sidewalks throughout the SR 82 corridor are generally too narrow to support the “boulevard” street environment required to promote investment in transit-oriented mixed-use and infill residential development</p>	<ul style="list-style-type: none"> • New and re-development projects along the corridor frontage should provide a 10-foot or greater setback as needed to create a minimum 18-foot frontage sidewalk.
<p>Sidewalks provide a linear through-circulation route for pedestrians, “spillover” space, and area for boulevard amenities</p>	<ul style="list-style-type: none"> • Sidewalks should be configured to reflect the three basic sidewalk functions note above, with a 4-foot spillover zone adjacent to frontage buildings, a minimum 8-foot through walking zone, and a 6-foot amenity zone adjacent to the curb line for street trees, street lighting, and spillover area for curbside parking.
<p>Lighting conditions do not encourage pedestrian circulation, support investment in frontage properties, or promote the boulevard image desired for the corridor</p>	<ul style="list-style-type: none"> • Pedestrian-oriented street lighting should be installed throughout the corridor, with supplemental highway-type lighting located at intersections if required. • A minimum setback of 2 feet 6 inches is recommended to allow for curbside parking door swing and/or frontage visibility.

MTC’s Complete Streets/Routine Accommodation Policy

“Routine accommodation” refers to the practice of considering the needs of pedestrians and bicyclists habitually in the planning, design, funding and construction of transportation projects. “Complete streets” is a related concept that describes roadways designed and operated for safe and convenient access by all users, including bicyclists, pedestrians and transit riders.

In June 2006, the Metropolitan Transportation Commission—the regional transportation planning agency for the Bay Area—adopted a complete streets/routine accommodation policy for the region. The policy states that projects funded all or in part with regional funds “shall consider the accommodation of bicycling and walking facilities, as described in Caltrans Deputy Directive 64” (see below) in the full project cost. The policy requires that sponsors of transportation projects—including the City of South San Francisco—complete a project checklist for any project submitted for funding to

1 PLANNING CONTEXT

MTC that has the potential to impact bicycle or pedestrian use negatively. The checklist is meant to ensure that project sponsors evaluate the need for bicycling and walking facilities as part of project planning—ideally at the earliest stage—and accommodate such facilities in the design and budget of their projects.

Regional Ferry Plan (September 1992)

This plan outlines goals for Ferry service in the San Francisco Bay, including improved mobility and reduction on single occupancy vehicle dependence. A new ferry terminal is being constructed on the South San Francisco waterfront at Oyster Point, and pedestrian access between the terminal and employment destinations in the East of 101 Area will be very important. Ferry service to and from South San Francisco is maintained by the Water Emergency Transportation Agency (WETA). WETA operates ferry service throughout the bay.

1.4 STATEWIDE INITIATIVES AND PLANS

Caltrans is responsible for building and maintaining state-funded transportation infrastructure. Within the City of South San Francisco, Caltrans maintains El Camino Real (CA Highway 82), US 101, Interstate 280, and Interstate 380. The following policies affect strategic planning decisions on those corridors. In conjunction with Caltrans, the State has also passed legislation that affects all streets in South San Francisco.

Caltrans' Complete Streets Policy

In 2001, the California Department of Transportation (Caltrans) adopted a routine accommodation policy for the state in the form of Deputy Directive 64, "Accommodating Non-motorized Travel." The directive was updated in 2008 as "Complete Streets—Integrating the Transportation System." The new policy reads in part:

The Department views all transportation improvements as opportunities to improve safety, access, and mobility for all travelers in California and recognizes bicycling, pedestrian, and transit modes as integral elements of the transportation system.

The Department develops integrated multimodal projects in balance with community goals, plans, and values. Addressing the safety and mobility needs of bicyclists, pedestrians, and transit users in all projects, regardless of funding, is implicit in these objectives. Bicycle, pedestrian and transit travel is facilitated by creating "complete streets" beginning early in system planning and continuing through project delivery and maintenance and operations....

The directive establishes Caltrans' own responsibilities under this policy. Among the responsibilities that Caltrans assigns to various staff positions under the policy are:

- Ensure bicycling, pedestrian, and transit interests are appropriately represented on interdisciplinary planning and project delivery development teams.
- Ensure bicycle, pedestrian, and transit user needs are addressed and deficiencies identified during system and corridor planning, project initiation, scoping, and programming.

1 PLANNING CONTEXT

- Ensure incorporation of bicycle, pedestrian, and transit travel elements in all Department transportation plans and studies.
- Promote land uses that encourage bicycle, pedestrian, and transit travel.
- Research, develop, and implement multimodal performance measures.

California Complete Streets Act

Assembly Bill 1358, the “California Complete Streets Act of 2008,” requires “that the legislative body of a city or county, upon any substantive revision of the circulation element of the general plan, modify the circulation element to plan for a balanced, multimodal transportation network that meets the needs of all users [including] motorists, pedestrians, bicyclists, children, persons with disabilities, seniors, movers of commercial goods, and users of public transportation...” This provision of the law goes into effect on January 1, 2011. The law also directs the Governor’s Office of Planning and Research to amend its guidelines for the development of circulation elements so as to assist cities and counties in meeting the above requirement.

Assembly Bill 32 and State Bill 375

Senate Bill (SB) 375 is the implementation legislation for Assembly Bill (AB) 32. AB 32 requires the reduction of greenhouse gases (GHG) by 28 percent by the year 2020 and by 50 percent by the year 2050. GHGs are emissions – carbon dioxide chief among them – that accumulate in the atmosphere and trap solar energy in a way that can affect global climate patterns. The largest source of these emissions related to human activity is generated by combustion-powered machinery, internal combustion vehicle engines, and equipment used to generate power and heat. SB 375 tasks metropolitan and regional planning agencies with achieving GHG reductions through their Regional or Metropolitan Transportation Plans. The reduction of the use the automobile for trip making is one method for reducing GHG emissions. This can be achieved through the use of modes other than the automobile, such as walking, bicycling, or using transit.

Assembly Bill 1581 and Caltrans Policy Directive 09-06

Assembly Bill (AB) 1581 provides direction that new actuated traffic signal construction and modifications to existing traffic signals include the ability to detect bicycles and motorcycles. It also calls for the timing of actuated traffic signals to account for bicycles. In response to AB 1581, Caltrans has issued Traffic Operations Policy Directive 09-06, which has proposed modifications to Table 4D-105(D) of the California Manual on Uniform Traffic Control Devices. The California Traffic Control Devices Committee is considering the proposed modifications.

High Speed Rail Plan

A statewide high speed rail system is in the concept phase, and recommends that rail a corridor connecting San Francisco and San Jose run through South San Francisco. The plan is undergoing design changes involving a shared rail system. Studies are currently underway to examine access across the tracks and potential local traffic impacts. Caltrain is developing a list of improvements. More specific accommodations for the local pedestrian environment will be considered as plans for implementation are developed.

1 PLANNING CONTEXT

Strategic Growth Council Health in All Initiative

California's Health in All Policies Task Force was established in 2010, under the auspices of the Strategic Growth Council (SGC). The Task Force was charged with identifying priority actions and strategies for State agencies to improve community health while also advancing the other goals of the SGC. The policy recommendations address two strategic directions, which both relate to the Pedestrian Master Plan:

- Building healthy and safe communities with opportunities for active transportation; safe, healthy, affordable housing; places to be active, including parks, green space, and healthy tree canopy; the ability to be active without fear of violence or crime; and access to healthy, affordable foods.
- Finding opportunities to add a health lens in public policy and program development and increase collaboration across agencies and with communities.

1.5 FEDERAL INITIATIVES

The United States Department of Transportation has issued the following statement on pedestrian and bicycling activity and planning.

Department of Transportation Statement on Bicycle and Pedestrian Accommodations, Regulations and Recommendations

In 2010, the United States' Department of Transportation (DOT) announced a policy directive to demonstrate the DOT's support of fully integrated active transportation networks by incorporating walking and bicycling facilities into transportation projects. The statement encourages transportation agencies to go beyond minimum standards in the provision of the facilities. The DOT further encourages agencies to adopt policy statements that would affect bicycling and walking, such as:

- Considering walking and bicycling as equals with other transportation modes
- Ensuring availability of transportation choices for people of all ages and abilities
- Going beyond minimum design standards
- Integrating bicycling and pedestrian accommodations on new, rehabilitated, and limited access bridges
- Collecting data on walking and biking trips
- Setting mode share for walking and bicycling and tracking them over time
- Removing snow from sidewalks and shared use paths
- Improving non-motorized facilities during maintenance projects



2 EXISTING PEDESTRIAN ENVIRONMENT

CHAPTER 2: EXISTING PEDESTRIAN ENVIRONMENT

The City of South San Francisco, incorporated in 1908, is located on the west shore of the San Francisco Bay, in northern San Mateo County. The City is built upon the Bay Plain and the northern foothills of the Coastal Range, and the El Camino Real and Union Pacific Railroad helped to establish its position as a hub of economic activity. The City became a significant regional shipbuilding hub during the two World Wars, the population boomed after World War II, and both residential and industrial areas developed. Now it is home to major transportation corridors and destinations, including U.S. 101, Interstate 380 and Interstate 280, Caltrain, BART, and airport related industries. Genentech moved to the East of 101 business area in the 1970s and introduced the biotechnology sector to the region, and there are now more than 30 biotech companies located in South San Francisco. The City encompasses 9.63 square miles and has a population of approximately 63,000 (2010 Census), which swells to approximately 75,000 during the day due to an influx of workers in the administrative, biotechnical and industrial sectors.

2.1 SOUTH SAN FRANCISCO TODAY

South San Francisco is already home to many great walking environments. The downtown area is a well connected street network complete with sidewalks, commercial activity, destinations, and public amenities. Multi-use shared paths along the waterfront and connecting the San Bruno and South San Francisco BART stations have already been built, and a number of new trail and on-road bikeway projects were recommended in the South San Francisco Bicycle Master Plan. Some of these have already been implemented, or are simply a conversion from a recommended route to a marked bike lane. Long-term implementation of bikeway projects will depend on availability of funding and opportunities presented by future development. The Caltrain station is adjacent to the downtown, and the forthcoming Station Area Plan will identify key pedestrian connections and opportunities. The Grand Boulevard Initiative provides guidelines and priorities to define El Camino Real as a destination and human-scale street. All of these assets can contribute to a vibrant street environment and civic life.

The City of South San Francisco has identified the importance of building walkable communities and defines the Downtown, the City's historic commercial center, as a primary focus area for revitalization. The area includes City Hall, small commercial retail businesses, the Caltrain station, and a residential area. **Figure 2-1** illustrates these existing activity generators throughout South San Francisco, as well as schools, major employers, other commercial districts, parks, and recreation centers.

South San Francisco includes a variety of land uses and walking environments. From the commercial corridor along El Camino Real, to the industrial development east of US 101, the scale and pedestrian level of service vary greatly. Many of the residential streets in South San Francisco, located primarily to the west of U.S. 101, are well suited for walking, but some busy car-oriented streets such as El Camino Real, Junipero Serra, South Spruce, South Linden Avenue, Westborough Boulevard and streets east of U.S. 101 have gaps in the sidewalk network, and highways and some local arterials such as Junipero Serra Boulevard and Westborough Boulevard create pedestrian barriers between residential and employment destinations.



2 EXISTING PEDESTRIAN ENVIRONMENT

In recent years, there has been a focus on transit oriented development around the South San Francisco and San Bruno BART stations, and local parks and bicycle and pedestrian facilities have been completed. For example, Centennial Way Park, a 2.85 mile linear park and Class I multi-use path connects many of the destinations and amenities between the two BART stations. The City has recently received grant funding to develop a detailed land use plan for the Downtown Station Area, and is completing a land use plan for the northern portion of the El Camino Real Corridor. The cities of South San Francisco and San Bruno collaborated with the San Mateo County Transit District to develop a Community Transportation Plan (CMP) for a portion of the southeastern area of South San Francisco west of US 101 (along with northern San Bruno).

In addition to the commercial corridors and neighborhood serving retail, schools are a primary walking destination. The South San Francisco Unified School District includes nine elementary schools, three middle schools, and three high schools; South San Francisco is also home to six private elementary schools and one private high school. All of these schools are important pedestrian destinations.

Table II-1 shows the population age groups for South San Francisco compared to other nearby jurisdictions. School age children make up a 22% of the local population.

Table II-1: Population Age Groups

Age Group	San Francisco	San Mateo County	City of San Mateo	City of South San Francisco
< 18 years	13%	22%	21%	22%
20 – 64 years	73%	64%	65%	65%
65+ years	14%	14%	14%	13%
Total	100%	100%	100%	100%

Source: U.S. Census Bureau, 2006-2010 American Community Survey

Walking to Work

Knowing how many people walk, and for what purposes, can help South San Francisco develop effective and targeted programs to better service residents and resident-employees. A common term used in describing travel demand is “mode-split.” Mode split refers to the form of transportation a person chooses to take, such as walking, bicycling, public transit, or driving, and is often used in evaluating commuter alternatives such as walking, where the objective is to increase the percentage of people selecting an alternative means of transportation to the single-occupant (or drive-alone) automobile. Table II-2 presents Census data for the commute mode split for the City of South San Francisco, compared to the United States, California, San Mateo County, and the City of San Mateo.

2 EXISTING PEDESTRIAN ENVIRONMENT

Table II-2: Existing Journey to Work

Mode	United States	California	San Mateo County	City of San Mateo	City of South San Francisco
Drive Alone	76%	73%	71%	72%	67%
Carpool	11%	12%	11%	11%	14%
Transit	5%	5%	8%	8%	11%
Bicycle	<1%	1%	1%	1%	.5%
Walk	3%	3%	3%	3%	3.5%
Other	5%	6%	6%	5%	4%
Total	100%	100%	100%	100%	100%

Source: U.S. Census Bureau, 2006-2010 American Community Survey

As shown, driving alone is the predominant means of commuting in South San Francisco, though at a slightly lower share compared to county, state, and national levels. Carpool and transit are also higher than county, state, and national levels. However, bicycle and walk are as low as the regional and national levels, representing only four percent of work trips in South San Francisco.

Journey-to-work mode share is not always an accurate indicator of overall walking activity, since commute trips only represent a portion of all trips taken by residents. Residents also take walking trips when traveling between their home and transit, or between their vehicle and transit. Additionally, the journey-to-work data does not represent the trips South San Francisco residents take to go shopping, to school, or to social activities. This should not be misinterpreted as the non-motorized mode share of all trips for several reasons:

- Journey-to-work data only represents commute trips, which tend to be longer than shopping, school, recreation, and other trips, and therefore less compatible with active transportation.
- Journey-to-work data does not account for commuters with multiple modes of travel to and from work, such as commuters who walk to a bus stop before transferring to transit for the remainder of their journey to work.
- No separate accounting of shopping, school, or recreational trips is made in the Census; these trips make up more than half of the person trips on a typical weekday and a significantly greater portion on the weekend. These trips also tend to be short to medium in length and are therefore very well suited to walking.

2 EXISTING PEDESTRIAN ENVIRONMENT

- Journey-to-work reports information for adult work trips, but does not request data on school trips, which are much more likely to be walking trips because school-aged individuals cannot drive until the latter half of their high school years.

The Federal Highway Administration and U.S. Department of Transportation released in May 2010 the National Bicycle & Walking Study: 15 Year Status Report. The agencies found that between the initial report in 1995 and household survey data collected in 2009, walking activity grew from 7.2 percent of all trips to 10.9 percent of all trips. Meanwhile, the total number of pedestrian fatalities has decreased 22.3 percent, from 5,638 in 1993 to 4,378 in 2008. Estimates of pedestrian injuries fell approximately 17.8 percent, from 84,000 in 1995 to 69,000 in 2008.

Future walking trips will depend on a number of factors such as the availability of well-connected facilities; appropriate education and promotion programs designed to encourage walking; and location, density, and type of future land development. The 2010 National Bicycle & Walking Study: 15 Year Status Report found correlation between funding for bicycling and walking projects and the number of walking and bicycling trips.

With appropriate walking facilities in place and implementation of employer trip reduction programs, the number of people walking to work, school, or to shop could increase significantly in future years. By setting aggressive goals and implementing the recommendations in this plan, South San Francisco could substantially increase the number of daily walking trips, especially if this plan's goals, policies and recommendations are directed at people who would mostly likely switch to walking, including those making trips that are under one mile, workers who work within five miles of South San Francisco, school children, and transit riders.

Estimating and projecting how many people walk for all trips, including non-work trips, in a targeted study area is difficult, but Bay Area Travel Survey (BATS) provides a baseline. According to the most recent BATS data, walking represented 9.3 percent of all Bay Area trips in 2000. If South San Francisco can achieve success similar to other cities and national goals, the walk travel mode share could double to nearly 20 percent of all trips taken.

2.2 PEDESTRIAN COLLISION REPORTS

Data on collisions and a brief analysis of collision reports maintained by the Statewide Integrated Traffic Records System (SWITRS) show trends in vehicle-pedestrian collisions in South San Francisco, and help planners and decision-makers identify specific locations and support programs. While traffic collisions can affect anyone, they have a disproportionate impact on pedestrians and bicyclists, the most vulnerable users on the road. **Figure 2-2** identifies the locations of pedestrian-involved collision reports between 2005 and 2010. Pedestrian-involved collisions make up 5.5 percent of all collisions in South San Francisco during this period. Among all collisions with injuries recorded during this period, 12.2 percent are pedestrian-involved collisions.

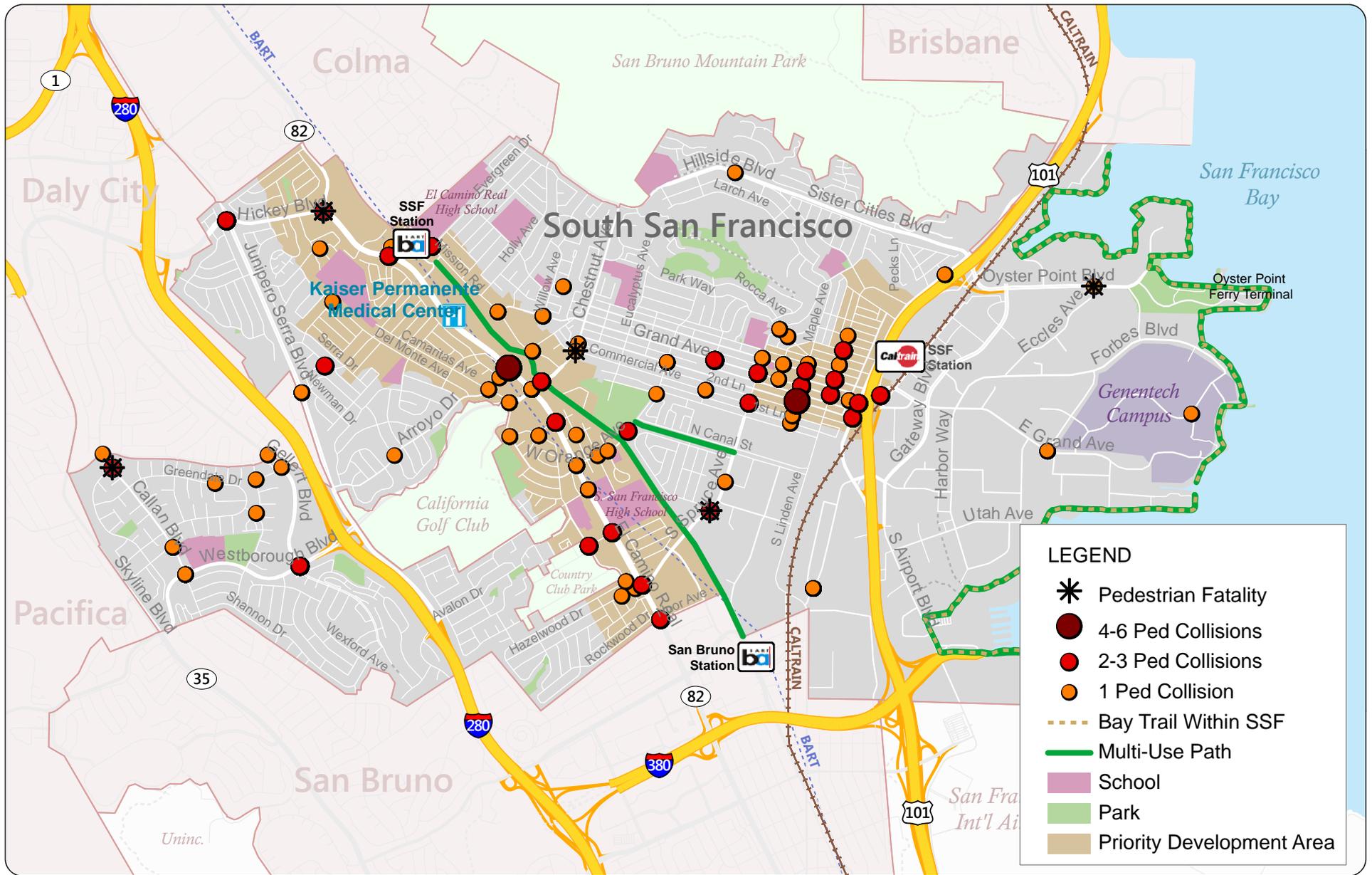
The collision reports identify crash locations; however, many factors that influence collision rates are not location-specific, such as time of day, weather conditions, condition of the driver, degree of sobriety and attention, and age of parties involved. For example, in this data set, more pedestrian

2 EXISTING PEDESTRIAN ENVIRONMENT

collisions take place during p.m. peak travel hours (38 percent of all pedestrian collisions take place between 3 p.m. and 7 p.m.) than during a.m. peak (only 16 percent of all pedestrian collisions take place between 6 a.m. and 10 a.m.). Furthermore, collisions that involve stationary objects do not typically get recorded in the SWITRS database. Collision on off-street trails and shared-use paths often go unreported as well. Therefore, a small number of data points may not indicate much about a specific location.

While the collision locations identified in this section help identify “hotspots,” they should not be assumed to be the most hazardous or risky locations. For a more meaningful evaluation, the data would need to be adjusted for the number of pedestrian or bicyclists to account for “exposure.” At best, a group of data points at a single location reveals that there is a tendency for collisions to occur relative to the number of pedestrians or bicyclists in the area. For example, El Camino Real (State Route 82) has more pedestrian-involved collision reports than other areas of South San Francisco, but it is a primary corridor for shopping, transit, school, and employment, with likely greater numbers of walkers than the more residential areas of the City. Absent a complete database of pedestrian and bicyclist volumes, there is no reliable way to adjust for exposure and relative safety. Thus, the data in the following section is presented for informational purposes only, and does not necessarily identify a certain location as unsafe.

Collision data includes the roadway where the incident occurred. “Corridors” can be used to target collision reduction programs. Table II-3 summarizes the 12 streets that were reported most frequently in the 2005 to 2010 pedestrian-involved collision data. These corridors include the entire length of the streets that are within the South San Francisco city boundaries.



PEDESTRIAN COLLISION MAP 2005-2010

2 EXISTING PEDESTRIAN ENVIRONMENT

Table II-3: Top 12 Pedestrian-Involved Collision Corridors – 2005 to 2010

Street	Collisions Reported	Street	Collisions Reported
El Camino Real/ Rt 82	21	Miller Ave	7
Grand Ave	16	Baden Ave	7
Spruce Ave and South Spruce Ave	12	West Orange Blvd	7
Maple Ave	11	Airport Blvd	6
Arroyo Dr	9	Callan Blvd	5
Linden Ave	9	Hickey Blvd	5

Source: SWITRS, 2005 - 2010

Almost all collisions are assigned to the nearest intersection, defined as the combination of primary and secondary roadway; incidents as far away as half the distance to the next nearest intersection will be so assigned. Table II-4 summarizes the intersections that were reported most frequently in the 2005 to 2010 pedestrian-involved collision data.

2 EXISTING PEDESTRIAN ENVIRONMENT

Table II-4: Top Pedestrian-Involved Collisions by Intersection – 2005 to 2010

Street	Collisions Reported	Street	Collisions Reported
Rt 82/El Camino Real and Arroyo Dr	6	Hickey Blvd and Junipero Serra Blvd	3
Rt 82/El Camino Real and Country Club Cr	2	Linden Ave and Miller Ave	3
Rt 82/El Camino Real and Hickey Blvd	2	Linden Ave and California Ave	2
Rt 82/El Camino Real and Mc Lellan Dr	2	Myrtle Ave and Spruce or South Spruce Ave	2
Rt 82/El Camino Real and Noor Ave	2	Myrtle Ave and West Orange Ave	2
Rt 82/El Camino Real and Southwood Dr	2	Alida Way and Country Club Dr	2
Rt 82/El Camino Real and Spruce Ave	2	Antoinette Ln and Chestnut Ave	2
Grand Ave and Spruce or South Spruce Ave	3	Maple Ave and Miller Ave	2
Grand Ave and Airport Blvd	3	Callan Blvd and Carter Dr	2
Grand Ave and Linden Ave	2	Gellert Blvd and Westboro Dr	2
Grand Ave and Magnolia Ave	2	Mission Rd and Evergreen Dr	2
Grand Ave and Maple Ave	2	East Grand Ave and Dubuque Ave	2
Baden Ave and Maple Ave	4	Spruce Ave and Commercial Ave	2
Baden Ave and Airport Blvd	2	Keoncrest Dr and San Felipe Ave	2

Source: SWITRS, 2010

2 EXISTING PEDESTRIAN ENVIRONMENT

Locations with multiple pedestrian collisions indicate dangerous conditions; locations with fatalities may not include multiple collisions, but indicate conditions that may lead to severe collisions. These locations should be closely analyzed and considered for interventions. Six fatalities were recorded in South San Francisco from 2005 to 2010. These were located at the following intersections:

- Route 82/El Camino Real and Hickey Boulevard
- Myrtle Ave and Spruce or South Spruce Avenues
- Callan Boulevard and Carter Drive (two fatalities within the same block)
- Oyster Point and Eccles Avenue
- Commercial and Chestnut Avenues

Collisions are due to a wide variety of unsafe conditions and behavior. In approximately 41 percent of reported pedestrian-involved collisions a motorist failed to yield to a pedestrian with the right of way. Pedestrians who cross outside a crosswalk must yield to vehicles; in approximately 35 percent of these collisions a pedestrian failed to yield to a motorist with the right of way. Motorists starting, backing, speeding, or turning unsafely were responsible for approximately 11.2 percent of these collisions, and nearly 3 percent were due to a motorist driving under the influence. Location data and primary collision factors are used to evaluate and prioritize improvements as part of the Implementation Plan.

2.3 EXISTING PROGRAMS, POLICIES AND PRACTICES BENCHMARKING ANALYSIS

The City of South San Francisco has already made significant investments in making its streets friendlier to pedestrians. The following section summarizes the City's pedestrian safety policies, programs, and practices. The City's current operations were reviewed with a benchmarking matrix¹ that compares the City's policies, programs, and practices with national best practices. The benchmarking analysis categorized the City's programs, practices, and policies into three groups:

Key strengths – areas where the City is exceeding national best practices

Enhancements – areas where the City is meeting best practices

Opportunities – areas where the City appears not to meet best practices (often this is due to limited staff resources)

¹ National Best Practices are defined in the California Pedestrian Safety Assessment Program: http://www.techtransfer.berkeley.edu/pedsafety/psa_handbook.pdf

2 EXISTING PEDESTRIAN ENVIRONMENT

Table II-5: Summary of Benchmarking Analysis

Category	Key Strengths	Enhancements	Opportunities
Policies	Climate Action Plan	Design Standards Overcoming Institutional Barriers Speed Surveys/Speed Limits Transportation Demand Management	ADA Transition Plan Complete Streets Policy Crosswalk Policy General Plan Safe Routes to Transit Warrants for Traffic Control Devices
Data Collection	Collision History and Reports Trip and Fall Reports	Bicycle Facility Inventory Sidewalk Inventory	Pedestrian Volumes Trails and Paths Inventory
Programs	Walking Audits	Safe Routes to School Program Traffic Calming Program	Pedestrian, Bicycle and TDM Coordinator Pedestrian Education
Enforcement	Involving Enforcement in Design	Pedestrian-Oriented Enforcement Shared Pedestrian Enforcement Traffic Safety Officers	Pedestrian Safety Course
Promotion	Coordination with Health Agencies Promotional Giveaways Public Involvement		Economic Vitality Signage and Wayfinding

Source: Survey Completed by City of South San Francisco staff, 2012; Prepared by Fehr & Peers 2012

2 EXISTING PEDESTRIAN ENVIRONMENT

Table II-6: Existing Policies and Benchmarking Analysis

<i>Plan or Policy</i>	<i>Benchmark</i>	<i>South San Francisco Response</i>	<i>Opportunities for Improvements</i>
<p>Climate Action Plan A Climate Action Plan is comprised of policies and measures that address climate change. Climate Action Plans often work in tandem with other policies and plans, including the General Plan, Circulation Element, Bicycle Master Plan, Pedestrian Master Plan, and transit-related plans. Policies in Climate Action Plans often address greenhouse gas emissions (GHGs), including enhancing local transportation options, energy efficiency and green building, open space, low-impact development, waste, and natural environmental features.</p>	Key Strength	The City of South San Francisco is currently developing a Climate Action Plan.	Ensure that the recommendations made in the Climate Action Plan complement those made in the Pedestrian Master Plan
<p>Design Standards Design policies and development standards can improve the walking experience, encourage walking, enhance economic vitality, and offer funding opportunities for walking improvements.</p>	Enhancement	The City does not currently have a Streetscape Master Plan, but a set of streetscape guidelines is included in the El Camino Master Plan. The East of 101 Area Plan identifies the need for Streetscape Plans, but the City has yet to develop any. The City Council has adopted the Grand Boulevard Landscape Plan for El Camino Real. Also, the City's parking ordinance designates the number of driveway curb cuts allowed in residential areas and limits the amount of paving allowed in front yards. Curb cuts in commercial areas are decided on a case by case basis, but the City is sensitive to pedestrian needs when making decisions.	<ul style="list-style-type: none"> • Consider developing a Streetscape and/or Landscape Architecture Master Plan for the City. • Consider developing a street trees policy for the City. • Consider developing a parklets program for the City. See San Francisco's program as a best practice example: http://sfpavementtoparks.sfplanning.org/ • During the next General Plan update, include goals and actions for new development standards and guidelines for walking friendly development.

2 EXISTING PEDESTRIAN ENVIRONMENT

Plan or Policy	Benchmark	South San Francisco Response	Opportunities for Improvements
<p>Overcoming Institutional Barriers</p> <p>Numerous agencies have jurisdiction over components of the South San Francisco transportation network, including Caltrain, BART, SamTrans, BCDC, Caltrans, neighboring communities, and SFIA. Institutional coordination associated with multiple agencies is necessary because of non-local control of right-of-way and differing policies regarding walking accommodation. For example, Caltrans policies have historically discouraged proposals for bulbouts, wider sidewalks, and other walking-oriented improvements.</p>	<p>Enhancement</p>	<p>The City of South San Francisco coordinates between departments and external agencies and is currently coordinating with Caltrain, C/CAG and other agencies on High Speed Rail and on a Caltrain Station Area Plan. The City identified the following obstacles to overcome:</p> <ul style="list-style-type: none"> • Challenges with state policies (i.e., Caltrans standards) • Challenges with other agencies or jurisdictions regarding high speed rail coordination • Challenges with SFIA in developing better pedestrian and bicycle access • Shortage of trained staff (for bicycling and walking issues) • Lack of design standards for pedestrian facilities • Inadequate or non-uniform traffic calming • Lack of understanding of economic benefits of increased walking and reduced minimum parking requirements by the residents and business community • Inadequate funding 	<ul style="list-style-type: none"> • Continue to seek opportunities to collaborate with Caltrain, SamTrans and BART to improve personal and walking safety around transit hubs. • Proactively collaborate with the Cities of San Bruno, Colma, Daly City, Pacifica, Brisbane and C/CAG on walking improvements and safety measures beneficial to the jurisdictions. • Proactively seek opportunities to collaborate with Caltrans to identify and improve walking safety along El Camino Real, freeway interchanges and other Caltrans right-of-way. <p>Recent Context Sensitive Solutions and Routine Accommodations policies within Caltrans (refer to the revised Deputy Directive 64: www.calbike.org/pdfs/DD-64-R1.pdf) now require the agency to consider multimodal needs and engage in collaborative community planning. These new policies may reduce institutional challenges, and the City should continue to work with Caltrans and other agencies and neighboring communities to identify new opportunities for joint transportation facilities planning.</p>

2 EXISTING PEDESTRIAN ENVIRONMENT

<i>Plan or Policy</i>	Benchmark	South San Francisco Response	Opportunities for Improvements
<p>Speed Surveys and Speed Limits</p> <p>Pedestrian fatality rates increase exponentially with vehicle speed. Thus, reducing vehicle speeds in walking zones may be one of the most important strategies for enhancing walking safety.</p>	<p>Enhancement</p>	<p>In South San Francisco, speed surveys are conducted every five years by a registered civil engineer, following MUTCD guidelines. Speed limits are occasionally reviewed in response to citizen requests. The default speed limit in the city when no sign is posted is 25mph, even near schools. Speed limit signs are not posted in these areas unless there is a demonstrated need for a sign. The City has adopted a Traffic Calming Policy that justifies improvements on local streets or residential collectors where City-conducted speed surveys show that the 85th percentile speed is in excess of the posted speed limit by more than 10mph.</p>	<ul style="list-style-type: none"> • Consider walking volumes when setting speed limits and employ traffic calming strategies in locations where speed surveys suggest traffic speeds are too high for walking areas. • Consider establishing 15 MPH school zones during school bell times, as was recently implemented in San Francisco: http://www.sfmayor.org/index.aspx?page=537 • Ensure design standards/ design speeds in walking areas do not contribute to a routine need for traffic calming.

2 EXISTING PEDESTRIAN ENVIRONMENT

<i>Plan or Policy</i>	<i>Benchmark</i>	<i>South San Francisco Response</i>	<i>Opportunities for Improvements</i>
<p>Transportation Demand Management Transportation Demand Management (TDM) programs encourage multi-modal travel by incentivizing non-auto options. As new development occurs, the TDM program can be expanded and strengthened.</p>	Key Strength	<p>The City has a citywide TDM program. Any project expected to generate greater than 100 ADT over the previous use is required to prepare a TDM plan, implement the plan for the life of the project, and conduct on-going monitoring. The city provides shower and locker facilities and secure bicycle parking at most locations. Many employers within the city provide TDM programs. Genentech operates a comprehensive TDM program, including complementary shuttle service connecting to transit stations, alternative commute incentives such as parking cash-out and incentives for carpooling, and offers guaranteed ride home services. The City has a guaranteed ride home program and a commuter check program. The City belongs to the Congestion Management Alliance and works with the Alliance on TDM review.</p>	<ul style="list-style-type: none"> • Implement Citywide TDM policies (per SSFMC 20.400). • Consider establishing a Citywide TDM Coordinator position and potentially combine with a Pedestrian and Bicycle Coordinator. • Consider establishing a Transportation Management Association (TMA) for key commercial and business areas to coordinate parking, transit, and other TDM strategies and policies. • The City provides free parking to employees and does not have a parking cash-out program. Consider establishing a parking cash-out program.

2 EXISTING PEDESTRIAN ENVIRONMENT

Plan or Policy	Benchmark	South San Francisco Response	Opportunities for Improvements
<p>ADA Plan</p> <p>An ADA Transition Plan sets forth the process for bringing public facilities into compliance with ADA regulations. An ADA Transition Plan addresses public buildings, sidewalks, ramps, and other walking facilities. An ADA Coordinator is typically responsible for administering a City's ADA Transition Plan. Compliance with the Americans with Disability Act (ADA) guidelines is important not only to enhance community accessibility, but also to improve walking conditions for all pedestrians.</p>	<p>Opportunity</p>	<p>The City does not currently have an ADA Transition Plan for Municipal Facilities. Such a plan is required by Federal Law. However, the City does provide ADA upgrades such as curb ramps in conjunction with other projects such as road resurfacing projects and some new developments. These are typically funded with gas tax money.</p>	<ul style="list-style-type: none"> • Develop an ADA Transition Plan that includes public rights-of-way (intersections and sidewalks especially). • Develop design guidelines for items such as directional curb ramps and audible pedestrian signals. The San Francisco Better Streets Plan can be seen as a best practice example: http://www.sf-planning.org/ftp/BetterStreets/index.htm • Ensure that the ADA Transition Plan provides an inventory, prioritization plan, and funding source for improvements. The Standard Drawings for the City of Sacramento include best practices for directional curb ramp design (see drawing T-77 http://www.cityofsacramento.org/utilities/pubs/stdspecs/Transportation.pdf).

2 EXISTING PEDESTRIAN ENVIRONMENT

<i>Plan or Policy</i>	Benchmark	South San Francisco Response	Opportunities for Improvements
<p>Complete Streets Policy Routine Accommodations or Complete Streets Policies accommodate all modes of travel and travelers of all ages and abilities.</p>	<p>Key Strength</p>	<p>The City of South San Francisco adopted a Complete Streets Policy in October 2012.</p>	<p>Update the City's Street Design Ordinance (SSFMC Chapter 19.20) to reflect the adopted Complete Streets Policy and incorporate the design recommendations included in the Pedestrian Master Plan.</p> <p>The following cities have established practices for "Complete Streets and Routine Accommodations," and may serve as models for South San Francisco:</p> <ul style="list-style-type: none"> • Sacramento Transportation and Air Quality Collaborative Best Practices for Complete Streets: www.completestreets.org/documents/FinalReportII_BPCompleteStreets.pdf • San Francisco, California, Department of Public Health's Pedestrian Quality Index: www.sfphes.org/HIA_Tools/PEQI.pdf • San Francisco County Transportation Authority's Multi-modal Impact Criteria: www.sfcta.org/images/stories/Planning/CongestionManagementPlan/2007%20-%20appendix%2005%20-%20tia.pdf

2 EXISTING PEDESTRIAN ENVIRONMENT

Plan or Policy	Benchmark	South San Francisco Response	Opportunities for Improvements
<p>Crosswalk Policy A formal policy for crosswalk installation, removal, and enhancement provides transparency in decision-making and adopts best practices in pedestrian safety and accommodation.</p>	<p>Opportunity</p>	<p>The City of South San Francisco does not have a formal crosswalk policy beyond installing crosswalks on all approaches of signalized intersections. Decisions regarding installation, removal and enhancements for uncontrolled crosswalks are made on a case by case basis and are generally complaint driven. Crosswalk removal requires a long process and is extremely rare; only one crosswalk has been removed in the past several years. The general practice is to not install midblock crossings except under extreme circumstances, such as the one recently installed near El Camino High school across from the BART station.</p>	<p>Consider creating a crosswalk toolbox that reflects best practices and recent research with respect to the installation, removal, and enhancement of crosswalks, including criteria for installing crosswalk enhancements, such as flashing beacons, in-roadway warning lights, or in-roadway pedestrian signs. Crosswalk policy resources include:</p> <ul style="list-style-type: none"> •Sacramento Crosswalk Policy: www.cityofsacramento.org/transportation/dot_media/engineer_media/pdf/PedSafety.pdf •Stockton Crosswalk Policy: www.stocktongov.com/publicworks/publications/PedGuidelines.pdf •Federal Highway Administration Study on Marked versus Unmarked Crosswalks: http://safety.fhwa.dot.gov/ped_bike/docs/cros.pdf

2 EXISTING PEDESTRIAN ENVIRONMENT

<i>Plan or Policy</i>	<i>Benchmark</i>	<i>South San Francisco Response</i>	<i>Opportunities for Improvements</i>
<p>General Plan Planning principles contained in a city's General Plan can provide an important policy context for developing walking-oriented, walkable areas. Transit-oriented development, higher densities, and mixed uses are important planning tools for walking-oriented areas</p> <p>A city's General Plan is a key opportunity to establish the framework for walking orientation. The Circulation Element of the Plan typically assigns roadway typologies, which can include a layered network approach with prioritized corridors for transit, pedestrian, bicycle, and auto travel.</p>	Opportunity	<p>The City of South San Francisco General Plan: Circulation Element (1999) describes the existing bicycling, walking, transit riding, and driving facilities within the City and establishes the goals and policies for future transportation needs. Transit-oriented development (TOD) is addressed in the General Plan. A TOD currently exists around the South San Francisco BART station and a station area plan is being developed for the South San Francisco Caltrain Station.</p> <p>El Camino Real is considered an important pedestrian corridor and pedestrian accommodation is considered in the South San Francisco El Camino Real Master Plan (2006).</p>	<p>During the next General Plan update, the City could consider including the following items in its Circulation Element, or other sections, of the Plan:</p> <ul style="list-style-type: none"> • Identify existing and future priority walking areas in the City through specific plans, where varied densities and mixed-uses could accommodate or attract pedestrian activity. • Consider additional opportunities for mixed-uses with new development, particularly in walking districts/nodes and transit-rich areas. Consider opportunities for density bonuses in walking friendly areas. • Consider an overlay district for walking districts with special walking-oriented guidelines, such as adopting multi-modal level of service practices (perhaps in combination with a layered network approach), and prioritizing sidewalk improvement and completion projects.
<p>Safe Routes to Transit Safe Routes to Transit is a grant program that awards funds to projects that make it easier to walk and bike to transit throughout the Bay Area Region.</p>	Opportunity	<p>The City of South San Francisco has not been awarded any Safe Routes to Transit Grants.</p>	<p>Apply for grant funding, particularly for projects mentioned in the San Bruno/South San Francisco Community-Based Transportation Plan (January 2011). http://transformca.org/campaign/sr2t</p>

2 EXISTING PEDESTRIAN ENVIRONMENT

Plan or Policy	Benchmark	South San Francisco Response	Opportunities for Improvements
<p>Traffic Signal Warrants / Traffic Control Devices</p> <p>Best practices include:</p> <ul style="list-style-type: none"> • Requiring a crash history of three instead of five collisions based on routine underreporting • Reducing traffic volume thresholds based on latent demand • Providing consideration for school children/pedestrians and traffic speeds 	<p>Opportunity</p>	<p>The City of South San Francisco follows Caltrans warrants for traffic signals.</p>	<p>The new California Manual on Uniform Traffic Control Devices (CA-MUTCD) was adopted by the California Department of Transportation in January 2012. The most significant changes for pedestrians are:</p> <ul style="list-style-type: none"> • Reduction of the pedestrian walking speed (used to calculate traffic signal pedestrian clearance intervals) from four feet per second to 3.5 feet per second • Provision that all new and retrofit signals should have pedestrian countdowns signal heads <p>Allowance of the HAWK pedestrian beacon at mid-block locations has been included in the national MUTCD and is likely to be included in the CA-MUTCD shortly.</p> <p>Leading Pedestrian Intervals (LPI) provide pedestrians with a “head start” signal timing before vehicles on the parallel street are allowed to proceed through an intersection. A 2000 study by the Insurance Institute for Highway Safety found that the LPI reduces conflicts between turning vehicles and pedestrians by enhancing the visibility of the pedestrian in the crosswalk.</p> <ul style="list-style-type: none"> • Include maintenance records within a GIS database inventory of signs, markings and signals. • Develop a proactive monitoring program for traffic control devices.

Source: Survey Completed by City of South San Francisco staff, 2012; Prepared by Fehr & Peers 2012

2 EXISTING PEDESTRIAN ENVIRONMENT

Table II-7: Existing Data Collection Practices Benchmarking Analysis

<i>Plan or Policy</i>	<i>Benchmark</i>	<i>South San Francisco Response</i>	<i>Opportunities for Improvements</i>
Collision History and Reporting	Key Strength	The Police Department has access to collision data by location. Injury accident reports are routinely pulled. The police department has the ability to check if a collision involved a pedestrian or bicycle, but this is a manual process and this information is not generally accessed unless it's asked for. Statewide Integrated Traffic Records System (SWITRS) data on collisions will be analyzed in the PMP to create a GIS shapefile of pedestrian collision locations throughout the city between 2005-2010 as well as an analysis of the locations with the highest pedestrian collision rates.	Geo-coding and comprehensive monitoring using Crossroads software would allow for more proactive walking safety projects and best practices implementation, such as crash typing for countermeasure selection. A field inventory of collision locations and walking volume counts could enhance comprehensive monitoring. With sufficient walking volume data, the City could prioritize collision locations based on collision rates (i.e., collisions/daily walking volume), a practice that results in a more complete safety needs assessment. Treatments could then be identified for each location and programmatic funding allocated in the City's Capital Improvements Program (CIP).
Trip and Fall Reports	Key Strength	The Department of Public Works maintains a database of trip hazard removal projects including the location of the hazard, the project status and the cost for repairs.	Include these records as a sub-category within the sidewalk inventory in order to better prioritize improvement areas.
Bicycling Facility Inventory	Enhancement	The South San Francisco Bicycle Master Plan includes a map of existing and proposed bicycle facilities, and these networks are available in GIS format, however parts of the layer may be out of date.	Update current bicycle facility GIS shapefile. Add signs, markings and loop detectors to inventory and create GIS shapefiles of these features.

2 EXISTING PEDESTRIAN ENVIRONMENT

<i>Plan or Policy</i>	<i>Benchmark</i>	<i>South San Francisco Response</i>	<i>Opportunities for Improvements</i>
<p>Sidewalk Inventory A GIS-based sidewalk inventory enables project identification and prioritization, as well as project coordination with new development, roadway resurfacing, etc.</p>	Enhancement	The City of South San Francisco currently has an inventory of missing sidewalks in list form.	<p>Ensure that the current sidewalk inventory includes both existing and missing sidewalks and is available in GIS format. Expand the sidewalk inventory to include informal pathways and key pedestrian opportunity areas in the City.</p> <p>City sidewalks should be evaluated for age and condition, slope, and a data base established and maintained as part of the pavement management program. Coordinate the data base with Encroachment Permits issued for sidewalk repairs and replacement.</p>
<p>Pedestrian Volumes Pedestrian volume data is important for prioritizing projects, developing collision rates, and determining appropriate infrastructure</p>	Opportunity	The City does not currently conduct pedestrian volume counts and new developments are not required to take bicycle or pedestrian counts. Some bicycle counts are being conducted as part of the bicycle master plan.	<ul style="list-style-type: none"> • Consider routinely collecting walking and bicycling volumes by requiring them to be conducted in conjunction with manual intersection counts, such as those conducted for transportation impact analyses and area plans and include in an annual report. • Geo-code walking volume data with GIS software along with other data such as pedestrian-involved collisions.
<p>Trails and Paths Inventory</p>	Opportunity	The City does not currently maintain an inventory of trails, but does have an inventory of bicycle facilities which includes combined walking and biking paths.	Update the existing inventory to include all pedestrian paths and trails and create a GIS-based map of existing and proposed off-street paths and trails within the City.

Source: Survey Completed by City of South San Francisco staff, 2012; Prepared by Fehr & Peers 2012

2 EXISTING PEDESTRIAN ENVIRONMENT

Table II-8: Existing Programs Benchmarking Analysis

<i>Plan or Policy</i>	<i>Benchmark</i>	<i>South San Francisco Response</i>	<i>Opportunities for Improvements</i>
<p>Walking Audits Walking audits provide an interactive opportunity to receive feedback from key stakeholders about the study area as well as discuss potential solutions and their feasibility. They can be led by city staff, advocacy groups, neighborhood groups, or consultants.</p>	Key Strength	Sixteen walking audits were conducted in 2012 as part of the PMP. These audits focused on positive practices, issues and opportunity areas, and possible recommendations to address pedestrian safety concerns.	Consider establishing a program of conducting regular walking audits and establishing a Citywide pedestrian safety program to include during regular walking audits by City staff and an annual reporting program.
<p>Safe Routes to School Safe-Routes-to-School programs encourage children to safely walk or bicycling to school. The Marin County Bicycle Coalition was an early-adopter of the concept, which has spread nationally (refer to best practices at www.saferoutestoschools.org). Safe-Routes-to-School programs are important both for increasing physical activity (and reducing childhood obesity) and for reducing morning traffic associated with school drop-off. Funding for Safe-Routes-to-School programs and/or projects is available at the regional, state, and federal levels.</p>	Enhancement	The City recently won a Safe Routes to School grant for pedestrian infrastructure investments on West Orange Street and C Street. However, the City and school district (SSFUSD) do not have an ongoing safe routes to school program.	<ul style="list-style-type: none"> • Continue applying for grant funding; apply for non-infrastructure as well as infrastructure projects. • Consider developing a citywide Safe-Routes-to-School program that encourages walking to school and highlights preferred walking routes. Marin County's program is considered a best practice example: http://www.saferoutestoschools.org/ • Form a steering committee for the program (or each school) comprised of City staff, BPAC, SSFUSD staff, PTA leaders, County Health Services and other stakeholders. Consider scheduling regular ongoing meetings to maintain stakeholder involvement, determine level of interest, and identify areas with the highest need • Consider developing a "Street Smarts" program, such as those developed by the City of San Jose or Marin County: http://www.getstreetsmarts.org/

2 EXISTING PEDESTRIAN ENVIRONMENT

<i>Plan or Policy</i>	<i>Benchmark</i>	<i>South San Francisco Response</i>	<i>Opportunities for Improvements</i>
<p>Traffic Calming Program</p> <p>Traffic Calming Programs and Policies set forth a consensus threshold on neighborhood requests and approvals, as well as standard treatments and criteria for traffic calming</p>	Enhancement	The City of South San Francisco has a traffic calming program and established policy for addressing traffic calming concerns; however, no funding source is dedicated to this program.	Identify a dedicated funding source and implementation plan for the traffic calming program.
<p>Pedestrian/Bicycle Coordinator</p> <p>In a sampling of walking-oriented California cities, a full-time pedestrian/bicycle coordinator is typically provided at a ratio of one per 100,000 population.</p>	Opportunity	The City does not have a full-time Bicycle or Pedestrian Coordinator on staff, though several staff assist on bicycle or pedestrian related projects. A part- or full-time coordinator could be tasked with convening the Bicycle and Pedestrian Advisory Committee and implementing many of the recommendations included in this report.	With a population of approximately 64,000, and over 45,000 jobs, South San Francisco should consider employing a City Pedestrian and Bicycle Coordinator and combining the position with TDM coordination when resources become available. Such a staff member could be involved in activities such as outreach, interdepartmental coordination, inter-agency coordination, grant writing, project management, and staff liaison to the Bicycle and Pedestrian Advisory Committee, the C/CAG BPAC, local non-profits and advocacy groups, and local schools.
<p>Pedestrian Education</p>	Opportunity	The City does not offer any classes or programs to provide information or instructions about pedestrian laws or ordinances.	Consider creating an education program to provide information to residents and employers about pedestrian laws and ordinances. Consider providing traffic education curriculum to schools, community centers, and/or senior centers. Establish a BPAC webpage to provide an electronic media outlet for outreach and education.

Source: Survey Completed by City of South San Francisco staff, 2012; Prepared by Fehr & Peers 2012

2 EXISTING PEDESTRIAN ENVIRONMENT

Table II-9: Existing Enforcement Programs Benchmarking Analysis

<i>Plan or Policy</i>	<i>Benchmark</i>	<i>South San Francisco Response</i>	<i>Opportunities for Improvements</i>
<p>Involving Law Enforcement in Design/Operation of Facilities Walking and bicycling facility design is constantly evolving. Having officers understand how specific facilities operate is essential knowledge for them to know how to enforce laws.</p>	Key Strength	The police department is occasionally consulted on facility design, usually through the Traffic Advisory Committee. The police department has a liaison working closely with the planning division on development review, focused primarily on security and traffic safety concerns.	Maintain regular contact with law enforcement during the design of new facilities, especially those that might not include typical roadway design features.
<p>Pedestrian-Oriented Enforcement Activities (crosswalk stings, focused school drop-off enforcement, etc.) Enforcement of pedestrian right-of-way laws and speed limits is an important complement to engineering treatments and education programs.</p>	Enhancement	The Community Assisted Reactive (CARE) program can include pedestrian issues. Through the Traffic Accident Reduction Plan (TARP), officers review collision data in order to determine high accident areas and enforcement is increased in these areas. The police department participates in the GRADE program, which provides education in schools, particularly kindergartens, about “stranger danger.”	<p>Implement sustained enforcement efforts and involve the media. Use enforcement as an opportunity for education by distributing walking safety pamphlets in-lieu of, or in addition to, citations.</p> <p>The Miami-Dade Pedestrian Safety Demonstration Project provides a model for the role of media in the sustained effectiveness of enforcement. Information is available at: http://www.miamidade.gov/MPO/docs/MPO_ped_safety_demo_eval_report_200806.pdf.</p>
<p>Shared Pedestrian Enforcement with Other Jurisdictions Sharing officers with specific bicycling and walking focus with other jurisdictions can help the Police Department increase service without needing to budget for a new officer.</p>	Enhancement	The City currently shares pedestrian related police resources and data with neighboring cities on request for DUI enforcement as part of the OTS grant process.	Consider working with the San Bruno or Colma Police Departments to organize pedestrian related enforcement activities.

2 EXISTING PEDESTRIAN ENVIRONMENT

Plan or Policy	Benchmark	South San Francisco Response	Opportunities for Improvements
<p>Traffic Safety Officers These officers focus on enforcing pedestrian-involved violations.</p>	Enhancement	The City does not have a traffic safety officer dedicated to pedestrian issues. The department has a responsive approach: when a pedestrian safety complaint is made, an officer will go out to check the complaint.	<p>Identify a key traffic safety officer that dedicates a meaningful percentage of his time to walking and bicycling issues.</p> <p>Work with Police Department staff to identify particular violation types that officers might have difficulty enforcing. The Sunnyvale police department has a Traffic Safety Unit whose objective is to ensure the safe and orderly flow of pedestrian, bicycle, and vehicular traffic: http://sunnyvale.ca.gov/Departments/PublicSafety/DPSDivision/s/PoliceandTechnicalServices.aspx#traffic%20safety%20unit</p>
<p>Pedestrian Safety Course for Law Enforcement Oftentimes, laws related to pedestrian right-of-way issues are misunderstood, or worse, not known. These courses are designed to educate officers about specific issues related to pedestrian safety and laws.</p>	Opportunity	Officers do not participate in a course specific to pedestrian issues.	<p>Create a workshop for officers that discusses the specific pedestrian safety and right-of-way issues. A sample guide book for such a course was prepared by the Florida Bicycle Association: http://www.dot.state.fl.us/safety/ped_bike/brochures/pdf/Pedestrian%20LEGuide-08.pdf</p>

Source: Survey Completed by City of South San Francisco staff, 2012; Prepared by Fehr & Peers 2012

2 EXISTING PEDESTRIAN ENVIRONMENT

Table II-10: Existing Promotion Programs Benchmarking Analysis

<i>Plan or Policy</i>	<i>Benchmark</i>	<i>South San Francisco Response</i>	<i>Opportunities for Improvements</i>
<p>Coordination Health Agencies Involving non-traditional partners such as Emergency Medical Service personnel, public health agencies, pediatricians, in the planning or design of walking facilities may create opportunities to be more proactive with walking safety, identify walking safety challenges and education venues, and secure funding. Under-reporting of pedestrian-involved collisions could be a problem that may be partially mitigated by involving the medical community in walking safety planning.</p>	Key Strength	The City has a good relationship with Kaiser Permanente and the San Mateo County Health Services Agency, which provides public health programs, and is looking for opportunities to partner on community or public health programs. The City is also a partner in the League of California Cities' HEAL Initiative Campaign (Healthy Eating Active Living)	<p>Continue to seek opportunities for technical collaboration and funding with public health and health care professionals. Work proactively with the County Health Services Agency to ensure policies reflect good health. Establish a Health Agency liaison to facilitate communication and coordination efforts to improve walking opportunities and public information.</p> <p>The Santa Clara County Public Health Department has organized the Traffic Safe Communities Network (TSCN), a collaborative of traffic safety stakeholders aimed at reducing motor vehicle crashes and improving bicycle and pedestrian safety: http://www.sccgov.org/sites/sccphd/en-us/Partners/TrafficSafety/Pages/default.aspx</p> <p>The Pedestrian Plan recommendations should support the Strategic Growth Council's Health in All Initiative</p>
<p>Promotional Giveaways (maps, pedometers, etc.)</p>	Key Strength	The City has partnered with the Alliance on congestion relief and Bike to Work Day and partnered with Kaiser Permanente to create a walking and biking map for South San Francisco which is distributed to residents at various locations and events.	Continue seeking partnerships with local organizations willing to sponsor safety item giveaways to encourage walking and other alternative transportation modes.

2 EXISTING PEDESTRIAN ENVIRONMENT

<i>Plan or Policy</i>	<i>Benchmark</i>	<i>South San Francisco Response</i>	<i>Opportunities for Improvements</i>
<p>Public Involvement Responding to public concerns through public feedback mechanisms represents a more proactive and inclusive approach to bicycling and walking safety compared to a conventional approach of reacting to pedestrian-involved collisions. Advisory committees serve as important sounding boards for new policies, programs, and practices. A citizens' bicycling and walking advisory committee is also a key component of proactive public involvement for identifying bicycling and walking safety issues and opportunities</p>	Key Strength	<p>The City as well as C/CAG currently both have a Bicycle and Pedestrian Advisory Committee (BPAC). Additionally, citizens can call the public works department with complaints. The department has a system to document complaints and send an automatic response to the person who made the complaint when the issue is resolved.</p>	<p>Coordinate outreach with neighborhood advocacy groups. Consider organizing neighborhood groups that identify street needs, including greening and traffic calming. Provide information and conduct outreach in multiple languages.</p> <p>Proactively, work with schools and employers, residents, neighboring communities and C/CAG to facilitate public involvement and more closely coordinate efforts to improve pedestrian facilities.</p> <p>Establish a BPAC webpage to facilitate access to pedestrian information.</p>
<p>Economic Vitality Improving walking safety and walkability can enhance economic vitality. Similarly, enhancing economic vitality through innovative funding options such as Business Improvement Districts (BIDs), parking management, and façade improvement programs can lead to more active walking areas and encourage walking</p>	Opportunity	<p>The City has an active Chamber of Commerce.</p> <p>The City has an on-going façade improvement program.</p>	<ul style="list-style-type: none"> • Encourage the creation of BIDs in commercial areas of the City and apply funds towards walking-related improvements. •

2 EXISTING PEDESTRIAN ENVIRONMENT

<i>Plan or Policy</i>	<i>Benchmark</i>	<i>South San Francisco Response</i>	<i>Opportunities for Improvements</i>
Signage/Wayfinding	Opportunity	The City does not have specific wayfinding signage. There are some signs along Centennial Way directing traffic to the BART station and some Bay Trail signage.	Develop wayfinding signage with South San Francisco-specific graphic design. The signage program should be consistent with other locally used design standards, so that pedestrians and motorists are familiar with different sign types. Example signage programs include the City of Berkeley (http://www.ci.berkeley.ca.us/ContentDisplay.aspx?id=6684), and the West Contra Costa Transportation Advisory Committee (WCCTAC) Wayfinding Plan, which will add pedestrian and bicycle signage throughout west Contra Costa County: http://www.wcacesstransit.com/wayfinding/

Source: Survey Completed by City of South San Francisco staff, 2012; Prepared by Fehr & Peers 2012

3 EXISTING CONDITIONS

CHAPTER 3: EXISTING CONDITIONS

This chapter documents the existing pedestrian conditions, issues and opportunities for South San Francisco.

3.1 PEDESTRIAN NEEDS

A well-connected pedestrian network is a vital component to livable communities, which thrive on multimodal travel for all roadway users, regardless of age or ability. A complete street should offer equal accessibility for the young and old, disabled and not, and should consider the needs of pedestrians, bicyclists, motorists, and transit riders. Designing streets for our most vulnerable populations means that they are safe and accessible for everyone. For all pedestrians, the most important aspects of good design include providing a pleasant and attractive pathway system, free of obstructions and room for pedestrians to walk side-by-side. However, pedestrians with special needs require additional considerations. By designing streets for the most vulnerable users, South San Francisco can provide an environment that will be comfortable and accessible for all. The following describes different pedestrian types and considerations for each.

Children

Children have special needs in the pedestrian realm and thus have unique considerations to accommodate their sensitive demands. This becomes apparent in school zones (particularly for the Kindergarten through 6th grade population) where a safe pedestrian environment is vital. Young children are often too small to be in the line of sight of drivers, so without proper designs, streets surrounding schools may not be safe for these young pedestrians. In addition, children walk slower than adults and may not be able to gauge the amount of time needed to cross an intersection. When streets surrounding schools have inadequate pedestrian facilities, parents may be reluctant to allow their children to walk to school, and will decide to drive children to school for even short distances.

Accommodating children and other vulnerable populations requires special provisions to remove barriers to pedestrian travel. These special provisions include measures such as reducing vehicle speeds and enhancing street crossings around schools. Reduced speed zones near schools, using striping patterns and colors to communicate to drivers that they are within a school zone, and traffic calming measures can facilitate slower vehicle speeds. Reducing crossing lengths through bulb-outs, special crosswalk striping, and median refuges provide shorter crossings for children. Technical assistance and funding to implement these enhancements can be done through Safe Routes to School programs. Adequate sidewalk facilities and crosswalks are particularly important to separate children from vehicle traffic around school neighborhoods where children walk and ride their bicycles.



Source: Dan Burden

3 EXISTING CONDITIONS

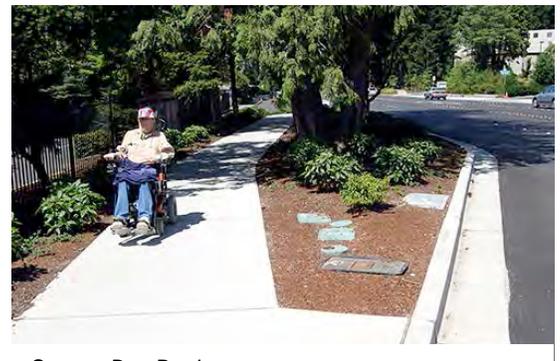
Seniors

Poor sidewalk and crossing conditions may foster isolation with limited opportunities for seniors' mobility; they need travel options other than driving, whether it be walking or taking transit. Seniors have slower walking speeds and reaction times, and may have other impairments that restrict their mobility, vision, and hearing. Sidewalks and street crossings should be sensitive to these barriers and how they affect the aging population.

Opportunities to orient streets to provide senior mobility include: shortening street crossings with median refuges, sidewalk bulb-outs and adequate curb ramps; installing sidewalk furniture to make walking more comfortable by providing places to rest; and adjusting signal timing to account for slower walking speeds. Treatments like pedestrian refuge islands are particularly important to help seniors cross a street since they tend to walk at slower speeds; if they are unable to make the crossing during the available signal time, a refuge provides a separated place to wait.



Source: Dan Burden



Source: Dan Burden

Persons with Disabilities

The Americans with Disabilities Act (ADA) protects the rights of people with disabilities, requiring public entities to develop transition plans to bring existing public facilities up to ADA standards. A key component to adequate ADA provision includes plans to improve curb ramps. It sets guidelines for people with disabilities to access public accommodations and commercial facilities. Disconnected sidewalks and unpaved surfaces can prove frustrating to disabled pedestrians. Additionally, pedestrian crossings may not address the needs of those with poor vision without audible or vibrotactile enhancements. Creating a comfortable and well-connected pedestrian network is important for addressing the needs of users with disabilities. A key recommendation of this Plan is the development of an ADA Transition Plan, which will evaluate South San Francisco's compliance with these standards.

3.2 WALKING IN SOUTH SAN FRANCISCO

Walking as a form of transportation is enjoyable, energizing, environmentally friendly and free. Walking is part of virtually every trip a person takes; however, pedestrians are often the most vulnerable roadway users. Although a fundamental form of any transportation system, pedestrian infrastructure has only recently been given much attention by transportation planners and engineers.

3 EXISTING CONDITIONS

In particular, walking to and from destinations less than ½ mile from home or work is often the quickest and most efficient way for a person to travel in an urban community like South San Francisco.

For the purposes of this memo, the City has been divided into five areas for analysis. Each area has a distinctive character, and pedestrian related themes are generally repeated throughout.

- **Downtown:** The Downtown area is the civic and commercial center of the City. It is also the most walkable area of South San Francisco. The street network is a traditional grid network with narrow street widths. The main streets, such as Grand Avenue and Linden Avenue, are fronted by commercial uses, and have many pedestrian amenities including street furniture, decorative brick crosswalks, landscaping, and street trees. Side streets primarily have residential uses and some landscaping. The Caltrain station is located just to the east of Downtown, on the east side of Highway 101. The pedestrian connection between the station and Downtown has several issues, including difficult crossings at Airport Boulevard and E. Grand Avenue, high-speed traffic, and generally lacks a feeling of personal security due to poor lighting and obstructed sightlines.



Grand Avenue features many excellent pedestrian amenities

- **Lindenville:** The area immediately south of Downtown, identified in the City's General Plan as Lindenville, is primarily an industrial employment area. It is the only industrial area of the City west of US 101. The San Bruno BART station is located immediately south of the area. Walking conditions are difficult in the area. Many sidewalks are missing, and where they do exist, cars are frequently parked on sidewalks and block pathways.



Walking audit in Lindenville

3 EXISTING CONDITIONS

- **East of Hwy 101:** The area east of Hwy 101 is primarily comprised of industrial uses and office parks. The area is home to several of the City’s major employers, including Genentech, Amgen Inc., Columbus Manufacturing Inc., Onyx Pharmaceuticals Inc., and a Costco retail store,. In addition, the South San Francisco Conference Center, many large and medium sized hotels, and the Oyster Point Ferry Terminal are located here, and the San Francisco International Airport is located immediately south. Due to these types of land uses, missing sidewalks throughout the area are problematic. The Bay Trail is located along the shoreline, but walking connections to the trail from



Multi-use path in east of 101 area

other parts of the City are limited. Highway 101 is a major barrier between this area and the rest of the City; limited pedestrian access points exist across the highway. A few mixed use pathways exist, particularly in the northwest corner of the area, however, these pathways often have cracks or other obstacles and are not maintained by the City. Block sizes are large in this area, so often walking paths cross through private campuses. Since it is the responsibility of each property owner to maintain pathways on their land, the quality of these paths varies.

- **El Camino Real:** El Camino Real, or SR 82, runs north-south through South San Francisco. The route was originally developed parallel to the former Southern Pacific railroad tracks and continues to be an important regional route through the Peninsula. The corridor includes a diverse mix of land uses including hotels, restaurants, both small and large scale retail, the Kaiser Permanente Medical Center, civic buildings, two BART stations and both of South San Francisco’s public high schools.



Florist shop on El Camino Real

Despite these diverse land uses along the corridor, the walking environment along El Camino Real can be challenging. Sidewalks are narrow and limited buffers exist between the sidewalk and moving traffic. Crossing distances are extremely wide, with

few pedestrian refuges. Since traffic speeds can be high along the corridor, this creates an uncomfortable environment for pedestrians.

3 EXISTING CONDITIONS

- **Residential Areas:** The rest of the City is primarily residential with localized commercial uses, schools and parks. For the most part, traffic speeds and volumes are lower in these areas than along the major arterials. Landscaping or on-street parking frequently serve as a buffer between the sidewalks and travel lanes. However, in many areas with rolled curbs and no landscaping, cars park on the sidewalks, blocking the pedestrian path of travel. Another common issue is vehicles parked in driveways and blocking the sidewalk. This is common in older neighborhoods where garages and driveways were not built to accommodate larger vehicles. In addition, vehicles were observed driving at higher speeds on several residential collector streets that had few speed control measures, signals or stop signs. Higher speeds can discourage walking trips, particularly for children, seniors, and people with disabilities.



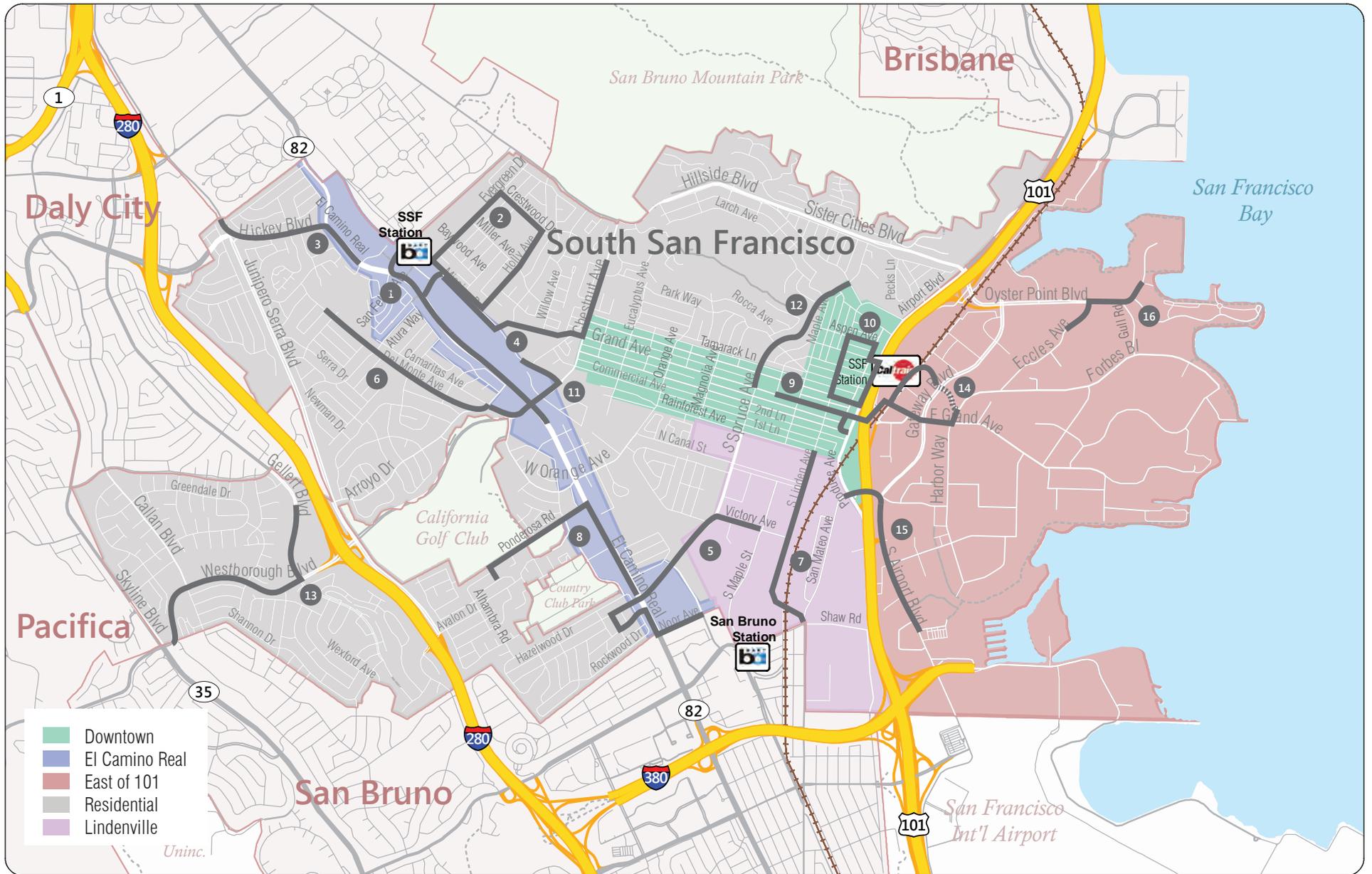
Residential neighborhood in South San Francisco

3.3 PEDESTRIAN ENVIRONMENT

In order to evaluate walking conditions and collect inventory data throughout South San Francisco, 16 walking audits were conducted over the course of a week in May, 2012. The walking audit locations were selected to cover a range of neighborhood and street types and to target areas of concern. The list of sites are illustrated in **Figure 3-1**. Four walking audits were conducted per day on May 1, 3, 4 and 6, 2012. City staff, City Council members, BPAC members and other stakeholders participated in a number of the audits.

This section provides an overview of the citywide pedestrian network trends based on the audit findings. Where appropriate, concerns specific to the five area types discussed above are discussed. While there are many components that contribute to a great walking environment, this section focuses on following key elements:

- **Sidewalks and Pathways**
- **Intersection Crossing Treatments**
- **ADA Access**
- **High Speed Traffic**
- **Linear Barriers**



3 EXISTING CONDITIONS

Sidewalks and Pathways

Sidewalks provide pedestrians with a separated travel path from vehicles on the road. Within an urban area, sidewalks should be provided where feasible, but especially around schools, transit stops, parks, and along mixed-use commercial corridors. In the case of schools, safety considerations are a primary concern when families make the decision whether children should walk (or be driven) to school. Transit stops are also locations of high pedestrian activity, as every transit rider is a pedestrian both before and after taking a trip by transit. Commercial areas should not only accommodate pedestrian travel but also serve as gathering places for pedestrians. Providing sidewalks will increase the safety and convenience of pedestrian travel for all users.

South San Francisco's pedestrian network consists of a system of sidewalks and off-street pathways and trails. Sidewalks are included on both sides of streets throughout most of the City with a few exceptions, particularly in the area east of Highway 101 and in Lindenville, as well as portions of El Camino Real, Westborough Boulevard, Hickey Boulevard, Junipero Serra Boulevard, Gellert Boulevard, King Drive and Carter Drive. Filling these sidewalk gaps is important to the safety and comfort of all roadway users. Off-street pathways and trails provide additional pedestrian connections through the City, including short-cuts within large blocks and accessible routes across barriers such as freeways and railroad tracks. South San Francisco features two extensive off-street pathways: the Centennial Trail and the Bay Trail.

The majority of sidewalks in South San Francisco are typically five feet wide or less. Sidewalks less than five to six feet wide make it difficult for people to walk side-by-side, and can often be difficult for persons with mobility impairments to navigate, particularly when additional barriers are blocking the route, such as parked vehicles, street furniture or utility poles. Ensuring that pathways are clear from obstructions is important for assuring access to all users. There are several locations throughout the City



The Centennial Way Trail is a great pedestrian amenity



Missing sidewalk



Vehicles often park on sidewalks

3 EXISTING CONDITIONS

where utility poles are located in the middle of the sidewalk, limiting the usable width of the sidewalk and potentially prohibiting wheelchair users from passing. Furthermore, multiple neighborhoods have issues with cars blocking the sidewalk either by parking in a driveway so that the back of the vehicle blocks the sidewalk, or from cars parallel parking on the street with two wheels on the sidewalk and two wheels on the road. This is particularly a problem in areas with rolled curbs, such as West Orange, Spruce and Alta Loma Avenue.

Buffers between the sidewalk and the roadway can help to increase pedestrian safety and comfort. Common buffers include:

- Landscaping or street trees, which have been applied on several streets in downtown South San Francisco, including Grand Avenue.
- Parallel or angled parking, which has been applied on most streets throughout the City.
- Striped bike lanes, which have been installed along sections of Airport Boulevard.

Sidewalks in several neighborhoods of the City could be further enhanced by buffering sidewalks from moving traffic, as discussed in the following chapter.

Intersection Crossing Treatments



Decorative brick crosswalk across Grand Avenue with in-pavement flashers

Well-designed street crossings are vital for improving pedestrian mobility and connecting neighborhoods. Well-marked, high visibility pedestrian crossings accomplish dual goals. They prepare drivers for the likelihood of encountering a pedestrian, and they create an atmosphere of walkability and accessibility for pedestrians. As with sidewalks, street crossings are particularly important near schools, transit stops, parks, and where there are many pedestrians. The addition of new street crossings may be most effective where there are existing safety deficiencies and a high demand for street crossings.

In California, it is legal for pedestrians to cross any street, except at unmarked locations between immediately adjacent signalized crossings or where crossing is expressly prohibited. Marked crossings reinforce the location and legitimacy of a crossing, and are essential links in a pedestrian network.

Common practice in California is to place

crosswalks on all four legs of an intersection, otherwise the crossing should be closed with a barrier at the curb.

South San Francisco does not have an established crosswalk policy for when, where and how to mark



Pedestrian actuated flashing beacon on Miller Avenue

3 EXISTING CONDITIONS

crossings, however the City typically uses two parallel white lines to mark crosswalks. Decorative brick treatments are used along the downtown commercial area of Grand Avenue to mark crosswalks, and several crosswalks within school zones and other high activity areas use high visibility yellow or white ladder design crosswalks.

Several intersections were observed with pedestrians crossing at unmarked locations, typically where crosswalks were marked on some, but not all, legs of the intersection. In many cases these are legal crossing locations (where drivers are required to yield to pedestrians), but the lack of a marked crosswalk creates ambiguity for pedestrians and drivers about who has the right-of-way. Consistent marking of crosswalks is important to both increase driver awareness of the pedestrian right-of-way and to improve safety.

Most signalized intersections in South San Francisco are pedestrian actuated, meaning the pedestrian must push a button to trigger the walk phase. A few signals throughout the City have pedestrian countdown timers, which let the pedestrian know how much crossing time is left in the signal phase. Pedestrian countdown signals are now required to be installed whenever signals are upgraded. The City has also installed a number of traffic control devices at unsignalized locations. In-pavement flashers are installed along Grand Avenue, Orange Avenue and other locations throughout the City. A flashing beacon with pedestrian signage at the intersection of Miller Avenue and Cypress Avenue also helps to improve visibility of pedestrians.



Family crossing the street on Spruce Avenue at an unmarked crossing location



Diagonal curb ramp without tactile domes

ADA Access

The United States Access Board is the federal agency in charge of accessibility for persons with disabilities. The Board develops and maintains design criteria for the built environment, transit vehicles, telecommunications equipment, and for electronic information technology. The Board is currently developing an amendment to its Public Rights-of-Way Accessibility Guidelines. These include standards for sidewalks, street crossings, and other elements of the roadway. The Guidelines



Accessible bi-directional curb ramp with tactile domes

3 EXISTING CONDITIONS

include clarifying the placement of detectable warnings, and limiting pedestrian signalization at roundabouts and channelized turn lanes to crossings of two lanes of traffic or more. Both the Access Board Guidelines and the 2009 Manual of Uniform Traffic Control Devices (MUTCD) recommend setting pedestrian signals based on a maximum of 3.5 feet/second walking speed (rather than 4.0 feet per second). All new facilities that have any federal funding must meet the Access Board's guidelines. In addition, when any physical changes are made to an existing facility, the facility must be upgraded to the Access Board's current standards.

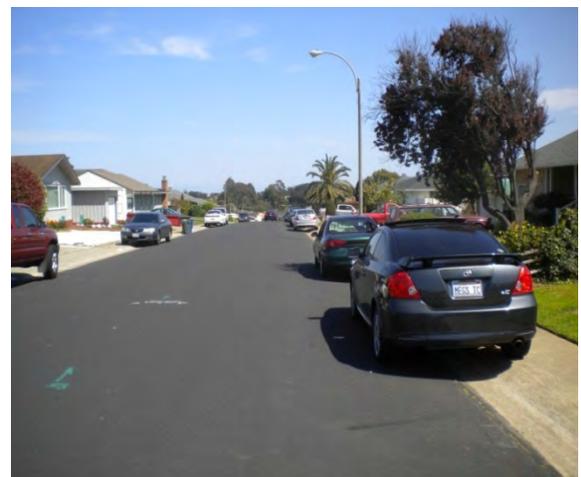
South San Francisco does not have an established policy for timing pedestrian signals. The pedestrian crossing time at many signals throughout the City is shorter than what is recommended in the ADA guidelines. This can lead to certain pedestrians not having enough time to cross the street during the pedestrian signal phase, making them vulnerable to oncoming traffic once the light turns green.



Cars blocking sidewalk on a residential street

According to ADA guidelines, sidewalk curb ramps should have both a ramp and detectable warnings (also known as truncated domes) to ensure access between the sidewalk and street for people with disabilities. The majority of curbs throughout South San Francisco have curb ramps; areas lacking curb ramps are difficult for those with mobility impairments to navigate. Few curb ramps in the City have truncated domes which alert those with visual impairments that they are about to enter the street. Ideally, curb ramps should be bi-directional and guide pedestrians into the marked crossings, rather than diagonally across an intersection. While the sidewalk corner area often limits the direction of curb ramp, bi-directional ramps are the best practice and should be installed wherever feasible. Audible pedestrian crossing signals also help those with visual impairments know when it is safe to cross the street. South San Francisco has audible signals at a few intersections.

Many residential areas in the City, particularly in older areas, have garages that do not accommodate larger cars. However, many people park in driveways, blocking the sidewalk. There is likely a lack of knowledge that the sidewalk is public right-of-way and blocking it with a vehicle is illegal. "Friendly" enforcement of this issue is needed to reduce this problem. Additionally, the City's driveway standards should be reviewed and potentially updated to ensure that they meet ADA standards.



Cars parked on sidewalks with rolled curbs

High Speed Traffic

Speeding traffic can negatively affect the pedestrian experience, and is a primary indicator for the severity of a pedestrian injury as the result of a collision. Arterial streets

3 EXISTING CONDITIONS

such as El Camino Real, Airport Boulevard, Westborough Boulevard, and East Grand Avenue were designed for higher vehicle speeds. On streets such as these it is best to provide a buffer between the sidewalk and moving traffic in order to protect pedestrians and maximize comfort. Buffers can include landscaping or street trees, bike lanes, or parked cars. In addition, conflicts between vehicles and pedestrians can occur at crossing locations. At these locations, vehicle speeds should be controlled through design measures and signal timing to reduce the number and severity of conflicts.

Residential streets are not meant to accommodate vehicles at high speeds. However, high traffic speeds were noted on several residential streets throughout the City, particularly on streets such as Spruce Avenue and Del Monte Avenue, which have long stretches without speed reduction measures or stop signs. These areas also have rolled curbs. In these locations, vehicles were frequently parked on sidewalks, likely a result of wanting to avoid getting hit by speeding vehicles. The rolled curbs also increase the ease of parking on sidewalks. However, this limits the accessibility of the sidewalks, which are sometimes completely blocked by vehicles.

Linear Barriers

Highway 101, Interstate 280, El Camino Real, and the Caltrain railroad tracks physically separate different parts of the City, and present obstacles to walking between neighborhoods. Pedestrian paths across these barriers are provided in limited locations, forcing pedestrians to travel longer distances to reach their destinations, and are often unpleasant places to walk due to the narrow pathways, high-speeds and high volumes of vehicles, and lack of pedestrian amenities.



Pedestrian connection on Grand Avenue under Hwy 101

3 EXISTING CONDITIONS

3.4 IDENTIFICATION OF SYSTEM GAPS

Pedestrian infrastructure gaps were inventoried across South San Francisco during the walking audits. Addressing these gaps is an important component in developing a safe and accessible walking environment.

Missing Sidewalks

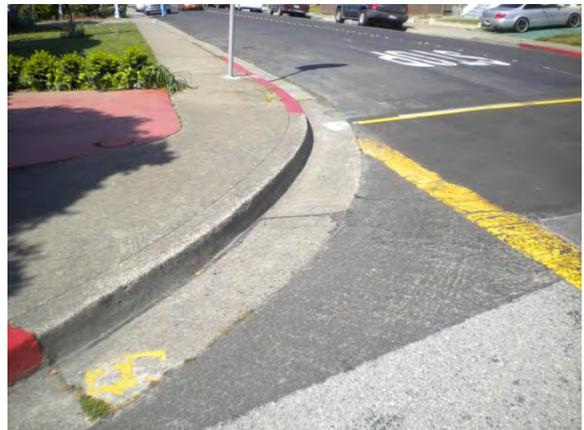
Figure 3-2 shows sections of South San Francisco where sidewalks are missing; this inventory is a comprehensive list of sidewalks throughout the entire City. While most of the areas with missing sidewalks are located in the area east of Highway 101, other areas with significant gaps include several streets in Lindenville, as well as portions of El Camino Real, Westborough Boulevard, Hickey Boulevard, Junipero Serra Boulevard, Gellert Boulevard, Chestnut Avenue, Hillside Boulevard, King Drive and Carter Drive. Filling these sidewalk gaps is important to the safety and comfort of all roadway users.



Discontinuous sidewalk segment

Missing Curb Ramps

Curb ramps were also inventoried across the City. While the missing sidewalk inventory includes the entire City, curb ramps were only inventoried in the areas where walking audits were conducted. **Figure 3-3** shows the locations of all of the intersections where a curb ramp inventory was conducted. Each intersection has four corners; ideally curb ramps with tactile domes would be included at each corner. Each circle on the map represents one intersection, with each quarter of the circle representing one corner. Each circle is color-coded to show the status of the corner among the following options:



Missing curb ramp in Lindenville neighborhood

- Curb ramp with tactile domes
- Curb ramp without tactile domes
- Missing curb ramp

3 EXISTING CONDITIONS

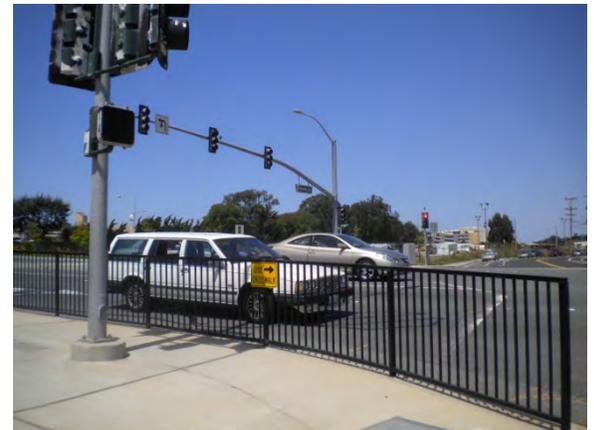
The downtown area generally has curb ramps at each of its intersections, but without tactile domes. Lindenville has a mix; while some curb ramps have tactile domes, some intersections are missing curb ramps altogether. The surveyed areas east of 101 generally have curb ramps without tactile domes, wherever sidewalks exist. Intersections along El Camino Real generally have curb ramps and some have tactile domes. The quality of curb ramps varies in the residential areas. In the Sunshine Gardens neighborhood, near the South San Francisco BART station, many intersections have curb ramps with tactile domes, however some corners are missing curb ramps. Curb ramps are also missing in sections of the Westborough, Avalon, and Paradise Valley neighborhoods. A more comprehensive inventory of missing curb ramps is needed. Curb ramps and tactile domes should be installed at any intersection where they currently do not exist.



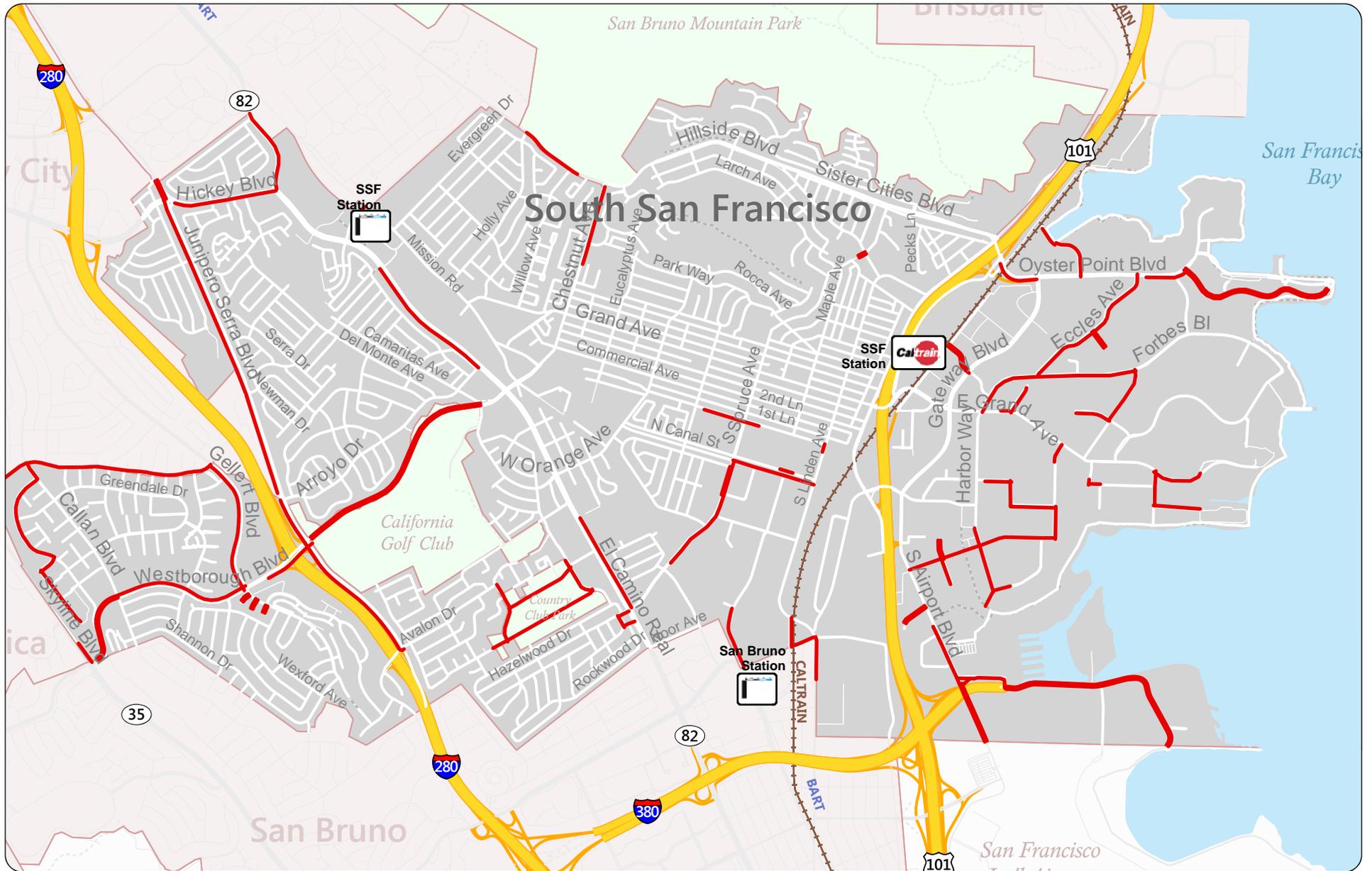
Pedestrian walking at unmarked crossing location at Chestnut Avenue and Mission Road

Missing Crosswalks

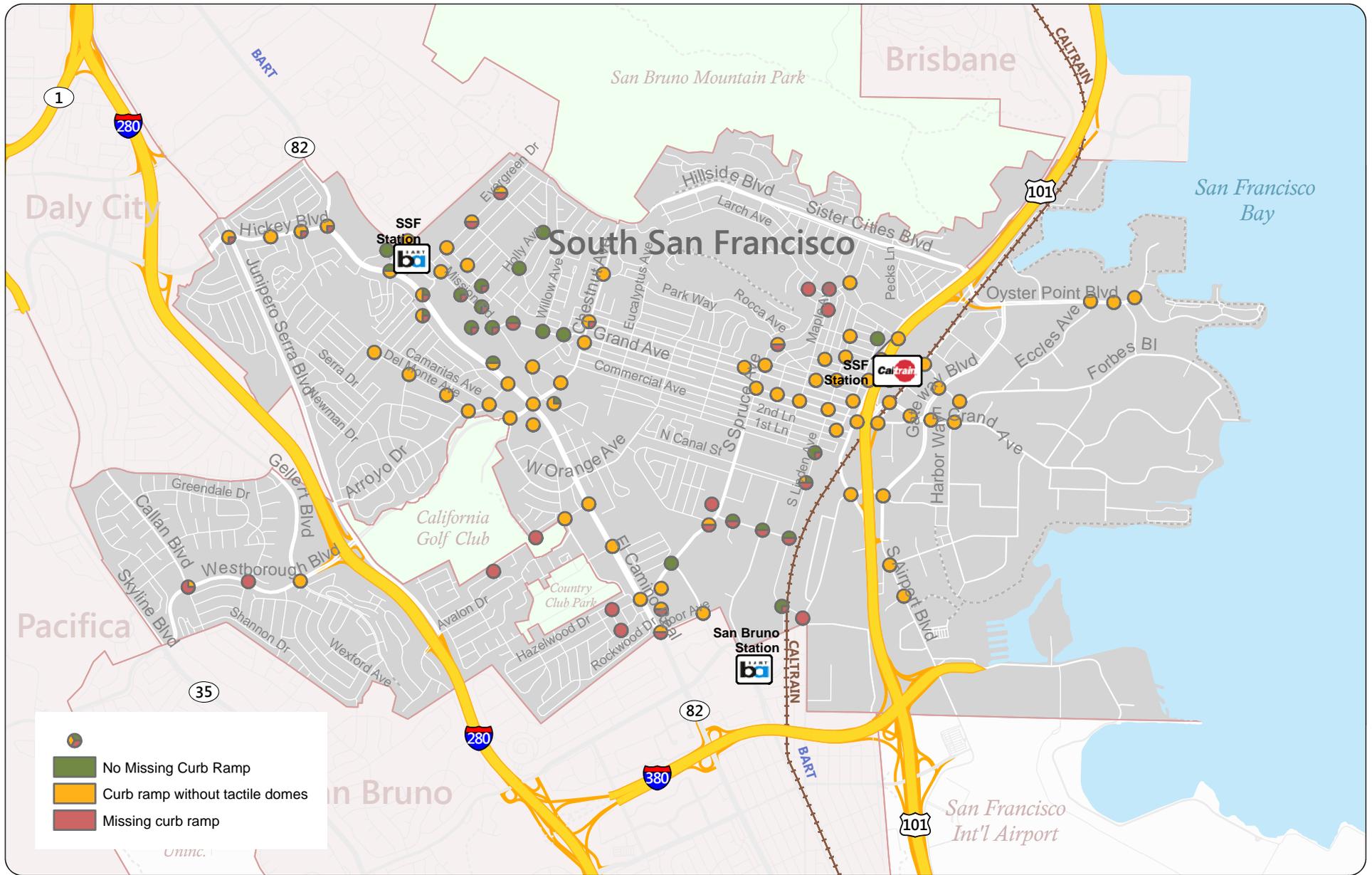
The presence of crosswalks was also inventoried at intersections along the walking audits. It is generally recommended to locate marked crosswalks across all four legs of an intersection. Where crosswalks are not marked, a barrier should be placed to discourage pedestrians from crossing. **Figure 3-4** shows, for the intersections inventoried, which intersections have no crosswalk gaps, and which intersections have at least one leg missing a marked crosswalk. Crosswalk gaps exist in all areas of the City. At some intersections the gap only exists at one of three legs, but at some intersections no legs are marked with a crosswalk. Marking crosswalks is important to demonstrate both to vehicles and pedestrians where the pedestrian right-of-way exists. At several locations throughout the walking audits pedestrians were observed crossing the street at unmarked crosswalk locations, despite uncomfortable conditions. Marking crosswalks is important for improving safety of all roadway users.

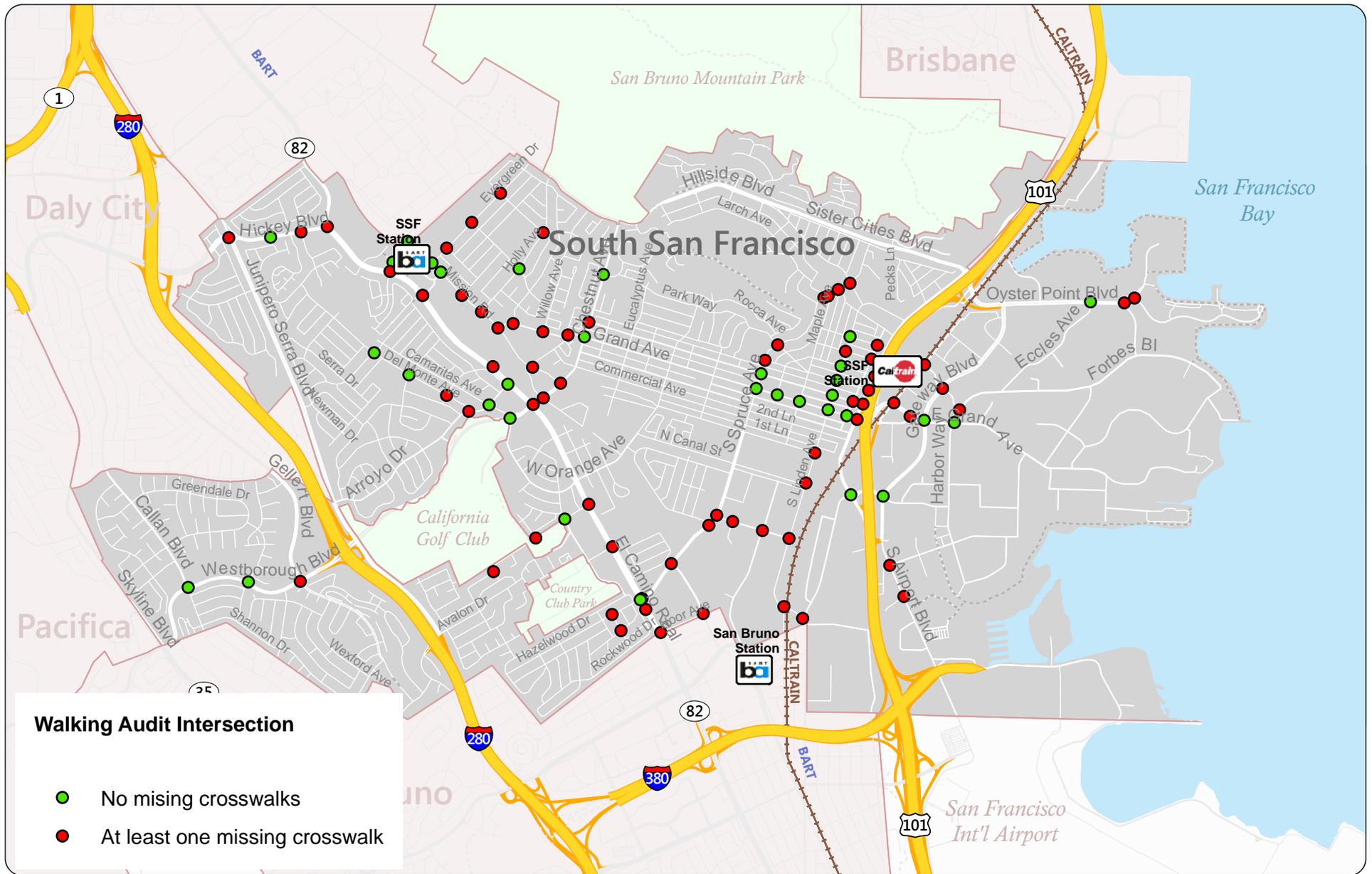


Fencing barrier where pedestrian crossing is prohibited



MISSING SIDEWALKS CITYWIDE INVENTORY





3 EXISTING CONDITIONS

3.5 SUMMARY OF OPPORTUNITIES AND CONSTRAINTS

The following table summarizes the opportunities and constraints for addressing the issues discussed in the previous sections.

	OPPORTUNITIES	CONSTRAINTS
Sidewalks	<ul style="list-style-type: none"> • Complete sidewalk gaps • Provide buffers/barriers such as landscaping or bike lanes • Consider an encouragement or enforcement program to reduce parking on sidewalks in residential neighborhoods 	<ul style="list-style-type: none"> • The pedestrian right-of-way is physically constrained in some areas, limiting opportunities to provide new sidewalks • Sidewalk gap projects will require an ongoing funding source, such as private development and Capital Improvement Project funds • New sidewalks and/or types of buffers may require some on street parking to be removed • Parking enforcement requires coordination with the Police Department
Pedestrian Crossings	<ul style="list-style-type: none"> • Implement crossing improvements such as marked crossings on all intersection legs, signal countdowns, and increase pedestrian signal lengths at high-priority intersection locations • Develop a crosswalk policy to guide the installation of marked crosswalks 	<ul style="list-style-type: none"> • Intersection crossing improvements may affect auto vehicle operations in high volume areas • Crossing improvements may require coordination with other agencies such as Caltrans, Caltrain, City of Daly City and City of San Bruno
ADA Access	<ul style="list-style-type: none"> • Develop an ADA Transition Plan • Install curb ramps with detectable warnings • Review and revise driveway design standards as needed • Increase parking enforcement 	<ul style="list-style-type: none"> • Improvements will require a dedicated funding, ongoing funding source • Parking enforcement requires coordination with the Police Department
High Speed Traffic	<ul style="list-style-type: none"> • Fund Traffic Calming Program • Perform enforcement activities at high-priority locations 	<ul style="list-style-type: none"> • Enforcement requires coordination with the Police Department • Traffic Calming Program will require an ongoing, dedicated funding source
Linear Barriers	<ul style="list-style-type: none"> • Enhance crossings at linear barriers 	<ul style="list-style-type: none"> • Crossing improvements may require coordination with other agencies such as Caltrans, Caltrain, City of Daly City and City of San Bruno

4 RECOMMENDED IMPROVEMENTS

CHAPTER 4: RECOMMENDED IMPROVEMENTS

The pedestrian improvements recommended in this chapter are aimed to enhance pedestrian access, safety and circulation within South San Francisco.

4.1 INTRODUCTION

This section documents the recommended pedestrian improvements throughout the City including closing the key pedestrian network gaps, programmatic improvements, as well as specific site improvements. Projects were selected based on review of previous plans, City and BPAC input and findings from the walking audits.

4.2 CITYWIDE PROJECT RECOMMENDATIONS

The Existing Conditions chapter identified key issues and gaps in the pedestrian network. Certain issues reoccur throughout the City. Recommended improvements for these citywide issues are divided into five categories, each of which is identified and discussed below:

- Sidewalks
- Intersection Crossing Treatments
- ADA Access
- Speed Reduction Measures
- Linear Barriers

Sidewalks

Two types of sidewalk improvements are recommended: those that fill in the gaps where sidewalks do not currently exist, and those that improve existing sidewalks that do not meet ADA standards. Sidewalk gaps are areas in South San Francisco where there are either no sidewalks on a street or where sidewalks only exist on one side of the street, as shown in **Figure 3-2**. The Downtown area has a complete sidewalk network, but there are many sidewalk gaps in the East of 101 area and the western side of the City. Completing sidewalk gap closures will be an ongoing effort by the City and will require a sustained funding source. Sidewalk gaps that have been previously approved and those on private streets in residential subdivisions may remain unchanged, but future development should require sidewalks on both sides of the street to maximize connectivity to existing and future pedestrian facilities. The Implementation Chapter of this plan will address prioritization and funding of these projects.



Grand Avenue sidewalk in Downtown South San Francisco

4 RECOMMENDED IMPROVEMENTS

Sidewalks should be installed in all areas of the City where they are currently missing. ADA accessible curb ramps should be included with any new sidewalk construction. Many existing sidewalks in the City are narrow and some are blocked by obstacles such as utility poles, which are a major barrier to pedestrians with visual impairments. New developments should be required to install ADA accessible sidewalks as a requirement for development approval. A recommended minimum sidewalk width for new residential development is six feet. Sidewalks in existing residential developments may remain at current widths (city approved minimum of 48 inches, or 4 feet) unless a substantial new development of multifamily dwelling units is planned. ADA sidewalk regulations specify that routes with less than 1.525 meters (60 inches, or 5 feet) of clear width must provide passing spaces at least 1.525 meters (60 inches) wide at reasonable intervals not exceeding 61 meters (200 feet), and a 5 feet by 5 feet turning space should be provided where turning or maneuvering is necessary. At locations where obstacles are blocking the sidewalk, the obstacles should either be removed, or the sidewalk should be widened to provide sufficient width for ADA access. In some cases, such as around utility poles and boxes, this may require a curb extension or bulb out. Sidewalks along arterials should have buffers between pedestrians and moving traffic. Buffers may include landscaping or street trees, parallel or angled parking, and striped bike lanes.



Example of bulb out with curb ramp and tactile domes

Intersection Crossing Treatments

Intersections should be designed to enable access for all users. Best practices include providing uniform crosswalk markings, providing high visibility crossing treatments at high risk unsignalized crossings, providing pedestrian countdowns at signalized intersections, and providing pedestrian islands or median tips. Intersection crossing enhancement projects will be an ongoing effort by the City. Potential funding sources for these projects will be discussed in the Implementation chapter.

Crosswalks should be marked across all legs of an intersection. The walking audits inventoried the locations of crosswalk gaps at some intersections, as shown in **Figure 3-4** of Chapter 3. However, a thorough citywide inventory is recommended. A uniform crosswalk policy should be implemented across the City, which is useful for building future crosswalks at development and road improvement sites. A citywide inventory can be used to identify priority locations for periodic upgrades.. Currently the City provides crosswalks in the form of two white parallel lines at most intersections. This could be



Ladder crosswalk and ADA accessible curb ramp with tactile domes

4 RECOMMENDED IMPROVEMENTS

designated as the default treatment. At stop controlled intersections, is recommended to replace all crossings marked with a stop bar and the word "STOP" and replace this with the uniform crosswalk treatment identified by the City. At signalized intersections, all crossings are legal and should be marked. If the City chooses not to mark a crosswalk, the crossing should be closed to pedestrians with a barrier and signage directing them to the closest legal crossing.

High visibility crosswalks, such as ladder striped crosswalks, should be considered at unsignalized crossings with high pedestrian volumes. One uniform high visibility crossing treatment should be used throughout the City. Crossings near schools should be marked in yellow to designate that they are located in a school zone. Additional crossing treatments may be applied in school zones to ensure safe crossing of students or at other unsignalized crossings designated as high risk areas. This may include advanced yield lines, commonly referred to as "sharks teeth", advanced stop bars, pedestrian signage, or flashing beacons. These treatments are described in detail in the **Design Guidelines (Appendix A)**.



Pedestrian countdown signal

In order to ensure that pedestrians are aware of the remaining crossing time, pedestrian countdowns should be installed at all signalized intersections. California law requires that countdown signals be installed whenever signal control devices are being upgraded. At pedestrian actuated crossings, one pedestrian push button should be located adjacent to the curb ramp. Pedestrian push buttons for separate directions should not be located on the same pole. For audible pedestrian signals at corners of signalized locations where two pedestrian pushbuttons are provided, the pushbuttons should be separated by a distance of at least 10 feet in order to distinguish between the audio sources.

Many arterial streets in South San Francisco have medians which terminate in the crosswalk, partially blocking the crosswalk. These medians should be trimmed back so that they do not block the crosswalk, and a median tip or "thumbnail" should be added on the outer edge of the crosswalk to provide additional pedestrian protection. Pedestrian refuge islands can also be installed to provide pedestrians with a protected place to wait between walk signals while crossing a long intersection.



A mobility assisted pedestrian waits to cross the street

ADA Access

Pedestrian facilities should be designed to accommodate pedestrians with mobility impairments and should meet Americans with Disability Act guidelines. Best practices include upgrading curb ramps, providing adequate pedestrian clearance intervals, providing accessible pedestrian signals, and removing obstacles on sidewalks. It is recommended that the City develop an ADA Transition Plan that

4 RECOMMENDED IMPROVEMENTS

comprehensively addresses these issues.

Many intersections throughout the City are either missing curb ramps or the existing curb ramps are missing truncated domes. The walking audits inventoried missing curb ramps at some intersections, as shown in **Figure 3-3** of Chapter 3, but a thorough curb ramp inventory of the entire City should be conducted in order to identify priority locations for periodic curb ramp upgrades. Truncated domes provide a tactile signal to the visually impaired as they transition between walking paths or sidewalks and conflict areas such as intersections. Bi-directional curb ramps (i.e., two ramps per corner) are preferred whenever possible, to direct pedestrians into a crosswalk instead of diagonally into the intersection. Curb ramps should be provided at all intersections where they are currently missing in order to provide an accessible pedestrian network. This is important not just for people with disabilities, but for people with strollers, children and seniors.

As mentioned in Chapter 3, both the Access Board Guidelines and the 2009 Manual of Uniform Traffic Control Devices (MUTCD) recommend setting pedestrian signals based on a maximum of 3.5 feet/second walking speed (rather than 4.0 feet per second). All new facilities that have any federal funding must meet the Access Board's guidelines. In addition, when any physical changes are made to an existing facility, the facility must be upgraded to the Access Board's current standards. Long crosswalks throughout the City at signalized intersections should include a pedestrian signal phase based on a 3.5 feet/second walking speed to ensure that pedestrians have sufficient time to cross the intersection.

Accessible pedestrian signals communicate information about crossings to pedestrians with visual impairments with audible tones or vibrating systems. These accessible pedestrian signals should be placed with guidance from the Accessibility Disability Commission.

Cars parked in driveways, or on rolled curbs, blocking the sidewalk is a common obstacle in residential neighborhoods in South San Francisco. Education programs can help to make residents aware that the sidewalk is public right-of-way and blocking it with a vehicle is illegal. Enforcement and encouragement efforts should be implemented to help alleviate this problem. Enforcement could start with "friendly" warnings to alert violators, followed by ticketing for repeat offenders. Additionally, the City's driveway standards should be reviewed and potentially updated to ensure that they meet ADA standards.

Speed Reduction Measures

High vehicle speeds were noted in many areas of the City, both on arterials and in residential neighborhoods. The City currently has a traffic calming program with specific standard treatments. These treatments should be used to reduce vehicle speeds in neighborhoods of concern. Measures included in the traffic calming program are divided into three categories: education and enforcement, speed reducing tools, and cut-through traffic reducing tools. Education and enforcement tools include neighborhood speed watch programs, neighborhood pace car programs, and



An edgeline demarcates the parking lane & edge of travel lane to reduce vehicle conflicts

4 RECOMMENDED IMPROVEMENTS

targeted police enforcement. Speed reducing tools include high visibility crosswalks, textured pavements, in-pavement flashers, signage, radar display units, edgeline striping, curb extensions, traffic circles, raised crosswalks and raised intersections. Cut-through reduction tools include turn restrictions, median barriers, and channelizing barriers. Refer to the South San Francisco Traffic Calming Program for details about these measures and their implementation. Many residential neighborhoods with high vehicle speeds also have rolled curbs. As a result, cars are frequently parked on the sidewalk to avoid getting hit by oncoming vehicles, however this blocks the sidewalk for pedestrians. One simple measure included in the traffic calming program is to stripe edgelines along the roadway. Edgelines have the apparent effect of narrowing the roadway and therefore encourage drivers to drive more slowly. Painting edgelines with sufficient space for vehicles to park outside the sidewalk would also encourage vehicles to park on the street, rather than on the sidewalk. Education and enforcement measures can also be cost effective solutions, especially when residents are willing to volunteer for programs to address issues on their own streets.

Linear Barriers

Linear barriers physically separate different parts of the City and present obstacles to walking between neighborhoods. Four major transportation routes create linear barriers in South San Francisco: Highway 101, Interstate 280, El Camino Real, and the Caltrain railroad tracks. Colma Creek also presents a linear barrier through part of the City. Crossings at linear barriers should be enhanced to improve pedestrian comfort and safety. This can include bridges, pedestrian scale lighting, widening sidewalks, and removing obstacles.

4.3 SITE-SPECIFIC RECOMMENDATIONS

This section provides recommendations for site-specific projects within the City. Some of the citywide themes discussed above are reiterated in this project list, including opportunities to fill specific sidewalk, curb ramp and crosswalk gaps, particularly when these gaps coincide with other adjacent pedestrian improvement opportunities. These recommendations were identified during the 16 walking audits and from input from the City and BPAC members. Therefore this project list is not a comprehensive citywide list, but rather is focused on key pedestrian areas, which are located throughout the city and represent a range of neighborhoods and issues.

The project table includes a project ID, which is the walking audit number and the project reference number within that walking audit. The location column describes either the intersection or the street segment. The issue column describes issues or opportunities noted at the location. The recommendations column summarizes the recommended improvements for the location. The cost column provides a concept-level cost estimate (forthcoming). The notes column lists additional considerations involved in implementing the recommendations.

The recommendations are divided into five color coded categories:

- Construction of pedestrian right-of-way (sidewalk, bulb-out, curb ramp, median island, etc.)
- Traffic control measures
- Striping

4 RECOMMENDED IMPROVEMENTS

- Signage
- Other measures including enforcement and amenities

The organization of the table will help to facilitate grouping of recommendations into grant ready projects, since projects in the list can either be grouped by location or project type. Projects may be funded through grants, new development and other capital improvement funding opportunities. Project prioritization and funding is discussed in detail in the Implementation chapter. The following section outlines a set of eight conceptual plans, which provide a comprehensive description of recommendations for eight geographic areas of the City. These concept plans can be used as project sheets for the purpose of pursuing grants.

5 CONCEPT PLANS

CHAPTER 5: CONCEPT PLANS

This chapter outlines eight concept plans to provide site-specific recommendations based on assessments of pedestrian facilities and field work completed during the walking audits. Concept plans include corridors, large intersections, sections of neighborhoods and areas around activity nodes. These plans can be applied to the specific locations described, and can be used as a general guide for similar settings as the City finds opportunities for pedestrian improvements in additional locations.

5.1 CITYWIDE SIDEWALK GAP CLOSURE PROJECT

Missing sidewalks

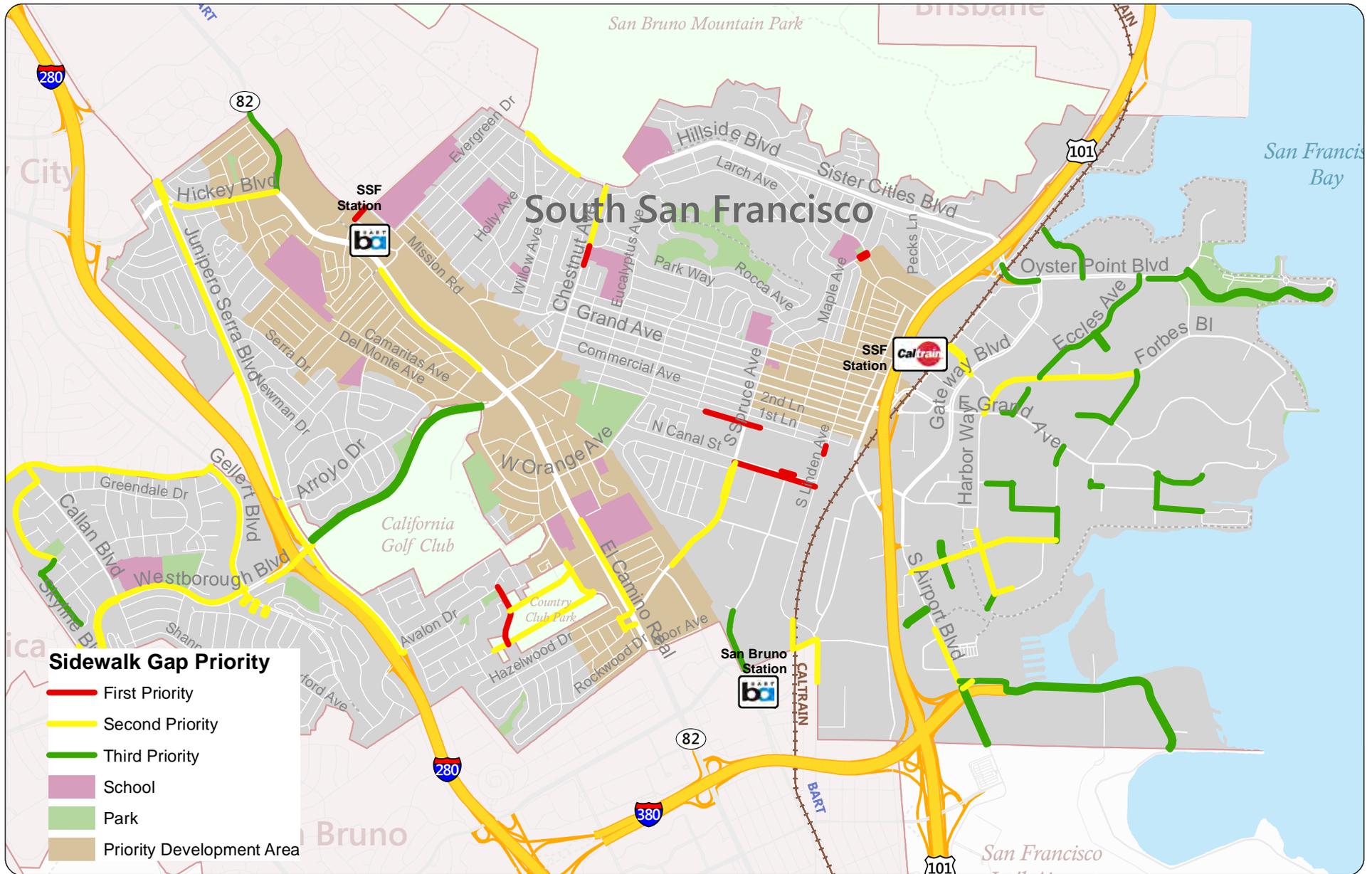
Closure of sidewalk gaps throughout the City will provide basic pedestrian connectivity and create opportunities for pedestrian trips between existing and future destinations. This is especially effective in the near-term through areas with high pedestrian demand, as the investment will be immediately relevant by providing pedestrian access between existing origins and destinations that may lead to a switch to pedestrian mode.

Pedestrian demand was evaluated in the San Mateo County Pedestrian INDEX Walking Demand Score analysis using a number of variables in a GIS model. The built environment, proximity to destinations, demographics, and street design were all considered. The built environment factors include population and employment density, as well as land use mix. The proximity factors include schools, parks, transit, commercial centers, and employment, Demographics factors include age, income and vehicle ownership, thereby incorporating need-based demand in the analysis. Street design factors include intersection density and street connectivity. The factors were weighted and given points, so each street segment in South San Francisco has a total Pedestrian INDEX Demand Walking Score.

These scores were grouped according to natural breaks to great three categories: high priority, medium priority, and long-term sidewalk gap closures. Professional judgment and proximity to recorded pedestrian collisions were taken into consideration where the scores were close to the cut-off point. High priority sidewalk gaps, shown on the figure in red, are located on segments with the highest demand scores, which are primarily streets near the downtown core, in the older, denser residential neighborhoods and adjacent to major transit hubs. Medium priority sidewalk gaps, shown on the figure in yellow, are located on segments with the mid-range scores, which are primarily streets that connect to residential development or economic activity, and some that are located in areas slated for near-term future development. Long-term sidewalk gap closures, show on the figure in green, are located on street segments with low pedestrian demand. This evaluation may change depending on future development and transportation patterns, and opportunities to close sidewalks in conjunction with development, at a reduced cost to the City, should be taken into consideration.

5 CONCEPT PLANS

Issues and Opportunities	<ul style="list-style-type: none">• There are gaps in the sidewalk network throughout the City, especially outside of Downtown• Many of these sidewalk gaps overlap with areas of high pedestrian demand, or intersections with recorded pedestrian collisions
Proposed Improvements	<ul style="list-style-type: none">• Develop a prioritization system to systematically close sidewalk gaps and identify development opportunities to close additional gaps
Cost	<ul style="list-style-type: none">• TBD• Costs will vary depending on project



Sidewalk Gap Priority

- First Priority
- Second Priority
- Third Priority
- School
- Park
- Priority Development Area



Citywide Sidewalk Gap Closure Project
Missing Sidewalks Citywide

5 CONCEPT PLANS

5.2 NEIGHBORHOOD RETAIL CORRIDOR

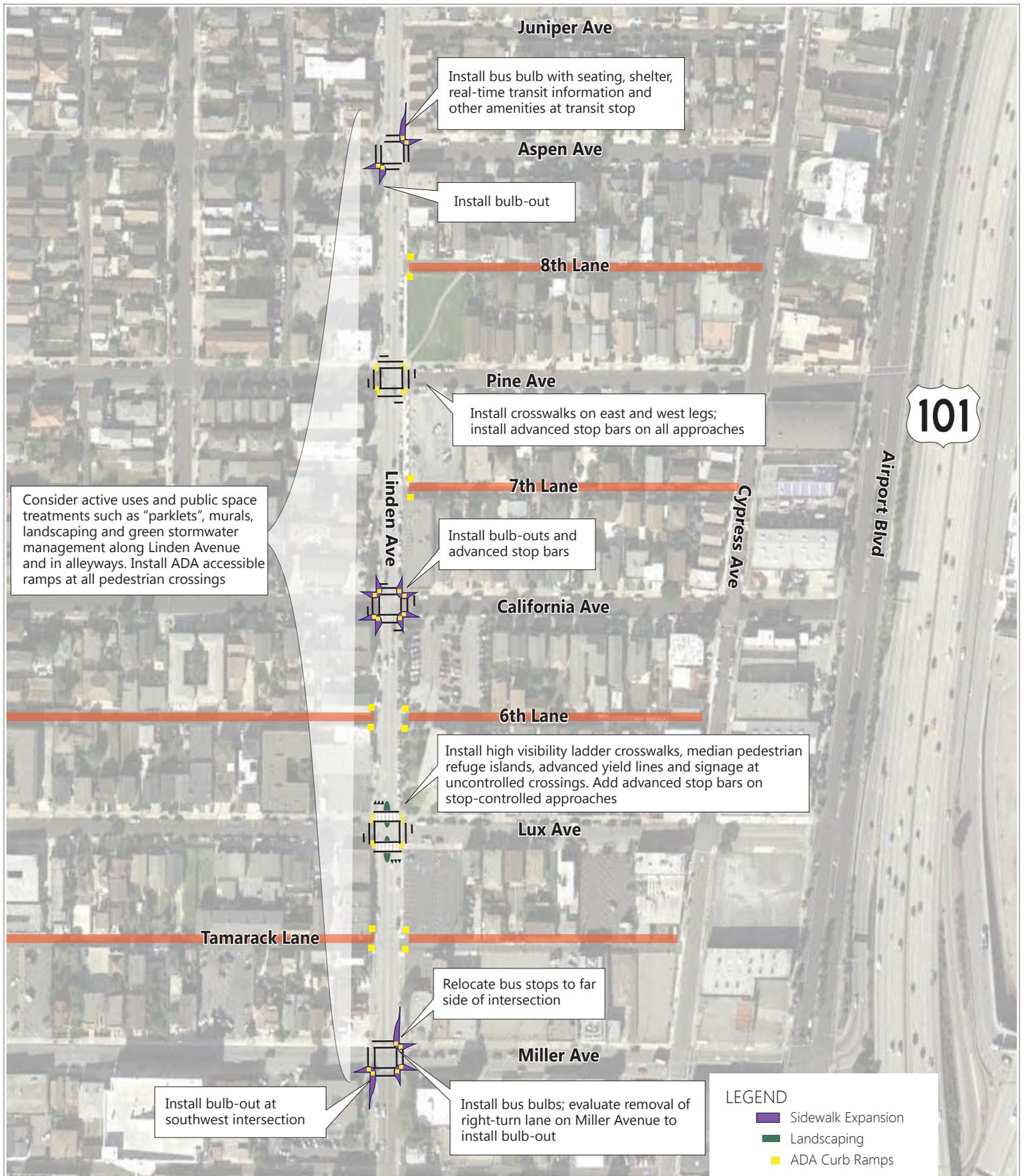
Linden Avenue Improvements

Linden Avenue between Aspen Street and Grand Avenue in downtown South San Francisco is a secondary commercial corridor connecting to the busier Grand Avenue corridor. This section of Linden Avenue is a key transit corridor and presents opportunities for increased commercial activity and pedestrian connections to nearby destinations, including small parks, schools, City buildings, local businesses and the walkable residential neighborhoods of this part of South San Francisco.

Issues and Opportunities	<ul style="list-style-type: none"> • Opportunity to improve pedestrian amenities, encourage economic development and enhance access to transit stops along corridor
Proposed Improvements	<ul style="list-style-type: none"> • Relocate bus stop at Miller Avenue to far side of intersection • Add bus stop shelters at Miller Avenue and Aspen Avenue • Install bus bulbs at Miller Avenue and Aspen Avenue bus stops • Install traffic calming treatments such as curb extensions at the corners of crossings along Linden Avenue • Install median pedestrian refuge islands at yield controlled crossing (Lux Avenue), and advanced stop bars at stop-controlled crossings • Install advanced pedestrian signage at key unsignalized crossings. • Update curb ramps • Install high visibility crosswalks
Estimated Cost	<ul style="list-style-type: none"> • \$543,440 construction costs • \$326,064 soft costs* • Total cost: \$869,504

*Soft costs include the following:

- Traffic control (5%)
- Design and Environmental Review (20%)
- Mobilization (5%)
- Construction Management (10%)
- Contingency (20%)



Not to Scale

5 CONCEPT PLANS

5.3 BART STATION AND EL CAMINO HIGH SCHOOL ACCESS IMPROVEMENTS

Mission Road Corridor

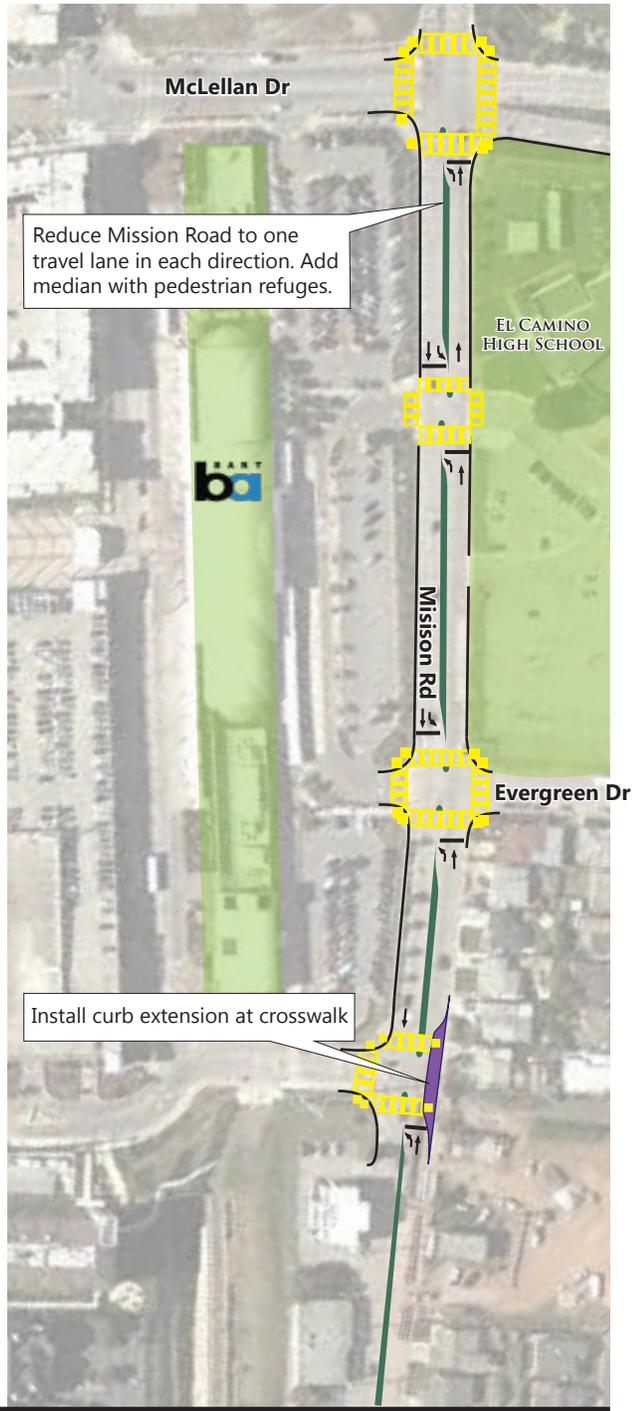
Mission Road between El Camino High School and McLellan Drive at the north and Holly Avenue at the south is a key transit access corridor with a variety of local connections. The South San Francisco BART station, related transit oriented development, El Camino High School, the Centennial Way Trail, scattered local-serving commercial uses and residential development are all located directly on Mission Road. Side streets also connect to a neighborhood elementary school, additional TOD commercial development and El Camino Real.

Issues and Opportunities	<ul style="list-style-type: none"> • Multiple opportunities to improve pedestrian access to the BART station and High School
Proposed Improvements	<ul style="list-style-type: none"> • Consider reducing Mission Road to one lane in each direction by removing outside lanes and either widen sidewalks, add corner bulb-outs, or add a median to narrow the vehicle right of way and create pedestrian refuge islands at Mission Road crossings • At Sequoia Avenue install curb extension, especially at northeast and southeast corners to reduce the turning radii and pedestrian crossing distance • At Sequoia Avenue add all-way stop control, or install sharks teeth and advanced pedestrian crossing signage if roadway is reduced to a single lane in each direction • At Holly Avenue straighten crosswalk at east leg to shorten crossing distance, consider adding curb extensions to northeast and southeast corners, add crosswalk to south leg and install advance stop bars at north and south legs
Estimated Cost	<ul style="list-style-type: none"> • \$559,758 construction costs • \$335,854 soft costs* • Total Cost: \$895,612

*Soft costs include the following:

- Traffic control (5%)
- Design and Environmental Review (20%)
- Mobilization (5%)
- Construction Management (10%)
- Contingency (20%)

NORTH SECTION



SOUTH SECTION



LEGEND

- Sidewalk Expansion
- Landscaping
- ADA Curb Ramps



Not to Scale

5 CONCEPT PLANS

5.4 RESIDENTIAL NEIGHBORHOOD TRAFFIC CALMING IMPROVEMENTS

Sunshine Gardens

Residential streets connecting Sunshine Gardens Elementary School, El Camino High School and Mission Road, including Holly Avenue, Crestwood Drive and Evergreen Drive present key opportunities to implement neighborhood traffic calming improvements. These local streets connect schools and residential neighborhoods to the nearby BART station and the high volume Hillside Boulevard, to the north. The current configuration allows for high speed vehicles with few stop controlled intersections and some blocks stretching more than 900 feet long, three times longer than typical downtown residential blocks. Traffic calming improvements implemented here at intersections, key crossings and along the length of blocks can be replicated throughout similar neighborhoods in South San Francisco.

Issues and Opportunities	<ul style="list-style-type: none"> • High speed vehicles cutting through the neighborhood at dangerous speeds • No buffer between sidewalks and vehicles (other than occasional on-street parking)
Proposed Improvements	<ul style="list-style-type: none"> • Install traffic calming treatments along collector streets; consider small traffic circles, edge lines to visually narrow roadway, speed humps, or other speed reduction measures • Mark northeast leg of crosswalk at Baywood Avenue entrance to El Camino HS on Evergreen Drive • Install stop sign or sharks teeth/advance pedestrian crossing signage at Baywood Avenue and Evergreen Drive intersection (check stop sign warrant)
Estimated Cost	<ul style="list-style-type: none"> • \$64,280 construction costs • \$38,568 soft costs* • Total cost: \$102,848

*Soft costs include the following:

- Traffic control (5%)
- Design and Environmental Review (20%)
- Mobilization (5%)
- Construction Management (10%)
- Contingency (20%)



Not to Scale

RESIDENTIAL NEIGHBORHOOD TRAFFIC CALMING IMPROVEMENTS
 SUNSHINE GARDENS
 CONCEPT PLAN FOUR

5 CONCEPT PLANS

5.5 RESIDENTIAL NEIGHBORHOOD TRAFFIC CALMING IMPROVEMENTS

Spruce Avenue

The residential neighborhood along Spruce Avenue north of Downtown, from Lux Avenue to Maple Avenue represents typical residential streets in the older north section of South San Francisco. These streets present opportunities for strong pedestrian connections to downtown, and the South San Francisco Caltrain station is located within approximately one mile or less from most points along this corridor.

Issues and Opportunities	<ul style="list-style-type: none"> • High speed vehicles • Vehicles parked on the sidewalk instead of in the roadway, blocking the already narrow pedestrian right of way
Proposed Improvements	<ul style="list-style-type: none"> • Install edge line striping to reduce traffic speeds and encourage vehicles to park on the street rather than the sidewalk; consider parking restrictions on one side of the street or converting Spruce to one-way traffic in order to maintain adequate travel way widths. Note that while narrow lane widths may require two-way traffic to slow and pass very carefully, this will have only a very minor impact on local residential streets • Consider adding staggered landscaped bulbs on alternating sides of the street • Extend existing traffic calming medians between Beech Avenue and Hemlock Avenue • Install crosswalk striping at Maple Avenue and Hemlock Avenue intersection
Estimated Cost	<ul style="list-style-type: none"> • \$54,447 construction costs • \$32,668 soft costs* • Total cost: \$87,115

*Soft costs include the following:

- Traffic control (5%)
- Design and Environmental Review (20%)
- Mobilization (5%)
- Construction Management (10%)
- Contingency (20%)



Not to Scale

RESIDENTIAL NEIGHBORHOOD TRAFFIC CALMING IMPROVEMENTS
 SPRUCE AVENUE
 CONCEPT PLAN FIVE

5 CONCEPT PLANS

5.6 COMPLETE STREETS/GATEWAY IMPROVEMENTS

South Spruce Avenue

South Spruce Avenue from Victory Avenue to El Camino Real, connecting the El Camino Real corridor to Downtown South San Francisco through the industrial neighborhood south of downtown serves as a primary gateway between El Camino Real and Downtown. It is also a busy industrial corridor, linking El Camino Real with the industrial and office park uses south of Railroad Avenue. These corridors represent part of the South San Francisco employment base, and create a significant amount of related commercial and truck traffic. The Centennial Way Trail crosses South Spruce Avenue along this segment, and the nearby shopping districts downtown and on El Camino Real could generate additional pedestrian activity.

Issues and Opportunities	<ul style="list-style-type: none">• Pedestrian crossing at Victory Avenue is dominated by local truck traffic and high speed South Spruce Avenue traffic• Heavy truck traffic encroaches on sidewalk at southeast corner of Spruce Avenue and Victory Avenue intersection• Major opportunity for stronger gateway identity• Narrow pedestrian right of way and wide street• Spruce is a designated bike route but there is no infrastructure in place• Short pedestrian signal timing and high pedestrian exposure at corners and medians crossing at El Camino Real
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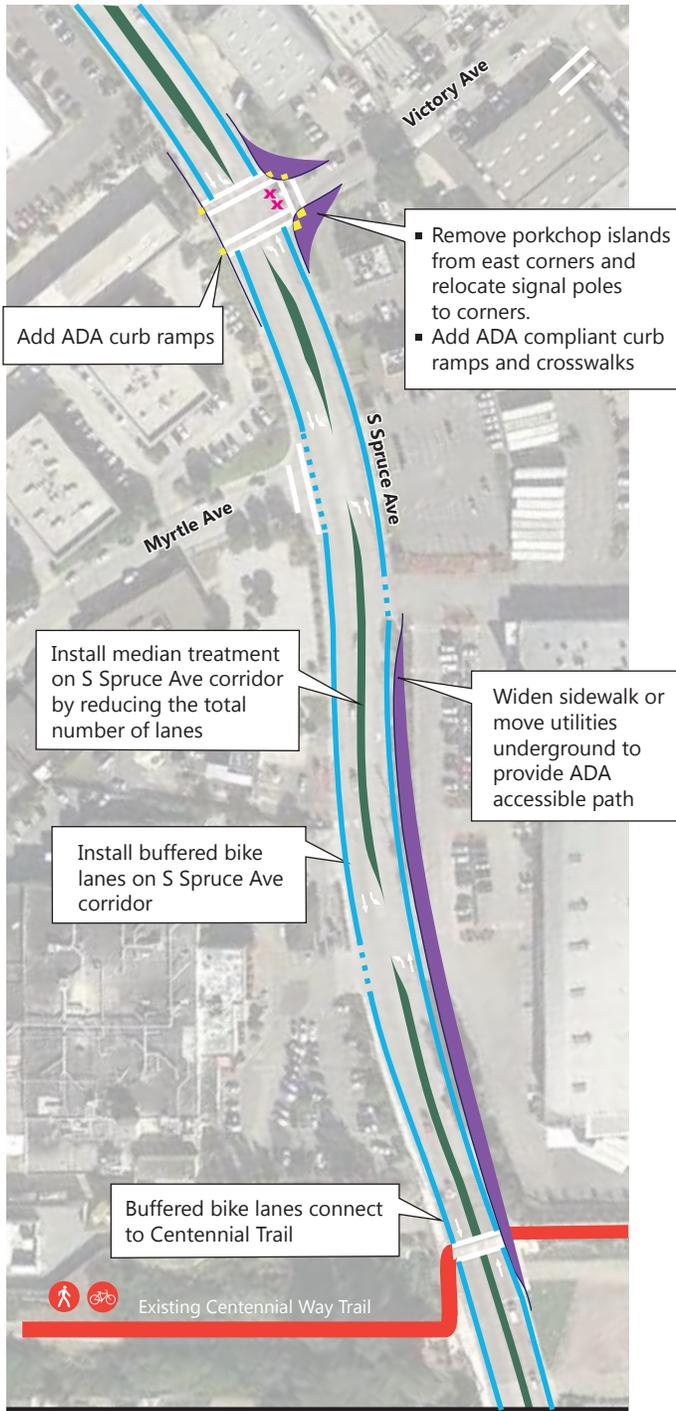
5 CONCEPT PLANS

Proposed Improvements	<ul style="list-style-type: none"> • Remove pork chops, relocate signals to corners and update crosswalk alignment accordingly at Victory Avenue • Install ADA curb ramps at the Victory Avenue crosswalks • Consider median treatment and road diet on the entire corridor to calm traffic and narrow pedestrian crossings • Install bike lanes, buffered when possible, on Spruce, to establish bike way and connect to Centennial Trail • Widen sidewalk on southeast side between Myrtle Ave and Centennial Way Trail, or update to underground utilities to address utility pole and ADA access issues; the existing street right-of-way is wide enough to accommodate one traffic lane and one buffered bike lane in each direction and a center median through the length of the corridor – the median could be narrowed along this section where the sidewalk expansion takes over a portion of that right-of-way • Consider striping crosswalk at northeast leg at Huntington, or close crosswalk • Increase pedestrian crossing time at all signals on El Camino Real intersections • Install median tips at El Camino Real crossings
Estimated Cost	<ul style="list-style-type: none"> • \$949,585 construction costs • \$569,751 soft costs* • Total Cost: \$1,519,336

*Soft costs include the following:

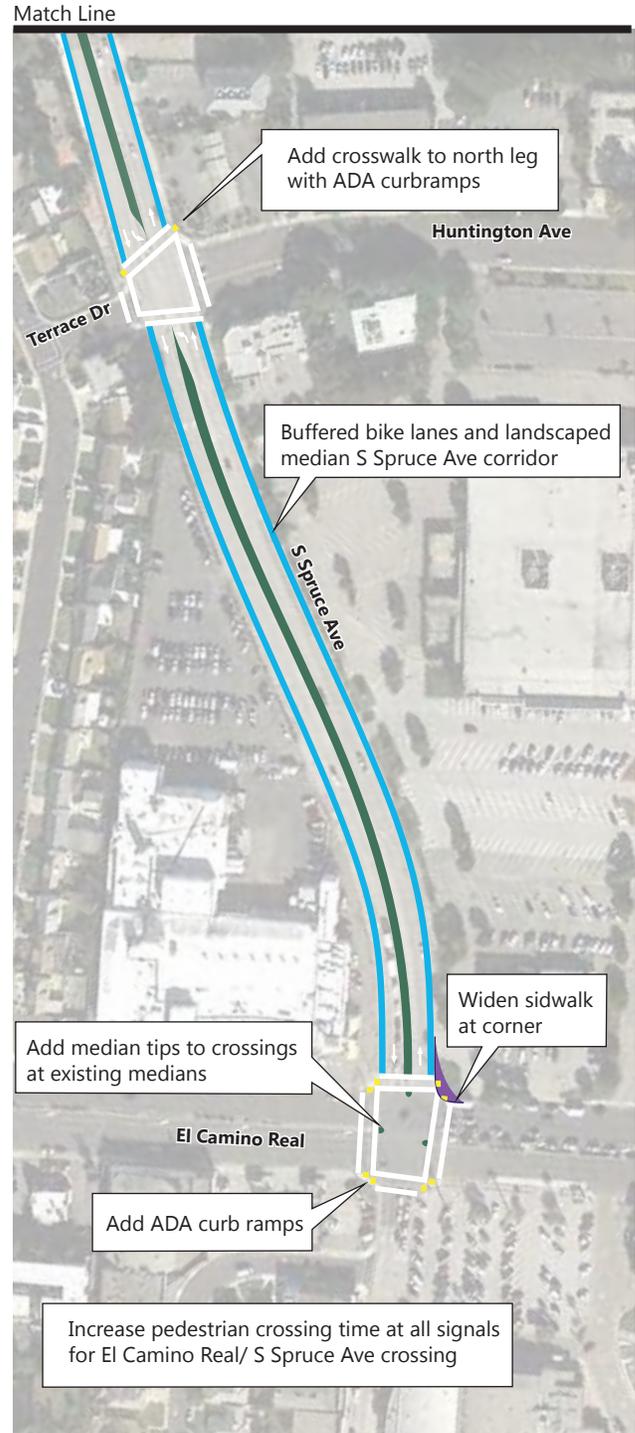
- Traffic control (5%)
- Design and Environmental Review (20%)
- Mobilization (5%)
- Construction Management (10%)
- Contingency (20%)

NORTH SECTION



Match Line

SOUTH SECTION



LEGEND

- Sidewalk Expansion
- Landscaping
- Bike Lanes
- ADA Curb Ramps

COMPLETE STREETS/GATEWAY IMPROVEMENTS SOUTH SPRUCE AVENUE

CONCEPT PLAN SIX



Not to Scale

5 CONCEPT PLANS

5.7 CENTENNIAL WAY ACCESS IMPROVEMENTS

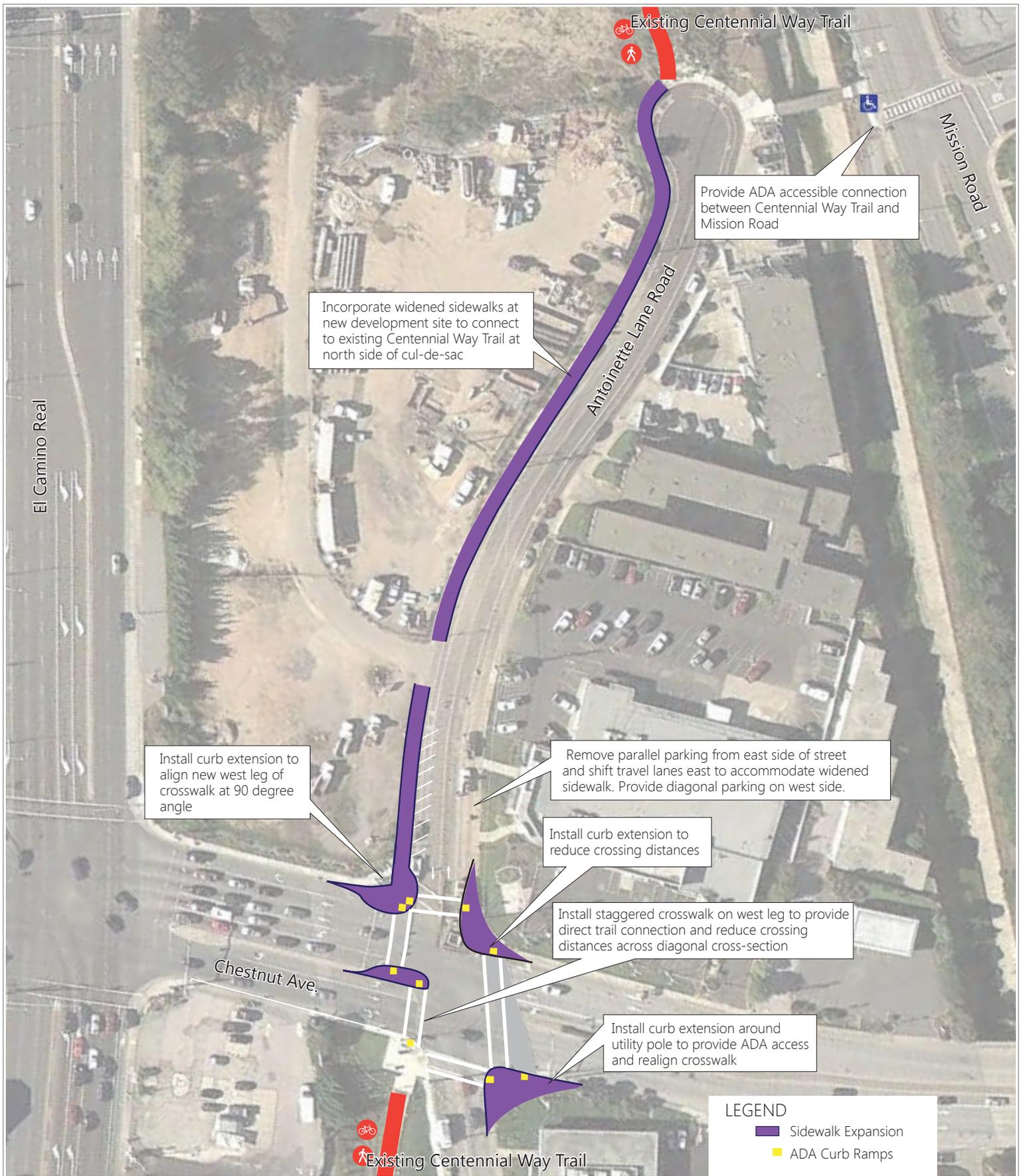
Centennial Way Trail through Chestnut Avenue crossing

Centennial Way Trail crosses Chestnut Avenue at the intersection of Antoinette Lane, approximately 175 feet east of El Camino Real. This section of the Centennial Way trail is immediately adjacent to a few commercial developments on Chestnut Avenue, including a restaurant and carwash, and a cluster of strip development on El Camino Real. Beyond these blocks, the nearby land use is predominantly residential on both sides of El Camino Real. The lot adjacent to the trail crossing on the north side of Chestnut Avenue is currently being used as a construction staging area, and may present some opportunities for realigning the current link between trail sections north and south of Chestnut Avenue. Note that a traffic analysis will be necessary to evaluate the impact that these changes may have on eastbound traffic at the Antoinette Lane/Chestnut Avenue intersection.

Issues and Opportunities	<ul style="list-style-type: none"> • Crosswalk gap along Centennial Trail • Utility pole blocking sidewalk
Proposed Improvements	<ul style="list-style-type: none"> • Extend Centennial Trail along sidewalk alignment on west side of Antoinette Lane, south to intersection. Prohibit on-street parking through this segment to provide right of way for pathway extension; by shifting travel lanes on Antoinette Lane, the same number of on-street parking spaces can likely be maintained with angle-in parking on the east side of the street • Install a staggered crosswalk across western leg of Chestnut Avenue to connect Centennial Trail • Extend median islands on both legs of Chestnut Avenue and include median tips to provide pedestrian refuge and improve safety • Install bulb-out on southeastern corner to provide access around utility pole • Consider consolidating driveway access of property on the SE corner of Chestnut Ave and El Camino Real to reduce pedestrian and bicycle conflicts with vehicles. (Will require coordination with property owner) • Update curb ramps
Estimated Cost	<ul style="list-style-type: none"> • \$228,334 construction costs • \$137,000 soft costs* • Total Cost: \$365,334

*Soft costs include the following:

- Traffic control (5%)
- Design and Environmental Review (20%)
- Mobilization (5%)
- Construction Management (10%)
- Contingency (20%)



Not to Scale

5 CONCEPT PLANS

5.8 PROTOTYPICAL ARTERIAL INTERSECTION IMPROVEMENTS

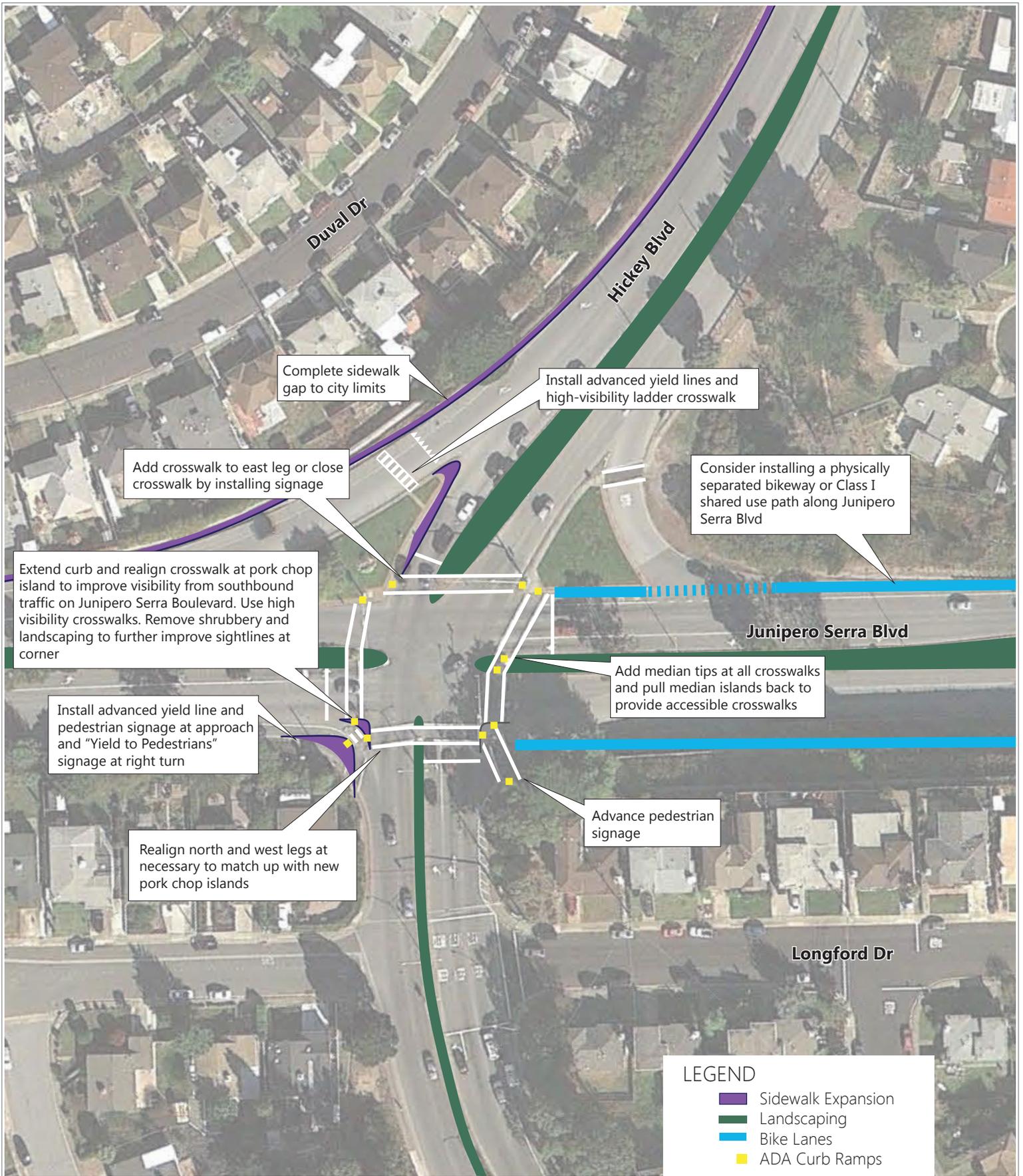
Hickey Boulevard and Junipero Serra Boulevard

The intersection of Hickey Boulevard and Junipero Serra Boulevard, between Interstate 280 and El Camino Real represents a number of arterial intersection challenges found throughout South San Francisco. The signalized Junipero Serra Boulevard approach includes two through lanes and one left turn lane in each direction, and a separated stop controlled right turn pocket in each direction. The signalized Hickey Boulevard approach includes also includes two through lanes in each direction, one left turn lane in the eastbound direction, and separated stop controlled right turn pockets in each direction. This configuration creates long pedestrian crossing distances across multiple directions. This intersection was selected for development of prototypical improvements because similar treatments can be repeated at many other arterial intersections.

Issues and Opportunities	<ul style="list-style-type: none"> • Challenging pedestrian crossing conditions • Limited visibility and short sight distance for oncoming traffic approaching pedestrian crossing • Opportunity for a physically separated bicycle and pedestrian pathway
Proposed Improvements	<ul style="list-style-type: none"> • Extend curb and move crosswalk back at pork chop on north leg of intersection (northwest corner) • Install advanced pedestrian crossing signage at north leg of intersections • Install median tip and pull median back (out of crosswalk) at west leg • Install “close crosswalk” signage at east leg • Install remaining sidewalk to Colma City limits; there are grading and drainage issues present on the north side of Hickey Boulevard that lead to sidewalk installation challenges • Consider physically separated bikeway and/or Class I shared use pathway on Junipero Serra Boulevard where traffic volumes are low and excess road capacity exists
Estimated Cost	<ul style="list-style-type: none"> • \$52,333 construction costs (does not include Junipero Serra Blvd bikeway or sidewalk gap projects) • \$31,400 soft costs* • Total Cost: \$83,733

*Soft costs include the following:

- Traffic control (5%)
- Design and Environmental Review (20%)
- Mobilization (5%)
- Construction Management (10%)
- Contingency (20%)



Not to Scale

PROTOTYPICAL ARTERIAL INTERSECTION IMPROVEMENTS HICKEY BOULEVARD AND JUNIPERO SERRA BOULEVARD

6 POLICY FRAMEWORK

CHAPTER 6: POLICY FRAMEWORK

This chapter lays out the policy framework for the South San Francisco *Pedestrian Master Plan*. The framework provides a set of seven overarching goals designed to support implementation of the long-term vision for walking in South San Francisco over the next 10 years. Each goal is accompanied by an objective designed to gauge progress in achieving the goals. Goals are typically implemented through policies and implementation measures dealing with more specific issues. Subsequent chapters of the *Pedestrian Master Plan* include recommendations, implementation tasks and next steps that are even more specific.

6.1 GOALS & OBJECTIVES

Goal 1 Promote and Encourage Walking

Objective: Double the number of walking trips in South San Francisco by 2023.

Goal 2 Improve Pedestrian Safety

Objective: Reduce the rate of pedestrian-involved collisions by 25% by 2023.

Goal 3 Improve Pedestrian Access

Objective: Design and construct at least three priority pedestrian projects annually.

Goal 4 Identify and Pursue Funding Sources to Construct and Maintain Pedestrian Facilities

Objective: Identify and secure funds for pedestrian projects annually.

Goal 5 Maintain Pedestrian Facilities

Objective: Track and evaluate maintenance of pedestrian facilities annually.

Goal 6 Periodically Review the Pedestrian Master Plan and Keep It Relevant

Objective: Design and construct at least three priority pedestrian projects annually.

Goal 7 Encourage Public Participation and Stay Informed

Objective: Meet or exceed 75 percent of the BPAC Action Plan goals annually.

6 POLICY FRAMEWORK

Goal 1: Promote and Encourage Walking

Objective: Double the number of walking trips in South San Francisco by 2023.

Policy 1.1: Integrate pedestrian facilities and planning into all of the City's planning review and construction activities, legitimizing walking as a transportation mode.

Implementation Measures:

- 1.1-1 All development projects shall be required to conform to the Pedestrian Master Plan goals, policies and implementation measures.
- 1.1-2 All public and private street projects shall incorporate pedestrian improvements and amenities.

Policy 1.2: Reduce reliance on travel by single occupant passenger vehicles.

Implementation Measures:

- 1.2-1 All major developments shall be required to establish and maintain a Transportation Demand Management Plan as prescribed in the South San Francisco Municipal Code Title 20 Zoning Regulations.
- 1.2-2 All developments with approved Transportation Demand Management Plans shall be required to prepare periodic reports as prescribed in the SSFMC Zoning Regulations.
- 1.2-3 As part of the review of the Pedestrian Master Plan stated in Goal 6, the BPAC shall review and make recommendations on the effectiveness of local TDM Plans in supporting walking as a transportation mode.

Policy 1.3: Encourage residents and employees to walk for journeys to work, shopping, school and recreation.

Implementation Measures:

- 1.3-1 Sponsor and/or support at least one local annual event promoting walking such as Streets Alive.
- 1.3-2 Work with the South San Francisco Unified School District and private schools to implement programs and events to support walking

6 POLICY FRAMEWORK

including regular contests, and challenging students to walk to school.²

- 1.3-3 Develop and implement incentive based walking programs to encourage and increase walking.
- 1.3-4 Maintain, update and publish a City Pedestrian Map.

Goal 2: Improve Pedestrian Safety

Objective: Reduce the rate of pedestrian-involved collisions by 25% by 2023.

Policy 2.1: The BPAC and City staff shall continually seek to improve pedestrian safety.

Implementation Measures:

- 2.1-1 City staff, assigned to support the BPAC, shall establish and maintain a current pedestrian data base. The data base shall include, but not be limited to, an annual pedestrian volume count, analysis of pedestrian collision rates and locations, and a review of facility conditions.
- 2.1-2 Focus pedestrian safety improvements measures at hot spot collision locations, and around schools and senior facilities, as children and seniors are disproportionately represented in pedestrian collisions.
- 2.1-3 Identify an annual funding source for the City's Traffic Calming Program.
- 2.1-4 City staff shall establish and maintain a BPAC webpage to disseminate walking information and elicit community input.
- 2.1-5 The BPAC shall annually review efforts to improve pedestrian safety and make recommendations for improving pedestrian safety, maintaining existing pedestrian facilities, and constructing new pedestrian facilities especially ADA accessible ramps.

² Encouraging students to bicycle can be implemented and funded through Safe Routes to School programs.

6 POLICY FRAMEWORK

Policy 2.2: Enforce pedestrian related traffic laws to maintain and improve traffic safety.

Implementation Measures:

- 2.2-1 The Police Department shall enforce the vehicle code for pedestrians.
- 2.2-2 Provide pedestrian safety training to police officers and pursue enforcement activities such as pedestrian stings and speeding campaigns.
- 2.2-3 The BPAC webpage shall be utilized to provide public information pertaining to laws regarding walking.

Policy 2.3 Provide security on pedestrian paths.

Implementation Measure

- 2.3-1 The city shall establish and maintain a security program for remote paths including the Bay Trail, Centennial Path and future conversion of former rail spur tracks.
- 2.3-2 Expand the Police Department Bike Patrol to include pedestrian paths and evaluate other methods to improve security such as establishing a Citizen Bike Patrol, installing cameras and lighting on pedestrian paths.

Goal 3: Improve Pedestrian Access

Objective: Design and construct at least three priority pedestrian projects annually.

Policy 3.1: The city shall expand the existing pedestrian network and improve access throughout the community with a special emphasis on connections to places of work, transit, commercial centers and community amenities and on ADA accessibility.

Implementation Measure:

- 3.1-1 Construct pedestrian facilities in accordance with a prioritized list of facilities.
- 3.1-2 Adopt a citywide ADA Transition Plan.
- 3.1-3 Update the City's Street Design Ordinance (SSFMC Chapter 19.20) to reflect the adopted Complete Streets Policy and incorporate the design recommendations included in the Pedestrian Master Plan.

Policy 3.2: Pedestrian facilities and amenities should be provided at schools, parks and transit stops, and shall be required to be provided at private developments

6 POLICY FRAMEWORK

including places of work, commercial shopping establishments, parks, community facilities and other pedestrian destinations.

Implementation Measure:

- 3.2-1 Amend the City’s Transportation Demand Management Ordinance to clarify and quantify the requirements for pedestrian amenities and facilities within individual development projects and access to other destinations. (i.e. connections to transit, safe crossing treatments for pedestrians, and continuous sidewalks).
- 3.2.2 Work with the South San Francisco Unified School District and private schools to provide and improve pedestrian facilities at schools and provide safe access to schools.

Policy 3.2: Install pedestrian amenities including street furniture, street trees and wayfinding and destination signage in commercial areas, transit hubs and other major destinations.

Implementation Measure:

- 3.2-1 Establish a pedestrian wayfinding program in key commercial, historic and transit hub locations.
- 3.2-2 Install pedestrian wayfinding and destination signage on all public paths and require that privately sponsored path projects implement the same type of signage.
- 3.2-3 Establish a citywide street tree program.
- 3.2-4 Establish a street furniture ordinance.

Goal 4: Identify and Pursue Funding Sources to Construct and Maintain Pedestrian Facilities

Objective: Identify and secure funds for pedestrian projects annually.

Policy 4.1: City sponsored pedestrian facilities shall include, to the extent feasible and available, Federal, State and/or local grant funding to augment city funding.

Implementation Measures:

- 4.1-1 City staff shall establish and maintain a data base of funding sources to support planning, design, construction and maintenance of pedestrian facilities.

6 POLICY FRAMEWORK

- 4.1-2 Pedestrian improvement and maintenance projects shall be included in the City's Capital Improvement Plan.

Goal 5: Maintain Pedestrian Facilities

Objective: Track and evaluate maintenance of pedestrian facilities annually.

- Policy 5.1** Maintain sidewalks, marked crossings, pedestrian traffic control devices and paths as a high priority.

Implementation Measures:

- 5.1-1 Establish a regular maintenance program including pavement, pedestrian traffic control devices, marked crossings, signs and lighting to keep the pedestrian facilities in good condition.

- Policy 5.2** The BPAC shall conduct regular evaluations of the pedestrian facilities.

Implementation Measures

- 5.2-1 Conduct an annual review of the pedestrian maintenance program and make recommendations to improve maintenance.
- 5.2-2 The BPAC, with the assistance of city staff, shall conduct and document a regular review of pedestrian surface conditions.

- Policy 5.3** Keep the City's Sidewalk Management Plan relevant to pedestrian transportation.

Implementation Measure:

- 5.3-1 The city staff shall revise the City's Sidewalk Management Plan to include pedestrian facilities, pavement marking, signage and lighting maintenance as a high priority.

Goal 6: Periodically Review the Pedestrian Master Plan and Keep It Relevant

Objective: Design and construct at least three priority pedestrian projects annually.

- Policy 6.1** Maintain the Pedestrian Master Plan and the implementation schedule and keep the plan current and relevant.

Implementation Measure

- 6.1-1 BPAC shall conduct an annual review of the Pedestrian Master Plan, including achievement of the goals and policies, effectiveness of the implementation measures, the progress of implementation and the efficient use of local resources.

6 POLICY FRAMEWORK

- 6.1-2 The BPAC shall make recommendations to improve the plan, achievement of the goals and policies, and its implementation.
- 6.1-3 As part of the annual review, the BPAC shall prioritize pedestrian improvements and identify external funding sources.
- 6.1-4 Make recommendations to undertake periodic pedestrian planning studies to update the plan and achieve greater effectiveness.

Policy 6.2 Maintain a focus on pedestrian issues.

Implementation Measures

- 6.2-1 The BPAC shall adopt an annual work program to guide its efforts to improve walking and to focus on pedestrian issues, programs and projects, and the progress of implementation.
- 6.2-4 Make recommendations to the City Council on all public and privately sponsored pedestrian/development projects.

Goal 7: Encourage Public Participation and Stay Informed

Objective: Meet or exceed 75 percent of the BPAC Action Plan goals annually.

Policy 7.1 Promote public awareness of walking and increase public participation.

Implementation Measure:

- 7.1-1 Establish and maintain a BPAC webpage to disseminate information and elicit community input.
- 7.1-2 Notify the community of BPAC meetings and encourage public attendance of the meetings through various media including the city website.

Policy 7.2 Develop a BPAC Action Plan to establish goals and activities on an annual basis.

Implementation Measures:

- 7.2-1 Establish and maintain a community data base of BPACs, interested residents, and organizations.
- 7.2-2 Establish and maintain contact with BPACs within San Mateo County, bicycle organizations, SamTrans, BART, Caltrain and FHWA, interested citizens and businesses.

6 POLICY FRAMEWORK

- 7.2-3 BPAC shall conduct a periodic joint meeting with the neighboring communities, including Daly City, Colma, Brisbane, Pacifica and San Bruno BPAC's, and local bicycle groups to review establishing better connections between bikeways and programs to improve walking, coordinating improvements and co-sponsoring joint projects.
- 7.2-4 BPAC shall propose joint meetings with the C/CAG and all local community BPACs within San Mateo County to discuss walking issues including coordinating bicycle projects and have more voice in pedestrian issues.
- 7.2-5 Work with other City Boards and Commissions to coordinate efforts to implement the plan and improve pedestrian facilities.

Policy 7.3 BPAC shall take a proactive approach to stay informed on best practices in pedestrian and bicycle planning.

Implementation Measure

- 7.3-1 Participate in regional pedestrian conferences and increase awareness, knowledge and technical pedestrian expertise. On an annual basis, attend at least one public event including pedestrian fairs and/or conferences to establish and maintain connections with the larger walking and transportation planning communities. Attend regional and national walking related conferences, such as the California Walks "Peds Count" Conference.
- 7.3-2 Take an active leadership role by directing the planning, implementation and maintenance of pedestrian improvements and programs.
- 7.3-3 Monitor and review pedestrian demonstration and cutting edge projects and programs in other communities.
- 7.3-4 BPAC shall keep current on advancements, walking information and new and pending Federal and State pedestrian legislation.

7 FUNDING AND IMPLEMENTATION

CHAPTER 7: FUNDING AND IMPLEMENTATION

Implementation of the proposed pedestrian improvements included in this Plan will require funding from local, state, and federal sources and coordination with multiple agencies. To facilitate this, this chapter presents a method of prioritizing local pedestrian improvement projects, construction cost estimates for the proposed improvements, a brief overview of funding strategies and sources, and implementation strategies.

7.1 PLANNING IMPLEMENTATION

Prioritization

The proposed projects outlined in the Recommended Improvements chapter, would enhance the pedestrian experience, safety and access throughout South San Francisco. Recommended projects were scored and ranked in order to prioritize their implementation. While the City of South San Francisco may find opportunities to implement a number of projects through resurfacing or in conjunction with other street improvements regardless of project rank, this prioritization process identifies projects with the greatest potential to impact the pedestrian environment by scoring each project according to several factors.

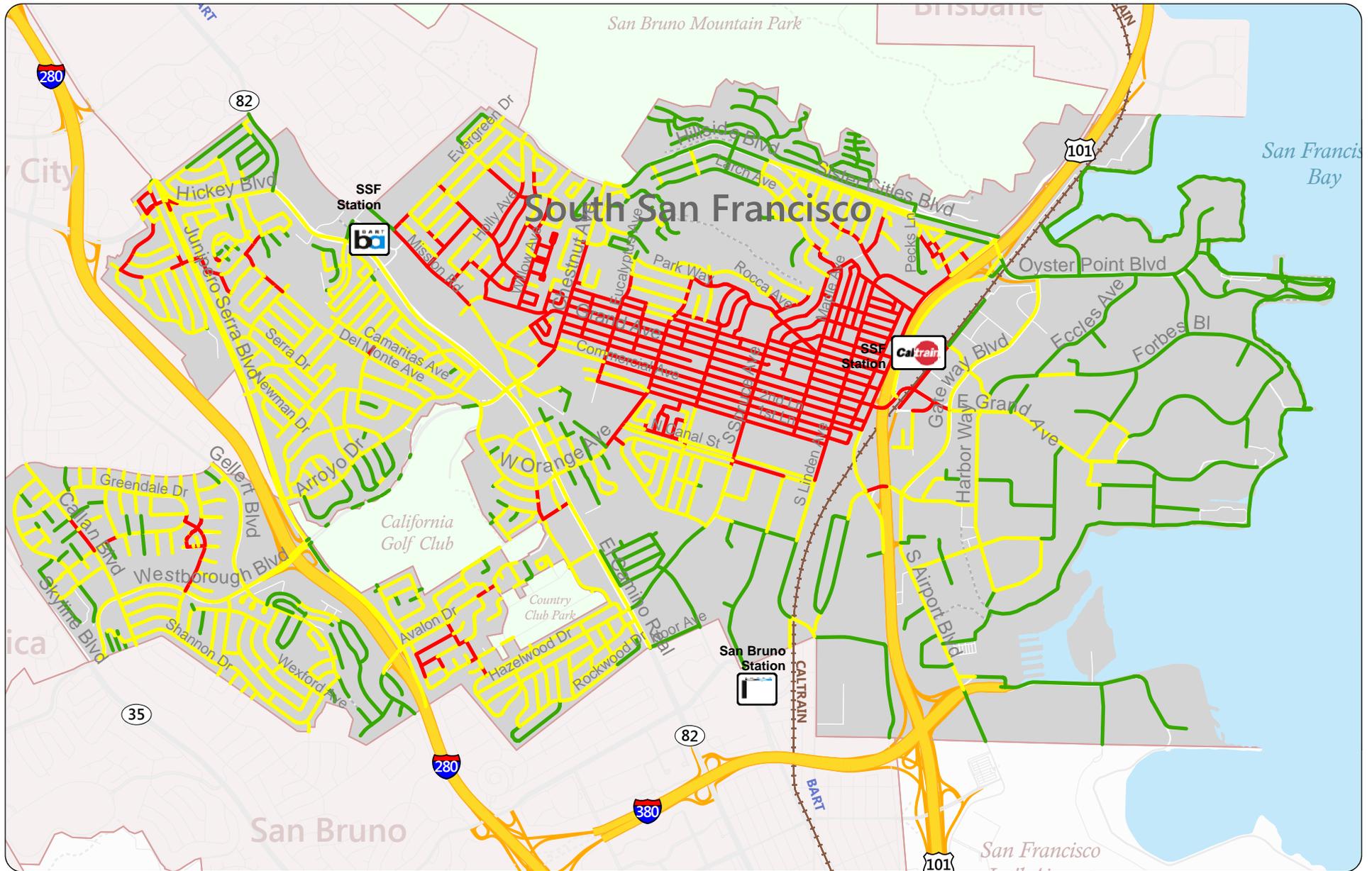
The prioritization scoring method outlined below was developed specifically for the City of South San Francisco with special consideration given to local priorities with input from other regional pedestrian plans. Pedestrian demand, designated pedestrian focus areas, and pedestrian safety are identified as priority factors in the C/CAG San Mateo County *Comprehensive Bicycle and Pedestrian Plan*, and have been included in the prioritization methodology for South San Francisco projects. In addition to these county-wide priorities this prioritization considers gap closures and potential for funding.

All projects receive a score between 10 and 100 based on the following factors:

Existing pedestrian demand (10-30 points)

Each project was assessed according to its location and corresponding pedestrian demand. Pedestrian demand is based on a number of geographically-based factors that are considered indicators for pedestrian activity. These include housing and employment density, population density, incomes, vehicle ownership, proximity to recreation, proximity to commercial districts, and proximity to schools. During the development of the C/CAG *Bicycle and Pedestrian Plan*, each street segment in South San Francisco was assigned a pedestrian demand value, which is illustrated in **Figure 7-1**. The following points were assigned to each pedestrian project:

- Projects located primarily within the red and orange street segments are high demand, and received 30 points
- Projects located within the yellow street segments are considered to have medium demand and received 20 points



Pedestrian Demand
Prioritization

7 FUNDING AND IMPLEMENTATION

- Projects located within the green street segments are considered to have low demand and received 10 points

Access to key destinations (0-20 points)

Additional points were assigned to projects located within a Priority Development Area, or that provide direct access with frontage on schools, parks, commercial centers, transit and other key destinations:

- 15-20 points for direct access to two or more key destinations
- 5-10 points for direct access to one key destination
- 0 points for no access to key destinations

Closure of a critical gap (0-20 points)

Additional points were assigned to projects that close a gap in the pedestrian network, including sidewalk gaps, improved pedestrian access across interchanges or other physical barriers, and gaps in access to the Centennial Way Trail:

- 15-20 points for directly closing a gap
- 5-10 points for improving access and reducing the impact of a gap
- 0 points for no gap closure

Immediate safety need (0-20 points)

Additional points were assigned to projects in areas where pedestrian safety is a primary concern, including proximity to recent pedestrian collisions and streets with high speed traffic or pedestrian exposure to high volumes of traffic:

- 15-20 points for locations near pedestrian collisions *AND* high speed/high volume streets
- 5-10 point for locations near pedestrian collision *OR* high speed/high volume streets
- 0 points for locations where collisions and traffic speed/volume are not a concern

Overall feasibility (0-10 points)

Finally, additional points were assigned to projects with potential funding sources:

- 10 points for projects that are both feasible (in terms of engineering feasibility and/or strong political support) and fundable (strong contenders for grant opportunities, could be built with new development opportunities, or are relatively affordable and could be included in the City's annual CIP program)

7 FUNDING AND IMPLEMENTATION

- 1-9 points for projects with some degree of political and financial support (as outlined above)
- 0 points for projects with no support and not associated with funding opportunities

As an example, recommended Project # 10-1, located on Linden Avenue from Grand Avenue to Aspen Avenue, was scored in the following way:

Table VII-1: Project 10-1 Priority Scoring

Scoring Criteria	Assessment of Project 10-1	Score
Pedestrian demand	High Demand - Linden Avenue from Grand to Aspen is entirely within red street segments	30
Access to key destinations	Linden and Grand is the center of Downtown, a gateway between Downtown and East of 101 and provides access to transit stops along the corridor	20
Closure of critical gap	No critical gap at this location	0
Serves immediate safety need	High incidence of pedestrian collisions at this intersection; no high speed traffic noted	10
Feasibility	Recommendations are not capital intensive (most related to curb ramp and pavement markings) and located within the Downtown Improvement District	10
Total		70

Each recommended project was scored according to these criteria, and highest scores indicate highest priorities. Projects with the same score are ranked according to estimated cost (i.e., less expensive projects are ranked higher.) The resulting ranked list is not intended to be a static document, as new opportunities for funding and improved access will emerge. However, the list will provide a starting point for determining project priorities and implementation. Unit costs are summarized in Table 2. Table 3 provides a list of the top tier ranked pedestrian projects. A complete list of ranked projects is included in **Appendix B**. More details about the recommended project list can be found in the Recommended Improvements Chapter.

Cost of New Facilities

A list of unit costs was developed based on recent projects and cost estimates throughout the Bay Area, and input from the South San Francisco Engineering Division. These unit costs provided the basis for total cost estimates for each recommended project. Table 2 provides a unit cost summary for the construction of pedestrian, bicycle and traffic calming facilities in South San Francisco.

7 FUNDING AND IMPLEMENTATION

Table VII-2: Unit Costs

Item	Assumptions	Unit	Cost/Unit
Wayfinding/Destination Sign		Each	\$500
Standard Class I Path		Mile	\$800,000
Class II Bike Lanes (Both Roadway Sides)	Includes \$2.50 LF striping, \$150 marking (8 per mile), \$250 sign (8 per mile)	Mile	\$29,120
Curb extension/ Bulb-Out		Each	\$50,000
Sidewalk		Square Foot	\$30
Remove concrete sidewalk		Square Foot	\$3
Curb and Gutter		Linear Foot	\$52
Signal Modification/New Signal		Each	\$250,000
Slurry Seal	70 ft paved width	Mile	\$184,800
Advance Stop Bars		Each	\$400
Advance Yield Lines		Each	\$400
Crosswalk Striping		Linear Foot	\$7
High Visibility Crosswalk Restriping		Linear Foot	\$5
Solid Edge Line		Linear Foot	\$4
Remove Thermoplastic Lane Striping		Linear Foot	\$1
Speed Table		Each	\$30,000
Median	Includes vertical median concrete surface to fill, depending on dimensions		
Vertical Median		Linear Foot	\$22
Concrete Surface		Square Foot	\$11
New Pedestrian Signal with Countdown		Each	\$1,000
Pedestrian Push Buttons		Each	\$2,000
Upgrade to Pedestrian Countdown Heads		Each	\$1,000
Pedestrian Barricade and signs (close crossing)		Each	\$1,000
ADA Curb Ramps		Each	\$5,000
HAWK Beacon		Each	\$120,000
Rectangular Rapid Flashing Beacon	Includes installation	Each	\$27,000
New Signage		Each	\$700
New Sign on Existing Post		Each	\$500

7 FUNDING AND IMPLEMENTATION

Item	Assumptions	Unit	Cost/Unit
Relocate Sign and Post		Each	\$400
Remove and Salvage Sign and Post		Each	\$150
Traffic Circle	Includes \$52/LF for curb and gutter, \$8/SF for landscaping, 10 FT diameter and \$700 sign (4 per intersection)	Each	\$5,000
Lighting		Each	\$10,000
Bus Shelter		Each	\$6,500
Paint Curb		Linear Foot	\$10

For the purposes of this *Pedestrian Master Plan*, construction cost estimates for the proposed improvements were based on the following assumptions:

- Sidewalk paving does not include demolition costs and new sidewalks are 6 feet wide unless other dimensions are required due to site specific constraints
- Relocation of utility poles and fire hydrants does not include design and engineering costs

Detailed cost estimates based on the unit costs and assumptions summarized above have been developed for all recommended projects included in this Pedestrian Master Plan. A table summarizing cost estimates for all recommended projects is included in **Appendix C**. Projects with the highest prioritization scores (51 to 100 points), or First Tier Projects, are considered short- to medium-term projects that typically provide access to existing pedestrian-generators and are more easily constructed, such as gap closures in already developed areas.

If the City meets the goal of constructing at least three of these projects per year (Goals/Objectives 3 and 6), then this Tier 1 project list could be completed within nine years. The Tier 1 list can be completed much more rapidly if additional projects are constructed, support programs and funding mechanisms are pursued more aggressively, or the City can commit more funds per year. Several Tier 1 projects are lower-cost improvements that could likely be implemented more immediately as funding allows. For example, ten of the top 11 projects could be implemented in year one if \$600,000 was secured for the improvement.

First Tier recommended projects, priority scores, and associated project cost estimates are summarized in **Table VII-3**.

7 FUNDING AND IMPLEMENTATION

Table VII-3: South San Francisco Pedestrian Master Plan First Tier Prioritized Projects

ID #	Location	Construction Cost	Pedestrian Demand	Access	Gap Closure	Safety Need	Feasibility	Total Points
1-2	McLellan Drive from Mission Road to El Camino Real	\$154,900	30	20	10	10	5	75
11-1	Chestnut Avenue and Antoinette Lane	\$228,300	20	20	10	15	5	70
12-1	Spruce Avenue between Lux Avenue and Maple Avenue	\$15,300	30	15	0	15	5	65
9-1	Grand Avenue and Airport Boulevard	\$19,500	30	10	0	15	10	65
13-1	Westborough Boulevard from Callan Boulevard to Gellert Boulevard	\$368,400	20	15	10	15	5	65
9-4	East Grand Avenue and Dubuque Avenue	\$13,800	30	15	0	15	1	61
10-3	Airport Boulevard and Miller Avenue	\$500	30	15	0	10	5	60
14-3	E Grand Avenue between Grand Avenue and Dubuque Avenue	\$1,400	30	10	0	15	5	60
1-1	McLellan Drive and Mission Road	\$14,000	30	20	0	0	10	60
9-3	Pedestrian crossing under Hwy 101 along East Grand Avenue	\$20,000	30	10	0	15	5	60
10-2	Airport Boulevard at Pine Avenue	\$137,200	30	15	0	10	5	60
10-1	Linden Avenue from Grand Avenue to Aspen Avenue	\$543,400	30	15	0	10	5	60
6-1	Del Monte Avenue from Arroyo Drive to Alta Loma Drive	\$40,000	20	15	5	15	1	56
2-1	Mission Road from McLellan Drive to Holly Avenue	\$197,900	30	20	0	5	1	56

7 FUNDING AND IMPLEMENTATION

ID #	Location	Construction Cost	Pedestrian Demand	Access	Gap Closure	Safety Need	Feasibility	Total Points
9-2	Grand Avenue between Airport Boulevard and Walnut Avenue	\$275,900	30	15	0	10	1	56
12-3	School Street and Olive Avenue	\$20,000	30	10	0	10	5	55
16-1	Oyster Point Boulevard from Eccles Avenue to driveway immediately east	\$35,700	10	15	10	15	5	55
12-2	School Street and Maple Avenue	\$39,100	30	10	0	10	5	55
2-2	Mission Road and BART entrance	\$50,000	30	20	0	0	5	55
12-4	Grand Avenue and Spruce Avenue	\$204,000	30	10	0	10	5	55
2-5	Holly from Mission Road to Crestwood Drive	\$346,000	30	10	0	10	1	51
2-6	Crestwood Drive from Holly Avenue to Evergreen Drive	\$10,000	30	10	0	10	1	51
1-3	El Camino Real and McLellan Drive	\$900	20	20	0	10	1	51
15-3	S Airport Boulevard and Highway 101 off-ramp	\$91,600	20	5	15	10	1	51
2-3	Mission Road and Sequoia Avenue	\$209,700	30	20	0	0	1	51
8-1	El Camino Real from Hazelwood Drive to Ponderosa Road	\$271,400	10	15	10	15	1	51

7 FUNDING AND IMPLEMENTATION

Additional soft costs for design, environmental review, mobilization and contingency must also be taken into consideration when developing practical cost estimates for recommended projects. The following table summarizes these cost increases.

Table VII-4: Design and Construction Costs

Category	Increase (as a percentage of construction cost)
Traffic Control	5%
Design and Environmental Review	20%
Mobilization	5%
Construction Management	10%
Contingency	20%

Maintenance costs should also be incorporated into project budgets. As with all infrastructure, pedestrian facilities require maintenance for long-term function, including cleaning, resurfacing, re-striping, repair, drainage, trash removal, and landscaping. These efforts are most effective when incorporated into larger infrastructure maintenance routines and budgets, and are best done periodically to keep expenses down.

7 FUNDING AND IMPLEMENTATION

Table VII-5: Total Costs for Recommended Projects

First Tier: Short-Term Projects (51-100 Points)		
Construction Costs		\$2,997,600
Additional Soft Costs:		
Traffic Control	5%	\$149,880
Design and Environmental Review	20%	\$599,520
Mobilization	5%	\$149,880
Construction Management	10%	\$299,760.00
Contingency	20%	\$599,520
Total First Tier Costs		\$4,796,160
Second Tier: Medium-Term Projects (41-50 points)		
Construction Costs		\$2,175,000
Additional Soft Costs:		
Traffic Control	5%	\$108,750
Design and Environmental Review	20%	\$435,000
Mobilization	5%	\$108,750
Construction Management	10%	\$217,500
Contingency	20%	\$435,000
Total Second Tier Costs		\$3,480,000
Third Tier: Long-Term & Opportunistic Projects (0-40 points)		
Construction Costs		\$2,855,600
Additional Soft Costs:		
Traffic Control	5%	\$142,780
Design and Environmental Review	20%	\$571,120
Mobilization	5%	\$142,780
Construction Management	10%	\$285,560
Contingency	20%	\$571,120
Total Third Tier Costs		\$4,568,960
Total Cost for All Projects		\$12,845,100

Many of the recommended projects include site-specific sidewalk gap closure projects. These sidewalk costs are incorporated in the project level cost summaries. The Citywide Sidewalk Gap Closure Project (Chapter 5, Concept Plan 5.1) also provides a comprehensive inventory of sidewalk gaps. Sidewalk

7 FUNDING AND IMPLEMENTATION

gaps throughout the City were mapped, ranked according to priority, and designated as high-priority, medium-priority and long-term sidewalk gap closures. The costs of each sidewalk gap closure will vary depending on the specifics of the project. A conceptual-level cost estimate for completing these closures is summarized below. As there is some overlap with site-specific recommendations, these citywide costs should not be double counted.

Table VII-6: Sidewalk Gap Closure Projects Cost Estimate Summary

First Priority Sidewalk Gaps – 54,037 linear feet		
Construction Costs		\$9,726,660
Additional Soft Costs:		
Traffic Control	5%	\$486,330
Design and Environmental Review	20%	\$1,945,330
Mobilization	5%	\$486,330
Construction Management	10%	\$972,670
Contingency	20%	\$1,945,330
Total First Tier Costs		\$15,562,656

7 FUNDING AND IMPLEMENTATION

Second Priority Sidewalk Gaps – 63,111 linear feet		
Construction Costs		\$11,359,980
Additional Soft Costs		
Traffic Control	5%	\$568,000
Design and Environmental Review	20%	\$2,272,000
Mobilization	5%	\$568,000
Construction Management	10%	\$1,134,000
Contingency	20%	\$2,212,000
Total Second Tier Costs		\$18,175,968
Third Priority Sidewalk Gaps – 5,802 linear feet		
Construction Costs		\$1,044,360
Additional Soft Costs		
Traffic Control	5%	\$52,220
Design and Environmental Review	20%	\$208,870
Mobilization	5%	\$52,220
Construction Management	10%	\$104,440
Contingency	20%	\$208,870
Total Third Tier Costs		\$1,670,976
Total Cost for All Citywide Sidewalk Gaps – 122,950 feet		\$35,409,600

7.2 FUNDING

Past Funding Strategies and Expenditures in South San Francisco

South San Francisco can build on funding sources and strategies that have been used for past pedestrian expenditures. These include a variety of local and regional funds:

- Capital Improvement Program – The South San Francisco Capital Improvement Program (CIP) outlines planned local infrastructure improvements for the upcoming fiscal year. The CIP is reviewed by the Planning Commission and approved by the City Council. Several approved projects for the 2012-13 Fiscal Year will improve the pedestrian environment in South San Francisco, including:
 - Pedestrian crossing improvements at El Camino High School
 - Annual Street Rehabilitation Program

7 FUNDING AND IMPLEMENTATION

- Gateway Assessment Improvement Projects.
 - Private Development – Current property owners and developers are required to include specific upgrades and additional pedestrian infrastructure, such as sidewalks, for approval of development projects.
 - Grants – a variety of grant funding sources have been used in South San Francisco:
 - San Mateo County’s Measure A Sales Tax – A local sales tax increase to fund for transportation improvements designated in the Transportation Expenditure Plan. This is described in greater detail below.
 - Community Development Block Grant (CDBG) – The South San Francisco CDBG program is designed to address four specific core areas:
 - Basic needs such as food, shelter, clothing and legal services
 - Senior services
 - Youth services
 - Housing and/or community rehabilitation

These funds have been used in the past to provide ADA accessible ramp upgrades to improve pedestrian accessibility.

 - Transportation Development Act (TDA) Article 3 funds have been pursued. These are described in greater detail below.
- Gas tax revenue has been used as a funding source for curb ramp upgrades and as part of larger overlay projects.
- Public Works Operating Budget – The South San Francisco Department of Public Works is responsible for maintenance of the city’s streets, vehicles, infrastructure, and local water quality. The Public Works Department creates and carries out the CIP.

Funding Sources

There are numerous funding sources at the federal, state, regional, county and local levels that are potentially available to the City of South San Francisco to implement the projects and programs in the *Pedestrian Master Plan*. Below is a description of the most promising funding programs available for the proposed projects. Most of these sources are highly competitive and require the preparation of extensive applications.

7 FUNDING AND IMPLEMENTATION

Federal Funding Sources

Moving Ahead for Progress in the 21st Century (MAP-21)

The new federal transportation bill, MAP-21, was signed into law in July, 2012 and will be in effect from October 2012 through September 2014, funding surface transportation programs for fiscal years 2013 and 2014.

A new program, *Transportation Alternatives (TA)*, consolidates pedestrian and bicycle programs formerly funded under the Transportation Enhancements program (part of SAFETEA-LU, the previous transportation bill authorized in 2005). Funding through TA is lower than in the previous bill, and states may opt out of funding. There are six eligible categories for funding under Transportation Alternatives, including:

- Safe Routes for Non-Drivers – the former Safe Routes to School program is no longer a stand-alone program with dedicated funding, but is still eligible under the Safe Routes for Non-Drivers program.
- On-road and Off-road Trail Facilities - construction, planning, and design of pedestrian infrastructure is eligible. This includes a Recreational Trails Program continued at current funding levels through 2014.
- Abandoned Railroad Corridors for Trails - conversion of rail corridors for pedestrians and bicyclists, or other non-motorized transportation users is eligible.
- Environmental Mitigation and Community Improvement Activities – improvements related to stormwater management, landscaping, and rights-of-way improvements, including historic preservation, and vegetation management and erosion control are eligible.

The TA program falls under the general provisions for federal share payable for non-interstate system projects at 80%, with the remaining 20% being local match funding. Because states can opt out of MAP-21 funds, available money may be lower than estimated based on formula calculations. MAP-21 is authorized for two years, and the specifics of the funding programs are likely to change by the end of FY 2014.

Transportation Enhancements Program (TE)

Unlike the previous federal legislation, MAP-21 does not provide funding specifically for Transportation Enhancements. Instead, TE activities will be eligible to compete for funding alongside other programs as part of the new TA program.

Congestion Mitigation and Air Quality Improvement Program (CMAQ)

The CMAQ program is continued in MAP-21 to provide a flexible funding source to State and local governments for transportation projects and programs to help meet the requirements of the Clean Air

7 FUNDING AND IMPLEMENTATION

Act. Funding is available to reduce congestion and improve air quality for areas that do not meet the National Ambient Air Quality Standards for ozone, carbon monoxide, or particulate matter (nonattainment areas) and for former nonattainment areas that are now in compliance (maintenance areas).

Safe Routes to Schools

Unlike the previous federal legislation, MAP-21 does not provide funding specifically for Safe Routes to School (SRTS). Instead, SRTS activities will be eligible to compete for funding alongside other programs, including the Transportation Enhancements program and Recreational Trails program, as part of the new TA program.

Statewide Funding Sources

Safe Routes to School (SRTS)

California's Safe Routes to Schools program (SRTS) is a Caltrans-administered grant-funding program established in 1999 (and extended in 2007 to the year 2013). Eligible projects include walkways, crosswalks, traffic signals, traffic-calming applications and other infrastructure projects that improve the safety of walking and biking routes to elementary, middle and high schools, as well as "incidental" education, enforcement and encouragement activities. Planning projects, on the other hand, are not eligible. For funding Cycle 10, fiscal years 2011/12 and 2012/13, approximately \$48.47 million was available in grant funding.

- Caltrans Safe Routes to School program:
www.dot.ca.gov/hq/LocalPrograms/saferoutes/saferoutes.htm

Transportation Development Act (TDA), Article 3

TDA Article 3 is perhaps the most readily available source of local funding for pedestrian and bicycle projects. TDA funds are derived from a statewide quarter-cent retail sales tax. This tax is returned to the county of origin and distributed to the cities and county on a population basis. Under TDA Article 3, two percent of each entity's TDA allocation is set aside for pedestrian and bicycle projects; this generates approximately \$3 million in the Bay Area annually. Eligible projects include the design and construction of walkways and safety education programs. According to MTC Resolution 875, these projects must be included in an adopted general plan or bicycle plan and must have been reviewed by the relevant city or county bicycle advisory committee.

- MTC's Procedures and Project Evaluation Criteria for the TDA Article 3 program:
www.mtc.ca.gov/funding/STA-TDA/RES-0875.doc

Highway Safety Improvement Program

The Highway Safety Improvement Program (HSIP) program was established as part of SAFETEA-LU in 2005 to implement infrastructure-related highway safety improvements to significantly reduce traffic fatalities and serious injuries on public roads.

7 FUNDING AND IMPLEMENTATION

Caltrans expects the available funding apportioned to local agencies in the 2013 Federal Statewide Transportation Improvement Program (FSTIP), which is a four-year funding cycle from 2012/13 through 2015/16, to be approximately \$100 million for the four-year HSIP plan.

- Highway Safety Improvement Program:
- <http://www.dot.ca.gov/hq/LocalPrograms/hsip.htm>

Regional Funding Sources

Transportation for Livable Communities (One Bay Area)

MTC created the Transportation for Livable Communities (TLC) program in 1998. It provides technical assistance and funding to cities, counties, transit agencies and nonprofit organizations for capital projects and community-based planning that encourage multimodal travel and the revitalization of town centers and other mixed-use neighborhoods. The program funds projects that improve bicycling to transit stations, neighborhood commercial districts and other major activity centers. One Bay Area (OBA) grants are now an umbrella for the previous MTC grant programs. It combines funding for Transportation for Livable Communities, Bicycle, Local Streets and Roads Rehabilitation, and Safe Routes to School for the FY 2012-13 through 2015-16 funding cycles. This program is administered by MTC and awards funding to counties based on progress toward achieving local land-use and housing policies. Cities and counties can still use OBA funds for projects described under these programs.

- MTC's TLC program:
- <http://www.mtc.ca.gov/funding/onebayarea/>

Climate Action Program

In partnership with the Bay Area Air Quality Management District, Bay Conservation Development Commission and the Association of Bay Area Governments, MTC is sponsoring a transportation-oriented Climate Action Program, designed to reduce mobile emissions through various strategies, including a grant program. The grant program will provide funding for bicycle projects through new Safe Routes to School and Safe Routes to Transit programs, with total funding expected to be approximately \$400 million. This funding will be in addition to the state and federal Safe Routes to School programs and MTC's existing Safe Routes to Transit program.

Safe Routes to Transit (SR2T)

SR2T is a grant-funding program that emerged out of the Bay Area's Regional Measure 2, which instituted a \$1 toll increase on the Bay Area's seven state-owned toll bridges. Through the SR2T program, up to \$20 million is to be allocated through 2013 on a competitive basis to programs, planning efforts and capital projects designed to reduce congestion on toll bridges by improving bicycling and walking access to regional transit services that serve toll-bridge corridors. Funds can be used for safety enhancements and system-wide transit enhancements to accommodate pedestrians. The SR2T program is administered by two nonprofit organizations, TransForm and the East Bay Bicycle Coalition, with MTC serving as the fiscal agent. Regional Measure 2 provides \$20 million for the SR2S

7 FUNDING AND IMPLEMENTATION

program, to be distributed over five funding cycles with \$4 million available during each cycle. Fiscal year 2011/12 was the fourth of five funding cycles. The final cycle will occur in fiscal year 2013/14.

- Bay Area Safe Routes to Transit funding program: www.transformca.org/campaign/sr2t

Bay Trail Grants

The San Francisco Bay Trail Project—a non-profit organization administered by the Association of Bay Area Governments—provides grants to plan, design, and construct segments of the Bay Trail. The amount, and even availability, of Bay Trail grants vary from year to year, depending on whether the Bay Trail Project has identified a source of funds for the program. In recent years, grants have been made using funds from Proposition 84, the 2006 Clean Water, Parks and Coastal Protection Bond Act; however, this is a limited-term source of funds.

- Bay Trail grants: www.baytrail.org/grants.html

Transportation Fund for Clean Air (TFCA)

TFCA is a grant program administered by the Bay Area Air Quality Management District (BAAQMD). The purpose of the program, which is funded through a \$4 surcharge on motor vehicles registered in the Bay Area, is to fund projects and programs that will reduce air pollution from motor vehicles. Grant awards are generally made on a first-come, first-served basis to qualified projects. A portion of TFCA revenues collected in each Bay Area county is returned to that county's congestion management agency (CMA) for allocation (The City/County Association of Governments, or C/CAG, in San Mateo County). Applications are made directly to the CMAs, but must also be approved by the BAAQMD.

- TFCA County Program Manager Fund: <http://www.baaqmd.gov/Divisions/Strategic-Incentives/Funding-Sources/TFCA/County-Program-Manager-Fund.aspx>

Surface Transportation Program

The Surface Transportation Program (STP) block grant provides funding for transportation projects, including pedestrian projects. This program is administered by MTC, which can prioritize projects for RSTP funding.

- MTC program information: <http://www.mtc.ca.gov/funding/STPCMAQ/>

Measure A

San Mateo County's Measure A sales tax increase of one-half of one percent was approved by San Mateo County voters in 1988 to fund transportation improvements designated in the Transportation Expenditure Plan. This measure was reauthorized in 2004 to extend through 2033, is administered by the San Mateo County Transportation Authority (SMCTA), and funds a wide variety of transportation projects, including pedestrian projects.

- SMCTA program information: http://www.smcta.com/about/About_Measure_A.html

7 FUNDING AND IMPLEMENTATION

Local Funding Sources

A variety of local sources may be available for funding pedestrian improvements; however, their use is often dependent on political support.

New Construction

Future road repaving, widening and construction projects are methods of upgrading or installing new pedestrian facilities. To ensure that roadway construction projects provide pedestrian facilities where needed, it is important that the review process includes a review of the City's proposed pedestrian project list. Planned roadway improvements in South San Francisco should provide pedestrian facilities consistent with the *Pedestrian Master Plan* in the City. Typically, new development projects are required to install sidewalks or bus pullouts. MTC provides a typical routine accommodations checklist that describes the items that the City should look for when reviewing projects.

- MTC Routine Accommodations Checklist:
http://www.mtc.ca.gov/planning/bicyclespedestrians/Routine_Accommodation_checklist.pdf

Capital Improvement Plan

The South San Francisco CIP outlines planned needed infrastructure improvements throughout the community. The program funding only includes Fiscal Year 2012-2013 and the projects in the future years will be appropriated in future budget cycles. The CIP shall be adopted and annually updated by a resolution at a noticed public hearing. The City may use the CIP to formulate its budget, but it does not preclude "opportunistic projects," such as a street resurfacing or development project. Opportunistic projects are unanticipated projects where the City may incorporate pedestrian facilities, even if the projects occur out of sequence.

Assessment Districts

Different types of assessment districts or special improvement districts can be established to provide funding for specific public improvement projects within the districts. Property owners in the districts are assessed for the improvements, and can make payments immediately or over a number of years. Street pavement, sidewalk repair, curb ramps and streetlights are commonly funded through assessment districts. Business Improvement Districts in commercial centers are funded this way. The 1982 California State Legislature Mello-Roos Community Facilities District Act allows communities to establish districts for special property tax assessments.

Impact Fees

Another potential local source of funding is developer impact fees, typically tied to trip generation and traffic impacts as a result of proposed projects.

Open Space District

7 FUNDING AND IMPLEMENTATION

Local Open Space Districts may float bonds that go to acquiring land or open space easements, which may also provide for some improvements to the local trail system.

Other Funding Sources

Local sales taxes, developer or public agency land dedications, private donations, and fund-raising events are other local options to generate funding for pedestrian projects. For example, Kaiser Permanente Community Health Initiatives grants are available to public agencies to support increased physical activity in San Mateo County. Creation of these potential sources usually requires substantial local support.

Funding Strategy

Grant funding is highly competitive and the following options should be considered by the City in pursuing the funding necessary to complete the proposed improvements:

- For multi-agency and cross-jurisdictional projects, prepare joint applications with other local and regional agencies, such as the Cities of Daily City, Colma and San Bruno, San Mateo County, and local and regional park and open space organizations. Joint applications often increase the competitiveness of projects for funding; however, coordination amongst the participating jurisdictions is often challenging. The City should act as the lead agency, with a strong emphasis on coordination between participating jurisdictions and agencies (including SamTrans, Caltrain, BART and Public Health organizations) on important projects to ensure they are implemented as quickly as possible.
- Use existing funding sources as matching funds for State and Federal funding.
- Include pedestrian projects in local traffic impact fee programs and assessment districts. When traffic improvement mitigations are proposed to address level of service, potential impacts to pedestrians at the intersection should be considered. If pedestrians will be impacted, this may be reason to override traffic improvement mitigations.
- Continue to require construction of pedestrian facilities, such as sidewalks, street trees and marked crossings, as part of new development.
- Continue to include proposed pedestrian improvements as part of roadway projects involving widening, overlays, or other improvements.

The City should also take advantage of private contributions, if appropriate, in developing the proposed system. This could include a variety of resources, such as volunteer labor during construction, right-of-way donations, or monetary donations towards specific improvements associated with improving pedestrian access near private developments.

Projects should be funded opportunistically. If funding becomes available for a Second or Third Tier priority project before a First Tier priority project, the funding should be used. Easy “quick fix” projects should be funded before larger construction projects, especially when they can be included with other

7 FUNDING AND IMPLEMENTATION

First Tier projects. All pedestrian project implementation moves South San Francisco closer to meeting the goals of the *Pedestrian Master Plan*.

7.3 IMPLEMENTATION STEPS

To fully achieve the vision set forth in this Plan, close coordination among City agencies and neighboring jurisdictions will be required. Recommended projects fall into two categories:

- Citywide recommendations
- Site-Specific recommendations

Citywide Recommendations

Citywide recommendations include basic pedestrian upgrades to ramps, marked crosswalks and sidewalks throughout the City. All curb ramps should be upgraded to ADA compliant ramps, missing crosswalks should be marked according to the criteria outlined in the Plan *Design Guidelines*, and sidewalk gaps should be filled and sidewalks should be enhanced to meet the most current ADA standards. These citywide improvements should be made as funding is available and when street improvements and property development provide an opportunity to construct new curbs and sidewalks.

Opportunities to implement sidewalk and street improvements included in the Recommended Projects list should be included in street reconstruction projects identified by the City's pavement management model.

Pedestrian Master Plan recommendations and issues related to the pedestrian environment in South San Francisco are part of the local planning fabric and can be addressed through zoning updates, local land use plans, public health education and outreach efforts.

Site-specific Recommendations

Site-specific recommendations have been outlined in the Concept Plans and Recommended Projects List. These have been evaluated according to the prioritization method described earlier in this chapter and cost estimates are provided. Site-specific recommendations can be implemented according to the three tiers of project priorities and as funds become available for project elements associated with other infrastructure projects.

Concept plans can be used in grant applications to illustrate how funding will be used for site specific and corridor specific recommendations.

In addition, the potential loss of on-street parking related to new bulb outs, traffic circles and medians has presented challenges to building local support for past projects. This should be addressed early in the planning process when site-specific recommendations are considered, and residents, merchants

7 FUNDING AND IMPLEMENTATION

and property owners should be engaged and informed about design alternatives and potential benefits as part of the process. Broad proactive public outreach empowers the community to identify solutions and to be prepared for changes.

8 SUPPORT PROGRAMS

CHAPTER 8: SUPPORT PROGRAMS

This chapter outlines existing programs and recommendations for successful implementation of the Pedestrian Master Plan.

8.1 EXISTING PROGRAMS

Education is a critical element for a complete and balanced approach to improving pedestrian safety. Education campaigns should include residents of all ages, especially emphasizing safe walking habits to school children where habits may be instilled as lifelong lessons. South San Francisco participates and/or coordinates the following walking education initiatives and programs:

- Safe Routes to School
- Bicycle and Pedestrian Advisory Committee
- Involving Law Enforcement in Design/Operation of Facilities
- Promotional Giveaways, including a Citywide Walking & Bicycling Map, in collaboration with Kaiser and the Peninsula Traffic Congestion Relief Alliance (the Alliance), etc.

Safe Routes to School

Safe Routes to School (SRTS) programs promote safe walking or bicycling habits to school children. SRTS programs are important both for increasing physical activity (and reducing childhood obesity) and for reducing morning traffic associated with school drop-off. Funding for SRTS programs and projects is available at the regional, state, and federal levels. The South San Francisco Unified School District Board has officially adopted a SRTS policy, and provides information about safe walking and biking to school online:

http://www.ssfusd.org/cms/page_view?d=x&piid=&vpid=1296916223887

The City of South San Francisco recently received a SRTS grant award for pedestrian infrastructure investments on West Orange Avenue and C Street, including speed feedback signs, bulbouts and new crosswalk paint. The City and school district (SSFUSD) do not have an ongoing and funded program, but the City often receives letters of support for SRTS projects from school principals. The City could consider the following SRTS program enhancements as part of the pedestrian master plan:

- Consider developing a citywide SRTS program that encourages walking to school and highlights preferred walking routes. Local best practices include Marin County's program: <http://www.saferoutestoschools.org/>.
- Form a steering committee for the program (or each school) comprised of City staff, BPAC, SSFUSD staff, PTA leaders, County Health Services and other stakeholders. Consider scheduling regular ongoing meetings to maintain stakeholder involvement, determine level of interest, and identify areas with the highest need.

8 SUPPORT PROGRAMS

Consider developing a “StreetSmarts” program, such as those developed by the City of San Jose or Marin County: <http://www.getstreetsmarts.org/>.

Bicycle and Pedestrian Advisory Committee

Advisory committees serve as important sounding boards for new policies, programs, and practices, and many smaller and medium-sized communities form advisory committees that jointly consider pedestrian and bicycling issues.. A citizens’ bicycling and walking advisory committee is a key component of proactive public involvement for identifying walking safety issues and opportunities. South San Francisco and C/CAG currently both have a Bicycle and Pedestrian Advisory Committee (BPAC).

A citywide Pedestrian Coordinator on the City staff would typically be responsible for implementing and monitoring the status of this plan, as well as other pedestrian improvement projects and grants that support the goals of this plan. Often, this position is a joint bicycle and pedestrian coordinator. The City does not have a full-time Pedestrian Coordinator, though several staff within the City’s Engineering and Planning Divisions assist with pedestrian-related projects. With 64,000 residents and over 45,000 jobs, South San Francisco should consider employing a City Pedestrian and Bicycle Coordinator.

A part- or full-time coordinator would be tasked with convening the Bicycle and Pedestrian Advisory Committee and implementing many of the recommendations included in this report. . Such a staff member could be involved in activities such as outreach, interdepartmental coordination, inter-agency coordination, grant writing, project management, and staff liaison to the Bicycle and Pedestrian Advisory Committee, the C/CAG BPAC, local non-profits and advocacy groups, and local schools. This position could also be a joint TDM coordinator that oversees the City’s existing TDM-related ordinances and assists projects developing TDM plans.

Involving Law Enforcement in Design/Operation of Facilities

Having officers understand how specific facilities operate is essential knowledge for them to know how to enforce laws related to pedestrian and bicyclist movement. Oftentimes, laws related to pedestrian right-of-way issues are misunderstood, or worse, not known. Walking and bicycling facility design is constantly evolving beyond basic crosswalk and bicycle lane right-of-way. Maintaining regular contact with law enforcement during the design of new facilities, especially those that might not include typical roadway design features, will ensure more successful implementation and adaptation to the new facilities.

The South San Francisco Police Department is occasionally consulted on facility design, usually through the Traffic Advisory Committee. The Police Department has a liaison who works with the Planning Division on development review, providing feedback about both personal safety for pedestrians and potential compliance issues for motorists. Pedestrian safety courses for law enforcement are designed to educate officers about specific issues related to pedestrian safety and laws so that the Police Department responds to changes in the pedestrian environment in a way that supports personal safety and security.

8 SUPPORT PROGRAMS

Promotional Giveaways

The City has partnered with the Alliance to promote alternative transit, congestion relief and Bike to Work Day.

The City has partnered with Kaiser Permanente to create a walking and biking map for South San Francisco, which includes walking and biking trails, as well as locations of resources and public transportation, public art sites and tips on safe bicycling and walking in both English and Spanish. Maps are available at most City buildings, at various special events and online: <http://www.ssf.net/index.aspx?NID=481>

- The City should continue to team with local organizations willing to sponsor safety item giveaways that encourage walking and other active transportation modes.

8.2 RECOMMENDATIONS

Support programs are important tools for increasing the safety, utility and viability of capital infrastructure projects, such as new crosswalks, bulbouts, and sidewalks. Municipalities can provide support and administer a range of programs and activities related to pedestrian safety, education, promotion and law enforcement as a way to complement their infrastructure improvements. Below is a list of programs and activities that have been effective in other jurisdictions and which the City of South San Francisco could choose to offer.

Education and Encouragement

Street Smarts Program

Street Smarts (<http://www.getstreetsmarts.org/>) is a safety program first designed and implemented by the City of San Jose, California and launched in November 2002. Street Smarts was designed as both a media and a community relations campaign. It uses education to raise awareness of certain problem behaviors that contribute to traffic crashes and aims to change those behaviors over time. Behaviors addressed by the campaign include: red-light running, speeding, stop sign violations, school zone violations, and crosswalk violations. In addition to a media campaign, a community relations campaign is conducted, working with schools, neighborhood associations, businesses, and community organizations to create a public forum to address this community issue.

8 SUPPORT PROGRAMS



One part of this program is use of electronic message boards to display safety messages at various safety hot spots. Messages on the signs were changed regularly and boards were moved to different locations routinely to increase their exposure to different drivers and maximize their impact. The Street Smarts campaign in San Jose has received positive feedback from the public, and the program is being copied in other jurisdictions throughout California, including the Bay Area's City of San Ramon, City of Cupertino and City of Santa Rosa.

The Street Smarts program has the following advantages:

- The program provides multiple messages using a single tool
- The high-quality campaign materials were designed to be used regionally by any public agency
- Media campaigns use a wide variety of communication tools, including flyers, classroom kits for elementary schools, lawn signs, safety presentations at the workplace and online games and activities.
- The Street Smarts campaign materials are designed for use by any public agency for any community and are available from the City of San Jose. Materials are available in English, Spanish and Vietnamese.
- Graphic materials are available from the City of San José for \$3,500

Although the Street Smarts campaign requires staff resources, the overall cost is low to implement.

8 SUPPORT PROGRAMS

Brochures and Pamphlets

Brochures and pamphlets are helpful to educate residents and visitors on topics such as (1) how traffic signals work for pedestrians and the best way to be detected at intersections, (2) pedestrian rights and responsibilities when sharing the road, (3) motorists' rights and responsibilities when sharing the road. They can be distributed at locations with high volumes of pedestrians and on the City's website, as part of a general education campaign.

One limitation to this approach is that the materials may not reach a wide audience.

Brochures are available from the Federal Highway Administration, AAA, and the National Highway Traffic Safety Administration:

- http://safety.fhwa.dot.gov/ped_bike/ped_bike_order/
- <http://www.aaafoundation.org/products>
- <http://www.nhtsa.gov/Pedestrians>

Public Service Announcements

Public service announcements (PSAs) can provide accurate and current information to the public via public access television or online web channels (such as YouTube). PSAs are valuable as they are versatile and can reach a large audience on walking issues, education, and announcements. One challenge is that PSAs can require great effort and may not reach the intended audience. This approach may not be as effective as using a public relations firm and purchasing advertising time targeted to a specific audience.

Perils for Pedestrians (<http://www.pedestrians.org/>), a monthly television series, promotes awareness of issues affecting the safety of people who walk and bicycle. Many cities in California, including Berkeley and Davis, are already taking part through cable stations and webcasts. A typical series consists of interviews with walking and bicycling advocates, planners, engineers, and local and international public officials. They talk about important issues affecting active transportation, such as: walking hazards, infrastructure, bicycles, transit, and more. This program helps raise awareness of local and international issues through a common form of interface.

Walking Mascot

Bellevue, Washington has a great example of an encouragement program in their walking mascot. This elementary school campaign is conducted in conjunction with roadway improvements. The mascot, called PedBee, is on school safety signs and makes personal appearances at school safety days. Safety days include local staff from the City's Transportation and Police Departments. Children are taught bicycling, walking, and traffic safety basics, such as crossing the street safely. Children are

Figure 9C-7. Example of Bicycle Detector Pavement Marking



8 SUPPORT PROGRAMS

also given traffic safety workbooks that provide guidance with hands-on activities such as coloring and safety procedure quizzes.

Educational Signs for Pedestrian Signal Indications

Educational signs can be installed above pedestrian push buttons or integrated into the push button housing to improve understanding of pedestrian signal indications. Signs improve public understanding of pedestrian signal indications and encourage pedestrian compliance at the signals. Signs should be considered where ten or more pedestrian crossings per hour are anticipated. In areas with a high concentration of multilingual or non-English speaking households, non-word intensive or multilingual signs in common languages should be considered. The cost of a sign is approximately \$200 plus installation.

Walk Wise, Drive Smart

Nationally and regionally, the number of senior citizen pedestrians is growing. Walk Wise, Drive Smart is a program in North Carolina aimed to improve the walking environment not only for senior adults, but for all residents and visitors. It is a community program that holds educational workshops, walking audits, and feedback surveys. Activities are aimed at senior citizens providing exercise at a pace and location comfortable to the participants, but are open to all. More information about this how Hendersonville, NC develops and implements this model is available at <http://www.walk-wise.org/>.

Trip Reduction Incentive Programs

South San Francisco, like many cities, has single occupancy vehicle trips as the primary mode of transportation. In San Mateo County the Alliance sponsors a range of trip reduction incentive programs, including the Carpool Incentive Program, the Vanpool Incentive Program, the Schoolpool Incentive Program, free transit tickets for new transit riders, reduced price bike parking, and rebates for new vanpool participants. These programs are provided at no cost to employers throughout San Mateo County, and include gas card incentives for carpooling, employer incentive programs with cash rewards, online guides to transit alternatives, rideshare matching and links to bike commute information, just to name a few.

<http://www.commute.org/programs>

Wayfinding Signage

People are more likely to consider walking when they know that a trip is short and convenient. The City of South San Francisco could develop wayfinding signage with City-specific graphic design and consistent with other locally used design standards so that pedestrians and motorists are familiar with different sign types. Typically, these wayfinding programs are most effective in areas where there are multiple destinations within a reasonable walking distance, such as around transit stations, downtown commercial districts, or job centers. This example shows a bilingual wayfinding sign in Oakland's Chinatown, providing pedestrians with directional information for nearby cultural and transportation destinations.

8 SUPPORT PROGRAMS

Example signage programs include the City of Oakland, which has established design standards (<http://www2.oaklandnet.com/oakca1/groups/pwa/documents/report/oak025118.pdf>), and the City of Berkeley (<http://www.ci.berkeley.ca.us/ContentDisplay.aspx?id=6684>). These examples focus on bicycle wayfinding, but the information about distances and connections between key destinations is also very helpful for pedestrians. The City of Portland, OR has established a pedestrian focused wayfinding program. Examples of the signs and design standards can be found online: <http://www.portlandoregon.gov/transportation/40500>



In South San Francisco wayfinding signage can be used to direct people to specific destinations such as the BART station and to corridor destinations such as El Camino Real. Signs should be placed within walking distance of pedestrian destinations, and spaced out further afield along bicycle routes connecting to destinations (for example, a range of ¼ mile to 2 miles).

Pedestrian Flag Program

The purpose of a pedestrian flag program is to make pedestrians more visible as they cross the street. Hand-held flags are located in containers at both sides of the crosswalk and can be carried by pedestrians as they cross the street. The brightly colored flags can make pedestrians more visible to drivers and alert drivers to the presence of pedestrians. Depending on the number of intersections involved, start-up costs for this type of program are relatively low. This program has been implemented at other cities in the U.S., including Kirkland, Washington, Berkeley, California, and Salt Lake City, Utah.

Billboards and Electronic Message Boards

Billboards and electronic message boards promote safety in the community, inform the public about bicycling and walking safety programs, and provide feedback on the program's effects. StreetSmarts is one example of a public education campaign targeted toward changing driver, pedestrian, and bicyclist behavior to improve safety on city streets.

Law Enforcement

Enforcement tools have been demonstrated to be very effective in improving safety for road users. However, some programs can require a significant investment from local agencies. Newer enforcement tools like red-light running cameras and radar "wagons" can minimize the amount of time required for local law enforcement agencies.

Increased Fines

An increase in traffic fines has been shown to discourage driver violations against pedestrians in crosswalks. For example, in Salt Lake City, Utah, fines were increased from \$34 to \$70 for driver

8 SUPPORT PROGRAMS

violations against pedestrians in crosswalks. A lowering of fines for jaywalking from \$70 to \$10 was also implemented. Variations on this include double fines in school zones and construction zones.

Pedestrian Sting Operations

Pedestrian sting operations target motorists who violate the right-of-way of pedestrians crossing the street, and especially motorists who do not stop for the pedestrian when the cars in the adjacent (same direction of travel) lane have stopped on multi-lane roads. Such operations can also target pedestrians who make unsafe crossings. Stings are most effective on roadways and intersections with high walking volumes, such as on Grand Avenue or other Downtown South San Francisco streets.

Pedestrian stings increase drivers' awareness of pedestrians at intersections; however, as the program is not an ongoing operation, changes in motorist behavior can be short-term. The cost of the program could range from \$3,000 to \$5,000 for a six-week operation and includes the cost of police officer staffing time.

Pedestrian Safety Course for Law Enforcement

Oftentimes, laws related to pedestrian right-of-way issues are misunderstood, or worse, not known. These courses are designed to educate officers about specific issues related to pedestrian safety and laws. Create a workshop for officers to discuss the specific pedestrian safety and right-of-way issues. A sample guide book for such a course was prepared by the Florida Bicycle Association:

http://www.dot.state.fl.us/safety/ped_bike/brochures/pdf/Pedestrian%20LEGuide-08.pdf

Photo Red Light Enforcement Programs

Activated by loops in the pavement, red light cameras photograph the license plate and sometimes the driver of any vehicle entering an intersection after the signal has turned red. Warnings or citations can be sent to offenders. Speeding and double-parking can be discouraged with similar measures.

Red light cameras are appropriate for locations with speeding or red-light-running issues. Fines from citations help pay for the red-light camera system. While the threat of a ticket prevents deliberate traffic violations, the program is repeatedly tested in court.

Tattletale Lights

To help law enforcement officers catch red-light runners safely and more effectively, a "rat box" is wired into the backside of a traffic signal controller and allows enforcement officers stationed downstream to identify, pursue, and cite red-light runners. Warning signs may be set up along with the box to warn drivers about the fine for red-light violations. Rat boxes are a low-cost initiative (approximately \$100 to install the box), but do require police officers for enforcement.

APPENDIX A: DESIGN GUIDELINES

APPENDIX A: SOUTH SAN FRANCISCO PEDESTRIAN DESIGN GUIDELINES

A well-connected pedestrian network is a vital component to livable communities, which thrive on multimodal travel for all roadway users, regardless of age or ability. Multimodal travel incorporates the needs of not just motor vehicles in roadway design, but the needs of pedestrians, bicyclists, and transit users as well. The primary goal of the Pedestrian Design Guidelines is to assist the City of South San Francisco in creating streets that accommodate pedestrians through a set of recommended practices that enhance the walkability of all streets within the City. These guidelines will help the City make decisions about the preferred application of pedestrian treatments in the following areas:

- Streets and Sidewalks
- Uncontrolled Intersections / Mid-block Crossing Treatments
- Controlled Intersections

The pedestrian enhancements described throughout these guidelines provide street design best practice guidance, which can enhance the safety, convenience, and mobility for pedestrians. In particular, they provide guidance on appropriate treatments for the various “areas of focus” throughout South San Francisco, including downtown districts, access to transit stations, bay front areas, school zones, barrier crossings, and the El Camino Real corridor. Potential treatment types for each of these areas include different design options for streets/sidewalks, pedestrian crossings, multimodal connections and community vitality.

COMPLETE STREETS

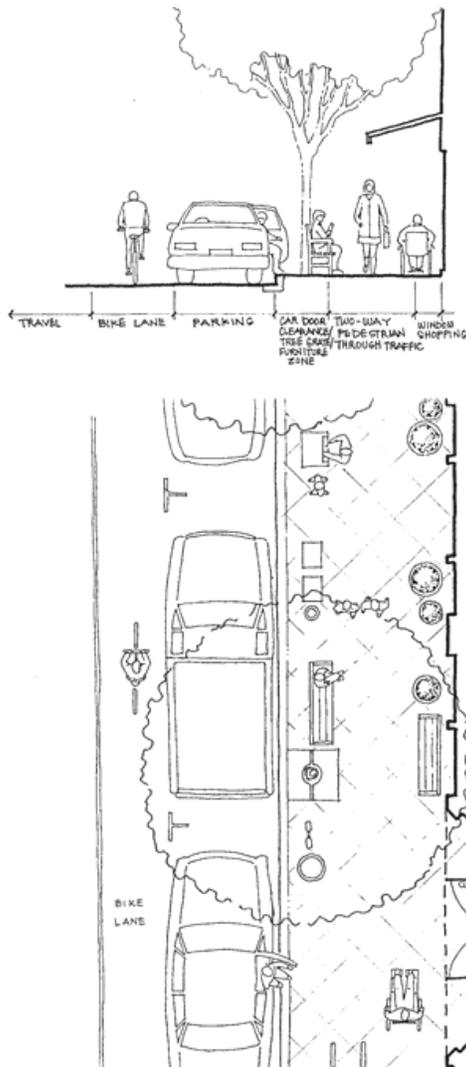
The pedestrian enhancements described throughout these guidelines provide street design best practice guidance, which can enhance the safety, convenience, and mobility for pedestrians. In particular, they provide guidance on appropriate treatments for the various locations identified for pedestrian improvements throughout South San Francisco. Potential treatment types for each of these areas include different design options for streets/sidewalks, pedestrian crossings, multimodal connections and community vitality.

Complete streets practices improve the pedestrian realm because they encourage the design of streets with well-connected and comfortable sidewalks, traffic calming measures to manage vehicle speeds and enhanced pedestrian crossings. Streets without accommodations for transit, pedestrians and cyclists can be a barrier, particularly for people with disabilities, older adults, and children, who may not travel by car.

APPENDIX A: DESIGN GUIDELINES

STREETS AND SIDEWALKS

Streets and sidewalks should support the activities and pedestrian levels along the street. Streets should be well-connected to ensure that destinations are within walking distance. Sidewalks should be wide enough to support the expected pedestrian volumes. South San Francisco's Municipal Code specifies a 10 foot sidewalk width in the downtown, and a minimum sidewalk width of four feet elsewhere. In addition, several adopted Specific Plans have specified sidewalk widths. This Plan recommends a minimum width of six feet for the pedestrian pathway section of a sidewalk, which is wide enough for two people to walk side by side, and can be navigated by persons with mobility impairments and meets current ADA requirements.



Sidewalks in existing residential developments may remain at current widths (city approved minimum of 48 inches, or 4 feet) unless a substantial new development of multifamily dwelling units is planned. ADA sidewalk regulations specify that routes with less than 1.525 meters (60 inches, or 5 feet) of clear width must provide passing spaces at least 1.525 meters (60 inches) wide at reasonable intervals not exceeding 61 meters (200 feet), and a 5 feet by 5 feet turning space should be provided where turning or maneuvering is necessary. This section provides guidelines to the design of sidewalk widths that meet walking demand and provide buffer space between motor vehicle lanes and sidewalks and space for walking, sitting, and lingering.

Typical Sidewalk Cross Section and Layout that Provides Space for Different Walking Oriented Activities
Source: *Creating Livable Streets, Portland Metro*

APPENDIX A: DESIGN GUIDELINES

Table A-1: Street Connectivity

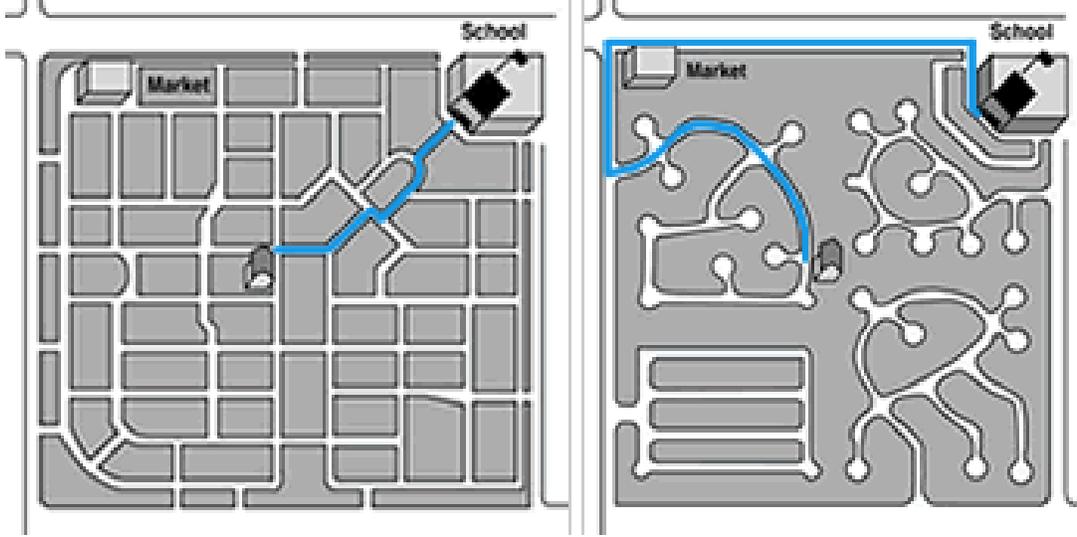
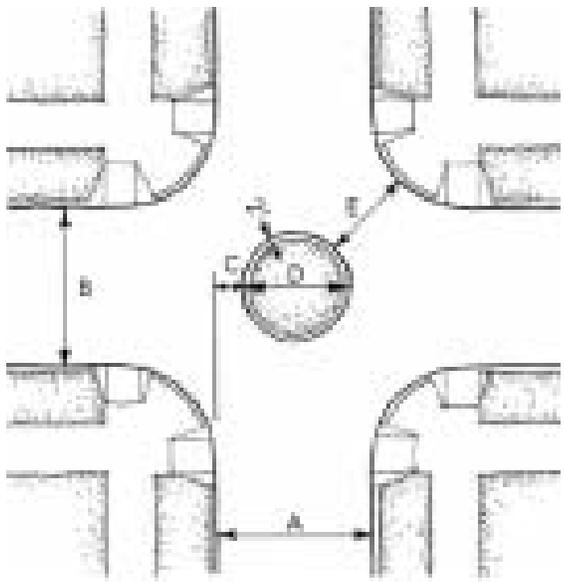
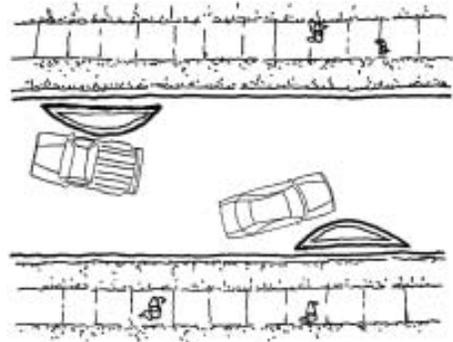
Discussion
<p>A well-connected street network has seamless connections for pedestrians through continuous sidewalks and pedestrian crossings. A grid-like street network is easy for pedestrians to navigate and distributes traffic evenly. In such a network, frequent crossings and short block lengths result in high connectivity. Travel times and distances for pedestrians decrease with connected streets because there are more opportunities for direct paths of travel.</p>
Design Example

Design Summary
<p>Internal street connectivity provides connections between streets within a particular area, while external connectivity provides connections to other neighborhoods. New road and pedestrian paths can increase pedestrian activity by creating better connections. If possible, cul-de-sacs should be avoided. However, if dead ends are unavoidable, there are alternatives to provide pedestrian connections.</p> <ul style="list-style-type: none">• Pedestrian Pathways- Connects a pedestrian routes to a building entrance when a direct connection is lacking.• Cul-de-sac connectors- Pathways where streets dead-end to connect people on foot or bicycle to other streets or land uses. <p>Avoid large blocks- Buildings on “superblocks” are less connected to the street. Connectivity is important along the street as well as between buildings. An intersection density of at least 150-400 intersections per square mile is recommended for pedestrian-friendly blocks and street networks.</p>

Image Source: <http://www.saferoutesinfo.org>

APPENDIX A: DESIGN GUIDELINES

Table A-2: Traffic Calming

Discussion	
<p>High vehicle speeds reduce pedestrian comfort and increase injury severity in collisions. Controlling speeds is a critical element to ensure the pedestrian feels comfortable walking in a sidewalk or within a crosswalk. Traffic calming treatments are physical elements that alter the streetscape to manage vehicle speeds. As a result, driver awareness of pedestrians increases, and the improvements may have an effect on slowing speeds.</p>	
Design Example	
<p>Speed Table</p> 	<p>Traffic Circle</p> 
<p>Chicane</p> 	
Design Summary	
<p>Speed tables/ raised crosswalk - An elevated surface above the travel lane attracts the attention of the driver and encourages lower speeds. It is useful in areas with high pedestrian activity by essentially raising the road surface over a short crossing distance.</p> <p>Traffic Circles - Traffic circles are located in the middle of an intersection to slow traffic. Generally 10-20 feet in diameter, they typically have landscaping in the middle that reduces sight length down the street to slow vehicles. Traffic circles also manage speeds by forcing vehicles to drive around them. Traffic circles are typically placed within an existing intersection and do not require any physical modifications to the roadway beyond the installation of the circle itself. Traffic circles differ from modern roundabouts in that they are often stop controlled and do not have splitter islands on the approaches. Pedestrians cross at the intersection in the same way they would at a typical</p>	

APPENDIX A: DESIGN GUIDELINES

side street or all-way stop controlled intersection. Unlike a roundabout, installation of a neighborhood traffic circle does not require modification to the pedestrian path of travel, and can be installed on streets as narrow as 24'-36'.

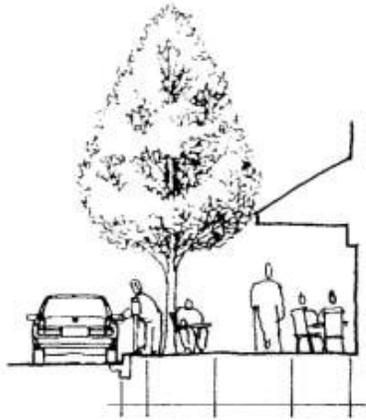
Pedestrian Bulb-outs - Extend sidewalks into the street to create shorter crossing distances for pedestrians and smaller vehicle turning radii at intersections. More detail may be found in the *Intersections Section*.

Refuge Islands - Provide a space in the middle of an intersection for pedestrian to comfortably wait until traffic clears and they can finish crossing the intersection. More detail may be found in *Intersections Section*.

Image Source: (Speed Table and Chicane): Valley Transportation Authority Pedestrian Technical Guidelines; (Traffic Circle) San Diego Street Design Manual

APPENDIX A: DESIGN GUIDELINES

Table A-3: Sidewalk Zones

Discussion
<p>The sidewalk zone is the portion of the street right-of-way between the curb and building front. Within this zone, there are four distinct areas that serve different organizational purposes (see below for more detail about how these apply to different settings).</p>
Design Example

<p>Edge Furnishings Throughway Frontage</p>


Design Summary
<p>These designs are recommended minimums, and ideally sidewalks with high pedestrian volumes should be 16 to 18 feet wide, and could include wider landscaped buffers, a seven and a half to 11 foot wide pedestrian pathway, and / or vegetative strips along the building face,</p> <ul style="list-style-type: none">• <u>Edge/ Curb Zone</u> - At a minimum, such as in areas with lower pedestrian activity, there should be a 6-inch wide curb. Other areas, such as downtowns, should have at least an extra foot to accommodate car doors to not conflict with the sidewalk.• <u>Furnishing/Landscape Zone</u> - This area acts as a buffer between the curb and throughway zone. This is the areas where trees should be planted and benches should

APPENDIX A: DESIGN GUIDELINES

be located. Any sidewalk amenities should be located within this area and should not interfere with the throughway zone. Streets with higher speeds should have larger furnishing zones.

- Throughway zone - The minimum width of this zone should be at least 6 feet or wider for higher volume areas. See sidewalk width discussion above (page A-2) for exceptions and details about ADA compliance.
- Frontage Zone - This area borders the building façade or fence. The primary purpose of this zone is to create a buffer between pedestrians walking in the throughway zone from people entering and exiting buildings. It provides opportunities for shops to place signs, planters, or chairs that do not encroach into the throughway zone.

Some zones are more important in specific settings; for example, most residential streets will not include a frontage zone and will only include a furnishing/landscape zone on streets with higher speeds. Only the curb and throughway zone have minimum widths specified, so there are no implications for residential areas.

Image Sources: Valley Transportation Authority Pedestrian Technical Guidelines; Chula Vista Pedestrian Master Plan; Fehr & Peers

APPENDIX A: DESIGN GUIDELINES

Table A-4: Pedestrian Amenities

Discussion		
<p>Providing amenities for pedestrians along their route makes for a more enjoyable and comfortable walking experience, thus encouraging more walking. They are an essential aspect of street infrastructure which makes pedestrians a priority within the streetscape. These elements serve as functional aspects for walkers while enhancing the character of the street.</p>		
Design Example		
Wayfinding and Signage	High Quality Street Furniture	Pedestrian Scale Lighting
		
Design Summary		
<ul style="list-style-type: none"> • Wayfinding & Signage - Wayfinding signage should cater to both vehicles and pedestrians, particularly in districts where there are high levels of walking activity. Signs and routes that direct pedestrians to specific destinations are key to providing adequate way finding for pedestrians. • Street Furniture - Street furniture is normally placed on a sidewalk in the Frontage Zone to provide additional comfort for pedestrians and enhance place making within the pedestrian realm. Street furniture makes pedestrians feel welcome, but it is important that they do not conflict with the pedestrian travel path. Street furniture can include benches, specially designed newspaper racks, fountains, special garbage/recycling containers, etc. • Street Trees - Street trees are an important aspect of the pedestrian realm as they increase the comfort for pedestrians, providing shade and a buffer from vehicles, ultimately enhancing the streetscape. Stormwater practices such as applying vegetated swales, planters, rain gardens, pervious paving, stormwater curb extensions, and green gutters to streets should also be considered. • Lighting - Pedestrian scale lighting provides a better-lit environment for pedestrians while improving visibility for motorists. Sidewalks with frequent nighttime pedestrian activity should have pedestrian lighting. Pedestrians tend to observe more details of 		

APPENDIX A: DESIGN GUIDELINES

the street environment since they travel at a slower pace than vehicles, and thus pedestrian scale lighting should have shorter light poles and shorter spacing between posts. A height of 12- 20 feet is common for pedestrian lighting. The level of lighting should reflect the location and level of pedestrian activity.

Image Source: Fehr & Peers

APPENDIX A: DESIGN GUIDELINES

CROSSWALK INSTALLATION GUIDELINES

Candidate crosswalk locations are initially identified by understanding pedestrian desire lines (i.e., the places people would like to walk). A person's decision to walk is affected by local land uses (homes, schools, parks, commercial establishments, etc.) and the location of transit stops and parking facilities. This information forms a basis for identifying pedestrian crossing improvement areas and prioritizing such improvements, thereby creating a convenient, connected, and continuous walking environment.

Once candidate crosswalk locations are identified, the second step is identifying the locations safest for people to cross. Of all road users, pedestrians have the highest risk because they are the least protected. National statistics indicate that pedestrians represent 14 percent of all traffic incident fatalities while walking accounts for only three percent of total trips. Pedestrian collisions occur most often when a pedestrian is attempting to cross the street at an uncontrolled intersection or mid-block location.³

UNCONTROLLED INTERSECTIONS AND MID-BLOCK CROSSING TREATMENTS

Uncontrolled intersections are locations without a stop sign or signal. Mid-block crossings are locations where there is marked crosswalk in between intersections. Without a formal signal to control traffic, uncontrolled locations and mid-block crossings require unique treatments to ensure that pedestrians are visible within the roadway.

A crosswalk's primary function is to channelize pedestrians. Well-marked pedestrian crossings prepare drivers for the likelihood of encountering a pedestrian, and create an atmosphere of pedestrian walkability and accessibility. Marked crossings reinforce the location and legitimacy of a crossing. However, the California Vehicle Code requires vehicles to yield the right-of-way to pedestrians at any intersection where crossing is not prohibited (regardless of markings).⁴ Crossing between adjacent, signalized intersections or anywhere crossing is prohibited, is considered *jaywalking*.

Pedestrians tend to walk in the path that provides the shortest distance. If intersection crossings are too far apart, mid-block crossings may be necessary to accommodate these paths. Streets with lower speeds and volumes and narrower cross-sections are better suited for marked crosswalks than multi-lane, high volume streets. Marking a crosswalk helps to identify the most appropriate place to direct the pedestrian to find their way across the street. However, crosswalks need to be marked properly and placed in a location with proper sight lines. In order to identify the need to mark a crosswalk at an uncontrolled location, the following conditions should occur:

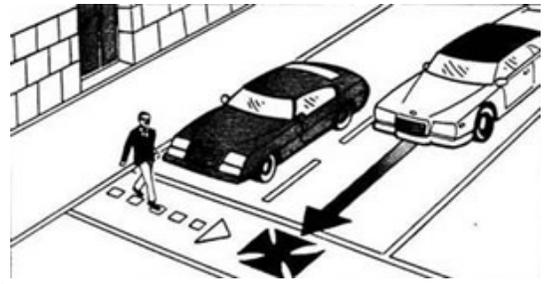
³ *Pedestrian Crash Types, A 1990's Information Guide*, FHWA; This paper analyzed 5,076 pedestrian crashes that occurred during the early 1990's. Crashes were evenly selected from small, medium, and large communities within six states: California, Florida, Maryland, Minnesota, North Carolina, and Utah. <http://drusilla.hsrrc.unc.edu/cms/downloads/PedCrashTypes1997.pdf>

⁴ More information on the California Vehicle Code sections related to pedestrian right-of-way is available at <http://www.walksf.org/vehicleCodes.html>.

APPENDIX A: DESIGN GUIDELINES

- Sufficient demand exists to justify the installation of a crosswalk
- The location has sufficient sight distance (as measured by stopping sight distance calculations) and/or sight distance will be improved prior to crosswalk marking
- Safety considerations do not preclude a crosswalk

Mid-block crossings must provide adequate sight distance so pedestrians can be clearly viewed by motorists, and vice versa. Additionally, it is important to consider challenges of “multiple threat” collisions in designating crosswalk locations and treatments. Multiple threat collisions occur on multi-lane roadways where a vehicle in the adjacent lane blocks the view of a crossing pedestrian from an approaching driver. South San Francisco has areas that are likely to have multiple-threat conflicts, including freeway interchanges, such as at the Highway 101 ramps at Grand Avenue, and multi-lane arterials, like Airport Boulevard.



Multiple Threat Risk on a Multi-lane Street

Source: FHWA

Street design should minimize conflict points with pedestrians. A highly visible marked crosswalk can reduce these conflicts by warning drivers that they are within a pedestrian realm. Advance yield lines (described within the *Intersections* Section) can create a buffer between the areas where the vehicle has to wait and the pedestrian crossing area. Other design strategies at uncontrolled locations include pedestrian bulb outs and restricting parking at corners, such as a 30 foot minimum, to improve visibility between motorists and pedestrians. The Federal Highway Administration has conducted research on the safety effects of marking crosswalks at uncontrolled locations (summarized in the following table). This research provides a framework for local jurisdictions seeking to establish guidelines for installing new crosswalks to facilitate pedestrian connectivity.

APPENDIX A: DESIGN GUIDELINES

Table A-5: Generalized Crosswalk Installation Guidelines

Discussion: FHWA Guidance on Crosswalk Installation												
Table 1. Recommendations for installing marked crosswalks and other needed pedestrian improvements at uncontrolled locations.*												
Roadway Type (Number of Travel Lanes and Median Type)	Vehicle ADT < 9,000			Vehicle ADT >9000 to 12,000			Vehicle ADT >12,000 - 15,000			Vehicle ADT > 15,000		
	Speed Limit**											
	≤ 30 mi/h	35 mi/h	40 mi/h	≤ 30 mi/h	35 mi/h	40 mi/h	≤ 30 mi/h	35 mi/h	40 mi/h	≤ 30 mi/h	35 mi/h	40 mi/h
2 Lanes	C	C	P	C	C	P	C	C	N	C	P	N
3 Lanes	C	C	P	C	P	P	P	P	N	P	N	N
Multi-Lane (4 or More Lanes) With Raised Median***	C	C	P	C	P	N	P	P	N	N	N	N
Multi-Lane (4 or More Lanes) Without Raised Median	C	P	N	P	P	N	N	N	N	N	N	N

* These guidelines include intersection and midblock locations with no traffic signals or stop signs on the approach to the crossing. They do not apply to

These guidelines include intersection and mid-block locations with no traffic signals or stop signs on the approach to the crossing. They do not apply to school crossings. A two-way center turn lane is not considered a median. Crosswalks should not be installed at locations that could pose an increased safety risk to pedestrians, such as where there is poor sight distance, complex or confusing designs, a substantial volume of heavy trucks, or other dangers, without first providing adequate design features and/or traffic control devices. Adding crosswalks alone will not make crossing safer, nor will they necessarily result in more vehicles stopping for pedestrians. Whether or not marked crosswalks are installed, it is important to consider other pedestrian facility enhancements (e.g., raised median, traffic signal, roadway narrowing, enhanced overhead lighting, traffic-calming measures, curb extensions), as needed to improve the safety of the crossing. These are general recommendations; good engineering judgment should be used in individual cases for deciding where to install crosswalks. ** Where the speed limit exceeds 40 m/h (64.4 km/h) marked crosswalks alone should not be used at unsignalized locations.

C= Candidate sites for marked crosswalks. Marked crosswalks must be installed carefully and selectively. Before installing new marked crosswalks, an engineering study is needed to determine whether the location is suitable for a marked crosswalk. For an engineering study, a site review may be sufficient at some locations, while a more in-depth study of pedestrian volume, vehicle speed, sight distance, vehicle mix, etc., may be needed at other sites. It is recommended that a minimum of 20 pedestrian crossings per peak hour (or 15 or more elderly and/or child pedestrians) exist at a location before placing a high priority on the installation of a marked crosswalk alone.

P= Possible increase in pedestrian crash risk may occur if crosswalks are added without other pedestrian facility enhancements. These locations should be closely monitored and enhanced with other pedestrian crossing improvements, if necessary, before adding a marked crosswalk.

N= Marked crosswalks alone are insufficient, since pedestrian crash risk may be increased

APPENDIX A: DESIGN GUIDELINES

due to providing marked crosswalks alone. Consider using other treatments, such as traffic-calming treatments, traffic signals with pedestrian signals where warranted, or other substantial crossing improvement to improve crossing safety for pedestrians.

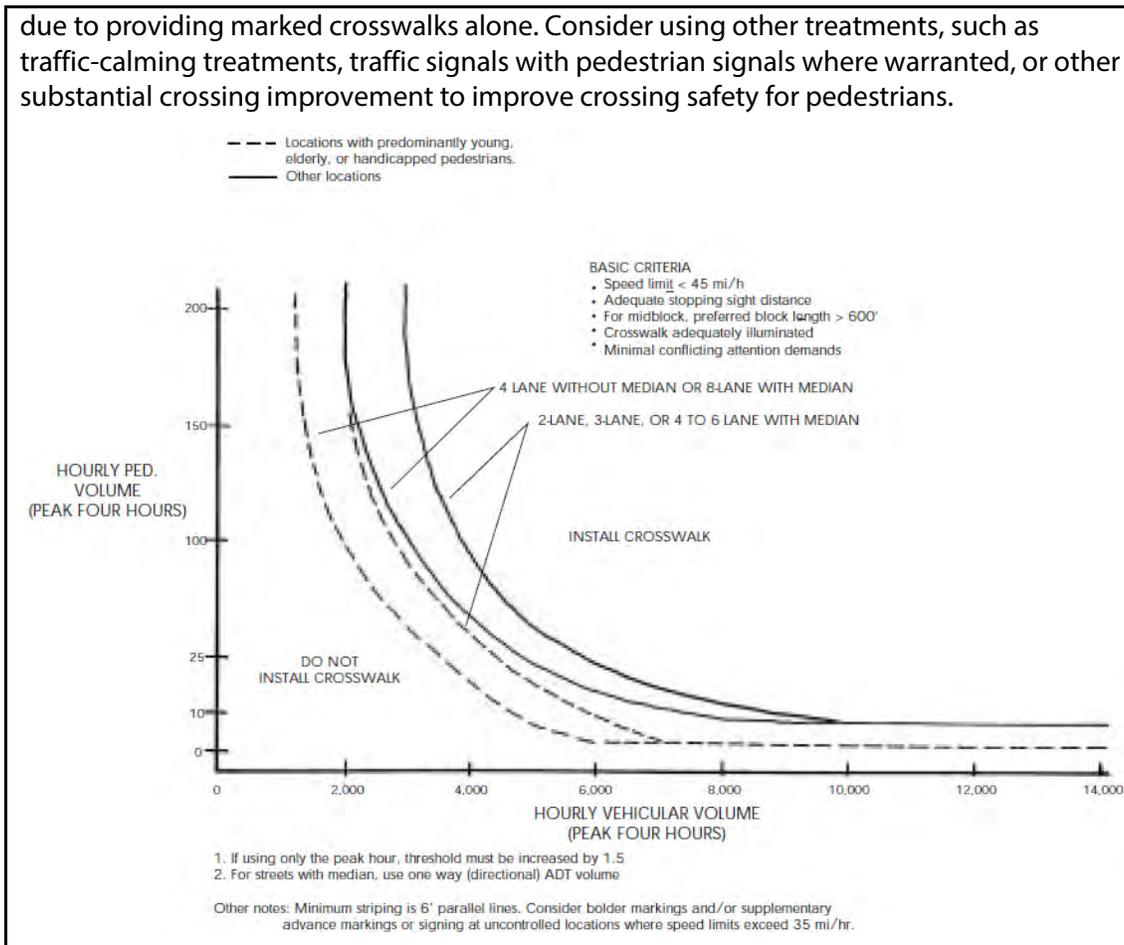


Image Source: FHWA

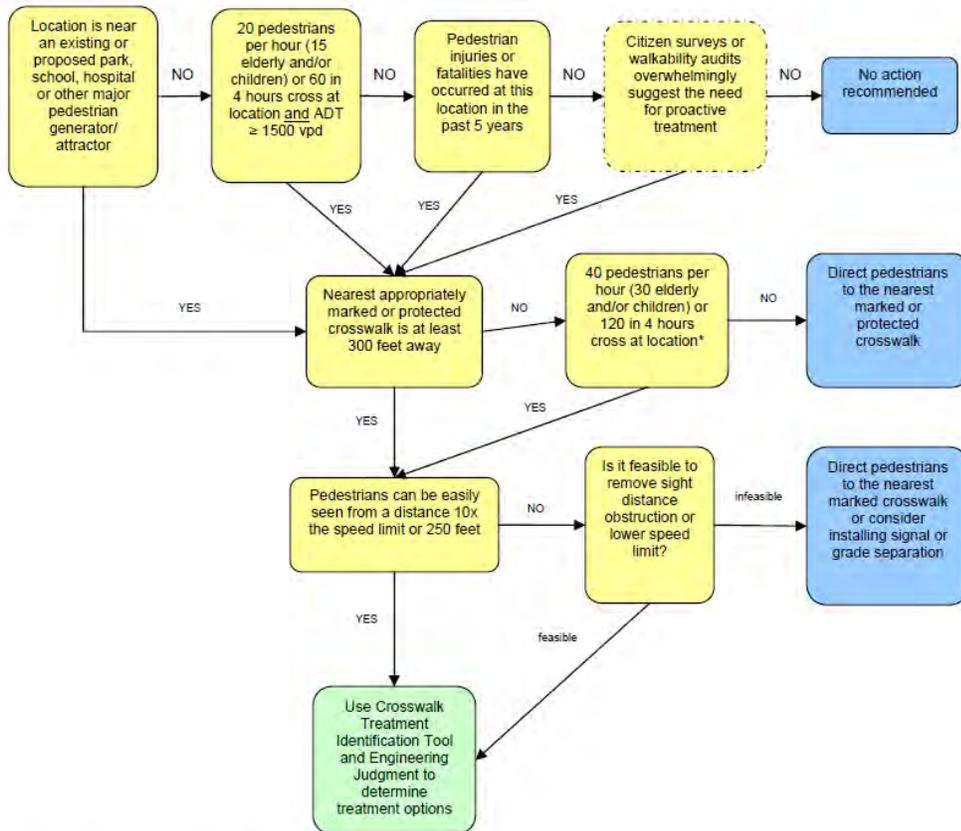
APPENDIX A: DESIGN GUIDELINES

Table A-6: Identifying Uncontrolled Crosswalk Placement

Discussion
<p>Recommendations for ideal crosswalk spacing are different depending on the area of focus (e.g. 300 – 600 ft in high/medium demand areas and rural town centers; at key crossing locations elsewhere). Providing a more direct path of travel may improve pedestrian accommodation and decrease jaywalking. Areas with low street network connectivity may benefit from the use of a mid-block crossing to help pedestrians take the most direct path. Sight distance and vehicle speed are two important factors to consider when installing a mid-block crossing. If speeds are more than 40 mph or volumes higher than 20,000 vehicles per day, mid-block crossings may not be the most suitable treatment. The two charts below provide guidance for the feasibility of crosswalks at uncontrolled and mid-block locations.</p>
Design Summary
<p>Potential Selection Process for Uncontrolled and Mid-Block Crosswalk Locations</p> <pre> graph TD A((City Staff receives request for a crosswalk installation or improvement)) B((Citizen walkability audits identify a location for crosswalk installation or improvement)) C((Citizen surveys identify a key location for crosswalk installation or improvement)) D((Collision analysis identifies one or more pedestrian fatalities or injuries at a location within 5 years)) E[Complete Staff Field Visit] F{Are demand considerations met (see Chart 2)?} G[No. This is not a good location for a marked crossing.] H[Use Crosswalk Treatment Identification Tool and Engineering Judgment to determine treatment options.] A -.-> E B -.-> E C -.-> E D -.-> E E --> F F -- NO --> G F -- YES --> H </pre> <p>--- optional</p>

APPENDIX A: DESIGN GUIDELINES

Feasibility Analysis for Treatments at Uncontrolled Locations



* Consider lowering the volume requirements in rural locations or to meet local ranges for pedestrian volumes

----- optional

Design Examples

The City of Sacramento currently has adopted Pedestrian Safety Guidelines document that incorporates the framework described in the flow charts. It can be accessed at:

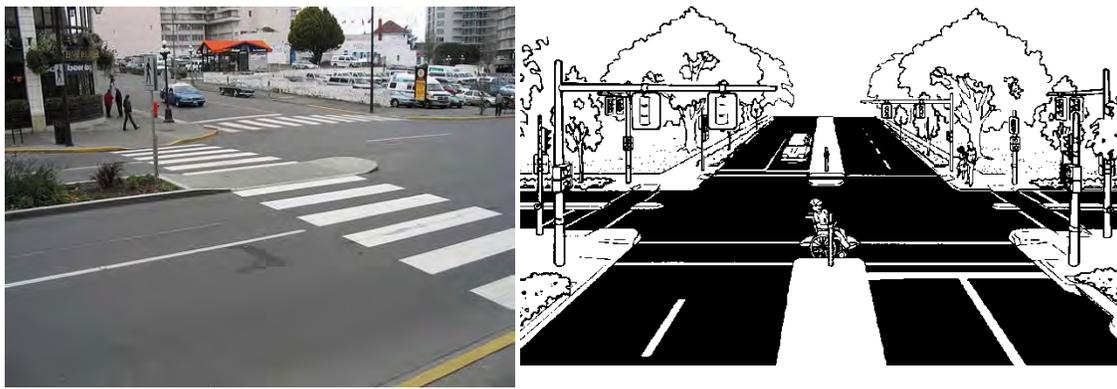
http://www.cityofsacramento.org/transportation/dot_media/engineer_media/pdf/PedSafety.pdf

The City of San Mateo is also currently in the process of developing its own Pedestrian Master Plan, part of which will include Crosswalk Installation Guidelines.

Image Source: Fehr & Peers

APPENDIX A: DESIGN GUIDELINES

Table A-7: Median Island / Pedestrian Refuge

Discussion
<p>Refuge islands provide a designated space in the middle of a crosswalk to allow pedestrians to wait halfway between crossings. Refuge islands are raised islands in the center of a roadway that separate opposing lanes of traffic with a cutout or ramp for an accessible pedestrian path. They reduce pedestrian exposure to motor vehicles, and allow a pedestrian to cross a roadway in two stages. Their application is most pertinent in higher traffic volume areas that have four-lane or wider streets or when crossing distances exceed 60 feet.</p>
Design Example
<p>Pedestrian Refuge Island</p>  The image shows a photograph of a street with a raised pedestrian refuge island in the center of a crosswalk. To the right of the photograph is a technical diagram of the same street layout, showing the island, crosswalks, and traffic lanes.
<p>Split Pedestrian Cross-Over</p>  The image shows a photograph of a street with a split pedestrian cross-over. A sign on the right side of the road indicates a pedestrian crossing.
Design Summary
<p>The minimum recommended width for a median island is 5-8 feet based on the average roadway speed, as shown in the table below. This minimum width accommodates bicyclists. In different contexts, the refuge island can be extended if there are higher amounts of pedestrian activity or additional travel lanes.</p>

APPENDIX A: DESIGN GUIDELINES

Recommended Median Widths	
Speed	Width
• 25-30 MPH	• 5 Feet
• 30-35 MPH	• 6 Feet
• 35-45 MPH	• 8 Feet

A special application of the median island is the two-stage crossing where the crosswalk is staggered such that a pedestrian crosses the street halfway and then is directed to walk towards the direction of traffic to reach the second half of the crosswalk. This channelization effect, typically described as a split-pedestrian cross-over, allows for the pedestrian to easily view traffic while completing the second part of the crossing.

- Pedestrian Pathways- Connects a pedestrian routes to a building entrance when a direct connection is lacking.
- Cul-de-sac connectors- Pathways where streets dead-end to connect people on foot or bicycle to other streets or land uses.

Avoid large blocks- Buildings on “superblocks” are less connected to the street.

Connectivity is important along the street as well as between buildings. An intersection density of at least 150-400 intersections per square mile is recommended for pedestrian-friendly blocks and street networks.

Image Source: www.tfrc.gov, www.flickr.com/photos/luton

APPENDIX A: DESIGN GUIDELINES

Table A-8: High Visibility Crosswalk Striping

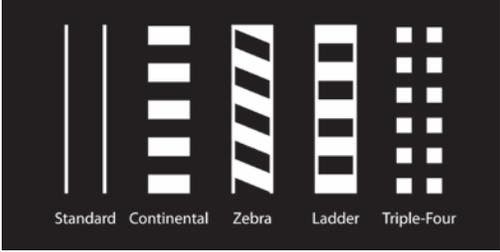
Discussion
<p>In areas with high pedestrian volumes and where land uses may generate significant pedestrian activity (at least 15 ph), high visibility striping is a tool that brings attention to pedestrians crossing typically at an uncontrolled or mid-block location and helps to direct pedestrian traffic to specific locations. It should be used in combination with other design treatments, like refuge islands, bulb-outs, and other active device enhancements for roadways with more than four lanes or speeds over 40 mph.</p>
Design Example
<p>Example Crosswalk Types Approved by FHWA</p>
 <p>Standard Continental Zebra Ladder Triple-Four</p>
<p>Continental Crosswalk High Visibility Ladder Crosswalk (school zone)</p> 
Design Summary
<p>The use of high visibility striping is recommended at uncontrolled crossing locations, and other locations as traffic volumes, speeds, and vehicle-pedestrian conflicts require. There are several treatments for high visibility markings, including the ladder, continental, and zebra designs. Continental, zebra and ladder striping are often chosen to communicate sensitive pedestrian crossing areas as the designated high visibility tool. Communities should choose a preferred style to use in these circumstances so it is consistently applied. The City of Sacramento, for example, developed its own standard high visibility striping treatment for uncontrolled locations called the triple-four. The City has implemented this treatment citywide, involving three four-foot segments, two dashed lines on the outside with a clear space in the center to direct pedestrian traffic.</p>

Image Source: FHWA, Fehr & Peers

APPENDIX A: DESIGN GUIDELINES

Table A-9: In-Street Pedestrian Crossing Signs

Discussion	
<p>This tool involves placing regulatory pedestrian signage in the middle of the roadway centerline, either in front or behind the crosswalk. It is MUTCD-approved and assists to remind road users of laws regarding to the right of way at unsignalized pedestrian crossings.</p>	
Design Example	
	
Design Summary	
<p>Signs may be placed on the roadway centerline directly, as in the picture below. Careful placement is necessary to avoid maintenance issues with vehicles knocking down the sign. One option is to temporarily place the sign during specific time periods, such as when school is in session. Another option is to put the sign within a raised median or place in-pavement raised markers around the sign. They can be placed either at mid-block locations or intersections with significant pedestrian activity, such as near transit stations or schools.</p>	

Image Source: FHWA, Fehr & Peers

APPENDIX A: DESIGN GUIDELINES

Table A-10: Enhanced Uncontrolled Crossing Treatments

Discussion	
<p>At uncontrolled locations, enhanced treatments beyond striping and signing may be needed for candidate marked crosswalk locations under the following conditions:</p> <ul style="list-style-type: none">• Multi-lane streets (three or more lanes); or• Two-lane streets with daily traffic volumes (ADT) greater than 12,000; or• Posted speed limit exceeding 30 miles per hour	
Design Example	
<p>In-Pavement Flashers</p> 	<p>Overhead Flashing Beacon</p> 
<p>Rectangular Rapid Flashing Beacon</p> 	<p>HAWK Signal</p> 
<p>Mid-Block Pedestrian Signal</p>	

APPENDIX A: DESIGN GUIDELINES



Image Source: Chula Vista Pedestrian Master Plan, tti.tamu.edu; Fehr & Peers

Design Summary

In-Pavement flashers

This enhanced treatment helps to improve the visibility of pedestrians at uncontrolled crosswalks. In-pavement markers are lined on both sides of a crosswalk, often containing an amber LED strobe light. They can either be actuated by a push-button or using remote pedestrian detection.

Flashing Beacons

This treatment enhances driver visibility of pedestrians by installing flashing amber lights either overhead or on a post-mounted sign before a vehicle approaches the crosswalk or at the crossing.

Rectangular Rapid Flashing Beacon (RRFB)

The RRFB, also known as a stutter flash, enhances the flashing beacon by replacing the slow flashing incandescent lamps with rapid flashing LED lamps. The lights can be activated either by a push-button or with remote pedestrian detection. This treatment is included in the 2009 Federal MUTCD, and has received interim approval for use in California. There are also versions with LED lights placed within the pedestrian crossing sign.

High- Intensity Activated Crosswalk (HAWK)

This enhanced signal treatment is used in circumstances where there are high vehicle speeds as well as a high demand for pedestrian crossings. It combines the beacon flasher with a traffic control signal to generate a higher driver yield rate. They are pedestrian activated and will display a yellow indication to warn vehicles, then a solid red light. While pedestrians are crossing, the driver sees a flashing red light in a “wig wag” pattern until the pedestrian clearance phase has ended, then returns to a dark signal. The HAWK is now included in the 2009 Federal MUTCD and 2012 CA MUTCD.

Mid-Block Pedestrian Signal

A pedestrian signal may be used to provide the strictest right-of-way control at a pedestrian crossing. Warrants for placement are defined within the MUTCD (a new warrant is provided in the 2009 Federal MUTCD).

APPENDIX A: DESIGN GUIDELINES

Table A-11: Grade Separated Crossing

Discussion

A grade-separated pedestrian crossing provides a complete separation of pedestrians from vehicles through a pedestrian-only overpass or underpass (generally bicycles are permitted as well). Grade separations are a tool to help overcome barriers and help pedestrians connect to sidewalks, off-road trails and paths. It should be used where topography is supportive and no other pedestrian facility is available.

Design Example



Design Summary

Grade separated crossings should be constructed within the most direct path of a pedestrian. They should have visual appeal and entrances that are visible so pedestrians feel safe and not isolated from others.

Because they can be costly (typically from \$2M to \$8M or more), it is recommended that grade separated crossings be used in instances where there are unsafe vehicle speeds and volumes or no convenient substitute for the pedestrian.

Image Source: Fehr & Peers, <http://www.walkinginfo.org/library/details.cfm?id=2882>, <http://www.opacengineers.com/features/BerkeleyPOC>

APPENDIX A: DESIGN GUIDELINES

CONTROLLED CROSSING TREATMENTS / INTERSECTION DESIGN

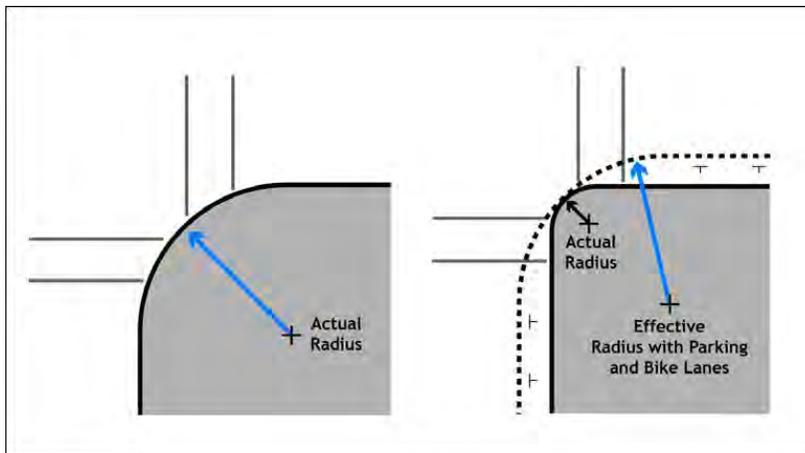
Pedestrian treatments at signalized locations throughout South San Francisco may be used to:

- Improve the visibility of pedestrians to motorists and vice-versa
- Communicate to motorists and pedestrians who has the right-of-way
- Accommodate vulnerable populations such as people with disabilities, children, and seniors
- Reduce conflicts between pedestrians and vehicles
- Reduce vehicular speeds at locations with potential pedestrian conflicts

Improving Pedestrian Visibility – Shorten Crossing Distance

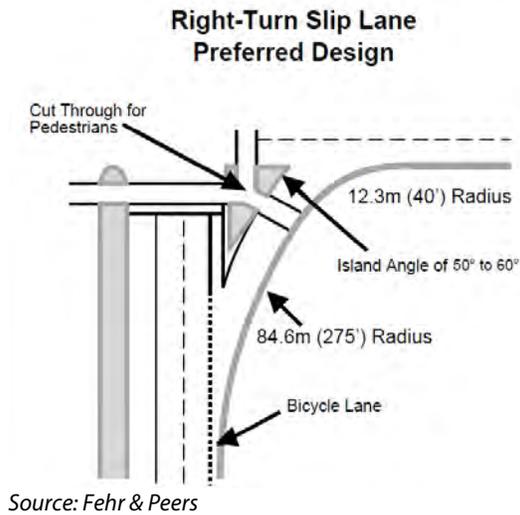
Intersections should be as compact as possible to minimize pedestrian crossing distances. Shorter crossing distances ultimately reduce the exposure time of pedestrians within the roadway and are easier to navigate. Consequently, compact intersections are more comfortable for pedestrians and improve visibility between motorists and pedestrians.

Reducing turning radii is one tool to foster compact intersection design and improve sight distance, in which dimensions of the curb at the intersection directly affects the speed of the approaching vehicle. A large turning radius (generally 30 feet or greater) allows vehicles to turn at high speeds. Reducing the radius forces approaching vehicles to slow down while still accommodating larger vehicles, thus reducing the frequency and severity of pedestrian collisions at intersections. As shown below, on-street parking and bicycle lanes can allow for smaller curb radii while maintaining the same effective curb radius. Note that on-street parking should be restricted in advance of crosswalks, to improve visibility for pedestrians.



Free right turns should be restricted whenever possible as they encourage fast turning movements and present a challenging uncontrolled crossing for pedestrians. When they are necessary, design strategies can enhance the pedestrian crossing and improve visibility of bicyclists on intersecting streets (illustrated below).

APPENDIX A: DESIGN GUIDELINES

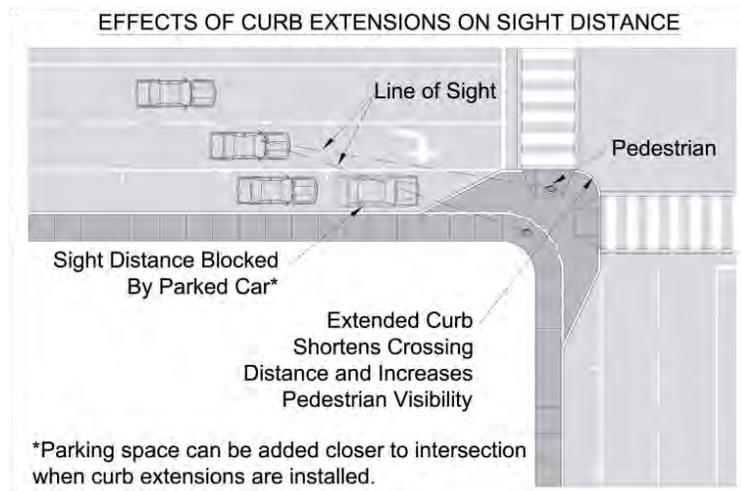


Improving Pedestrian Visibility – Reducing Sight Distance Barriers

Compact intersection design can also improve pedestrian visibility by removing barriers to sight distance, including parked cars, roadway geometry, terrain, vegetation, sun glare, insufficient building setbacks, inadequate roadway lighting, poor signal visibility, signal controller cabinets/poles, and cluttered signage. Improving sight distances gives motorists a clear view of pedestrians, while allowing the pedestrian to observe and react to any hazards. Free vehicle right turns and permitted lefts are two situations that often create conflicts with pedestrians. Ensuring proper sight distances between pedestrians and vehicles can decrease the rate and severity of turning related pedestrian-vehicle collisions.

Removing barriers to sight distance requires careful design when vehicles approach other vehicles and pedestrians. Design elements should be considered at intersections as well as mid-block crossings. Designers must particularly consider the needs of those pedestrians with special needs, including older adults, children, and people with disabilities. For example, children and people using wheelchairs have a lower eye height than standing adults.

Source: Sacramento City Pedestrian Master Plan



APPENDIX A: DESIGN GUIDELINES

Table A-12: Pedestrian Bulb-Outs

Discussion

Also known as curb extensions, bulb-outs increase driver awareness of pedestrians and help slow traffic. They provide a larger space for pedestrians to wait before crossing an intersection and prevent cars from parking near the crosswalk. Bulb-outs are highly beneficial in downtown or transit station areas, which generate significant pedestrian activity. They may also be beneficial in school zones or neighborhood districts, which have vulnerable pedestrians, such as children or older adults that would benefit from an enhanced treatment that reduces crossing distances.

Design Example



Design Summary

Bulb-outs involve extending the curb space into the street to create a shorter pedestrian crossing. They should not extend into the bicyclist line of travel to avoid impeding bicyclists and motorists. This can be achieved by designing the bulb-out width to be the same as the adjacent on-street parking (7-8' for parallel parking, or wider as necessary at locations with angled parking). They may also require removal of on street parking. Landscaping within bulb-outs, as depicted at right, can further enhance the character and comfort of the pedestrian realm. Bulb-outs may also create space for pedestrian amenities or bicycle parking. Bulbouts typically range in cost from between \$10,000-50,000 per corner.

Image Source: Dan Burden (top left), Fehr & Peers (top right and bottom)

APPENDIX A: DESIGN GUIDELINES

Table A-12: Special Paving Treatments

Discussion	
<p>Special paving treatments include adding texture to surfaces or coloring pavement to distinguish the sidewalk or crosswalk. This treatment enhances the character of the overall pedestrian environment. The rougher roadway surface may also slow vehicles and draw more attention to the pedestrian realm.</p>	
Design Example	
<p>Brick Pattern Streetprint Design</p> 	<p>Brick, Pavers and Concrete</p> 
<p>Decorative Streetprint</p> 	
Design Summary	
<p>Types of special paving treatments typically include:</p> <ul style="list-style-type: none">• Colored concrete• Stamped asphalt or concrete painted to resemble bricks.• Pavement stencils <p>Designers must be careful to not confuse the visually impaired and cause problems for people with disabilities. Surfaces should be adapted to accommodate people using wheelchairs. A standard white stripe is recommended on either side of the crosswalk even when special paving treatments are used to enhance the contrast between the crossing and the roadway.</p>	

Image Source: Fehr & Peers (top left and top right), <http://www.visualtexture.net/page/2/> (bottom)

APPENDIX A: DESIGN GUIDELINES

Table A-13: Standard Crosswalk Striping

Discussion	
<p>Crosswalks should be marked on <i>all approaches</i> where feasible to delineate space for pedestrians to cross. While heavy vehicle volumes may present an exception, they are discouraged and should only be considered when all other options to accommodate motor vehicle demand have been considered.</p> <p>At intersections, crosswalks are essentially an extension of the sidewalk; if the sidewalk extends to the intersection, proper striping should continue to direct the pedestrian to the other side of the intersection.</p> <p>Advanced stop bars are another standard crosswalk treatment to discourage vehicles from encroaching into the crosswalk. They may be useful at signalized intersections and stop controlled intersections with multiple lanes. A yield line should be used as a replacement at uncontrolled intersections.</p>	
Design Example	
<p>Standard Crosswalk</p> 	<p>Crosswalk with Advance Stop Bar</p> 
Design Summary	
<p>Standard dual white lane stripes are recommended for pedestrian crossings at signalized intersections. These bars should be one foot wide and extend from curb ramp to curb ramp.</p> <p>Advanced stop or yield limit lines solid white lines extending through the traffic lane to communicate to drivers where they should stop. MUTCD requires they be placed at least 4 feet before the crosswalk, although placement at greater distances can enhance pedestrian visibility and vehicle reaction times.</p>	

Image Source: Fehr & Peers (above), Sacramento City Pedestrian Plan (below)

APPENDIX A: DESIGN GUIDELINES

Table A-14: Curb Ramps

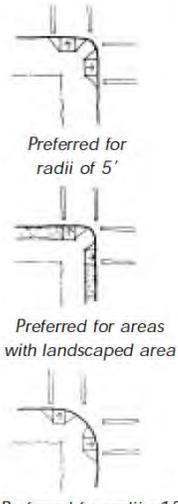
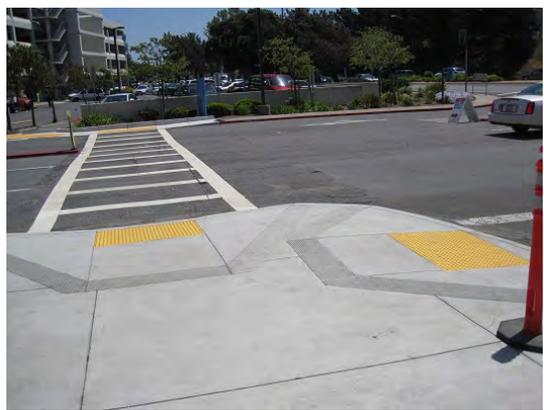
Discussion	
<p>Pedestrians with mobility impairments, such as people using wheelchairs or those with canes, need curb ramps to safely access a sidewalk.</p>	
Design Example	
<p><i>Recommended</i></p>  <p><i>Preferred for radii of 5'</i></p> <p><i>Preferred for areas with landscaped area</i></p> <p><i>Preferred for radii >15'</i></p>	<p><i>Not Recommended for New Construction: (existing constrained situations only)</i></p>  
Design Summary	
<p>The appropriate curb ramp design depends on the geometry of the intersection. Recommended practices for various sidewalk conditions are shown below. As depicted in the illustration, directional ramps are preferred over diagonal ramps as they provide direct access to each crosswalk. Curb ramps should be ADA compliant to accommodate mobility and visually impaired pedestrians. Detectable warnings are required by the ADA Accessibility Guidelines with any new curb ramp or reconstruction. These guidelines call for raised truncated domes of 23 mm diameter and 5mm height. Curb ramps should align in the direction of the crosswalk and have enough clear space beyond the curb line so the pedestrian is not drawn right into the line of traffic.</p>	

Image Source: Valley Transportation Authority Technical Pedestrian Guidelines, Fehr & Peers

APPENDIX A: DESIGN GUIDELINES

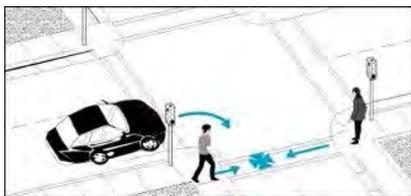
Table A-15: Pedestrian Friendly Signal Treatments

Discussion

There are several innovative treatments that enhance the visibility and convenience of pedestrian crossings at traffic signals. These treatments can be applied in a variety of contexts depending on the pedestrian demand and vehicle movement within the streetscape.

Design Example

Leading Pedestrian Interval



Countdown Signal



Scramble Phasing



Design Summary

Leading Pedestrian Intervals

- An enhanced pedestrian treatment that gives pedestrians a walk indication while other approaches are red to prevent advancing. Crossing with this “head start” allows pedestrians to be more visible to motorists approaching an intersection.
- Should be used at locations with heavy right turn vehicle volumes as well as frequent pedestrian crossings.
- Vehicles are stopped for 2-4 seconds while pedestrians are allowed to begin crossing.
- May require restricting right-turn on red at some locations.

Countdown signals

- Displays a “countdown” of the number of seconds remaining for the pedestrian crossing interval.
- Information about the amount of time left to cross is particularly helpful when crossing multi-lane arterials.
- Can improve pedestrian compliance while reducing the number of pedestrians

APPENDIX A: DESIGN GUIDELINES

“dashing” across an intersection.

Scramble Phasing

- This enhanced crossing treatment allows pedestrians to walk in all directions while all vehicle approaches have a red phase. Pedestrians may cross the street orthogonally or diagonally, providing a direct and efficient walking route.

Audible Signal

- Pedestrian phases are typically difficult to recognize for those with visual impairments.
- MUTCD 2003, Section 4A.01 specifies that signals that communicate to pedestrians in a non-visual way can include verbal messages or vibrating surfaces.
- Should be implemented on a separate pole close to the crosswalk line. If two are placed on the same corner, they should be 10 feet apart to distinguish between directions.
- Speaker on top of the signal can give a bell, buzzer, speech message during walk interval or vibrate when walk signal is on, or a personal individual receiver can communicate by infrared or LED to the signal.

Pedestrian Friendly Signal Timing

See “Pedestrian Friendly Signal Timing” below.

Image Source: <http://www.walkinginfo.org>, Fehr & Peers, www.streetswiki.wikispaces.com

APPENDIX A: DESIGN GUIDELINES

Table A-16: Pedestrian Friendly Signal Timing

Discussion
<p>Signal timing typically favors vehicle travel. However, in areas with high pedestrian activity, there are methods to alter signals to better meet the needs of pedestrians. The walk interval of a pedestrian phase is, at a minimum, four to seven seconds, followed by a pedestrian clearance interval, called the “flash don’t walk” (FDW) phase. The FDW phase uses a standard rate to determine the amount of time provided for the pedestrian to clear an intersection. It is determined by dividing the width of an intersection by the pedestrian walking speed. The solid “Don’t Walk” sign typically coincides with the yellow vehicle signal. The pedestrian timing is an important element to traffic signals since the green time for cars might not be sufficient for pedestrians to cross an intersection.</p>
Design Example
 <p>The image shows a close-up of a pedestrian signal head. It features three distinct signal stages: 1. 'START CROSSING' with a white walking person icon and the text 'WATCH FOR TURNING CARS'. 2. 'DONT START' with a flashing red hand icon and the text 'FINISH CROSSING IF STARTED'. 3. 'PEDESTRIANS SHOULD NOT BE IN CROSSWALK' with a steady red hand icon. Below the signals is a circular push-button for manual activation.</p>
Design Summary
<p>The standard for walking speeds at signalized intersections has changed from 4 feet per second to 3.5 feet per second to more accurately reflect the average pedestrian walking speed and aging population. The 2009 Federal MUTCD requires this reduction, although the change has not yet been adopted in California.</p> <p>A slower walking rate of 2.8 feet per second (MUTCD 4E.10(CA)) is recommended in areas with a high number of children, older adults, or disabled pedestrians crossing. Pre-timed signals may warrant a longer walk phase in order to accommodate pedestrians. This should ultimately be at the discretion of the local agency’s traffic engineer.</p>

Image Source: Dan Burden

APPENDIX A: DESIGN GUIDELINES

Table A-17: Pedestrian Friendly Signal Phasing

Discussion
<p>Left- and right-turning vehicles are required to yield to pedestrians in the crosswalk. Different signal phasing sequences accommodate pedestrian crossing intervals differently:</p> <ul style="list-style-type: none">• Protected left turns allow vehicles turning left an exclusive phase, ultimately eliminating conflicts between pedestrians in the crosswalk; left-turning vehicles will never cross at the same time as the pedestrian signal.• Split phasing, allows each intersection approach to receive a dedicated phase. Pedestrian phases for parallel crosswalks will be activated at different times. This phasing can reduce intersection capacity.• Permitted left turn phasing, where vehicles turning must yield to through traffic and pedestrians, can reduce pedestrian delay and improve traffic operational efficiency by minimizing the impact of pedestrian timing through allowing two pedestrian crossings at once. <p>Other types of pedestrian signal phasing, including “scramble” phasing and leading pedestrian intervals, are described in the “Pedestrian Friendly Signal Treatments” guideline above.</p>
Design Example
<p>Example of a Pedestrian Signal Head Mounted on a Signal Pole</p>  <p>The photograph shows a street intersection with a pedestrian crossing. A signal pole is visible with a pedestrian signal head mounted on it. A pedestrian is walking across the street. In the background, there is a building with large windows and a red traffic light.</p>

APPENDIX A: DESIGN GUIDELINES

Design Summary

In urban or downtown settings where pedestrian volumes are high, using permitted signal phasing is generally preferred because it reduces pedestrian delay. In less urban settings, providing protected left-turn phasing to eliminate pedestrian-vehicle conflicts is recommended where feasible.

At intersections with heavy vehicle traffic volumes, providing convenient and comfortable pedestrian crossings must be balanced with the need to maintain intersection capacity and operations for automobiles. In these instances, it is important to incorporate additional treatments to enhance pedestrian visibility, such as special striping or signage. If a permitted left turn phase is used, the traffic and pedestrian signal should be located next to each other on the corner pole (as depicted in the picture) to attract driver's attention.

Image Source: Fehr & Peers

APPENDIX A: DESIGN GUIDELINES

RESOURCE DOCUMENTS

Federal Standards and Resource Documents:

Guide to the Development of Pedestrian Facilities, American Association of State Highway and Transportation Officials, 2000

Manual on Uniform Traffic Control Devices, Federal Highways Administration, December 2009.

Geometric Design of Highways and Streets, American Association of State Highway and Transportation Officials, 2004.

Americans with Disabilities Act Accessibility Guidelines (ADAAG). United States Access Board.

California Standards and Resource Documents:

California Manual on Uniform Traffic Control Devices, Caltrans, January 2010.

Highway Design Manual, California Department of Transportation.

Other Guidelines and Resource Documents:

TCRP Report 112/NCHRP Report 562: Improving Pedestrian Safety at Unsignalized Crossings. Washington D.C.: TCRP and NCHRP, 2006.

Pedestrian Technical Guidelines: A Guide to Planning and Design for Local Agencies in Santa Clara City, Santa Clara Valley Transportation Authority, October 2003.

Routine Accommodations of Pedestrians and Bicyclists in the Bay Area, Metropolitan Transportation Commission, Available: http://www.mtc.ca.gov/planning/bicyclespedestrians/routine_accommodations.htm, 2006.

Pedestrian Safety Resource Guide, Metropolitan Transportation Commission Regional Pedestrian Committee, Available: <http://www.mtc.ca.gov/planning/bicyclespedestrians/PEDSAFETYRESOURCEGUIDE.doc>, 2004.

San Mateo County Sustainable Green Streets and Parking Lots Design Guidebook, San Mateo Countywide Water Pollution Prevention Program, First Edition: January 2009, Available: http://www.flowstobay.org/ms_sustainable_guidebook.php

APPENDIX B: RANKED PROJECTS

APPENDIX B: RANKED PROJECTS

South San Francisco Pedestrian Master Plan: Prioritized Projects

ID #	Location	Cost	Pedestrian Demand (30/20/10)	Access to Key Destinations (20/15/10/5/0)	Closure of Critical Gap (20/15/10/5/0)	Serves Safety Need (20/15/10/5/0)	Feasibility (0-10)	Total Points
First Tier: Short-Term Projects (51-100 Points)								
1-2	McLellan Drive from Mission Road to El Camino Real	\$154,961	30	20	10	10	5	75
11-1	Chestnut Avenue and Antoinette Lane	\$228,334	20	20	10	15	5	70
12-1	Spruce Avenue between Lux Avenue and Maple Avenue	\$15,312	30	15	0	15	5	65
9-1	Grand Avenue and Airport Boulevard	\$19,517	30	10	0	15	10	65
13-1	Westborough Boulevard from Callan Boulevard to Gellert Boulevard	\$368,360	20	15	10	15	5	65
9-4	East Grand Avenue and Dubuque Avenue	\$13,750	30	15	0	15	1	61
10-3	Airport Boulevard and Miller Avenue	\$500	30	15	0	10	5	60
14-3	E Grand Avenue between Grand Avenue and Dubuque Avenue	\$1,400	30	10	0	15	5	60
1-1	McLellan Drive and Mission Road	\$14,042	30	20	0	0	10	60
9-3	Pedestrian crossing under Hwy 101 along East Grand Avenue	\$20,000	30	10	0	15	5	60
10-2	Airport Boulevard at Pine Avenue	\$137,232	30	15	0	10	5	60
10-1	Linden Avenue from Grand Avenue to Aspen Avenue	\$543,440	30	15	0	10	5	60
6-1	Del Monte Avenue from Arroyo Drive to Alta Loma Drive	\$40,000	20	15	5	15	1	56
2-1	Mission Road from McLellan Drive to Holly Avenue	\$197,923	30	20	0	5	1	56
9-2	Grand Avenue between Airport Boulevard and Walnut Avenue	\$275,850	30	15	0	10	1	56
12-3	School Street and Olive Avenue	\$20,000	30	10	0	10	5	55
16-1	Oyster Point Boulevard from Eccles Avenue to driveway immediately east	\$35,695	10	15	10	15	5	55
12-2	School Street and Maple Avenue	\$39,135	30	10	0	10	5	55
2-2	Mission Road and BART entrance	\$50,000	30	20	0	0	5	55
12-4	Grand Avenue and Spruce Avenue	\$204,000	30	10	0	10	5	55
2-5	Holly from Mission Road to Crestwood Drive	\$34,600	30	10	0	10	1	51
2-6	Crestwood Drive from Holly Avenue to Evergreen Drive	\$10,000	30	10	0	10	1	51
1-3	El Camino Real and McLellan Drive	\$875	20	20	0	10	1	51
15-3	S Airport Boulevard and Highway 101 off-ramp	\$91,558	20	5	15	10	1	51
2-3	Mission Road and Sequoia Avenue	\$209,665	30	20	0	0	1	51

South San Francisco Pedestrian Master Plan: Prioritized Projects

ID #	Location	Cost	Pedestrian Demand (30/20/10)	Access to Key Destinations (20/15/10/5/0)	Closure of Critical Gap (20/15/10/5/0)	Serves Safety Need (20/15/10/5/0)	Feasibility (0-10)	Total Points
8-1	El Camino Real from Hazelwood Drive to Ponderosa Road	\$271,404	10	15	10	15	1	51
Second Tier: Medium-Term Projects (41-50 points)								
10-4	Cypress Avenue from California Avenue to Grand Avenue	\$17,280	30	15	0	0	5	50
5-5	Hazelwood Drive from El Camino Real to Pinehurst Way	\$24,140	20	10	5	10	5	50
15-1	Produce Avenue and S Airport Boulevard	\$45,012	30	0	0	10	10	50
14-2	E Grand Avenue from Forbes Boulevard to Gateway Boulevard	\$66,850	20	10	0	10	10	50
11-4	Mission Road and Oak Avenue	\$93,610	20	10	0	15	5	50
2-4	Mission Road and Holly Avenue	\$102,170	30	15	0	0	5	50
5-7	El Camino Real from Brentwood Drive to Noor Avenue	\$213,300	20	10	0	15	5	50
11-2	Westborough Avenue and Camaritas Avenue	\$258,708	20	10	0	15	5	50
3-4	Hickey Boulevard and El Camino Real	\$4,886	20	5	0	20	1	46
4-4	Chestnut Avenue from Miller Avenue to Sunset Avenue	\$161,724	30	5	0	10	1	46
1-4	El Camino Real and Kaiser entrance	\$577	20	10	0	5	10	45
15-2	S Airport Blvd btwn Airport Blvd and Gateway Blvd	\$6,816	30	0	0	10	5	45
1-8	Arroyo Drive between Camaritas Avenue and El Camino Real	\$54,400	20	10	0	10	5	45
4-2	Grand Avenue and Oak Avenue/ Aldenglen Drive	\$122,340	30	0	0	10	5	45
4-3	Chestnut Avenue and Miller Avenue	\$131,013	30	0	0	10	5	45
11-3	Mission Road and Chestnut Avenue	\$348,462	20	10	0	10	5	45
2-7	Evergreen Drive from Crestwood Drive to Mission Road	\$19,680	20	10	0	10	1	41
5-2	Victory Avenue and South Spruce Avenue	\$503,981	20	0	0	20	1	41
Third Tier: Long-Term & Opportunistic Projects (0-40 points)								
1-5	El Camino Real and Arroyo Drive	\$1,214	20	10	0	5	5	40
1-6	El Camino Real and Chestnut Avenue	\$2,068	20	10	0	5	5	40
7-1	South Linden Ave and Railroad Ave	\$7,320	20	0	15	0	5	40
4-1	Mission Road and Grand Avenue	\$53,136	20	10	0	5	5	40
14-1	Forbes Boulevard from Corporate Drive to E Grand Avenue	\$62,575	20	10	0	0	10	40
1-7	El Camino Real from Mission to Chestnut	\$229,680	20	10	0	5	5	40
7-3	South Linden Ave from South Canal St to Tanforan Ave	\$256,200	20	0	15	0	5	40

South San Francisco Pedestrian Master Plan: Prioritized Projects

ID #	Location	Cost	Pedestrian Demand (30/20/10)	Access to Key Destinations (20/15/10/5/0)	Closure of Critical Gap (20/15/10/5/0)	Serves Safety Need (20/15/10/5/0)	Feasibility (0-10)	Total Points
3-1	Hickey Boulevard at Junipero Serra Boulevard	\$261,133	20	0	5	10	5	40
8-2	Ponderosa Road from El Camino Real to Alhambra Road	\$557,890	10	15	10	0	5	40
5-4	South Spruce Avenue and El Camino Real	\$1,034	10	10	0	15	1	36
5-6	Brentwood Dr from Pinehurst Way to El Camino Real	\$1,400	20	10	0	0	5	35
13-2	Gellert Boulevard from Westborough Boulevard to Marbella Drive	\$3,834	20	0	0	10	5	35
15-4	S Airport Boulevard and Marco Way	\$33,727	20	0	0	10	5	35
3-5	El Camino Real and Costco Warehouse driveway	\$42,640	20	5	0	5	5	35
3-3	Hickey Boulevard and Hilton Avenue	\$158,885	20	5	0	5	5	35
5-3	South Spruce Avenue from Victory Avenue to El Camino Real	\$444,570	10	10	0	10	5	35
7-2	South Linden Avenue at North Canal Street and South Canal Street	\$26,880	20	15	5	15	1	56
16-2	Oyster Point Boulevard at Oyster Point Park	\$3,278	10	15	0	0	5	30
3-2	Junipero Serra, south of Hickey Boulevard	\$640,000	20	0	0	0	5	25
5-1	Victory Avenue and South Maple Avenue	\$5,532	10	0	0	0	5	15
7-4	South Linden Avenue and San Mateo Avenue/ Tanforan Avenue	\$62,579	10	0	0	0	5	15

APPENDIX C: DETAILED COST ESTIMATES

APPENDIX C: DETAILED COST ESTIMATES

South San Francisco Pedestrian Master Plan: Estimated Construction Costs

ID #	Location	Recommendations	Detailed Recs	Unit Cost	Total	Total Calculation	Unit	Construction Cost per Rec	Maintenance Cost per Rec	Notes	
1-1	McLellan Drive and Mission Road	<ul style="list-style-type: none"> Extend median and add a median tip on the east leg of the crossing Add school zone features at all four legs of the intersection; include high visibility yellow crosswalks, advance pedestrian crossing signs, and advance stop bars at all legs (El Camino HS is located at the southeast corner) 	Vertical Median	\$22	48	(3' tip + 7' extension to xwalk)*(2 sides)+(7' existing width)*(4 sides)	Linear Foot	\$1,056		Assumes median tip = 3'	
1-1			Concrete Surface	\$11	70	(3' tip + 7' extension to xwalk)*(7' existing width)	Square Foot	\$770			
1-1			Remove Thermoplastic Lane Striping	\$1	636	(66'+96'+62'+94' existing standard striping)*(2 sides)	Linear Foot	\$636			
1-1			High Visibility Crosswalk Restriping	\$5	1436	(66'+96'+62'+94' new standard striping)*(2 sides)+(10' new perpendicular striping)*(80'/4)*(4 legs)	Linear Foot	\$7,180			Assumes high visibility crosswalk restriping includes two standard parallel lines with 10' perpendicular lines spaced every 4'
1-1			New Signage	\$700	4		Each	\$2,800			
1-1			Advance Stop Bars	\$400	4		Each	\$1,600			
1-2	McLellan Drive from Mission Road to El Camino Real	<ul style="list-style-type: none"> Install sidewalk on north side of McLellan Drive between Mission Road and BART station entrance Install bulb out on northeast corner of El Camino or provide medians and pedestrian refuge to shorten crossing distance Install advanced stop bars at east and west legs of McLellan Drive crossing at BART entrance Improve existing median island between BART/Trader Joe driveways and El Camino Real 	Sidewalk	\$30	1728	(288' sidewalk length)*(6' new sidewalk width)	Square Foot	\$51,840		Assumes new sidewalk width = 6'	
1-2			Curb and Gutter	\$52	288	288' sidewalk length	Linear Foot	\$14,976			
1-2			Neckdowns/ Bulb-Out	\$50,000	1		Each	\$50,000		Bulb out installation cost estimation	
1-2			Advance Stop Bars	\$400	2		Each	\$800			
1-2			Vertical Median	\$22	760	(375' total length+5' available width b/t striping)*(2 sides)	Linear Foot	\$16,720			
1-2			Concrete Surface	\$11	1875	(375' total length)*(5' available width b/t striping)	Square Foot	\$20,625			
1-3			El Camino Real and McLellan Drive	Install crosswalk on north leg	Crosswalk Striping	\$7	125		Linear Foot	\$875	
1-4	El Camino Real and Kaiser entrance	<ul style="list-style-type: none"> Pull back median at north leg and install median tip for protection 	Remove concrete sidewalk	\$3	20	(4' pull-back)*(5' existing width)	Square Foot	\$60		Assumes cost of median pull-back = cost of removing concrete sidewalk	
1-4			Vertical Median	\$22	16	(3' tip+(5' existing width)*(2 sides)	Linear Foot	\$352		Assumes median tip = 3'	
1-4			Concrete Surface	\$11	15	(3' tip)*(5' existing width)	Square Foot	\$165			
1-5	El Camino Real and Arroyo Drive	<ul style="list-style-type: none"> Pull back median at north and south legs and install median tip for protection 	Remove concrete sidewalk	\$3	60	(6' pull-back)*(5' existing width)*(2 legs)	Square Foot	\$180		Assumes cost of median pull-back = cost of removing concrete sidewalk	
1-5			Vertical Median	\$22	32	(3' tip+5' existing width)*(2 sides)*(2 legs)	Linear Foot	\$704		Assumes median tip = 3'	
1-5			Concrete Surface	\$11	30	(3' tip)*(5' existing width)*(2 legs)	Square Foot	\$330			
1-6	El Camino Real and Chestnut Avenue	<ul style="list-style-type: none"> Add median tips at all legs (medians with push buttons are already in place) 	Vertical Median	\$22	64	(3' tip+5' existing width)*(2 sides)*(4 legs)	Linear Foot	\$1,408		Assumes median tip = 3'	
1-6			Concrete Surface	\$11	60	(3' tip)*(5' existing width)*(4 legs)	Square Foot	\$660			
1-7	El Camino Real from Mission to Chestnut	<ul style="list-style-type: none"> Add sidewalk along the west side of El Camino Real between Kaiser entrance and Arroyo 	Sidewalk	\$30	5940	(990' sidewalk length)*(6' new sidewalk width)	Square Foot	\$178,200		Assumes new sidewalk width = 6'	
1-7			Curb and Gutter	\$52	990	990' sidewalk length	Linear Foot	\$51,480			
1-8	Arroyo Drive between Camaritas Avenue and El Camino Real	<ul style="list-style-type: none"> Install bus bulbs/curb extension on north side of Arroyo Drive, or add center-running median Install sharks teeth and advance pedestrian signage at crosswalks at midblock crossing and access road in front of 	Neckdowns/ Bulb-Out	\$50,000	1		Each	\$50,000			
1-8			Advance Yield Lines	\$400	4		Each	\$1,600			
1-8			New Signage	\$700	4		Each	\$2,800			
2-1	Mission Road from McLellan Drive to Holly Avenue	<ul style="list-style-type: none"> Consider median treatment on the entire corridor to calm traffic and narrow crossing 	Vertical Median	\$22	4004	(1997' total length+5' assumed width)*(2 sides)	Linear Foot	\$88,088			
2-1			Concrete Surface	\$11	9985	(375' total length)*(5' assumed width)	Square Foot	\$109,835			
2-2	Mission Road and BART entrance	<ul style="list-style-type: none"> Install curb extensions, especially at northeast and southeast corners to reduce the turning radii and pedestrian crossing distances 	Neckdowns/ Bulb-Out	\$50,000	1		Each	\$50,000			

South San Francisco Pedestrian Master Plan: Estimated Construction Costs

ID #	Location	Recommendations	Detailed Recs	Unit Cost	Total	Total Calculation	Unit	Construction Cost per Rec	Maintenance Cost per Rec	Notes
2-3	Mission Road and Sequoia Avenue	<ul style="list-style-type: none"> Install curb extension, especially at northeast and southeast corners to reduce the turning radii and pedestrian crossing distance Consider reducing Mission Road to one lane in each direction by removing outside lanes and either widen sidewalks, add corner bulb-outs, or add a median to narrow the vehicle right of way and create pedestrian refuge islands at Mission Road crossings Add all-way stop control, or install sharks teeth and advanced pedestrian crossing signage if roadway is reduced to a single lane in each direction. 	Neckdowns/ Bulb-Out	\$50,000	3		Each	\$150,000		
2-3			Remove Thermoplastic Lane Striping	\$1	1010	(505 ft long)*2 sides	Linear Foot	\$1,010		Lane restriping and median installation cost estimation
2-3			Solid Edge Line	\$4	1010	(505 ft long)*2 sides	Linear Foot	\$4,040		
2-3			Vertical Median	\$22	1020	(505' total length+5' assumed width)*(2 sides)	Linear Foot	\$22,440		
2-3			Concrete Surface	\$11	2525	(505' total length)8(5' assumed width)	Square Foot	\$27,775		
2-3			Advance Yield Lines	\$400	4		Each	\$1,600		
2-3			New Signage	\$700	4		Each	\$2,800		
2-4	Mission Road and Holly Avenue		<ul style="list-style-type: none"> Straighten crosswalk at east leg to shorten crossing distance Consider adding curb extensions to northeast and southeast corners Add crosswalk to south leg Install advance stop bars at north and south legs 	Remove Thermoplastic Lane Striping	\$1	110	50' + 60' existing standard striping	Linear Foot	\$110	
2-4		Crosswalk Striping		\$7	80	(40' new standard striping)*(2 sides)	Linear Foot	\$560		
2-4		Neckdowns/ Bulb-Out		\$50,000	2		Each	\$100,000		
2-4		Crosswalk Striping		\$7	100	(50' new standard striping)*(2 sides)	Linear Foot	\$700		
2-4		Advance Stop Bars		\$400	2		Each	\$800		
2-5	Holly from Mission Road to Crestwood Drive	<ul style="list-style-type: none"> Install traffic calming treatments along collector streets; consider traffic circles, edge lines to visually narrow roadway, speed humps, or other speed reduction measures 	Traffic Circle	\$5,000	3		Each	\$15,000		
2-5			Advance Yield Lines	\$400	4		Each	\$1,600		
2-5			Solid Edge Line	\$4	4500	2,250' total length* two sides	Linear Foot	\$18,000		
2-6	Crestwood Drive from Holly Avenue to Evergreen Drive	<ul style="list-style-type: none"> Install traffic calming treatments along collector streets; consider traffic circles, edge lines to visually narrow roadway, speed humps, or other speed reduction measures 	Traffic Circle	\$5,000	2		Each	\$10,000		
2-7	Evergreen Drive from Crestwood Drive to Mission Road	<ul style="list-style-type: none"> Install traffic calming treatments at all collector street intersections; consider traffic circles, speed humps, or other speed reduction measures Mark crosswalk at Baywood/entrance to El Camino HS Install stop sign/advance pedestrian crossing signage or sharks teeth/advance pedestrian crossing signage (check stop sign warrant) 	Solid Edge Line	\$4	4500	2,250' total length* two sides	Linear Foot	\$18,000		
2-7			Crosswalk Striping	\$7	40		Linear Foot	\$280		
2-7			New Signage	\$700	2		Each	\$1,400		Stop sign and advance pedestrian crossing signage cost estimate
3-1	Hickey Boulevard at Junipero Serra Boulevard	<ul style="list-style-type: none"> Extend curb and move crosswalk back at pork chop on north leg of intersection (northwest corner) Install advanced pedestrian crossing signage at north leg of intersections Install median tip and pull median back (out of crosswalk) at west leg Install "close crosswalk" signage at east leg Install remaining sidewalk to Colma City limits 	Neckdowns/ Bulb-Out	\$50,000	1		Each	\$50,000		
3-1			Remove Thermoplastic Lane Striping	\$1	46	22' + 24' existing standard striping	Linear Foot	\$46		
3-1			Crosswalk Striping	\$7	40	(20' new standard striping)*(2 sides)	Linear Foot	\$280		
3-1			New Signage	\$700	1		Each	\$700		
3-1			Remove concrete sidewalk	\$3	30	(6' pull-back)*(5' existing width)	Square Foot	\$90		Assumes cost of median pull-back = cost of removing concrete sidewalk
3-1			Vertical Median	\$22	16	(3' tip+5' existing width)*(2 sides)	Linear Foot	\$352		Assumes median tip = 3'
3-1			Concrete Surface	\$11	15	(3' tip)*(5' existing width)	Square Foot	\$165		
3-1			New Signage	\$700	1		Each	\$700		
3-1			Sidewalk	\$30	5400	(900' sidewalk length)*(6' new sidewalk width)	Square Foot	\$162,000		Assumes new sidewalk width = 6'
3-1		Curb and Gutter	\$52	900	900' sidewalk length	Linear Foot	\$46,800			
3-2	Junipero Serra, south of Hickey Boulevard	<ul style="list-style-type: none"> Consider physically separated bikeway and/or Class I shared use pathway 	Standard Class I Path	\$800,000	0.8		Mile	\$640,000		Path length estimated between Hickey Blvd and King St (exclude Daly City)

South San Francisco Pedestrian Master Plan: Estimated Construction Costs

ID #	Location	Recommendations	Detailed Recs	Unit Cost	Total	Total Calculation	Unit	Construction Cost per Rec	Maintenance Cost per Rec	Notes
3-3	Hickey Boulevard and Hilton Avenue	<ul style="list-style-type: none"> Consider curb extension to straighten crosswalk at east leg Widen sidewalk at southwest corner where utility poles block right of way Close crosswalk if no pedestrian signal or striped crosswalk is provided at west leg Formalize desired pedestrian path with trail or stairs and erosion control on north side and at southwest corner to improve neighborhood access to shopping center There is a new crosswalk at the shopping center driveway south of Hickey – add sharks teeth, a high visibility ladder crosswalk and advanced pedestrian crossing signage Install missing sidewalk on north side of Hickey between Hilton and JSB. 	Neckdowns/ Bulb-Out	\$50,000	1		Each	\$50,000		
3-3			Sidewalk	\$30	240	(80' existing length)*(3' width extension)	Square Foot	\$7,200		Assumes sidewalk width extension = 3'
3-3			Curb and Gutter	\$52	80	80' existing length	Linear Foot	\$4,160		
3-3			New Signage	\$700	2		Each	\$1,400		New signage for closed xwalk cost estimate
3-3			-				#N/A	TBD		
3-3			Advance Yield Lines	\$400	2		Each	\$800		
3-3			High Visibility Crosswalk Restriping	\$5	225	(50' new standard striping)*(2 sides)+(10' new perpendicular striping)*(50'/4')	Linear Foot	\$1,125		
3-3			New Signage	\$700	2		Each	\$1,400		
3-3			Sidewalk	\$30	2400	(400' sidewalk length)*(6' new sidewalk width)	Square Foot	\$72,000		Assumes new sidewalk width = 6'
3-3			Curb and Gutter	\$52	400	400' sidewalk length	Linear Foot	\$20,800		
3-4	Hickey Boulevard and El Camino Real	<ul style="list-style-type: none"> Extend median up to crosswalk at west leg and add median tip Maintain landscaping at southwest corner to improve visibility and access to sidewalk Install advanced stop bars at east leg Mark crosswalk and add signage or close crossing at south leg 	Vertical Median	\$22	48	(3' tip + 7' extension to xwalk)*(2 sides)+(7' existing width)*(4 sides)	Linear Foot	\$1,056		Assumes median tip = 3'
3-4			Concrete Surface	\$11	70	(3' tip + 7' extension to xwalk)*(7' existing width)	Square Foot	\$770		
3-4			Landscaping	\$8	1000		Square Foot	\$0	\$8,000	Unit cost might be lower, since cost reflects new instead of maintenance landscaping
3-4			Advance Stop Bars	\$400	1		Each	\$400		
3-4			Crosswalk Striping	\$7	180	(90' new standard striping)*(2 sides)	Linear Foot	\$1,260		
3-4			New Signage	\$700	2		Each	\$1,400		
3-5	El Camino Real and Costco Warehouse driveway	<ul style="list-style-type: none"> Add crosswalk and stop bar to southwest leg where pedestrian signal is already in place Extend sidewalks at north corner to provide pedestrian access from crossing at El Camino Real to Costco entrance 	Crosswalk Striping	\$7	50	(25' new standard striping)*(2 sides)	Linear Foot	\$350		
3-5			Advance Stop Bars	\$400	1		Each	\$400		
3-5			Sidewalk	\$30	885	(145' + 150' existing length)*(3' width extension)	Square Foot	\$26,550		Assumes sidewalk width extension = 3'
3-5			Curb and Gutter	\$52	295	145' + 150' existing length	Linear Foot	\$15,340		
4-1	Mission Road and Grand Avenue	<ul style="list-style-type: none"> Extend median at north leg to crosswalk and add tip Extend curb to straighten crosswalk alignment on north and east legs Install median refuge at south leg crosswalk 	Vertical Median	\$22	36	(3' tip + 7' extension to xwalk)*(2 sides)+(4' existing width)*(4 sides)	Linear Foot	\$792		Assumes median tip = 3'
4-1			Concrete Surface	\$11	40	(3' tip + 7' extension to xwalk)*(4' existing width)	Square Foot	\$440		
4-1			Neckdowns/ Bulb-Out	\$50,000	1		Each	\$50,000		
4-1			Remove Thermoplastic Lane Striping	\$1	140	60' + 80' existing standard striping	Linear Foot	\$140		
4-1			Crosswalk Striping	\$7	120	(60' new standard striping)*(2 sides)	Linear Foot	\$840		
4-1			Vertical Median	\$22	24	6' * 4 sides	Linear Foot	\$528		Assumes median refuge dimensions 6' x 6'
4-1			Concrete Surface	\$11	36	6' * 6' sides	Square Foot	\$396		Assumes median refuge dimensions 6' x 6'
4-2			Grand Avenue and Oak Avenue/ Aldenglen Drive	<ul style="list-style-type: none"> Install HAWK or Rectangular Rapid Flashing Beacon and crosswalk with advance stop bars at west and east legs crossing Grand Avenue, Consider closing right-turn lane on NB Oak Avenue to reduce pedestrian exposure and improve sightlines at crossing locations. 	HAWK Beacon	\$120,000	1		Each	\$120,000
4-2	Crosswalk Striping	\$7			220	(50' + 60' new standard striping)*(2 sides)	Linear Foot	\$1,540		
4-2	Advance Stop Bars	\$400			2		Each	\$800		
4-3	Chestnut Avenue and Miller Avenue	<ul style="list-style-type: none"> Install HAWK or Rectangular Rapid Flashing Beacon with high visibility striped crosswalk crossing south leg of Chestnut Avenue. As an alternative, install a yield-controlled marked ladder crosswalk, with pedestrian refuge island, sharks' teeth and advanced pedestrian signage. Channelize ramps at northeast and southeast corners (at culverts) 	HAWK Beacon	\$120,000	1		Each	\$120,000		
4-3			High Visibility Crosswalk Restriping	\$5	202.5	(45' new standard striping)*(2 sides)+(10' new perpendicular striping)*(45'/4')	Linear Foot	\$1,013		Assumes high visibility crosswalk restriping includes two standard parallel lines with 10' perpendicular lines spaced every 4'
4-3			ADA Curb Ramps	\$5,000	2		Each	\$10,000		

South San Francisco Pedestrian Master Plan: Estimated Construction Costs

ID #	Location	Recommendations	Detailed Recs	Unit Cost	Total	Total Calculation	Unit	Construction Cost per Rec	Maintenance Cost per Rec	Notes
4-4	Chestnut Avenue from Miller Avenue to Sunset Avenue	<ul style="list-style-type: none"> Consider buffered bike lane, landscaping, and median or wider sidewalks to narrow the travel lanes Road diet to calm traffic and reduce pedestrian crossing distances (southbound Chestnut Avenue is a single lane; reduce northbound Chestnut Avenue from two to one lane and removing dedicated turn lanes.) Note that no on-street parking would be removed as part of this recommendation. 	Vertical Median	\$22	2250	(1120' total length+5' assumed width)*(2 sides)	Linear Foot	\$49,500		
4-4			Concrete Surface	\$11	5600	(1120' total length)*(5' assumed width)	Square Foot	\$61,600		Assumes median width = 5'
4-4			Class II Bike Lanes (Both Roadway Sides)	\$29,120	0.2	(.2 mi total length)	Mile	\$5,824		
4-4			Landscaping	\$8	5600	(1120' total length)*(5' assumed width)	Square Foot	\$44,800		Assumes landscaping width = 5'
4-4			(this is just additional description, not another element)				#N/A	\$0		
5-1	Victory Avenue and South Maple Avenue	<ul style="list-style-type: none"> Mark crosswalks on south and east legs Re-stripe pork chops or add curbs at south leg, pending analysis for turning radii Add stop bar at stop-controlled intersection, and sharks teeth at yield controlled lane on south leg 	Crosswalk Striping	\$7	180	(90' new standard striping)*(2 sides)	Linear Foot	\$1,260		
5-1			Remove Thermoplastic Lane Striping	\$1	284	(120' + 34') + (85' + 45') existing striped striping	Linear Foot	\$284		Porkchop restriping cost estimate
5-1			Crosswalk Striping	\$7	284	(120' + 34') + (85' + 45') new striped striping	Linear Foot	\$1,988		
5-1			Advance Stop Bars	\$400	4		Each	\$1,600		
5-1			Advance Yield Lines	\$400	1		Each	\$400		
5-2	Victory Avenue and South Spruce Avenue	<ul style="list-style-type: none"> Remove pork chops and relocate signals to corners Update crosswalk alignment accordingly 	Remove concrete sidewalk	\$3	175		Square Foot	\$525		
5-2			Signal Modification/New Signal	\$250,000	2		Each	\$500,000		Unit cost might be lower, since cost reflects "signal modification/new signal"
5-2			Remove Thermoplastic Lane Striping	\$1	446	(82'+64')+(68'+84')+(80'+68') existing standard striping	Linear Foot	\$446		
5-2			Crosswalk Striping	\$7	430	(85'+85'+45' new standard striping)*(2 sides)	Linear Foot	\$3,010		
5-3	South Spruce Avenue from Victory Avenue to El Camino Real	<ul style="list-style-type: none"> Consider median treatment on the entire corridor to calm traffic and narrow pedestrian crossing Widen sidewalk on southeast side or underground utilities to address utility pole and ADA access issues Consider striping crosswalk at northeast leg at Huntington or close crosswalk Install bike lanes, buffered when possible, on Spruce, to establish bikeway and connect to Centennial Trail 	Vertical Median	\$22	3386	(1688' total length+5' assumed width)*(2 sides)	Linear Foot	\$74,492		
5-3			Concrete Surface	\$11	1688	(1688' total length)*(5' assumed width)	Square Foot	\$18,568		Assumes median width = 5'
5-3			Sidewalk	\$30	7095	(350'+345'+670'+1000' existing length)*(3' width extension)	Square Foot	\$212,850		Assumes sidewalk width extension = 3'
5-3			Curb and Gutter	\$52	2365	350'+345'+670'+1000' existing length	Linear Foot	\$122,980		
5-3			Crosswalk Striping	\$7	160	(80' new standard striping)*(2 sides)	Linear Foot	\$1,120		Striping new xwalk cost estimate
5-3			Class II Bike Lanes (Both Roadway Sides)	\$29,120	0.5	(.5 mi total length)	Mile	\$14,560		
5-4	South Spruce Avenue and El Camino Real	<ul style="list-style-type: none"> Increase pedestrian crossing time at all signals Install median tips 	-				#N/A	\$0		
5-4			Vertical Median	\$22	32	(3' tip+5' existing width)*(2 sides)*(2 legs)	Linear Foot	\$704		Assumes median tip = 3'
5-4			Concrete Surface	\$11	30	(3' tip)*(5' existing width)*(2 legs)	Square Foot	\$330		
5-5	Hazelwood Drive from El Camino Real to Pinehurst Way	<ul style="list-style-type: none"> Consider sidewalk extension or non-rolled curbs to prevent cars parking Widen sidewalk to address clear path issues adjacent to lot 	-				#N/A	TBD		
5-5			Sidewalk	\$30	510	(170' existing length)*(3' width extension)	Square Foot	\$15,300		Assumes sidewalk width extension = 3'
5-5			Curb and Gutter	\$52	170	170' existing length	Linear Foot	\$8,840		
5-6	Brentwood Dr from Pinehurst Way to El Camino Real	Add yield to pedestrian signs at crossing of Brentwood at lot entrance	New Signage	\$700	2		Each	\$1,400		

South San Francisco Pedestrian Master Plan: Estimated Construction Costs

ID #	Location	Recommendations	Detailed Recs	Unit Cost	Total	Total Calculation	Unit	Construction Cost per Rec	Maintenance Cost per Rec	Notes
5-7	El Camino Real from Brentwood Drive to Noor Avenue	<ul style="list-style-type: none"> Widen sidewalks on El Camino 	Sidewalk	\$30	3450	(575' existing length)*(3' width extension)*(2 sides)	Square Foot	\$103,500		Assumes sidewalk width extension = 3'
5-7			Curb and Gutter	\$52	1150	(575' existing length)*(2 sides)	Linear Foot	\$59,800		
5-7			ADA Curb Ramps	\$5,000	10		Each	\$50,000		
6-1	Del Monte Avenue from Arroyo Drive to Alta Loma Drive	<ul style="list-style-type: none"> Install traffic calming treatments; consider edge lines, traffic circles, speed humps, or other speed reduction measures Consider enforcement of vehicles violating pedestrian right-of-way. Encouraging vehicles to park legally on the roadway would narrow the two travel lanes to approximately 22' total, which will encourage slower speeds along Del Monte Avenue. Consider striping edge lines to define parking lane. 	-				#N/A	TBD		
6-1			Solid Edge Line	\$4	10000	(5000' existing length)*(2 sides)	Linear Foot	\$40,000		Striped edge lines cost estimate
7-1	South Linden Ave and Railroad Ave	<ul style="list-style-type: none"> Install sidewalk to fill gap on east side of Railroad Ave 	Sidewalk	\$30	240	(40' sidewalk length)*(6' new sidewalk width)	Square Foot	\$7,200		Assumes new sidewalk width = 6'
7-1			Remove concrete sidewalk	\$3	40	40' sidewalk length	Square Foot	\$120		
7-2	South Linden Avenue at North Canal Street and South Canal Street	<ul style="list-style-type: none"> Move pedestrian push button from current location to pedestrian ramp at west leg of North Canal crossing Expand sidewalk on bridge to be ADA compliant Install ADA compliant ramps on west side of bridge 	Pedestrian Push Buttons	\$2,000	1		Each	\$2,000		Assumes sidewalk width extension = 3'; Costs will need to be refined after further design
7-2			Sidewalk	\$30	480	(80' existing length)*(3' width extension)*(2 sides)	Square Foot	\$14,400		
7-2			Remove concrete sidewalk	\$3	160	(80' existing length)*(2 sides)	Square Foot	\$480		
7-2			ADA Curb Ramps	\$5,000	2		Each	\$10,000		
7-3	South Linden Ave from South Canal St to Tanforan Ave	<ul style="list-style-type: none"> Complete sidewalk gaps 	Sidewalk	\$30	8400	(200'+400'+800' sidewalk length)*(6' new sidewalk width)	Square Foot	\$252,000		Assumes new sidewalk width = 6'
7-3			Remove concrete sidewalk	\$3	1400	200'+400'+800' sidewalk length	Square Foot	\$4,200		
7-4	South Linden Avenue and San Mateo Avenue/ Tanforan Avenue	<ul style="list-style-type: none"> Update all curbs and install cuts in pork chops for ADA access Re-stripe/install crossings where not visible, especially at the west crosswalks Install advance sharks teeth at yield approaches on west side 	ADA Curb Ramps	\$5,000	12		Each	\$60,000		
7-4			Crosswalk Striping	\$7	197		Linear Foot	\$1,379		
7-4			Advance Yield Lines	\$400	3		Each	\$1,200		
8-1	El Camino Real from Hazelwood Drive to Ponderosa Road	<ul style="list-style-type: none"> Provide longer pedestrian signal times on all El Camino crossings Install pedestrian refuge or median tips at El Camino crossings with push buttons Install advance stop bars Complete sidewalk on east side 	-				#N/A	\$0		
8-1			Vertical Median	\$22	24	6' * 4 sides	Linear Foot	\$528		Assumes pedestrian refuge dimensions 6' x 6'
8-1			Concrete Surface	\$11	36	6' * 6' sides	Square Foot	\$396		Assumes pedestrian refuge dimensions 6' x 6'
8-1			Pedestrian Push Buttons	\$2,000	2		Each	\$4,000		
8-1			Advance Stop Bars	\$400	5		Each	\$2,000		
8-1			Sidewalk	\$30	6840	(1140' sidewalk length)*(6' new sidewalk width)	Square Foot	\$205,200		Assumes new sidewalk width = 6'
8-1			Curb and Gutter	\$52	1140	1140' sidewalk length	Linear Foot	\$59,280		

South San Francisco Pedestrian Master Plan: Estimated Construction Costs

ID #	Location	Recommendations	Detailed Recs	Unit Cost	Total	Total Calculation	Unit	Construction Cost per Rec	Maintenance Cost per Rec	Notes
8-2	Ponderosa Road from El Camino Real to Alhambra Road	· Widen south sidewalk on Ponderosa Drive at southwest corner of El Camino Real	Sidewalk	\$30	510	(170' existing length)*(3' width extension)	Square Foot	\$15,300		Assumes sidewalk width extension = 3'
8-2			Curb and Gutter	\$52	170	170' existing length	Linear Foot	\$8,840		
8-2		· Widen narrow sidewalk across from golf club property, especially at locations where utility poles block right of way	Sidewalk	\$30	3300	(1100' existing length)*(3' width extension)	Square Foot	\$99,000		Assumes sidewalk width extension = 3'
8-2			Curb and Gutter	\$52	1100	1100' existing length	Linear Foot	\$57,200		
8-2		· Install sidewalk on north side of Ponderosa adjacent to country club property	Sidewalk	\$30	6900	(1150' sidewalk length)*(6' new sidewalk width)	Square Foot	\$207,000		Assumes new sidewalk width = 6'
8-2			Curb and Gutter	\$52	1150	1150' sidewalk length	Linear Foot	\$59,800		
8-2		· Install bulb out at southwest corner of Fairway to align crosswalk with curb (or widen west leg to trapezoid shape)	Neckdowns/ Bulb-Out	\$50,000	1		Each	\$50,000		
8-2			Neckdowns/ Bulb-Out	\$50,000	1		Each	\$50,000		
8-2		· Install curb extension and crossing improvements at school entrance on Lassen; include high visibility yellow crosswalks, advance pedestrian crossing signs, and advance stop bars at all legs, and in-street paddles at center line on concrete median tip at east and west legs	Remove Thermoplastic Lane Striping	\$1	270	(45' existing standard striping)*(2 sides)*(3 legs)	Linear Foot	\$270		
8-2			High Visibility Crosswalk Restriping	\$5	810	((45' new standard striping)*(2 sides)+(10' new perpendicular striping)*(45'/4'))*(4 legs)	Linear Foot	\$4,050		Assumes high visibility crosswalk restriping includes two standard parallel lines with 10' perpendicular lines spaced every 4'
8-2			New Signage	\$700	4		Each	\$2,800		
8-2			Advance Stop Bars	\$400	4		Each	\$1,600		
8-2			New Signage	\$700	2		Each	\$1,400		
8-2		· Install crosswalk at west leg of Alhambra	Crosswalk Striping	\$7	90	(45' new standard striping)*(2 sides)	Linear Foot	\$630		
8-2		· Trim landscaping and maintain sidewalk access at north sidewalk leading to Alhambra	Landscaping	\$8	100		Square Foot	\$0	\$800	Unit cost might be lower, since cost reflects new instead of maintenance landscaping
9-1	Grand Avenue and Airport Boulevard	· Add median tip on south leg of Airport Boulevard – to provide pedestrian refuge and improve safety	Vertical Median	\$22	16	(3' tip+5' existing width)*(2 sides)	Linear Foot	\$352		Assumes median tip = 3'
9-1			Concrete Surface	\$11	15	(3' tip)*(5' existing width)	Square Foot	\$165		
9-1		· Update curb ramps	ADA Curb Ramps	\$5,000	3		Each	\$15,000		
9-1		· Lengthen pedestrian signal time crossing Airport Boulevard	-				#N/A	\$0		
9-1		· Install South SF gateway treatment, signage and wayfinding to nearby destinations, such as Caltrain Station and Miller St garage.	Wayfinding/Destination Sign	\$500	8		Each	\$4,000		
9-2	Grand Avenue between Airport Boulevard and Walnut Avenue	· Mark all crosswalks as high visibility	High Visibility Crosswalk Restriping	\$5	3810	20 crosswalks + perpendicular stripes for average 45' long crosswalk * 20 crosswalks	Linear Foot	\$19,050		
9-2			Advance Yield Lines	\$400	24		Each	\$9,600		
9-2		· Replace stop bars at unsignalized crossings with sharks teeth, and install advanced pedestrian signage	New Signage	\$700	16		Each	\$11,200		
9-2		· Install countdowns at all signalized intersections	Upgrade to Pedestrian Countdown Heads	\$1,000	8		Each	\$8,000		
9-2			Rectangular Rapid Flashing Beacon	\$27,000	4		Each	\$108,000		
9-2		· Replace non-functioning in-pavement flashers with rapid flashing beacons	ADA Curb Ramps	\$5,000	24		Each	\$120,000		
9-2		· Update curb ramps	-				#N/A	\$0		
9-2	· Police enforcement of failure to yield, illegal parking and u-turns	-				#N/A	\$0			
9-3	Pedestrian crossing under Hwy 101 along East Grand Avenue	· Add pedestrian scale lighting	Lighting	\$10,000	2		Each	\$20,000		
9-3			· Trim landscaping to improve sightlines and visibility	Landscaping	\$8	6500		Square Foot	\$0	\$52,000

South San Francisco Pedestrian Master Plan: Estimated Construction Costs

ID #	Location	Recommendations	Detailed Recs	Unit Cost	Total	Total Calculation	Unit	Construction Cost per Rec	Maintenance Cost per Rec	Notes
9-4	East Grand Avenue and Dubuque Avenue	· Install high visibility crosswalk	High Visibility Crosswalk Restriping	\$5	450	(100' new standard striping)*(2 sides)+(10' new perpendicular striping)*(100'/4')	Linear Foot	\$2,250		Assumes high visibility crosswalk restriping includes two standard parallel lines with 10' perpendicular lines spaced every 4'
9-4		· Update curb ramps	ADA Curb Ramps	\$5,000	2		Each	\$10,000		
9-4		· Improve ADA access Caltrain Station	-				#N/A	TBD		
9-4		· Lengthen pedestrian signal time crossing E. Grand Avenue	-				#N/A	\$0		
9-4		· Install wayfinding signage for motorists in advance of intersection to indicate lane positioning, rationalize traffic patterns, and improve safety.	Wayfinding/Destination Sign	\$500	3		Each	\$1,500		
10-1	Linden Avenue from Grand Avenue to Aspen Avenue	· Relocate bus stops to far side of intersection	Relocate Sign and Post	\$400	2		Each	\$800		
10-1		· Add bus stop shelters	Bus Shelter	\$6,500	2		Each	\$13,000		
10-1		· Install bus bulbs at bus stops	Neckdowns/ Bulb-Out	\$50,000	2		Each	\$100,000		
10-1		· Install traffic calming treatments; consider traffic circles, edge lines to visually narrow roadway, speed tables, or other speed reduction measures that are appropriate for buses	Neckdowns/ Bulb-Out	\$50,000	6		Each	\$300,000		
10-1		· Update curb ramps	ADA Curb Ramps	\$5,000	20		Each	\$100,000		
10-1			Remove Thermoplastic Lane Striping	\$1	1440	((40' existing standard striping * 12 xwalks)+(30' existing standard striping * 8 xwalks))*(2 sides)	Linear Foot	\$1,440		
10-1		· Install high visibility crosswalks	High Visibility Crosswalk Restriping	\$5	3240	((40' new standard striping * 12 xwalks)+(30' new standard striping * 8 xwalks))*(2 sides)+(10' new perpendicular striping)*(40'/4'*(12 xwalks)+(10' new perpendicular striping)*(30'/4'*(8 xwalks))	Linear Foot	\$16,200		Assumes high visibility crosswalk restriping includes two standard parallel lines with 10' perpendicular lines spaced every 4'
10-1		· Install sharks' teeth and ladder crosswalks at yield controlled crossings, and advanced stop bars at stop-controlled crossings. Install advanced pedestrian signage at	Advance Yield Lines	\$400	2		Each	\$800		
10-1			Advance Stop Bars	\$400	14		Each	\$5,600		
10-1			New Signage	\$700	8		Each	\$5,600		
10-2	Airport Boulevard at Pine Avenue	· Consider installing pedestrian actuated HAWK or rapid flashing beacon	HAWK Beacon	\$120,000	1		Each	\$120,000		HAWK beacon cost estimate
10-2		· Add median tip on north leg of Airport Boulevard to provide pedestrian refuge and improve safety	Vertical Median	\$22	16	(3' tip+5' existing width)*(2 sides)	Linear Foot	\$352		
10-2			Concrete Surface	\$11	15	(3' tip)*(5' existing width)	Square Foot	\$165		
10-2		· Update curb ramps	ADA Curb Ramps	\$5,000	3		Each	\$15,000		
10-2			Remove Thermoplastic Lane Striping	\$1	140	(70' existing standard striping)*(2 sides)	Linear Foot	\$140		
10-2		· Replace crosswalk across north leg of Airport Boulevard with high visibility crosswalk to improve visibility of crossing	High Visibility Crosswalk Restriping	\$5	315	(70' new standard striping)*(2 sides)+(10' new perpendicular striping)*(70'/4')	Linear Foot	\$1,575		Assumes high visibility crosswalk restriping includes two standard parallel lines with 10' perpendicular lines spaced every 4'
10-2		· Consider closing crosswalk if enhancements are undesirable	-				#N/A	\$0		
10-3		Airport Boulevard and Miller Avenue	· Install wayfinding signage at freeway off-ramp directing thru-traffic down Miller Avenue and local traffic down Grand Avenue, signage should also include directions to the Miller Street Garage	Wayfinding/Destination Sign	\$500	1		Each	\$500	
10-4	Cypress Avenue from California Avenue to Grand Avenue	· Remove parking on one side of Cypress Avenue	Paint Curb	\$10	1000		Linear Foot	\$10,000		
10-4		· Install bike lane where parking is removed	Class II Bike Lanes (Both Roadway Sides)	\$29,120	0.25	(.25 mi total length)	Mile	\$7,280		

South San Francisco Pedestrian Master Plan: Estimated Construction Costs

ID #	Location	Recommendations	Detailed Recs	Unit Cost	Total	Total Calculation	Unit	Construction Cost per Rec	Maintenance Cost per Rec	Notes
11-1	Chestnut Avenue and Antoinette Lane	<ul style="list-style-type: none"> Extend Centennial Trail along sidewalk alignment on west side of Antoinette Lane, south to intersection. Prohibit on-street parking through this segment to provide right of way for pathway extension. Install a staggered crosswalk across western leg of Chestnut Avenue to connect Centennial Trail. Extend median islands on both legs of Chestnut Avenue and include median tips to provide pedestrian refuge and improve safety Install bulb-out on southeastern corner to provide access around utility pole Consider consolidating driveway access of property on the SE corner of Chestnut Ave and El Camino Real to reduce pedestrian and bicycle conflicts with vehicles. (Will require coordination with property owner) Update curb ramps 	Sidewalk	\$30	3900	(650' sidewalk length)*(6' new sidewalk width)	Square Foot	\$117,000		Assumes new sidewalk width = 6'
11-1			Curb and Gutter	\$52	650	650' sidewalk length	Linear Foot	\$33,800		
11-1			Paint Curb	\$10	650		Linear Foot	\$6,500		
11-1			New Signage	\$700	2		Each	\$1,400		
11-1			Crosswalk Striping	\$7	90		Linear Foot	\$630		
11-1			Vertical Median	\$22	92	((3' tip+5' existing width)*(2 legs) + 20' + 10' extension to xwalk + 5' + 5' existing width)*(2 sides)	Linear Foot	\$2,024		Assumes median tip = 3'
11-1			Concrete Surface	\$11	180	((3' tip)*(2 legs) + 20' + 10' extension to xwalk)*(5' existing width)	Square Foot	\$1,980		
11-1			Neckdowns/ Bulb-Out	\$50,000	1		Each	\$50,000		
11-1			-				#N/A	\$0		
11-1			ADA Curb Ramps	\$5,000	3		Each	\$15,000		
11-2	Westborough Avenue and Camaritas Avenue	<ul style="list-style-type: none"> Remove the WB right turn lane on to Camaritas Ave and convert pork chop island to extend curb, reduce pedestrian crossing distances, and expand open space Add median tips on both legs of Westborough Avenue – to provide pedestrian refuge and improve safety Consider adding a bike lane on the northern side of Westborough Avenue Update curb ramps 	Sidewalk	\$30	6600	30'x220' new concrete	Square Foot	\$198,000		
11-2			Curb and Gutter	\$52	200	200' new curb	Linear Foot	\$10,400		
11-2			Vertical Median	\$22	36	(3' tip+6' existing width)*(2 sides)*(2 legs)	Linear Foot	\$792		Assumes median tip = 3'
11-2			Concrete Surface	\$11	36	(3' tip)*(6' existing width)*(2 legs)	Square Foot	\$396		
11-2			Class II Bike Lanes (Both Roadway Sides)	\$29,120	1		Mile	\$29,120		
11-2			ADA Curb Ramps	\$5,000	4		Each	\$20,000		
11-3	Mission Road and Chestnut Avenue	<ul style="list-style-type: none"> Eliminate second right turn lane on Mission Road and extend sidewalk Add overlay right turn signal phase and preclude conflicting u-turn Install median tips at all legs of the intersection to provide pedestrian refuge and improve safety Update curb ramps 	Sidewalk	\$30	1620	(540' existing length)*(3' width extension)	Square Foot	\$48,600		Assumes sidewalk width extension = 3'
11-3			Curb and Gutter	\$52	540	540' existing length	Linear Foot	\$28,080		
11-3			Signal Modification/New Signal	\$250,000	1		Each	\$250,000		
11-3			Vertical Median	\$22	54	(3' tip+6' existing width)*(2 sides)*(3 legs)	Linear Foot	\$1,188		Assumes median tip = 3'
11-3			Concrete Surface	\$11	54	(3' tip)*(6' existing width)*(3 legs)	Square Foot	\$594		
11-3			ADA Curb Ramps	\$5,000	4		Each	\$20,000		
11-4	Mission Road and Oak Avenue	<ul style="list-style-type: none"> Install pedestrian island at crosswalk on northwest leg of Mission Road Install flashing beacon Install advanced stop bar Install bulb-out at northwest corner Update curb ramps 	Vertical Median	\$22	30	(10' + 5')*(2 sides)	Linear Foot	\$660		Assumes pedestrian island dimensions 10' x 5'
11-4			Concrete Surface	\$11	50	10' * 5' sides	Square Foot	\$550		Assumes pedestrian island dimensions 10' x 5'
11-4			Rectangular Rapid Flashing Beacon	\$27,000	1		Each	\$27,000		
11-4			Advance Stop Bars	\$400	1		Each	\$400		
11-4			Neckdowns/ Bulb-Out	\$50,000	1		Each	\$50,000		
11-4			ADA Curb Ramps	\$5,000	3		Each	\$15,000		
12-1	Spruce Avenue between Lux Avenue and Maple Avenue	<ul style="list-style-type: none"> Install edge line striping to reduce traffic speeds and encourage vehicles to park on the street rather than the sidewalk Consider adding staggered landscaped bulbs on alternating sides of the street (chicanes) 	Solid Edge Line	\$4	2260		Linear Foot	\$9,040		
12-1			Curb and Gutter	\$52	80	(4 bulbs)*[(6'wide)*(2 sides)+(8'long)]	Linear Foot	\$4,160		Median with curb/gutter instead of vertical median
12-1			Concrete Surface	\$11	192	(4 bulbs)*(6'wide* 8' long)	Square Foot	\$2,112		

South San Francisco Pedestrian Master Plan: Estimated Construction Costs

ID #	Location	Recommendations	Detailed Recs	Unit Cost	Total	Total Calculation	Unit	Construction Cost per Rec	Maintenance Cost per Rec	Notes	
12-2	School Street and Maple Avenue	· Install flashing beacon to improve visibility of pedestrians	Rectangular Rapid Flashing Beacon	\$27,000	1		Each	\$27,000			
12-2			Remove Thermoplastic Lane Striping	\$1	60	(30' existing standard striping)*(2 sides)	Linear Foot	\$60			
12-2		· Add school zone features to crossing treatments	High Visibility Crosswalk Restriping	\$5	135	(30' new standard striping)*(2 sides)+(10' new perpendicular striping)*(30'/4')	Linear Foot	\$675		Assumes high visibility crosswalk restriping includes two standard parallel lines with 10' perpendicular lines spaced every 4'	
12-2			New Signage	\$700	2		Each	\$1,400			
12-2			· Update curb ramps	ADA Curb Ramps	\$5,000	2		Each	\$10,000		
12-3	School Street and Olive Avenue	· Consider installing a traffic circle	Traffic Circle	\$5,000	1		Each	\$5,000			
12-3			· Update curb ramps	ADA Curb Ramps	\$5,000	3		Each	\$15,000		
12-4	Grand Avenue and Spruce Avenue	· Install corner bulb-outs with ADA accessible curb ramps at all corners · Add pedestrian scramble phase to reduce time to cross two legs	Neckdowns/ Bulb-Out	\$50,000	4		Each	\$200,000			
12-4			New Pedestrian Signal	\$1,000	4		Each	\$4,000			
13-1	Westborough Boulevard from Callan Boulevard to Gellert Boulevard	· Upgrade ramps at northwest and northeast corners of Callan Boulevard and Galway Drive intersections	ADA Curb Ramps	\$5,000	4		Each	\$20,000			
13-1			· Install median tips at west, north, and east legs of Callan Boulevard and Galway Drive intersections	Vertical Median	\$22	96	(3' tip+5' existing width)*(2 sides)*(3 legs)*(2 sites)	Linear Foot	\$2,112		Assumes median tip = 3'
13-1				Concrete Surface	\$11	90	(3' tip)*(5' existing width)*(3 legs)*(2 sites)	Square Foot	\$990		
13-1				Advance Stop Bars	\$400	8		Each	\$3,200		
13-1		· Install advanced stop bars and restripe high visibility yellow crosswalks for school zones at Callan Boulevard and Galway Drive	Remove Thermoplastic Lane Striping	\$1	1240	((90' existing standard striping * 4 xwalks)+(80'+70'+60'+50' existing standard striping))*(2 sides)	Linear Foot	\$1,240			
13-1			High Visibility Crosswalk Restriping	\$5	2790	((90' new standard striping * 4 xwalks)+(80'+70'+60'+50' new standard striping))*(2 sides)+(10' new perpendicular striping)*(90'/4)*(4 xwalks)+(10' new perpendicular striping)*(65'/4)*(4 xwalks)	Linear Foot	\$13,950		Assumes high visibility crosswalk restriping includes two standard parallel lines with 10' perpendicular lines spaced every 4'	
13-1			· Install median tips at all four legs of Gellert Boulevard intersection	Vertical Median	\$22	64	(3' tip+5' existing width)*(2 sides)*(4 legs)	Linear Foot	\$1,408		Assumes median tip = 3'
13-1		Concrete Surface		\$11	60	(3' tip)*(5' existing width)*(4 legs)	Square Foot	\$660			
13-1		· Install sidewalks on south side from Callan Boulevard to Galway Drive	Sidewalk	\$30	8400	(1140' sidewalk length)*(6' new sidewalk width)	Square Foot	\$252,000		Assumes new sidewalk width = 6'	
13-1			Curb and Gutter	\$52	1400	1140' sidewalk length	Linear Foot	\$72,800			
13-2	Gellert Boulevard from Westborough Boulevard to Marbella Drive	· Install median tips and advanced stop bars at Gellert Boulevard crossings at Marbella Drive intersection and at shopping center/ residential development access and crossing between Marbella Drive and Westborough Boulevard	Vertical Median	\$22	32	(3' tip+5' existing width)*(2 sides)*(2 legs)	Linear Foot	\$704		Assumes median tip = 3'	
13-2			Concrete Surface	\$11	30	(3' tip)*(5' existing width)*(2 legs)	Square Foot	\$330			
13-2			Advance Stop Bars	\$400	7		Each	\$2,800			
14-1	Forbes Boulevard from Corporate Drive to E Grand Avenue	· Install wayfinding signage & pedestrian scaled lighting	Wayfinding/Destination Sign	\$500	2		Each	\$1,000			
14-1			Lighting	\$10,000	6		Each	\$60,000			
14-1		· Install high visibility, color-treated intersection crossings	High Visibility Crosswalk Restriping	\$5	315	(70' new standard striping)*(2 sides)+(10' new perpendicular striping)*(70'/4')	Linear Foot	\$1,575		Assumes high visibility crosswalk restriping includes two standard parallel lines with 10' perpendicular lines spaced every 4'	
14-1			· Perform regular maintenance on segregated pathway	-			#N/A	\$0			

South San Francisco Pedestrian Master Plan: Estimated Construction Costs

ID #	Location	Recommendations	Detailed Recs	Unit Cost	Total	Total Calculation	Unit	Construction Cost per Rec	Maintenance Cost per Rec	Notes	
14-2	E Grand Avenue from Forbes Boulevard to Gateway Boulevard	<ul style="list-style-type: none"> Install wayfinding signage & pedestrian scaled lighting Install high visibility, color-treated intersection crossings Perform regular maintenance on segregated pathway 	Wayfinding/Destination Sign	\$500	2		Each	\$1,000			
14-2			Lighting	\$10,000	6		Each	\$60,000			
14-2			High Visibility Crosswalk Restriping	\$5	1170	$(140' + 120' \text{ new standard striping}) * (2 \text{ sides}) + (10' \text{ new perpendicular striping}) * (140'/4' + 120'/4')$	Linear Foot	\$5,850		Assumes high visibility crosswalk restriping includes two standard parallel lines with 10' perpendicular lines spaced every 4'	
14-2			-			#N/A	\$0				
14-3	E Grand Avenue between Grand Avenue and Dubuque Avenue	<ul style="list-style-type: none"> Provide advanced signage for drivers indicating lane positions to rationalize operations and improve safety Allow left turns from Grand Ave to Dubuque Ave concurrent with pedestrian phase. 	New Signage	\$700	2		Each	\$1,400			
14-3			-			#N/A	\$0				
15-1	Produce Avenue and S Airport Boulevard	<ul style="list-style-type: none"> Extend pork chops at all four corners Install sharks' teeth at uncontrolled slip lanes, and advanced stop bars on all signalized legs Upgrade curb ramps Install yield to pedestrian signs on all approaches with sidewalk connections Work with property owner to narrow driveway entrance just north of the intersection, to reduce pedestrian exposure to vehicles 	Vertical Median	\$22	176	$est ((40' \text{ long}) + (2' \text{ wide extension} * 2 \text{ sides})) * (4 \text{ pork chops})$	Linear Foot	\$3,872			
			Concrete Surface	\$11	320	$est (40' \text{ long}) * (2' \text{ wide extension}) * (4 \text{ pork chops})$	Square Foot	\$3,520			
15-1			Advance Yield Lines	\$400	3		Each	\$1,200			
15-1			Advance Stop Bars	\$400	4		Each	\$1,600			
15-1			ADA Curb Ramps	\$5,000	4		Each	\$20,000			
15-1			New Signage	\$700	3		Each	\$2,100			
15-1			Sidewalk	\$30	420	$(70' \text{ sidewalk length}) * (6' \text{ new sidewalk width})$	Square Foot	\$12,600	Assumes new sidewalk width = 6'		
15-1			Curb and Gutter	\$52	70	70' sidewalk length	Linear Foot	\$3,640			
15-2			S Airport Blvd btwn Airport Blvd and Gateway Blvd	<ul style="list-style-type: none"> Widen sidewalks by narrowing travel lanes 	Sidewalk	\$30	144	$(48' \text{ existing length}) * (3' \text{ width extension})$	Square Foot	\$4,320	Assumes sidewalk width extension = 3'
15-2					Curb and Gutter	\$52	48	48' existing length	Linear Foot	\$2,496	
15-3	S Airport Boulevard and Highway 101 off-ramp	<ul style="list-style-type: none"> Install high visibility crosswalks across the west side of Airport Boulevard; pull off-ramp stop bars back to create space for crossing. Install pedestrian actuated countdown signal, push buttons and ADA accessible ramps Consider restricting right turn on red or leading pedestrian interval at both off- and on-ramp Extend median between ramps for additional pedestrian refuge 	High Visibility Crosswalk Restriping	\$5	12894.5	$(125' \text{ wide}) * (2 \text{ sides}) * (125/4 \text{ perpendicular stripes}) * (10')$	Linear Foot	\$64,473			
15-3			Remove Thermoplastic Lane Striping	\$1	75	75' wide	Linear Foot	\$75			
15-3			Advance Stop Bars	\$400	2		Each	\$800			
15-3			Upgrade to Pedestrian Countdown Heads	\$1,000	1		Each	\$1,000			
15-3			Pedestrian Push Buttons	\$2,000	2		Each	\$4,000			
15-3			ADA Curb Ramps	\$5,000	4		Each	\$20,000			
15-3			-			#N/A	\$0				
15-3			Vertical Median	\$22	42	$(10' \text{ wide}) + (16' \text{ long} * 2 \text{ sides})$	Linear Foot	\$924			
15-3			Concrete Surface	\$11	26	$(10' \text{ wide}) * (16' \text{ long})$	Square Foot	\$286			
15-4	S Airport Boulevard and Marco Way	<ul style="list-style-type: none"> Install rectangular rapid flashing beacon or HAWK beacon Upgrade crosswalk across south leg of S Airport Boulevard to high visibility ladder crosswalk; install sharks' teeth Install median refuge island to reduce pedestrian exposure Install advanced pedestrian crossing signage 	Rectangular Rapid Flashing Beacon	\$27,000	1		Each	\$27,000			
15-4			Remove Thermoplastic Lane Striping	\$1	154	$(77' \text{ existing standard striping}) * (2 \text{ sides})$	Linear Foot	\$154			
15-4			High Visibility Crosswalk Restriping	\$5	346.5	$(77' \text{ new standard striping}) * (2 \text{ sides}) + (10' \text{ new perpendicular striping}) * (77'/4')$	Linear Foot	\$1,733	Assumes high visibility crosswalk restriping includes two standard parallel lines with 10' perpendicular lines spaced every 4'		
15-4			Advance Yield Lines	\$400	2		Each	\$800			
15-4			Concrete Surface	\$11	240		Square Foot	\$2,640			
15-4			New Signage	\$700	2		Each	\$1,400			

South San Francisco Pedestrian Master Plan: Estimated Construction Costs

ID #	Location	Recommendations	Detailed Recs	Unit Cost	Total	Total Calculation	Unit	Construction Cost per Rec	Maintenance Cost per Rec	Notes		
16-1	Oyster Point Boulevard from Eccles Avenue to driveway immediately east	<ul style="list-style-type: none"> Complete sidewalk gap on Eccles Avenue Restripe existing crosswalks across Oyster Point Boulevard Add pedestrian islands and/or median tips at all crosswalks Add ADA accessible curb ramps at crossings, where they do not already exist Remove pedestrian push buttons on Oyster Point Drive at west side of driveway entrance to bioscience buildings (immediately east of Eccles Avenue), and close crossing to pedestrians. Improve the marked crosswalk on the east side of the driveway entrance by adding a median tip. 	Sidewalk	\$30	240	(40' sidewalk length)*(6' new sidewalk width)	Square Foot	\$7,200		Assumes new sidewalk width = 6'		
16-1			Curb and Gutter	\$52	40	40' sidewalk length	Linear Foot	\$2,080				
16-1			Remove Thermoplastic Lane Striping	\$1	280	(70' existing standard striping)*(2 sides)*(2 legs)	Linear Foot	\$280				
16-1			Crosswalk Striping	\$7	280	(70' new standard striping)*(2 sides)*(2 legs)	Linear Foot	\$1,960				
16-1			Vertical Median	\$22	32	(3' tip+5' existing width)*(2 sides)*(2 legs)	Linear Foot	\$704			Assumes median tip = 3'	
16-1			Concrete Surface	\$11	30	(3' tip)*(5' existing width)*(2 legs)	Square Foot	\$330				
16-1			Vertical Median	\$22	24	6' * 4 sides	Linear Foot	\$528			Assumes pedestrian island dimensions 6' x 6'	
16-1			Concrete Surface	\$11	36	6' * 6' sides	Square Foot	\$396			Assumes pedestrian island dimensions 6' x 6'	
16-1			ADA Curb Ramps	\$5,000	4		Each	\$20,000				
16-1			Remove and Salvage Sign and Post	\$150	2		Each	\$300				
16-1			New Signage	\$700	2		Each	\$1,400				
16-1			Vertical Median	\$22	16	(3' tip+5' existing width)*(2 sides)	Linear Foot	\$352			Assumes median tip = 3'	
16-1			Concrete Surface	\$11	15	(3' tip)*(5' existing width)	Square Foot	\$165				
16-2			Oyster Point Boulevard at Oyster Point Park	<ul style="list-style-type: none"> Restripe mid-block crossing with high visibility markings; install sharks teeth and advanced pedestrian signage 	Remove Thermoplastic Lane Striping	\$1	88	(44' existing standard striping)*(2 sides)	Linear Foot	\$88		
16-2					High Visibility Crosswalk Restriping	\$5	198	(44' new standard striping)*(2 sides)+(10' new perpendicular striping)*(44'/4')	Linear Foot	\$990		
16-2	Advance Yield Lines	\$400			2		Each	\$800				
16-2	New Signage	\$700			2		Each	\$1,400				