City of San Mateo Bicycle Master Plan

Adopted October 17, 2011

PREPARED BY:
Alta Planning + Design

PREPARED FOR:
The City of San Mateo

walk·ride·live SAN MATEO

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Adopted October 17, 2011

Updated April 16, 2012

Prepared by:

Alta Planning and Design

In Partnership with:

Bicycle Solutions

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Prepared for:

City of San Mateo

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1. Introduction

The City of San Mateo Bicycle Master Plan guides the future development of bicycle facilities and programs in the City. The recommendations in this Plan will help the City reach goals adopted in the General Plan as well as the Sustainable Initiatives Plan by creating an environment and programs that support bicycling for transportation and recreation, encourage fewer trips by car and support active lifestyles.

This Plan was developed with extensive input from the community and seeks to meet its needs and desires for a pleasant, enjoyable, and safe place to bicycle. The diligent efforts of the City of San Mateo staff, the Public Works Commission, the Bicycle Plan Steering Committee and residents interested in improving the bicycle environment in the City have contributed to this document.

This Plan provides a blueprint for making bicycling an integral part of daily life in San Mateo and supports the goals of the San Mateo General Plan, the Sustainable Initiatives Plan and other plans and policies adopted by the City.

1.1. Purpose of the Plan

This Bicycle Master Plan provides a broad vision, strategies and actions for the improvement of the bicycling environment in San Mateo. The purpose of this Plan is to expand the existing network, complete network gaps, provide greater connectivity, educate, and encourage the public, and to maximize funding sources.

This Plan also satisfies requirements of the California Bicycle Transportation Account (BTA), and other state and federal funding programs that require a bicycle master plan for project eligibility.

1.2. Setting and Land Use

The City of San Mateo is one of the largest cities on the San Francisco Peninsula. It is located between Burlingame, Foster City, Belmont and Hillsborough.

The City is comprised of residential neighborhoods and commercial centers concentrated in the Downtown, Hillsdale Shopping Center, Bridgepointe Shopping Center, and along El Camino Real. **Figure 1-1** presents San Mateo's land use map. Single family residential homes account for approximately 34 percent of the City's land area while 14 percent is occupied by multi-family buildings. Commercial designations account for approximately 5 percent of the City. This land use pattern makes San Mateo a place where people can both live and work and establishes the City as an important subregional office and retail center on the San Francisco Peninsula.

Population growth has been moderate since the 1970's and is expected to continue to grow at a steady rate. The Association of Bay Area Governments estimates the City will grow from 102,200 (2010) to 114, 100 (2020) and to 119,800 (2030). San Mateo is actively pursuing infill development opportunities near transit and freeway access that will accommodate much of this forecast population growth.

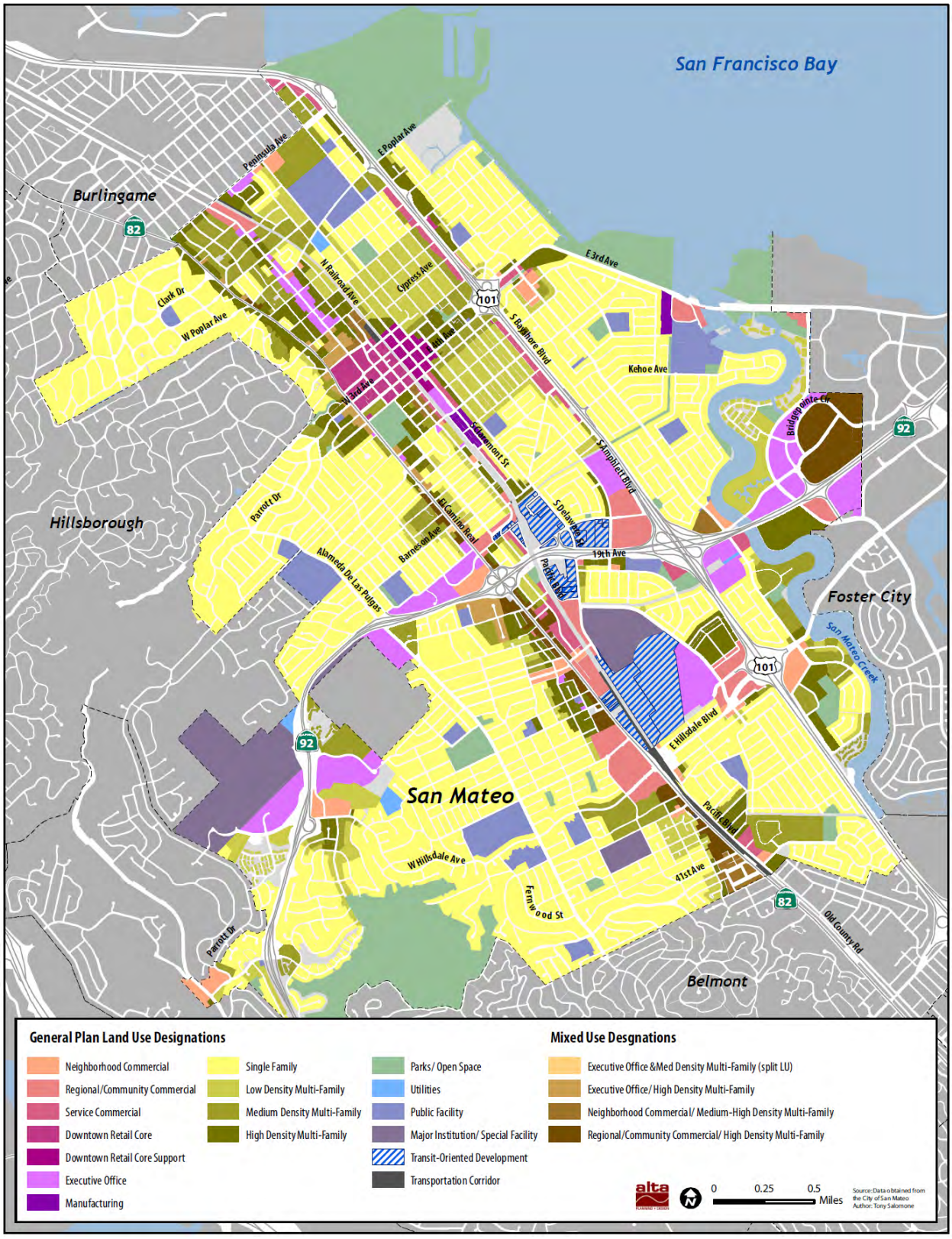

Figure 1-1: San Mateo Land Use Map

The City of San Mateo is accessible by highways and both regional and local transit. State Highway 92 (east-west) connects the City with other Peninsula cities and the East Bay. US Highway 101 runs north-south and connects San Mateo with San Francisco and San José. El Camino Real (State Route 82) also runs north-south through the center of the City.

Approximately 8.4 percent of San Mateo residents use public transit.[1-1] Two agencies operate most public transportation services within the City, Caltrain and SamTrans. AC Transit operates one route in San Mateo. On average, 2,614 people board Caltrain each weekday in San Mateo and 18 percent have a bicycle.[1-2] SamTrans operates bus routes throughout the City and provides front loading bicycle racks.

1.3. Bicycle Master Plan Process

The City of San Mateo initiated the process to develop this plan in March 2010 through its Public Works Department. To fully engage the City and residents, the City hosted two public workshops, conducted a survey, and provided a Plan website to inform the community of the project status and recommendations.

The first public workshop was held in July 2010 to gather community input on existing bicycling conditions, challenges and opportunities for improvement. The community survey was circulated at this time as well. The survey was distributed to community members who bicycle and those who do not in order to identify challenges for current bicyclists and barriers to bicycling for those do not currently bicycle. Over 600 responses were collected. The second community meeting was held in February 2011. The purpose of the second workshop was to share draft proposed bikeway improvements and programs for public review.

The Draft Bicycle Master Plan was also taken to City commissions and to City Council. The Plan was presented with discussion at the following meetings:

- Parks and Recreation Commission – March 2, 2011
- Planning Commission – March 22, 2011
- City Council Study Session – May 16, 2011

1.4. Overview of the Plan

The San Mateo Bicycle Master Plan contains the following chapters:

Chapter 1 – Introduction: Sets the context for the Plan including purpose and structure.

Chapter 2 –Vision, Goals, Objectives and Policies: Summarizes the vision, goals, objectives and policies guiding the implementation of the Plan.

Chapter 3 – Existing Conditions: Provides a description of the existing bicycle conditions in the City of San Mateo. The chapter includes a map of existing bikeways and descriptions of existing bicycle programs.

Chapter 4 – Needs Analysis: Reviews the relationship between bicycle activity, commute patterns, demographics, land use and collisions. This chapter also includes a review of community input.

Chapter 5 – Proposed Network Improvements: Includes recommended network, signage and pavement marking, spot improvements and bicycle parking improvements.

[1-1] American Community Survey, United States Census, 2006-2008.
[1-2] Ridership Counts, Caltrain, 2009.

Chapter 6– Proposed Programmatic Improvements: Describes proposed bicycle encouragement, education, enforcement and evaluation programs.

Chapter 7 – Benefits of Bicycling: Provides an outline of congestion and air quality benefits of this Plan's recommendations.

Chapter 8 – Implementation: Outlines an implementation strategy, including cost estimates for proposed projects.

Chapter 9 – Funding: Provides potential funding sources for implementing the Plan's projects and programs.

2. Vision, Goals, Objectives and Policies

The Vision, Goals, Objectives, and Policies of the City of San Mateo Bicycle Master Plan will guide the development and implementation of the City's bicycle network and programming for years to come. The vision is a broad inspirational statement that presents a desired future state. Goals are broad statements of what the City and its residents hope to achieve over time and that ultimately add up to the stated vision. Objectives are specific, action-oriented statements that mark progress toward the goal. Policies are specific actions that guide the City's programs, activities, and actions to achieve the objectives and goals.

This Plan lays out a framework of how to create and expand programs and capital improvements to increase bicycling in San Mateo. A number of the recommended Bicycle Master Plan goals and objectives are drawn from other adopted City of San Mateo plans. Goals from the City of San Mateo General Plan are indicated with (GP). Goals from the City of San Mateo Sustainable Initiatives Plan are indicated with (SIP).

2.1. Vision

This Plan envisions the City of San Mateo with a transportation system that supports the City's goals for sustainability, active living, and a sense of community where bicycling is an integral part of daily life. The system will include a comprehensive, safe, and logical citywide bicycle network that will support bicycling as a viable, convenient and popular travel choice for residents and visitors.

The following goals, objectives, and policies are identified steps towards achieving this vision.

2.2. Goals, Objectives, and Policies

Goal 1: Develop and maintain a comprehensive bicycle and pedestrian circulation network which provides safe recreation opportunities and an alternative to automobile travel. (GP Goal C4)

Objective 1.1: Develop a bicycle master plan and prioritized capital improvement program that creates and maintains a safe and logical bikeways system; supports the City's Sustainable Initiatives Plan; and is coordinated with the countywide bikeway network. (GP Policy 4.1, SIP T1.3)

Objective 1.2: Where the planned city route system interfaces with adjacent cities, the routes should be coordinated with those cities.

Objective 1.3: Encourage additional bicycle capacity on Caltrain and SamTrans (particularly to the College of San Mateo). Provide an adequate supply of secure covered bicycle parking at Caltrain stations. (GP Policy C 4.2)

Objective 1.4: Require dedication of necessary rights-of-way for bike lanes and paths shown on Figure C-5 (of the General Plan), which are deficient in land area. Dedication shall be required where the development project contributes to the need for the bikeways improvement and where the cost of dedication is not so disproportionate to the size of the project to make it unreasonable. (GP Policy 4.3)

Objective 1.5: Pedestrian and Bicycle Mobility Needs. Balance pedestrian mobility and bicycle accessibility and safety with vehicular congestion when considering intersection improvements to address level of service degradation. (GP Policy 4.8)

Objective 1.6: Construct a bicycle and pedestrian overcrossing in the vicinity of Hillsdale Boulevard over US 101. (GP Policy 4.12)

Goal 2: Increase mode share for pedestrian and bicycle travel to 30% for trips of one mile or less by 2020. (SIP Recommendation T.1).

Objective 2.1: Work with private and public schools to increase the number of students walking or bicycling to school. (SIP Recommendation T.1 Potential Supportive Action 7)

Objective 2.2: Reduce single purpose school trips made by private automobile by 50% by 2020. (SIP Recommendation T.3)

Objective 2.3: Develop workshops and organized activities to encourage biking among seniors.

Goal 3: Increase mode share of bicycle travel to schools.

Objective 3.1: Support Safe Routes to School and other related efforts, including educational and incentive programs to encourage more students to bicycle or walk to school through a partnership with the school district and other interested parties.

Goal 4: Ensure plentiful, high quality support facilities to complement the bicycle network.

Objective 4.1: Amend bicycle parking requirements for public and private buildings to provide greater clarity on required rates, design, and location.

Objective 4.2: Develop and adopt a Downtown Bicycle Parking Plan.

Objective 4.3: Develop and implement an informative bicycle wayfinding signage program.

Objective 4.4: Encourage large commercial property development to include shower and locker facilities as part of a Transportation Demand Management Strategy.

Goal 5: Maintain the bikeway network.

Objective 5.1: Establish routine maintenance schedule and standards for sweeping, surface repair, litter removal, repainting of striping, signage and signal actuation devices.

Goal 6: Supplement bikeways with education, encouragement, evaluation and enforcement programs.

Objective 6.1: Develop and implement educational opportunities for bicyclists, pedestrians and motorists to learn about their rights and responsibilities.

Objective 6.2: Develop and implement encouragement programs to promote bicycling as a viable travel choice.

Objective 6.3: Develop and implement an annual evaluation program to count and survey the community on bikeway facilities and programs.

Objective 6.4: Develop and implement an enforcement program to encourage safe travel behavior and to reduce aggressive and/or negligent behavior of drivers, bicyclists and pedestrians.

Goal 7: Ensure timely and efficient implementation of the bikeway network.

Objective 7.1: Designate a City Bicycle Coordinator responsible for coordinating bicycle transportation within the City and externally. The Bicycle Coordinator's role could include:

- Reviewing development proposals to ensure bike requirements are incorporated
- Developing and implementing educational and promotional programs
- Researching sources of funding and writing project proposals
- Conducting annual bicycling counts
- Serving as the City contact for bicycling inquiries and complaints
- Staffing the Bicycle Pedestrian Advisory Committee
- Coordinating with neighboring cities, the County, and other agencies to implement policies, programs, and projects

Objective 7.2: Update the Bicycle Master Plan every five years to identify new facility improvements and programmatic opportunities as the bicycle network develops, assess their feasibility, gauge public support, identify funding sources and develop implementation strategies.

Objective 7.3: Identify and pursue reliable sources of revenue to implement projects identified in the Bicycle Master Plan.

2.3. Relevant Plans and Policies

This Bicycle Master Plan builds on and supports a number of other plans and policies from the City of San Mateo and other public agencies. Planning and policy context is important to the successful implementation of this Plan because much of the money for bikeway projects comes from county sales tax, and federal and state money administered to regional and state agencies. A clear understanding of this policy context enables San Mateo to position projects that fulfill the policies adopted by Council and partner funding agencies.

City of San Mateo land use and transportation development are guided by a variety of plans with varying scopes. The General Plan guides future development and sets a foundation for Master and Specific Plans to follow. The Sustainable Initiatives Plan identifies strategies to reduce greenhouse gas emissions. San Mateo also has adopted several Specific Plans and Area Plans establishing land use and design standards for focused geographic areas of the city. The recommendations in this Plan are consistent with and support relevant goals, policies, programs and standards from each of these documents that will effect implementation of the Bicycle Plan.

Other planning efforts conducted by a variety of public agencies also occur at the county, regional and state levels. This Plan is also consistent with and supports the relevant goals, policies and standards of these documents.

Appendix E provides a review of planning and policy documents relevant to this Bicycle Master Plan. The review is organized by City, County, Regional and State documents and policies. Where applicable, the review of each document includes the most relevant policies to this Bicycle Master Plan.

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3. Existing Bicycle Facilities and Programs

Class I bikeways are paths separated from the roadway.

Class II bike lanes provide a striped travel lane on roadways for bicyclists.

Class III bicycle routes are signed roadways indicating a preferred bicycle route.

As defined by the League of American Bicyclists, bicycle-friendly cities demonstrate achievements in each of five categories, often referred to as the Five Es of bicycle planning. The Five Es are:

- Engineering
- Encouragement
- Education
- Enforcement
- Evaluation

Engineering includes on-street bicycle facilities and bicycle parking as well as signage and maintenance. Programs are a great way to maximize use of bicycle facilities. Of the Five Es of bicycle planning, four are related to programs: encouragement, education, enforcement and evaluation. Production of bike maps and programs to celebrate Bike to Work Day encourage people to ride bicycles. Education programs improve safety and awareness. Programs that enforce legal and respectful driving and bicycling make novice bicyclist feel more secure. Evaluation programs provide a method for monitoring improvements and informing future investments. All Five Es work together to enhance the bicycling experience in San Mateo. Analysis of San Mateo's existing facilities and programs within the framework of the Five Es is one way to assess the City's bicycle-friendly status.

The City of San Mateo has a growing network of bicycle paths, lanes and routes throughout the City. It has also implemented programs to support bicycling. This chapter presents existing facilities and programs in order to identify where new facilities are needed and what programs will better support bicycling in San Mateo.

This Plan refers to standard bikeway definitions identified by Caltrans in Chapter 1000 of the Highway Design Manual. **Figure 3-1** illustrates these three types of bikeways.

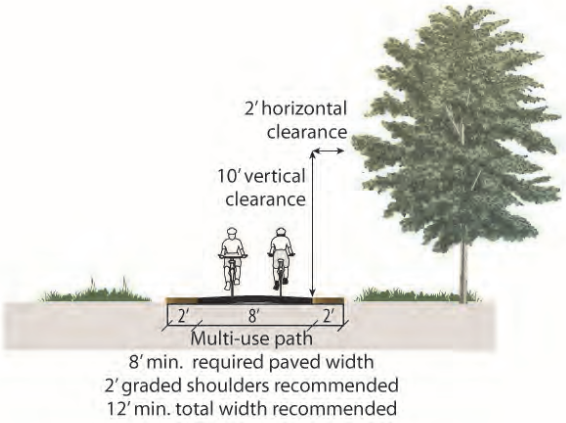
Class I Multi-Use Path: A Class I Bikeway provides for bicycle travel on a paved right-of-way completely separated from any street or highway.

Class II Bicycle Lane: A Class II Bikeway provides a striped and stenciled lane for one-way travel on a street or highway.

Class III Bike Route: A Class III Bikeway provides for shared use with pedestrian or motor vehicle traffic and is identified only by signing.

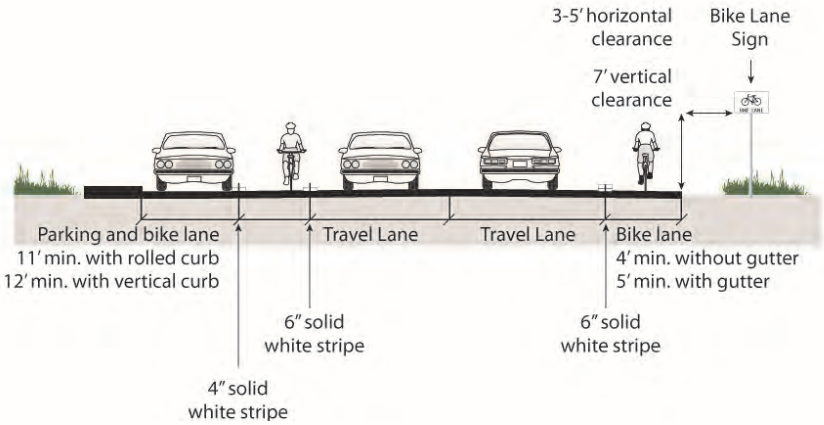
CLASS I
Multi-Use Path

Provides a completely separated right of way for the exclusive use of bicycles and pedestrians with crossflow minimized.



CLASS II
Bike Lane

Provides a striped lane for one-way bike travel on a street or highway.



CLASS III
Bike Route
Signed Shared Roadway

Provides for shared use with motor vehicle traffic, typically on lower volume roadways.

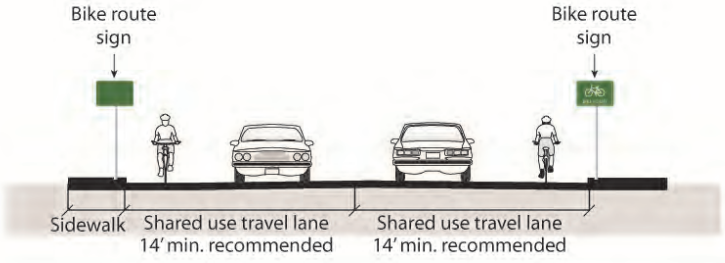


Figure 3-1: Caltrans Bikeway Classifications

3.1. Engineering

3.1.1. Existing Bikeways

The City has installed 39.42 miles of bikeways, which is comprised of 11.67 miles of Class I multi-use paths, 13.10 miles of Class II bike lanes, and 14.65 miles of Class III bike routes. **Table 3-1** lists all the existing bikeways by class and street. Not all listed facilities are operated or managed by the City of San Mateo; however the bikeways attract users from the City and region. The longest bikeway is the Shoreline Path, at a length of 3.57 miles and running from Airport Boulevard to the southern city limit. **Figure 3-2** maps San Mateo's existing bikeways.

In recent years, the City of San Mateo has invested nearly $450,000 in bicycle facilities. The investments include bridge railing safety improvements, street widening to include a Class II bike lane and a road diet to include Class II bike lanes.

3.1.2. Signing

The California Manual on Uniform Traffic Control Devices (CA MUTCD) and the California Highway Design Manual outline the requirements for bikeway signage. The Bike Lane Sign (R81) is required at the beginning of each designated bike lane and at each major decision point. The Bike Route Sign (D11-1) is required on Class III facilities. Multi-use paths require additional standardized signs to help manage different user groups. The City has installed CA MUTCD standard signs along its bikeways.

Caltrans Bikeway Signs

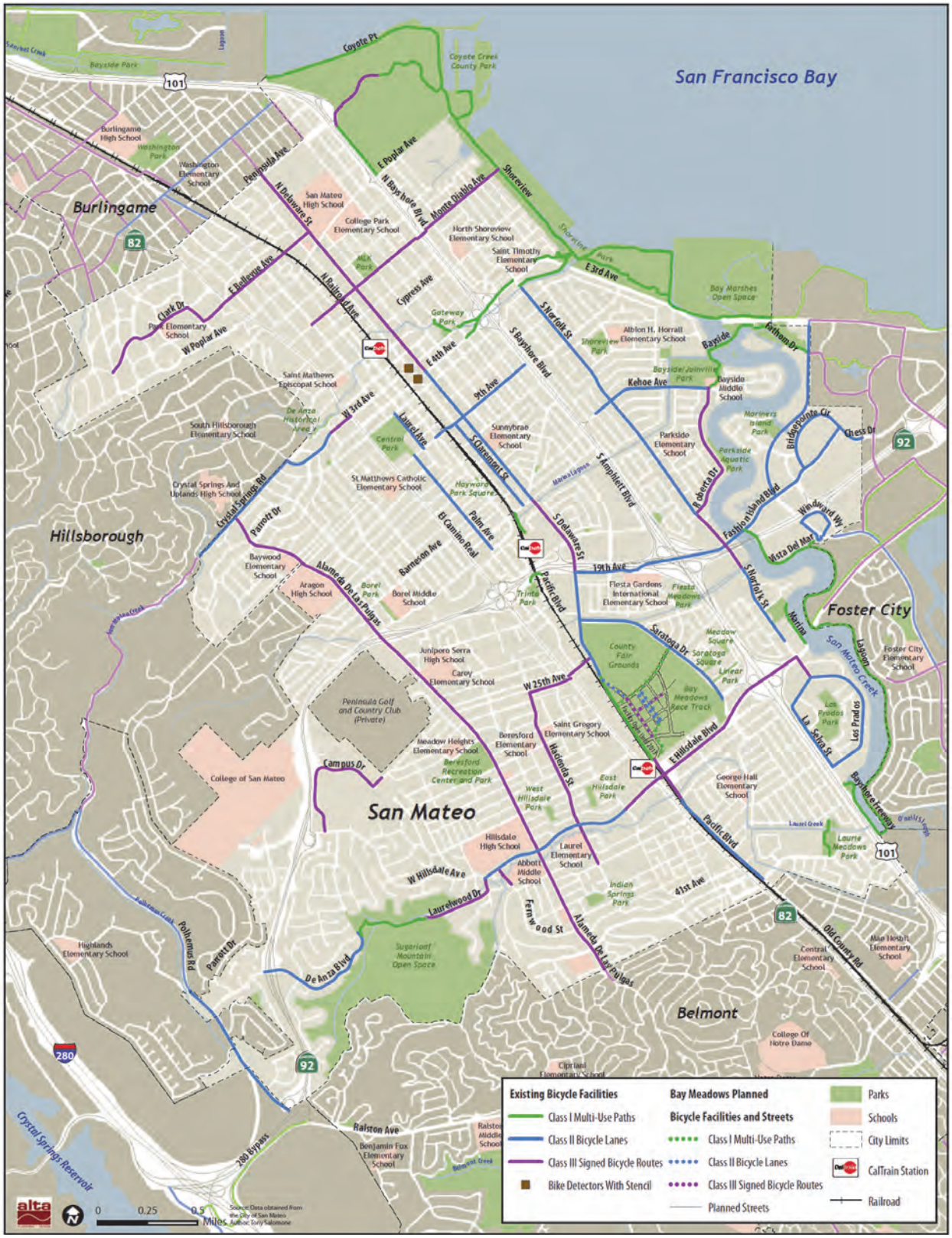


Figure 3-2: Existing Bikeways Map (2011)

Table 3-1: Existing Bikeways

Name	Start	End	Length (mi)
Class I Multi-Use Pathways			
16th Caltrain	Railroad Ave	Hayward Park Caltrain Station	0.11
Bay Meadows	Saratoga Dr	Franklin Dr	0.39
Bayshore Freeway	Kimberly Way	Port Royal Ave	0.44
Bayside Park Path	Kehoe Ave	Anchor Rd	0.50
Coyote Pt	Coyote Point Dr	Shoreview Path	0.45
E 3rd Ave	Hwy 101	S Norfolk St	0.24
Fathom Dr	Anchor Rd	Mariners Island Blvd	0.31
Lagoon	O'Neill Slough	Vista Del Mar	1.93
Laurie Meadows Park	Laurie Meadows Dr	Casanova Dr	0.20
Marina	Lakeshore Recreation Center And Park	E Hillsdale Blvd	0.23
N Bayshore Blvd	Coyote Point Dr	E Poplar Ave	0.32
Sawyer Camp Trail	Crystal Springs Reservoir (South)	Crystal Springs Reservoir (North)	0.66
Shoreline Bayfront Path	San Mateo Creek	Marina Lagoon	0.48
Shoreline Park Paths	Ryder St	Shoreview Path	0.14
Shoreline Parks Paths	J Hart Clinton Dr	Norfolk Dr	0.26
Shoreview Path	Airport Blvd	City Limit	3.57
Sugarloaf Mountain Path	Laurelwood Dr	De Anza Blvd	0.45
Vista Del Mar	Shoal Dr	Windward Wy	0.99
		Class I Total	**11.67**
Class II Bike Lanes			
9th Ave	Amphlett Blvd	B St	0.58
Bridgepointe Cir	Fashion Island Blvd	Chess Dr	0.73
Chess Dr	Bridgepointe Pkwy	City Limit	0.14
Claremont St	9th Ave	16th Ave	0.53
Coyote Point Dr	N Bayshore Blvd	Coyote Point Path	0.38
De Anza Blvd	Sugarloaf Mountain Path	State Hwy 92	0.68
Fashion Island Blvd	S Norfolk St	Bridgepointe Pkwy	0.56
Kehoe Ave	Cobb St	Roberta Dr	0.49
La Selva St	Norfolk St	Los Prados	0.54
Laurel Ave	5th Ave	9th Ave	0.23
Los Prados	Norfolk St	La Selva	0.72
Mariners Island Blvd	Fashion Island Blvd	City Limit	0.93
Pacific Blvd	Otay Ave	Laurie Meadows Dr	0.58
Palm Ave	9th Ave	South Blvd	0.61
S Delaware St	4th Ave	16th Ave	0.83
S Delaware St	Bermuda Dr	25th Ave	0.38
S Norfolk St	Marina Lagoon	Hillsdale Blvd	0.42
S Norfolk St	San Mateo Creek	Roberta Dr	1.43
Saratoga Dr	S Delaware St	Franklin Pkwy	0.86

Name	Start	End	Length (mi)
Vista Del Mar	Windward Way	State Hwy 92	0.17
W 3rd Ave	Dartmouth Rd	Crystal Springs Rd	0.30
W Hillsdale Blvd	Edison St	E Laurel Creek Dr	0.81
Windward Way	State Hwy 92	Vista Del Mar	0.21
		Class II Total	**13.10**
Class III Bike Routes			
19th Ave	Fashion Island Blvd	Ginnever St	0.13
Alameda De Las Pulgas	Crystal Springs Dr	City Limit	3.00
Campus Dr	W Hillsdale Blvd	26th Ave	0.71
Crystal Springs Rd	3rd Ave	City Limit	0.65
E 25th Ave	El Camino Real	S Delaware St	0.15
E 3Rd Ave	S Humboldt St	Hwy 101	0.13
E 4th Ave	S Humboldt St	Hwy 101	0.13
E Bellevue Ave	Occidental Ave	N Delaware St	1.34
E Hillsdale Blvd	S Norfolk St	El Camino Real	0.94
Fashion Island Blvd	19th Ave	S Norfolk St	0.46
Fernwood St	W Hillsdale Ave	Abbott Middle School	0.10
Hacienda St	W 25th Ave	37th Ave	0.92
Monte Diablo Ave	N San Mateo Dr	Shoreview Path	1.22
N Delaware St	Peninsula Ave	Cypress Ave	0.97
Norfolk	Roberta Dr	Marina Lagoon	0.36
Pacific Blvd	Delaware St	Otay Ave	0.19
Polhemus Rd	Bunker Hill Dr	City Limit	0.18
Polhemus Rd	Ticonderoga Dr	Tower Rd	0.13
Roberta Dr	S Norfolk St	Kehoe Ave	0.71
S Delaware St	Cypress Ave	4th Ave	0.32
S Delaware St	16th Ave	Bermuda Dr	0.50
S Delaware St	25th Ave	Pacific Blvd	0.65
S Norfolk St	Hillsdale Blvd	Los Prados	0.23
W 25th Ave	Hacienda St	El Camino Real	0.22
W 3rd Ave	El Camino Real	Dartmouth Rd	0.13
W Hillsdale Blvd	El Camino Real	Edison St	0.20
		Class III Total	**14.65**
		Bikeways Total	**39.42**

3.1.3. Bicycle Signal Detection

Bicycle signal detection actuates traffic signals when bicycles are present, turning the light green for bicyclists. Loop detectors use the disturbance of an electromagnetic current running through an in-pavement coil and video cameras use pixel analysis to actuate traffic signals. The City has installed both types of detection. However, only select intersections have bicycle pavement stencils to help position bicyclists at the intersection. **Table 3-2** identifies intersections with bicycle detection and stencils.

Table 3-2: Existing Bicycle Detection

Intersection	Direction	Loop Detection	Video Detection	Stencil
E 25th & S El Camino Real	NB	N	N	N
	SB	N	N	N
	EB	N	Y	N
	WB	N	Y	N
E 3rd & S Claremont	EB	N	N	N
	WB	N	N	N
	NB	Y	N	Y
	SB	Y	N	Y
E 3rd & S Delaware	EB	N	Y	N
	WB	N	Y	N
	NB	N	Y	Y
	SB	N	Y	Y
E 4th & S Claremont	EB	N	N	N
	WB	N	N	N
	NB	Y	N	Y
	SB	Y	N	Y
E 4th & S Delaware	NB	N	Y	N
	SB	N	Y	N
	EB	N	Y	N
E 5th & S El Camino Real	NB	N	N	N
	SB	N	N	N
	EB	Y	N	N
	WB	Y	N	N
E Bellevue & N El Camino Real	NB	N	N	N
	SB	N	N	N
	WB	Y	N	N
	EB	Y	N	Y

3.1.4. Bicycle Parking

Bicycle parking is located throughout the City. The bicycle racks pictured here are at City Hall.

Bicycle storage can range from a simple and convenient bicycle rack to storage in a bicycle locker or cage that protects against weather, vandalism and theft. Bicycle parking facilities are concentrated in Downtown San Mateo and near the three Caltrain stations. Across the rest of the City, bicyclists visiting stores, restaurants, places of employment and community facilities may not reliably find racks to temporarily store their bicycles. Many bicyclists resort to securing their bike to street fixtures such as trees, lights, telephone poles, and stop signs when parking facilities are not provided. Use of these street fixtures is problematic for a variety of reasons including pedestrian accessibility and stability of the locked bicycle. **Figure 3-3** maps the rack and locker locations in San Mateo. Bicycle parking is available throughout the City at retail destinations such as the Bridgepointe Center, the Hillsdale Shopping Center, and the Los Prados Shopping Center and grocery stores like Trader Joe's, Whole Foods, and Safeway. It is also provided at city facilities including multiple locations at Seal Point Park, Martin Luther King Jr. Park, the Joinville Swim Center, Central Park, Main Street Garage and City Hall. These facilities are generally concentrated in the vicinity of San Mateo and Hillsdale Caltrain Stations, with smaller pockets scattered elsewhere in the City. While many of the existing bicycle parking facilities meets the current City standard U-rack, not all do.

These bike parking locations are mapped in **Figure 3-3** below. In addition, bicycle lockers are available for rent at the following Caltrain stations:

- San Mateo Station (24 lockers)
- Hayward Park Station (12 lockers)
- Hillsdale Station (22 lockers)

3.1.5. Multi-Modal Connections

Approximately 18 percent of San Mateo Caltrain riders access stations by bicycle.

Approximately 8.4 percent of San Mateo residents use public transit.[3-1] While the City cannot directly improve bicycle accommodations on public transit vehicles, it can improve access and recommend additional accommodations to transit agencies. Two public transit agencies operate within the City, Caltrain and SamTrans.

On average, 2,614 people board Caltrain each weekday in San Mateo and 18 percent have a bicycle.[3-2] The Hillsdale and Hayward Park Caltrain Station have connecting bikeways, while the downtown station does not. Caltrain provides bicycle racks and lockers at its San Mateo stations and allows bicycles on its trains. Stainless steel gallery

[3-1] American Community Survey, United States Census, 2006-2008.
[3-2] Ridership Counts, Caltrain, 2009.

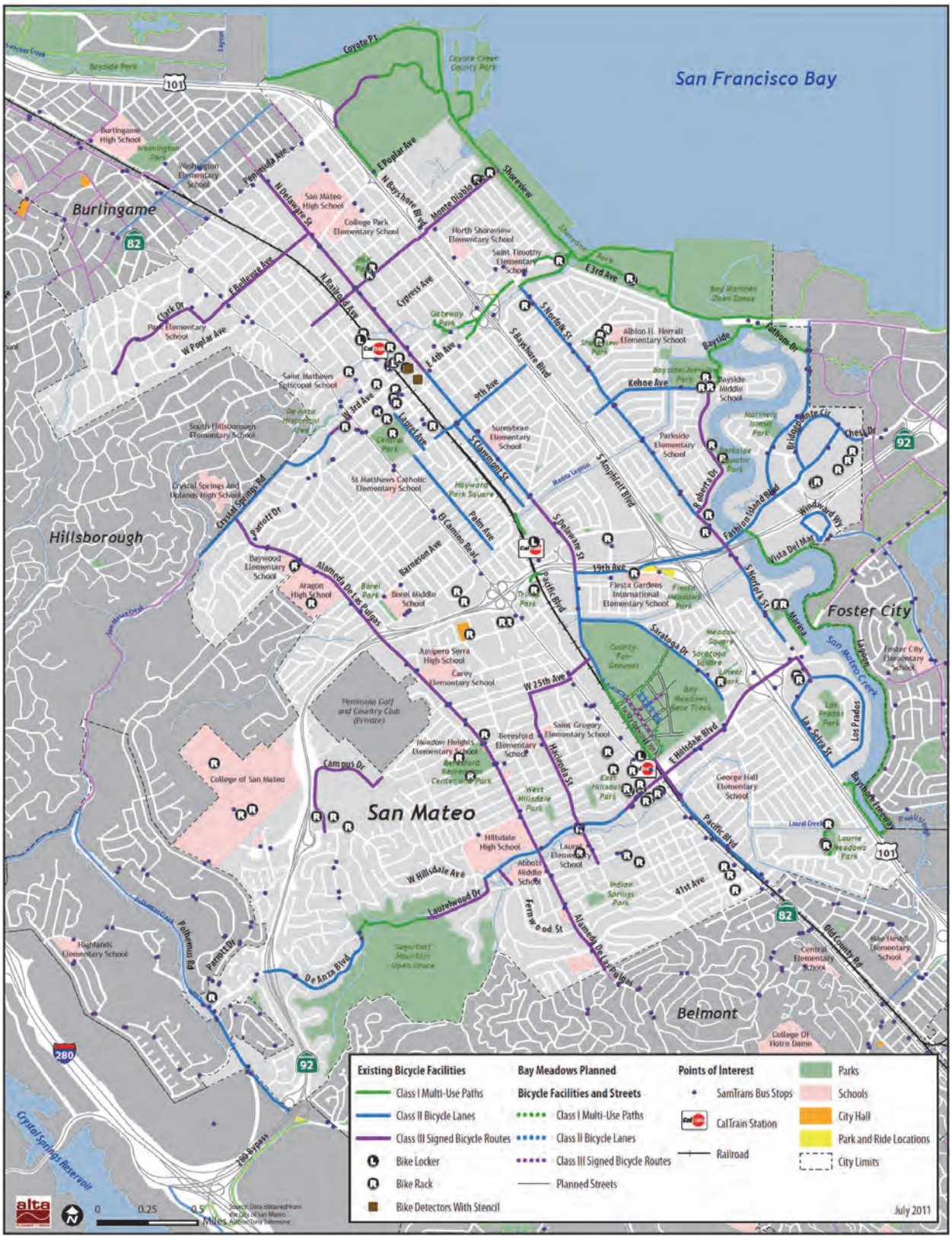


Figure 3-3: Existing Bicycle Parking in San Mateo (2011)

cars hold up to 40 bikes and grey Bombardier cars hold up to 24 and travel in pairs. Bicycle boarding is on a first-come, first-served basis.

SamTrans operates bus routes throughout the City and provides front-loading bicycle racks. The racks can carry up to two bicycles, and two bicycles are also allowed inside the bus if room is available. The City has installed bicycle lanes and routes along major bus routes, including Norfolk Street, Delaware Street/Pacific Boulevard, and Alameda De Las Pulgas.

3.1.6. Maintenance

Street and Bike Path Sweeping

Street sweeping clears the road of debris that would otherwise make bicycling difficult. Streets are the primary focus of the City's street sweeping program; however, Class II and III bike facilities are typically covered by this work. The San Mateo Public Works Department has a rotating street sweeping schedule for residential roadways, which are swept bi-weekly. Commercial roadways, i.e. 19th Street, are swept bi-monthly. The City sweeps the Monte Diablo pedestrian overcrossing at a minimum of once per week and aims to sweep the Third Avenue Class I path over US 101 at the same frequency. The City maintains the Shoreline bike path, the bike path from Mariner's Boulevard to Anchor Road, and the path along the water from Lakeshore Park to Hillsdale Boulevard. The City does not sweep these areas but trims and sprays to control vegetation.

Pothole Repairs

Potholes are a hazard to bicyclists that can cause damage to bicycles and cause crashes. Residents may report potholes to the Public Works Department, which will repair them within 72 hours. The phone number to report potholes is (650)-522-7300.

Pavement Management Program

The Public Works Pavement Management Program identifies roadways to be repaved, surfaced, and striped, which can improve bicycling conditions. The Public Works Department uses a set of criteria to score and prioritize roadway improvements. The presence of bikeways is not included in the prioritization process.

3.2. Encouragement

San Mateo residents benefit from encouragement programs administered or funded by numerous organizations, including the Peninsula Traffic Congestion Relief Alliance, City/County Association of Governments, San Mateo County Transportation Authority, Metropolitan Transportation Commission, the Bay Area Air Quality Management District, the California Office of Traffic and Safety, and the City of San Mateo. Together, these programs establish the current setting for encouragement in San Mateo.

3.2.1. Transportation Demand Management

The Peninsula Traffic Congestion Relief Alliance (Alliance) is the transportation demand management agency for San Mateo County and funded by the City/County Association of Governments, San Mateo County Transportation Authority, Metropolitan Transportation Commission and the Bay Area Air Quality Management District. The Alliance administers a range of programs that work to reduce the number of

single-occupancy drivers and commuters.[3-3] Employers that wish to install bicycle parking facilities may receive up to $500 per unit from the agency for the cost of facilities.[3-4]

Employers who have taken advantage of this reimbursement program are listed below.

- 58 El Camino Condominium Association (Apartments)
- Akamai Technologies
- CarrAmerica Realty Corp
- City of San Mateo
- Cornerstone Properties/Bayshore Corporate Center
- Equity Office (Campus Drive)
- Glenborough Property Management
- Glu Mobile
- Guidewire Software
- Hillsdale High School
- Nandi Yoga
- PML Management Corp
- Prometheus-2 (Atrium & Waters Park)
- Skytide Inc.
- Stottler Henke
- Wilson Meany Sullivan

3.2.2. Bicycle Helmet Giveaway

In 2009, the San Mateo Police Department gave away bicycle helmets to children at schools, a program funded by a California Office of Traffic Safety (OTS) grant. Police officers also gave helmets to children observed bicycling without wearing helmets. In order to receive the helmet, the children's parents were required to return a "citation" issued by the officer.

The Police Activities League (PAL), a non-profit organization within the Police Department, continues to give away helmets from the same OTS grant. PAL's intention is to reinforce laws requiring safe bicycle use and promote trust between police officers and children.

3.2.3. Bike to Work Day

Bike to Work Day is a region wide event promoting bicycling to work and is typically the third Thursday in May. The Bay Area's traffic management organization, 511.org, organizes Bike to Work events throughout the Bay Area, including San Mateo. One of the most popular activities are energizer stations, where volunteers set up a table with promotional items, coffee and snacks along popular bicycle commuting routes during the morning and afternoon commute hours.

Bike to Work Day 2010.

Businesses and organizations located within the City played host to variety of Bike to Work events in recent years. In 2008, a private building company with its headquarters in San Mateo

[3-3] For more information visit www.commute.org.

[3-4] There is no limit to number bicycle parking units an employer purchases. However, this benefit is only available if there are remaining funds.

kicked off Bike to Work Week with an address discussing how to improve bicycling in San Mateo by its CEO. In 2010, the San Mateo and Hillsdale Caltrain stations hosted energizer stations.

3.2.4. Bicycle Resource Website

The City of San Mateo hosts a bicycle resource website. To visit the website, follow the links from the City's home page: Living › Getting Around › Bike Information, or try the link below. This webpage provides a bicycle map of the City, bicycle parking locations and information about the Bicycle and Pedestrian Advisory Committee and local advocacy groups.

http://www.cityofsanmateo.org/bikesanmateo

The City dedicates a page of its website to bicycle information.

3.2.5. San Mateo Acting Responsibly Together

SMART is a citywide public outreach campaign encouraging businesses, schools and individuals to engage in behavior that reduces their carbon footprint. The City provides a website where participants can pledge to reduce their carbon footprint, calculate that reduction, and print flyers encouraging others to do so. Interested parties can request a SMART speaker to present about climate change and sustainable lifestyles that include bicycling as an integral transportation mode. The website below provides more information about the SMART program.

http://www.ci.sanmateo.ca.us/index.aspx?NID=1536

3.3. Education

3.3.1. Skills Classes

The Peninsula Traffic Congestion Relief Alliance offers a bicycle skills course for employers to host, though no employers in San Mateo have taken advantage of this free program, which also allows participant to enter a raffle for a $50 bike shop gift certificate. The Silicon Valley Bicycle Coalition offers bicycle safety and maintenance classes regularly.

3.3.2. Bicycle Rodeo

Bicycle rodeos are events where police officers teach children safe bicycling skills and the rules of the road. In 2005, the Police Department hosted a bicycle rodeo that was open to the public, advertising through its website and the City's newspaper. Approximately 75 children participated in the event.

A bicycle rodeos, participants learn about safe bicycling skills and rules of the road.

3.4. Enforcement

3.4.1. Bicycle Patrol

Police bicycle patrols not only increase the mobility of officers in dense areas but it also provide law enforcement officers with an opportunity display safe and legal bicycle skills. Bicycle patrols also show the community that the City is

engaged in sustainable transportation. The Police Department deploys up to two bicycle patrol officers in the Downtown area on an as needed basis, typically Thursday through Sunday.

3.4.2. Speed Feedback Signs

Speed feedback signs display the speed of passing motor vehicles, with the intent that motorists will slow down if they are aware of their speed. The City has installed permanent speed feedback signs at eight locations throughout the City. There are three signs on Alameda de las Pulgas near Carey School and Baywood School, signs installed in each direction on Third Avenue, signs in each direction on Delaware Street near Sunnybrae Elementary School, and a sign westbound on Kehoe Avenue near Bayside Academy. The Police Department and Department of Public Works operate two mobile speed feedback signs, which are deployed in response to resident complaints about speeding.

3.4.3. Targeted Enforcement

Targeted enforcement is focused efforts by police officers. For example, the Police Department conducts pedestrian stings at locations where pedestrians and motorists conflict and do not comply with traffic signals. Similar strategies may be applied to areas with bicycle traffic, although the Police Department has not implemented such strategies.

3.5. Evaluation

Evaluation programs measure and evaluate the impact of projects, policies and programs. Typical evaluation programs range from a simple year-after-year comparison of US Census Journey to Work data to bicycle counts and community surveys. Bicycle counts and community surveys act as methods to evaluate not only the impacts of specific bicycle improvement projects but can also function as way to measure progress towards reaching the City's Sustainable Initiatives Plan goals such as increased bicycle travel for trips one mile or less and the reduction of single-purpose school trips by automobile.

The City of San Mateo does not currently have bicycle-related evaluation programs. However, bicycle counts were conducted as part of this Master Plan process. This count effort is intended to be a benchmarking effort continuing on an annual basis to measure and evaluate projects, policies and programs.

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4. Needs Analysis

The needs of San Mateo bicyclists are diverse, depending on level of experience, confidence, age, trip type and many other factors. This examination begins with a review of trip attractors and generators to identify where residents are likely to bicycle to and from. Travel mode choice and typical travel time are then reviewed to understand the current and potential rates of bicycling. Bicycle collision locations and rates are also reviewed to understand locations likely in need of bicycle related improvements. The needs analysis concludes with a summary of community input gathered from a community survey and a workshop.

4.1. Types of Bicyclists

This Plan seeks to address the needs of all bicyclists and potential bicyclists and therefore it is important to understand the needs and preferences of all types of bicyclists to develop a successful plan. Bicyclists' needs and preferences vary between skill levels and their trip types. In addition, the propensity to bicycle varies from person to person, providing insight into potential increases in bicycling rates. Generally, bicycling propensity levels can be classified into four categories:[4-1]

- *Strong and Fearless* bicyclists will ride on almost any roadway despite the traffic volume, speed and lack of bikeway designation and are estimated to be less than one percent of the population.
- *Enthused and Confident* bicyclists will ride on most roadways if traffic volumes and speeds are not high. They are confident in positioning themselves to share the roadway with motorists and are estimated to be seven percent of the population.
- *Interested but Concerned* bicyclists will ride if bicycle paths or lanes are provided on roadways with low traffic volumes and speeds. They are typically not confident cycling with motorists. Interested but Concerned bicyclists are estimated to be 60 percent of the bicyclist population and the primary target group that will bicycle more if encouraged to do so.
- *No Way No How* are people that do not consider cycling part of their transportation or recreation options and are estimated to be 33 percent of the population.

Figure 4-1 presents a breakdown of these bicyclist types.

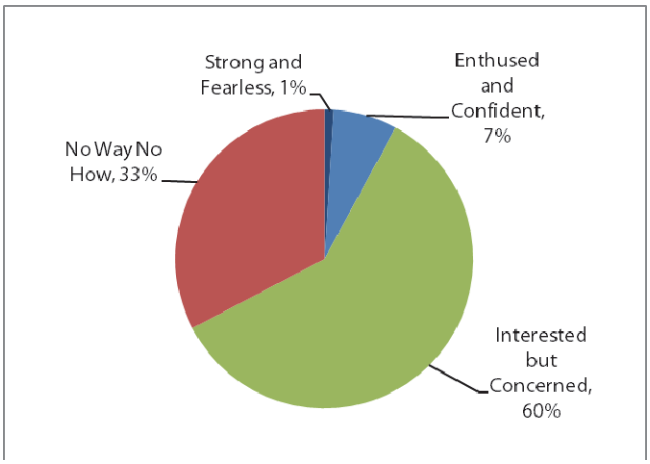

Figure 4-1: Bicyclist Typology Scale

[4-1] Source: Roger Geller, Bicycle Coordinator, City of Portland, Oregon

The needs of bicyclists also vary between trip purposes. For example, people who bicycle for performance-recreational purposes may prefer long and straight unsignalized roadways, such as Crystal Springs Road, while bicyclists who ride with their children to school may prefer direct roadways with lower vehicular volumes and speeds. This Plan considers these differences and develops a bikeway network to serve all user types. This section describes the different types of bicyclists and the respective needs for these categories of bicyclists.

- Commuters - adults who regularly bicycle between their residences and work.
- Enthusiasts - skilled adults.
- Casual / Family / Elderly riders - adults who use bicycles for running errands, exercise, or as a family activity
- School Children - children who bicycle to school.

An effective bicycle network accommodates bicyclists of all abilities. Casual bicyclists generally prefer roadways with low traffic volumes and low speeds. They also prefer paths that are physically separated from roadways. Because experienced bicyclists typically ride to destinations or to achieve a goal, they generally choose the most direct route, which may include arterial roadways with or without bike lanes.

Bicyclists of all abilities and purposes ride every day in San Mateo. Parents bicycle with their children to school, people bicycle to work in San Mateo and the surrounding communities, community members bicycle to Caltrain stations, and recreational bicyclists ride through San Mateo on extended bicycle trips.

4.2. Bicycle Attractors and Generators

Bicycling can be a viable means of transportation if schools, employment centers, shopping centers and parks are accessible by bikeways and have adequate bicycle parking. These bicycle "attractors" and "generators" are examined below and are used to identify potential recommended bicycle facilities. San Mateo's top bicycle attractors and generators are outlined below and shown in **Figure 4-2.**

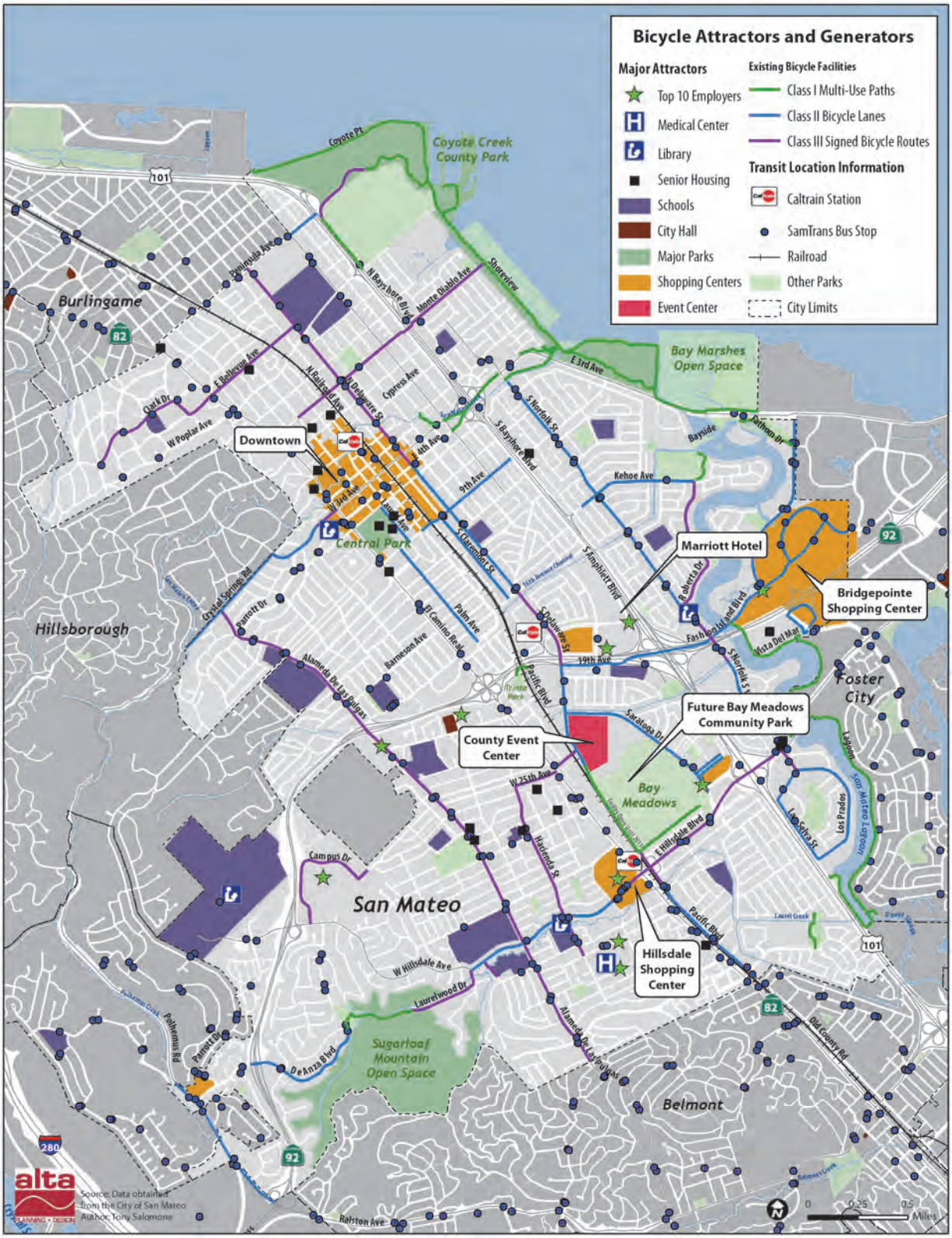

Figure 4-2: San Mateo's Bicycle Attractors and Generators

4.2.1. Parks and Community Centers

San Mateo has a variety of park facilities including playgrounds, ball fields, courts, and picnic areas that serve as recreational destinations for the community. These outdoor amenities attract individuals, families, local residents and tourists. San Mateo's larger park destinations are described below.

Sugarloaf Mountain can be accessed from the west by Class II bicycle lanes on De Anza Boulevard and from the east by Class III bicycle route on Laurelwood Drive. The park features several hiking trails and can be accessed from the west by Class II bicycle lanes on De Anza Boulevard.

CuriOdyssey is a 600-acre San Mateo County park located on the border of Burlingame and San Mateo. The park provides opportunities for picnicking, swimming, fishing, bicycling, sailing, and hiking, as well as several playgrounds. The Coyote Point Museum for Environmental Education, an environmental science center, is located within the park. The park can be accessed by Class II bicycle lanes on Cypress Road and via the San Francisco Bay Trail.

Central Park and Recreation Center is a 16-acre park located in downtown San Mateo. The park is a central city landmark and includes lighted tennis courts, playground, baseball field, Japanese Tea Garden, and Mini Train for children. The recreation center offers community classes and rental space. The park can be accessed by Class II bicycle lanes on Laurel and Palm Avenues.

Shoreline Parks consist of several different parks and open spaces along the shoreline and San Mateo Creek between U.S. 101 and the Bay. The system consists of 177 acres. Its more recent components are Ryder Park, which includes a renovated water feature, creative play areas, and a barbeque and picnic area, and 60-acre Seal Point Park, which features a 3-acre off-leash dog park and several walking and bicycling paths. Harborview Park and a portion of the Bayfront Nature area were also recently established. The park can be accessed by a Class III bicycle route on Monte Diablo Avenue and the 3rd Avenue Class I path.

Shoreline Park is a popular destination

Beresford Recreation Center and Park is on 18.5-acres located on Alameda de las Pulgas between Dolores Street and 28th Avenue. Beresford Park is known for its many amenities, including one of two San Mateo skate board plazas, the Gary Yates lighted bocce ball complex, a fully enclosed tot playground, and tennis and basketball courts. Activities offered at Beresford Recreation Center include preschool activities, after school care, and youth and adult classes. The park is accessible from a Class III bike route along Alameda de las Pulgas.

Bay Meadows Community Park is currently in the planning stages. This 12-acre community park will be located adjacent to Saratoga Drive between the County Expo Center property and the proposed 28th Avenue extension. Once completed, the park will be accessible from Class II bike lanes on Saratoga Drive as well as a proposed Class I path along 28th Avenue identified in the Hillsdale Station Area Plan.

Other City parks can also potentially draw large numbers of cyclists. These include Parkside Aquatic Park, Los Prados Park, Bayside/Joinville Park and Joinville Swim Center, Martin Luther King Junior Park and Recreation Center, Trinta Park, Lakeshore Park, and Shoreview Park. The San Mateo Senior Center is located at 2645 Alameda de las Pulgas. Providing bicycle facilities and wayfinding signage to all City parks would help to implement the Parks and Recreation Strategic Plan policy of designing pedestrian and bicycle trails that connect parks and recreational facilities.

4.2.2. Schools

Over 23,000 students, 24 percent of the population, are enrolled at schools in San Mateo, representing a large population of potential bicycle riders. Half of these students are enrolled at the College of San Mateo, which hosts the San Mateo Farmers' Market on Wednesdays and Saturdays, an event that commonly draws bicyclists. **Table 4-1** lists the schools in San Mateo and their enrollment.

Table 4-1: San Mateo School Enrollment

School	Enrollment	School	Enrollment
Abbott Middle School	752	Highlands Elementary	451
Aragon High School	1,670	Hillsdale High School	1,171
Bayside Middle School	504	Horrall Elementary	437
Baywood Elementary	509	Junipero Serra High School	162
Beresford Elementary	238	Laurel Elementary	417
Borel Middle School	953	Meadow Heights Elementary	313
Carey Elementary	238	North Shoreview Montessori	311
College of San Mateo	11,000	Park School	452
College Park Elementary	265	Parkside Elementary	420
Fiesta Gardens International School	447	San Mateo High School	1,396
George Hall Elementary	433	Sunnybrae Elementary	470
		Total Enrollment	**23,009**

4.2.3. County Event Center

The **San Mateo County Event Center** is a 48-acre facility with seven buildings, including the 100,000 square foot Expo Hall and 750,000 square feet of on-site parking. The Expo Hall hosts large events, trade shows, concerts, and corporate gatherings including many that attract significant number of bicyclists. The Maker Faire, a do-it-yourself family festival, is held annually at the Event Center and regularly attracts more than 1,000 bicyclists. The Event Center is bound by Class II bicycle lanes on Saratoga Avenue and South Delaware Street.

4.2.4. Retail Centers

Downtown San Mateo is the City's historic retail center. The area is comprised of several blocks and features restaurants, boutique retail, and entertainment uses, including a movie theater. The Central Park and Recreation Center is also located in Downtown San Mateo. Downtown

Downtown San Mateo

is home to a farmers market May through October as well as an annual "Wine Walk" each June. While downtown offers many locations for automobile parking including on-street parking, the central garage, the Main Street garage, and the transit center parking, it does not have a significant amount of bicycle parking. The North Delaware Street Class III bicycle route is the only bikeway accessing downtown.

Hillsdale Shopping Center is a large indoor shopping mall located west of the Hillsdale Caltrain Station. The center features three anchor stores, plus 130 specialty stores and restaurants and 5,800 parking spaces. Class II bicycle lanes provide access to the shopping center from the west. A Class III bike route on Hillsdale Boulevard provides access from the east; however, it has high traffic volumes and speeds and is not a route most San Mateo residents feel comfortable bicycling on.

Bridgepointe Shopping Center is a regional retail, dining, office, hotel, and residential center located at Mariner's Island, just west of Foster City. Bridgepointe also includes an ice skating rink, which offers public skating and youth hockey and skating programs. Class II bicycle lanes on Bridgepointe Circle and Fashion Island Boulevard access Bridgepointe Shopping Center.

Likewise, merchants in smaller neighborhood retail centers such as 20th Avenue, 25th Avenue, 37th Avenue, 41st Avenue and Norfolk Street are a valuable resource and destination for San Mateo residents. For example, the 25th Avenue retail area is a traditional shopping street with grocery stores, a pharmacy, post office and many restaurants. However, there is no bike parking and it is the only smaller retail district connected to the bikeway network.

4.2.5. Top Employers

Nearly 12,000 people are employed by San Mateo's top ten employers. These employees represent a large number of potential bicyclists if bicycling to work is made convenient by increased bicycle access to employment centers and City and privately sponsored encouragement programs. **Table 4-2** lists the top ten employers, their location and number of employees. This Plan's recommendations consider large employer locations.

Table 4-2: Top 10 Employers (2010)

Employer	Address	Number of Employees
Franklin Templeton Group	1 Franklin Pkwy and 960 Park Pl	5,900
San Mateo Medical Center	222 W 39th Ave	1,400
Hillsdale Shopping Center (Macy's, Sears and Nordstrom)	115 Hillsdale Mall	1,100
City of San Mateo	330 W. 20th Avenue	695
Campus Drive Businesses (Net Suite Inc. and Terarecon Inc.)	2955 Campus Dr #100 and #325	630
California Casualty Group	1900 Alameda De Las Pulgas	500
Salesforce.com	900 Concar Dr	400
Success Factors Inc	1500 Fashion Island Blvd # 300	350
YMCA	1877 S. Grant St	300
San Mateo County Psychological	225 37th Ave #125	285
	Total	**11,560**

4.2.6. Transit

Approximately 8.4 percent of San Mateo's working population take transit to work.[4-2] Transit opportunities in San Mateo include Caltrain and SamTrans. There are three Caltrain stations in San Mateo: San Mateo Station, Hayward Park, and Hillsdale. Provision of a bike station near the downtown transit stations, where transit users could safely park their bikes, would make biking to transit more convenient.

4.3. Commuter Travel

Monitoring the number of commuter bicyclists in the City provides a way to track the use of bicycle facilities. This Plan presents US Census Journey to Work data from the United State Census Bureau's 2008 American Community Survey. As bicycle facilities are built and education and encouragement programs implemented, Journey to Work data can be revisited to monitor changes in bicycling rates. The percentage of San Mateo residents that bicycle to work is about 1.1 percent, which is slightly higher than California and more than the United States as a whole. **Table 4-3** lists the mode choices of San Mateo, California and the United States.

Bicycle commuters at the Hillsdale Caltrain Station

Table 4-3: Journey to Work Data (2008)

Mode	San Mateo	California	United States
Bicycle	**1.1%**	**1.0%**	**0.5%**
Carpool	9.8%	11.9%	10.7%
Drive Alone	69.8%	72.7%	75.5%
Public Transit	8.4%	5.3%	5.0%
Walked	3.6%	2.8%	2.8%
Other	2.5%	1.5%	1.3%
Worked from Home	4.7%	4.8%	4.1%

Source: U.S. Census Bureau, 2008 American Community Survey

Review of travel time to work is important to estimate the potential number of bicycle commuters. Generally, a commute time of 15 minutes or less is equivalent to a 30 minute bicycle commute, assuming flat topography and light to moderate traffic. Based on a variety of factors, communities nationwide have demonstrated it is possible for San Mateo to shift a portion of the 29.7 percent of the 15 minute or less commuters to bicycle. **Table 4-4** compares average San Mateo commute times with California and the United States.

Table 4-4: Travel Time to Work

Travel Time to Work	San Mateo	California	United States
Less than 15 minutes	29.7%	25.3%	28.4%
15 to 29 minutes	35.2%	35.8%	36.1%
30 to 44 minutes	22.0%	21.1%	19.8%
45 to 59 minutes	7.7%	7.8%	7.5%
60 minutes or more	5.3%	10.0%	8.2%

Source: U.S. Census Bureau, 2008 American Community Survey

[4-2] American Factfinder, 2008

4.4. Estimated Commuter and Utilitarian Bicyclists

A key goal of this Plan is to maximize the number of bicyclists in order to realize multiple benefits, such as improved health, less traffic congestion, and maintenance of ambient air quality levels. In order to achieve this, a better understanding of the number of bicyclists is needed. The US Census collects only the primary mode of travel to work and it does not consider bicycle use when bicyclists ride to transit or school. Alta Planning + Design has developed a bicycle model that estimates usage based on available empirical data.

This model uses San Mateo specific data from the US Census American Community Survey; National Safe Routes to School survey information; and Federal Highway Administration college commute survey information. The steps are outlined below.

1. Bicycle to work mode share:
    a. Add number of bicycle commuters, derived from the US Census American Community Survey.
2. Work at home bicycle mode share:
    a. Add the number of those who work from home and likely bicycle, derived from assumption that five percent of those who work at home make at least one bicycle trip daily.
3. Bicycle to school mode share:
    a. Add the number of students biking to school, derived from multiplying the K-8 student population by the national bike to school average rate of two percent.
    b. Add the number of college students biking to the College of San Mateo, derived from an assumption that one percent of those students living in San Mateo bike.
4. Number of those who bike to transit:
    a. Add the number of people who bicycle to Caltrain and SamTrans, derived from an assumption that five percent of riders bike to transit.

As shown on **Table 4-5** there are an estimated 1,281 daily bicycle commuters and utilitarian riders in San Mateo. It is important to note that this is simply an order-of-magnitude estimate, based on available data and does not include recreational trips.

Table 4-5: Current Bicycle Trips

Data		Source
San Mateo Population	95,173	2008 US Census American Community Survey
Number of Commuters	48,512	2008 US Census American Community Survey (Employed persons minus those that work at home)
Number of Bicycle-to-Work Commuters	574	2008 US Census American Community Survey
Bicycle-to-Work Mode Share	1.1%	Mode share percentage of Bicycle to Work Commuters 2006 American Community Survey
Work at Home Mode Share	4.7%	2008 US Census American Community Survey
Estimated Work at Home Bicycle Commuters	113	Assumes 5% of population working at home makes at least one daily bicycle trip.
School Children Grades K-8	7,329	2008 US Census American Community Survey
Estimated School Bicycle Commuters	147	National average 2%. National Safe Routes to School Survey (2003)
Number of College Students	5,179	2008 US Census American Community Survey
Estimated College Bicycle Commuters	52	National Bicycling & Walking Study, FHWA, Case Study No. 1, 1995. Review of bicycle commute share in seven university communities (5%), adjusted to consider site-specific topographic constraints (1%)
Estimated number of people who use Caltrain and SamTrans	4,293	2008 US Census American Community Survey
Number of commuters who bicycle to Caltrain and SamTrans	215	Estimated 5% of transit users access by bicycle
Estimated Total Number of Bicycle Commuters and Utilitarian Riders	1,281	Total of bike-to-work, transit, school, college and utilitarian bicycle commuters. Does not include recreation.
Estimated Adjusted Mode Share	1.35%	Estimated bicycle commuters divided by population

4.5. Collision Analysis

Safety is a major concern for current and potential bicyclists and can influence the decision whether or not to bicycle. Potential bicyclists that do not have experience riding, especially in traffic, typically will not ride if they perceive the roadway as dangerous. People who currently ride often express frustration when drivers do not see them or do not understand that bicyclists are afforded the same rights as vehicles. Similarly, many bicyclists do not know or follow the "rules of the road." Uninformed or unlawful roadway users, as well as roadway designs, can lead to collisions.

Table 4-6: Bicycle Related Collisions by Year

Year	Number of Collisions
2003	39
2004	44
2005	30
2006	36
2007	37
2008	43
Total	**229**

This section reviews collision data from the Statewide Integrated Traffic Report System (SWITRS) to identify where collisions frequently occur and where roadway design improvements are needed. In general, the number of bicycle collisions per year has remained fairly constant at around 40. **Table 4-6** presents the number of bicycle collisions in San Mateo from 2003 to 2008 and **Figure 4-3** shows annual bicycle collisions per 1,000 population in the City of San Mateo County.

Figure 4-4 maps these collisions. Between 2004 and 2008, the City of San Mateo experienced 0.43 bike-automobile collisions per 1,000 population per year and 0.12 bike-automobile collisions per bike commuter per year. This is higher than the average for San Mateo County of 0.34 bike-automobile collisions per 1,000 population per year and 0.06 bike-automobile collisions per bike commuter per year.

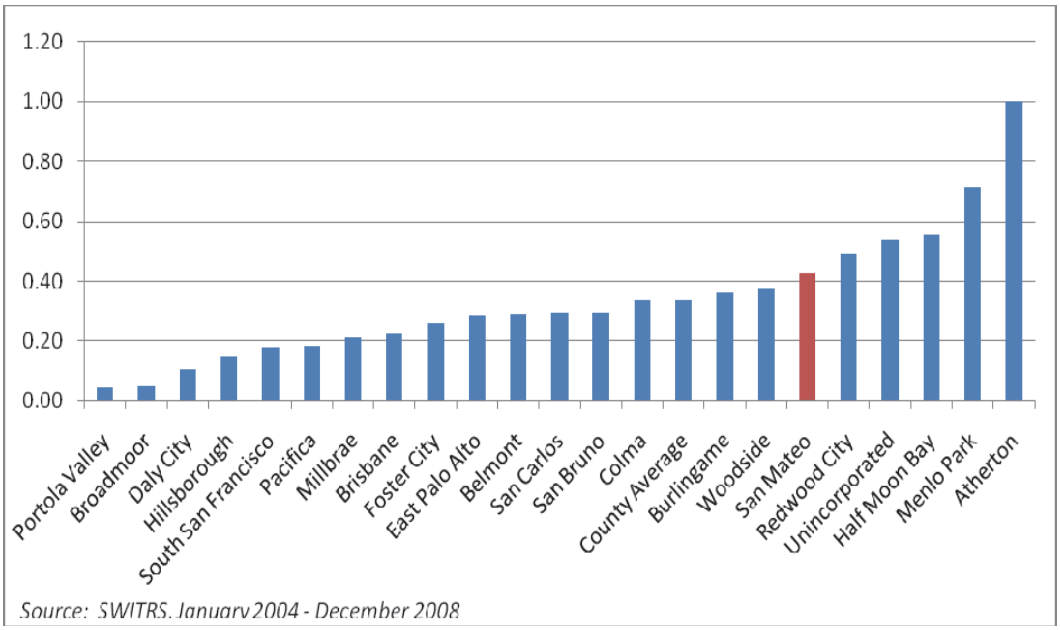

Figure 4-3: Annual Bicycle Collisions per 1,000 Population in San Mateo County

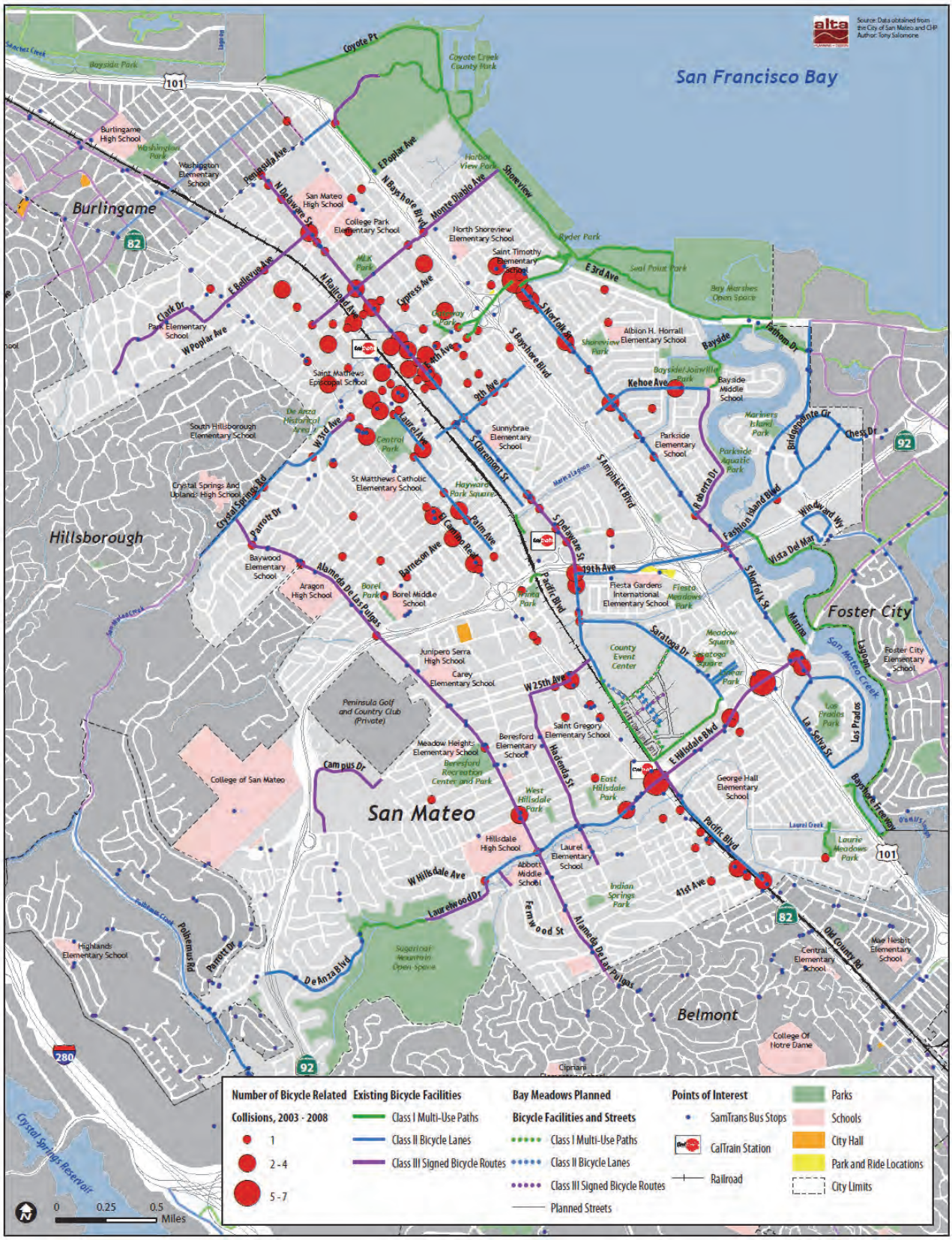

Figure 4-4: Bicycle Related Collisions

Table 4-7 shows that in 2008, bicycle related collisions totaled 13.2 percent of all collisions that resulted in either a fatality or injury in San Mateo. This is total is higher than the County average of 7.8 percent.

Table 4-7: Office of Traffic and Safety Rankings for the City of San Mateo, 2008

Type of Collision	Fatal and Injury Collisions	Ranking by Daily Vehicle Miles Driven	Ranking by Average Population
Total Fatal and Injury	365	38/103	55/103
Alcohol Involved	35	53/103	66/103
HBD Driver < 21	6	24/103	27/103
HBD Driver 21 - 34	4	91/103	94/103
Motorcycles	8	70/103	78/103
Pedestrians	53	9/103	6/103
Pedestrians < 15	8	23/103	29/103
Pedestrians 65+	10	3/103	4/103
Bicyclists	41	16/103	22/103
Bicyclists < 15	7	28/103	38/103
Speed Related	64	33/103	50/103
Nighttime (9:00pm -2:59am)	24	55/103	70/103
Hit and Run	27	31/103	45/103
Composite		49/103	61/103

Source: California Office of Traffic and Safety. Retrieved on October 20, 2010.

The vast majority of collisions occurred in the downtown area near 3rd and 4th Avenues and along Delaware Street. **Table 4-8** lists the intersections with the most collisions. High concentrations of collisions have also occurred along Norfolk Street, El Camino Real and Hillsdale Boulevard. While the City has not historically conducted bicycle counts, it is likely that the collision locations are popular bicycle routes, provide logical and direct north/south connections, and are near attractor or popular destinations.

Table 4-8: Top Collision Intersections

Intersection	No. of Collisions
3rd Ave & Norfolk St	7
Hwy 101 & Hillsdale Blvd	7
El Camino Real & Hillsdale Blvd	5
3rd Ave & San Mateo Dr	4
Delaware St & Tilton Ave	4
San Mateo Dr & Tilton Ave	4
Delaware St & 1st Ave	3
Delaware St & 2nd Ave	3
Delaware St & Bellevue Ave	3
Delaware St & Bermuda Dr	3
Hillsdale Blvd & Norfolk St	3
Poplar Ave & San Mateo Dr	3
San Mateo Dr & 4th Ave	3
Tilton Ave & Railroad Ave	3
Total	**55**

Further analysis of the data reveals a high number of collisions on Wednesdays. **Table 4-9** shows 21 percent of collisions occur on Wednesdays, while 12 to 15 percent of collisions occur the other days of the week. No factors are found to correlate with this trend. Wednesday collisions occurred throughout the City and not in concentrated areas.

Table 4-9: Collisions by Day of Week

Day of Week	% of Collisions
Monday	12%
Tuesday	12%
Wednesday	**21%**
Thursday	15%
Friday	15%
Saturday	11%
Sunday	14%

Identification of the most common violations in bicycle-related collisions and the locations where they occur can inform the City of possible engineering or education needs. A specific recurring violation can be the result of unclear traffic controls or roadways not designed for bicycle use. It can also be the result of bicyclists not aware of or complying with the "rules of the road" or not feeling comfortable riding with traffic. **Table 4-10** lists the top five most common traffic violations implicated in bicycle-related collisions for San Mateo and the specific locations where these violations most frequently occur.

The most common traffic violation is bicyclists riding on the wrong side of the road, which occurs on roadways with and without bikeways. South Delaware and South Norfolk Streets have bicycle lanes but also have a high number of "wrong side of the road" violations. Violators may not know the rules of the road or may not feel comfortable riding with traffic. In other circumstances, such as on El Camino Real, East 5th Street and East Hillsdale Avenue, the roadways do not provide bikeways and are designed to carry high traffic volumes.

Other frequent traffic violations include right of way, traffic signals and signs and improper turning. Again these violations may indicate that bicyclists or motorists do not know the rules of the road or choose not to follow them.

This analysis of violations informs the Plan's recommendations. These violations identify the need for bicycle and motorist education, outreach and direct and logical bikeways on or parallel to busy roadways.

Table 4-10: Common Violations in Bicycle Related Collisions Violations

Violation	% of Collisions	Locations where Violation Frequently Occurs
Wrong Side of Road	27%	• South Delaware Street (Bermuda Drive to 1st Avenue) • South Norfolk Street (2nd Avenue to Lago Street) • El Camino Real (Barneson Avenue to 41st Street) • East 5th Street (Laurel Avenue to Delaware Avenue) • East Hillsdale Avenue (Saratoga Drive to Norfolk Street)
Right of Way	16%	• Delaware Street (Bellevue Avenue to 9th Street)
Traffic Signals and Signs	14%	• South Norfolk Street and 3rd Street • South Delaware Street (Multiple Intersections) • Tilton Avenue (Multiple Intersections)
Other Hazardous Violation	11%	• South San Mateo Drive (3rd and 4th Streets) • South Delaware Street and East 4th Street • El Camino Real and Hillsdale Avenue
Improper Turning	10%	• South Delaware Street (Bermuda Drive and Saratoga Drive) • Palm Avenue (11th and 13th Streets)

Bicyclists were most commonly cited at fault for bicycle related collisions between 2003-2008. They were most at fault for riding on the wrong side of the road and disobeying traffic signals and signs. Motorists, including truck drivers, were at fault for 23 percent of collisions, mostly for disobeying bicyclist right of way. This data indicates a need for bicyclist and motorist education as well as the infrastructure improvements recommended in this plan. **Table 4-11** lists the traffic violations by the at fault party.

Table 4-11: Traffic Violation Type by Party at Fault

Violation	Bicycle	Vehicle	Not Stated	Other
Not Stated	3		5	
Unknown			7	
Under the influence	2	1	1	
Impeding Traffic		1		
Unsafe Speed	7	3		
Following Too Closely		1		
Wrong Side of Road	**59**		3	
Improper Passing	2	3		3
Unsafe Lane Change	1		1	
Improper Turning	11	8	3	
Right of Way	16	**18**	2	
Traffic Signals and Signs	**22**	9	1	
Other Equipment	1			
Other Hazardous Violation	17	5	4	
Other the Drive or Pedestrian			3	
Unsafe Starting or Backing	1	1		
Other Improper Driving			1	
Total	**142**	**43**	**31**	**3**
% Party at Fault	**62%**	**23%**	**14%**	**1%**

4.6. Community Identified Needs

The public outreach process for the Bicycle Master Plan included a community survey and a public workshop to gather information on resident and employee travel patterns in the City, opinions and suggestions on opportunities, challenges and potential facilities and programs from a large and diverse population of San Mateo residents. The survey is reproduced in **Appendix F**. The purpose of the survey was to help inform the development of bicycle facilities and programs as well as to serve as a benchmark for travel patterns.

4.6.1. Survey Approach

The survey was distributed in five ways to community members including those who bicycle and those who do not. It was open from May 1, 2010 through June 30, 2010. In total, the City received more than 600 survey responses. The survey instrument used throughout this effort is included as **Appendix F**.

Intercept Surveys

Intercept surveys of community members were collected in June 2010. Flyers with information on the plan, the survey and the survey website address were distributed at the following locations in the City:

- San Mateo Caltrain Station
- Whole Foods Grocery, Park Place
- Hillsdale Caltrain Station
- SamTrans Stop: El Camino Real at 4th Avenue
- 3rd Avenue and San Mateo Drive
- 3rd Avenue and B Street

Project Website

The survey was available on the project website (www.sanmateobikeplan.com) from May 1, 2010 through June 30, 2010. The City of San Mateo also posted the survey information on the City's home page and the City's Bike Information page.

Email Distribution

Local community groups were also notified of the survey effort through email newsletters. These groups include:

- San Mateo neighborhood associations
- United Homeowners Association
- Bicycle and pedestrian related advocacy organizations, including the Silicon Valley Bicycle Coalition (SVBC)
- Peninsula Traffic Congestion Relief Alliance newsletter recipients

Flyer Distribution

Survey flyers were distributed to:

- Public libraries (Main, Hillsdale and Marina)
- Community centers (Beresford, MLK and Central Park recreation centers)
- Bicycle shops (Cyclepath of San Mateo, The Sports Authority and Talbots Toyland)
- Peninsula Traffic Congestion Relief Alliance Bike to Work Day energizer stations
- Maker's Fair

Employee and Spanish Language Distribution

Surveys and flyers were distributed to the following organizations and retail locations to reach local employers and increase the response rate among San Mateo's Spanish speaking population.

- Worker Resource Center
- San Mateo Health Center
- Safeway stores
    - San Mateo (two)
    - Burlingame (at city limit)
    - Foster City (at city limit)

4.6.2. Community Workshop

In addition to the survey, a community workshop was held to gather input on where the public likes to bicycle, program areas, and where they would like to bicycle but are not comfortable doing so.

The workshop was held at San Mateo City Hall on July 14, 2010. In attendance were 41 members of the public including members of the Public Works Commission. At the workshop, the community provided input on suggested bikeways, areas of opportunities and challenges, and bicycle parking downtown.

4.6.3. Community Identified Needs

The following summarizes the desired programs and facilities identified by the community. This section begins with an overview of community bicycle ownership, use and typical travel patterns for trips less than five miles. Factors that prevent bicycling are then discussed followed by community suggested bikeways and policies for creating bicycle space. The section concludes with community identified needs for support facilities such as wayfinding signage and bicycle parking as well as programmatic needs.

Bicycle Ownership and Use

Of the survey respondents, 79 percent own a bicycle (**Figure 4-5**) and most, 94 percent, consider their bicycle to be in good working order. Despite this high rate of bicycle ownership, 59 percent of survey respondents stated they rode their bicycle less than five times in the last month. Of those surveyed, 16 percent state they ride their bicycle daily (**Figure 4-6**).

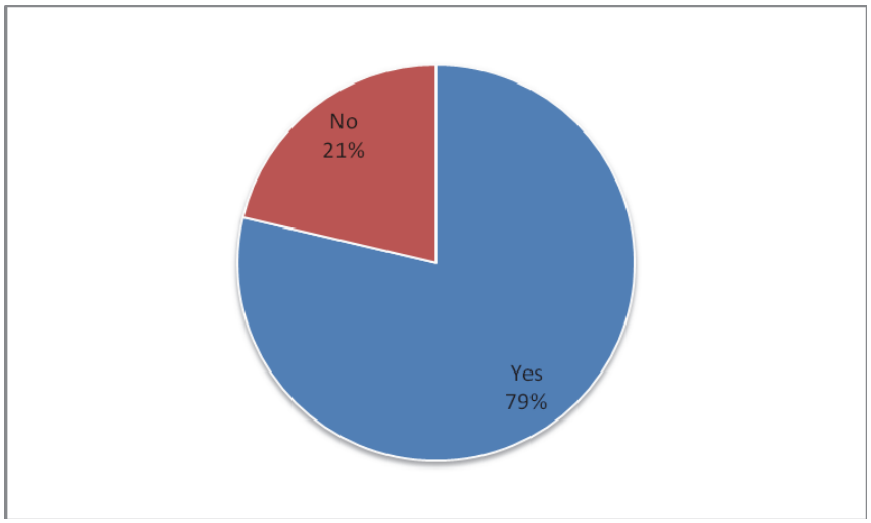

Figure 4-5: Survey Respondents Bicycle Ownership Distribution

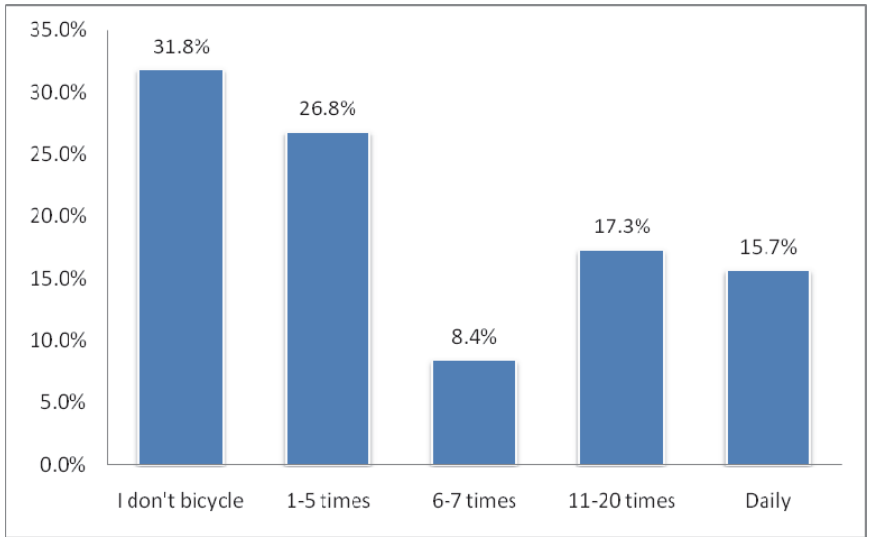

Figure 4-6: Times Respondents Bicycled in Past Month

Travel Patterns for Trips Less Than Five Miles

The majority of survey respondents, 64 percent, typically drive alone when traveling less than five miles (**Figure 4-7**), a trip that can be made in 30 minutes biking at a comfortable speed of 10 miles per hour. **Figure 4-8** shows this is a trip that for nearly 60 percent of respondents is an average bicycle ride.

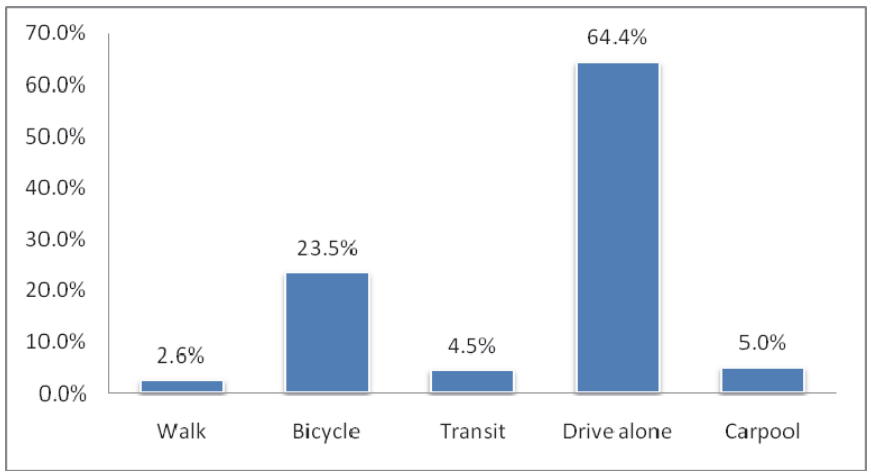

Figure 4-7: Respondent Mode of Choice for Trips Less than Five Miles

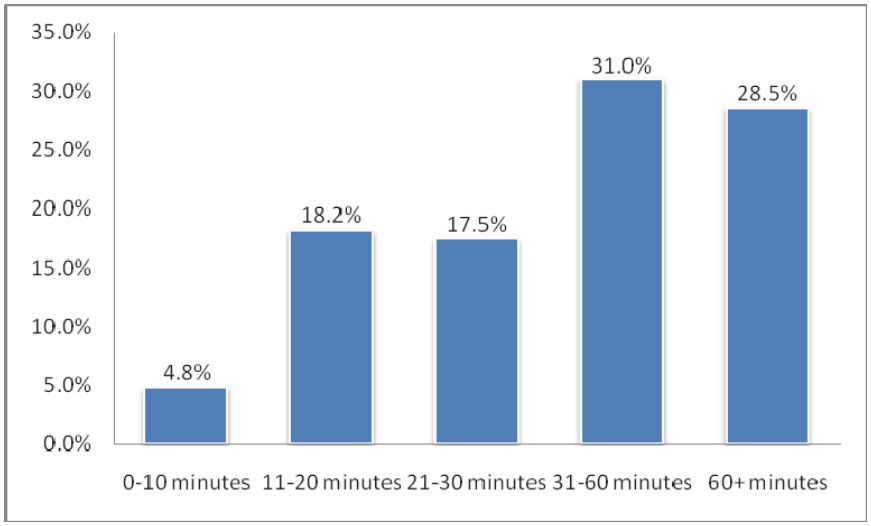

Figure 4-8: Average Time of Bicycle Ride

Factors Preventing Bicycling

Figure 4-9 shows that the most common reasons respondents cited as the reason they do not bike more often include that cars drive too fast or there are too many cars, there are no bikeways, they have to carry items and that destinations are too far away. Thirteen percent of respondents cited other reasons for not biking more often, including not having a bike, lack of time, poor weather, lack of shower and/or locker facilities at work, steep terrain and safety concerns. Other respondents stated they do not bike more often due to a lack of secure bike parking and because they travel with children.

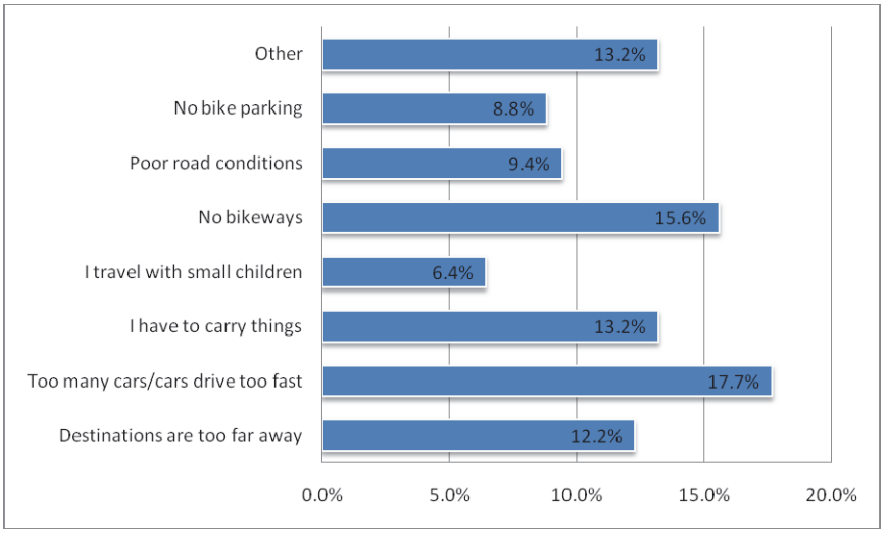

Figure 4-9: Factors Preventing More Bicycle Use

The responses indicate that respondents are not comfortable biking with cars and may feel more comfortable on separated bikeways or traffic calmed streets. Another common reason cited for not biking is the need to carry items. This can be addressed with information about how to travel by bicycle including the use of bicycle baskets, racks and panniers (bicycle bags).

Finally, respondents noted that destinations are too far away to bicycle. San Mateo's Sustainable Initiatives Plan notes that about 99 percent of all origins and destinations for trips within San Mateo are within five miles of each other (p.8). Many of the respondents noted that when they travel less than five miles they typically drive alone, however 60 percent of respondents normally bicycle more than 30 minutes, the time needed to travel five miles. The reason distance may be a concern may have to do with being uncomfortable traveling with cars, the lack of bikeways connecting to destinations, the lack of knowledge about how to carry items on a bicycle or time constraints.

Respondents indicated one of the reasons they do not bike more often is the lack of bikeways. In their survey responses, they indicated their preferred types of bicycle facilities to be off-street bike paths, bicycle boulevards and bike lanes. **Figure 4-10** indicates respondents prefer either a dedicated bicycle space such as a bike path or a bike lane or a bicycle boulevard. Bicycle Boulevards are shared low traffic volume roadways with various treatments that prioritize bicycle travel. Treatments may include oversized stencils and traffic calming devices. Respondents did not find bike routes, or shared-use travel lanes, a desirable bicycle facility. This was also reflected in respondent's reasons for not biking more often: cars drive too fast, there are too many cars and there are no bikeways.

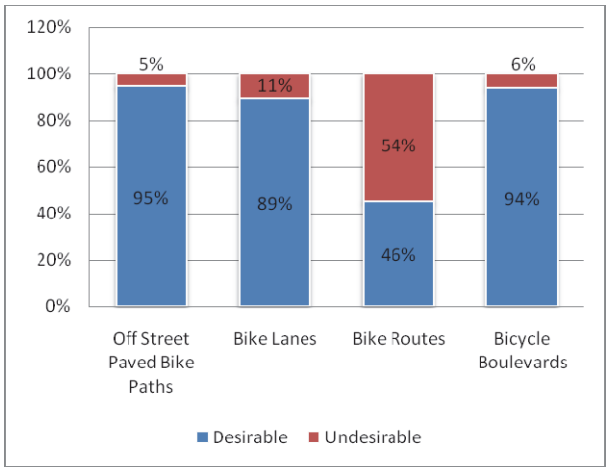

Figure 4-10: Bicycle Facility Preference

Community Suggested Bikeways

The community provided input on suggested bikeways, areas of opportunities and challenges, and bicycle parking downtown both at the workshop and on the project website.

Generally the community recommended:

- Improved crossings over US 101, SR 92 and El Camino Real
- Improved connections to Bay Trail, Downtown, San Mateo College, Hillsdale Shopping Center, schools
- North-South and East-West bikeways
- Recommended bikeway routes included a bike superhighway along the Caltrain corridor, bike path along the 16th Avenue Channel, and a bikeway on Claremont Street.
- Improved bikeway pavement maintenance

Figure 4-11 shows the community suggested bikeway facilities. **Figure 4-12** shows the community identified opportunities and challenges. Major community-identified opportunities include:

- Hwy 101 bicycle/pedestrian path
- Bicycle signage in the Downtown area
- Bike boulevards
- Good destinations or attractors

Major community-identified challenges include:

- Poor connection to Shoreline Park paths from western San Mateo
- Peninsula Ave. railroad crossing
- Idaho St. and Monte Diablo Ave.
- Kingston Ave. and Monte Diablo Ave.
- No facility connection at end of path at San Mateo Creek and N. Norfolk St.
- 19th Ave. and Hwy 101/92
- Pacific Blvd. and Saratoga Dr.
- 19th Ave. and Hwy 101/92

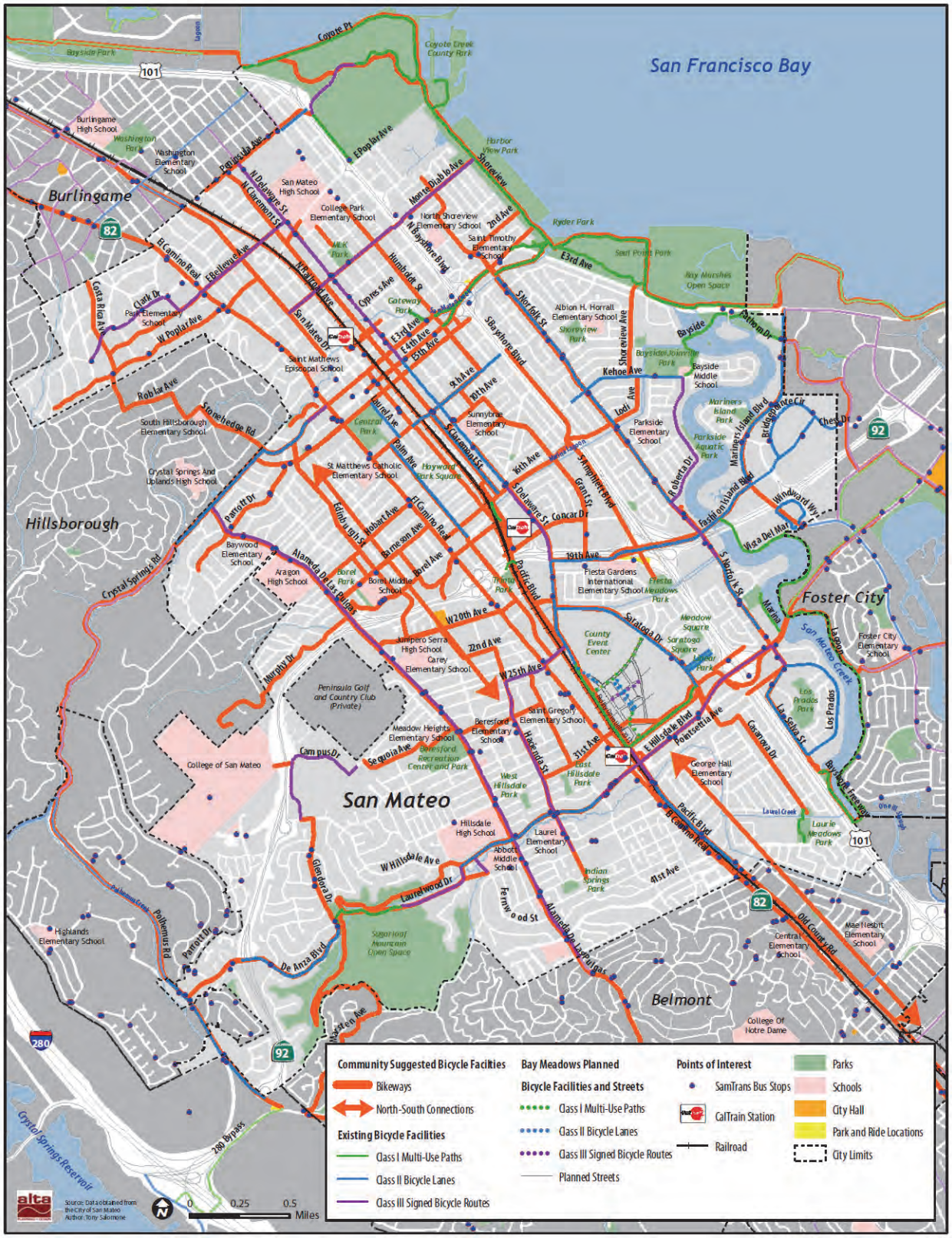

Figure 4-11: Community Identified Bikeways

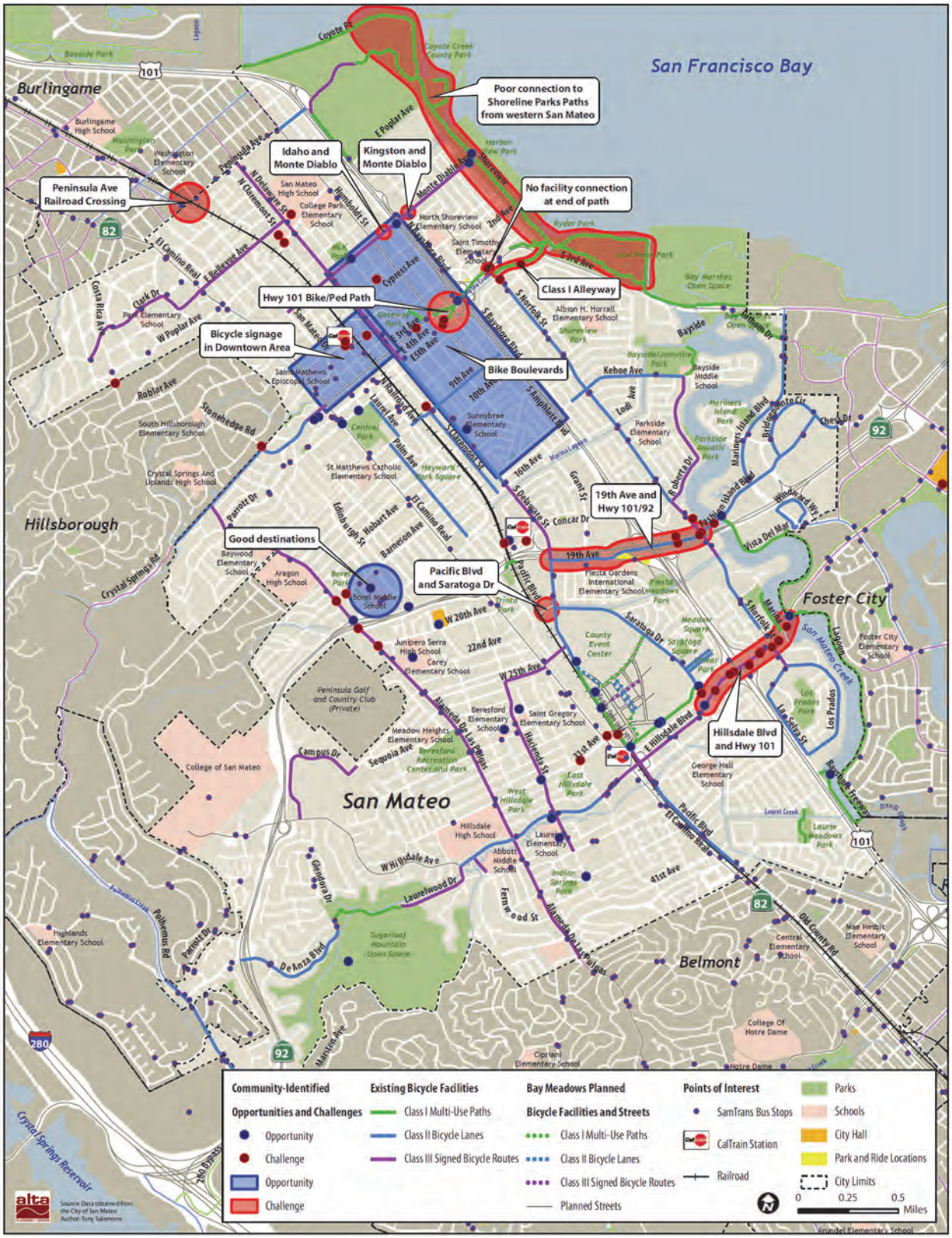

Figure 4-12: Community Idenfitied Opportunities and Challenges

Support for Creating Space for Bikeways

Dedicated bicycle space requires reallocation of the public right-of-way. The survey asked respondents what changes to city streets are acceptable to create space for bikes. Creation or expansion of bicycle space can be accomplished through travel lanes removal or narrowing, car parking removal, relocation or redesign, street widening and traffic calming.

Figure 4-13 shows respondents preferred methods to create or expand bicycle space include car parking relocation, street widening, traffic calming, redesign of on-street parking and travel lane narrowing. The majority of survey respondents supported replacing diagonal parking with parallel parking, car parking removal, travel lane narrowing and travel lane removal. Bicycle boulevards do not require the reallocation of space but are enhanced roadways that can include through traffic calming on residential streets. Eighty-four percent of respondents supported traffic calming.

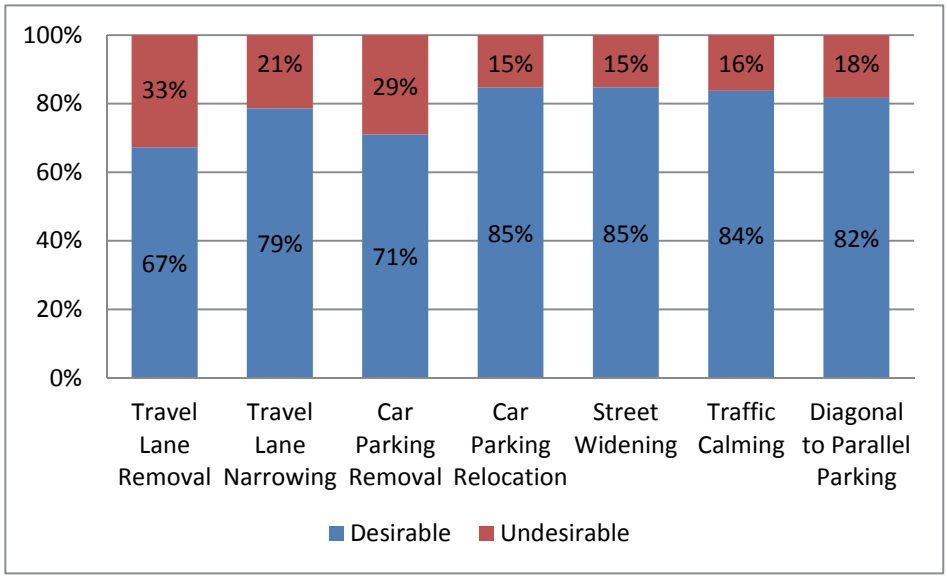

Figure 4-13: Street Modification Preference

When asked what would encourage them to bike more, respondents indicated their interest in more bike paths, improved safety from cars and more on-street bike lanes, more routes and more route and destination signage. In their open-ended responses, respondents expressed an interest in the provision of shower and locker facilities at work, a bike share program, improved accommodation for bikes on Caltrain and at Caltrain's San Mateo station and financial assistance to purchase a bicycle.

4.6.4. Wayfinding Signage

Bikeway wayfinding signage not only identifies a route, it can include directional and distance information to major destinations or connecting bikeways. Investment in wayfinding can greatly increase the transparency and visibility of the existing bicycle network as demonstrated by many Bay Area cities.

As described in the Design Guidelines, the California Manual on Traffic Control Devices and the California Highway Design Manual outline requirements for signage. However, these manuals do not require wayfinding signage, only identification signage. Community members identified the need for wayfinding signage.

4.6.5. Bicycle Parking

As San Mateo continues to build its bikeway network and more residents bicycle, bicycle parking will become an increasingly important issue. Some bicyclists currently park or lock their bikes along the transit routes at inappropriate locations, using street signs or trees near bus stops. Community members identified the need for bicycle parking at the community workshop by marking specific locations for proposed racks on workshop maps of downtown. **Figure 4-14** shows the community suggested downtown bike parking locations.

Other areas recommended for improved bike parking include:

- San Mateo's libraries: Main, Hillsdale and Marina
- Caltrain Stations
- Parks and recreational areas

The community also made the following bike parking related recommendations:

- Provide a map with locations of bike parking
- Place parking in a observed and convenient area
- Identify and consider for replacement bike racks that do not meet the City standard requirements (inverted u-rack)

Figure 4-14: Community Suggested Bike Parking Locations

4.6.6. Programmatic Needs

Bicycle programs can complement the bikeway infrastructure with encouragement, education, enforcement and evaluation. Community members identified need for the following programs:

- Encouragement
    - Bike tours and races to reintroduce bicycling as a fun activity
    - Street closures similar to San Francisco's Sunday Streets to encourage free health and community events where streets are opened to the community and closed to automobile traffic
    - Employer based bicycle encouragement programs including bicycle parking
    - Programs for seniors
- Education
    - Adult bike classes
    - Senior bike classes
    - Youth bike classes
- Enforcement
    - Targeted enforcement of traffic laws

4.7. Summary of Bicyclists Needs

Infrastructure and programmatic improvements are both needed in San Mateo. Infrastructure improvements such as bikeways are needed to connect attractors and generators, improve safety at high collision areas and provide a greater measure of protection for interested but concerned bicyclists. Other infrastructure improvements including signage and parking will support the on-street network. Programmatic improvements such as education, outreach and encouragement may help reduce conflict and also encourage more bicycling.

Bicycle attractors and generators such as parks, schools, event centers, retail and major employers are not well served by existing bikeways. While the City of San Mateo has invested in its bikeway network, it is fragmented. Additionally, the City has invested in both bike lanes and routes but community input indicates preference for paths and bike boulevards.

The need for bikeways to serve attractors is also evident in the bicycle related collision data. The highest rates of collisions occur near attractors near downtown, along Norfolk Street, El Camino Real and Hillsdale Boulevard. Investment in community preferred bikeways to community destinations as well as bicycle education and outreach is needed.

The US Census and survey data show the bicycle mode share to be lower than the City's goals. The community survey indicated the lack of bikeways and traffic speeds as the primary deterrents to bicycling more often. Traffic calming, bikeways on quiet streets may encourage more bicycling.

Collision data and the community survey also revealed programmatic needs. The collision analysis indicates bicycle education and outreach for both drivers and bicyclists about rights, responsibilities and the rule of the road are needed. Additionally, collision data suggest the need for bicycle facilities and spot improvements particularly at the high collision areas. As San Mateo's bikeway network is developed, bikeway map and a

distinctive wayfinding signage program will help bicyclists travel on bicycle priority streets. Bicycle parking at trip origin and destinations is also a community identified need.

Finally, the community survey revealed the need for employer based bicycle encouragement programs and outreach programs. These programs can include travel reimbursement; workplace shower and changing facilities; secure parking; company bicycle user groups; and promotional material on how to commute by bicycle.

The following chapters recommend programs and facilities intended to address these needs.

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5. Proposed Network Improvements

This chapter presents proposed bikeways and bicycle support facilities identified through input from the community, City staff and the needs analysis. The proposed improvements are intended to make bicycling more comfortable and accessible for bicyclist of all skill levels and trip purposes. This chapter presents the following improvement types:

- **Network Improvements** fill gaps in the existing network so the community has a seamless bicycle network to use.
- **Spot Improvements** identify specific locations for focused improvement.
- **Studies** identify potential improvements for consideration and further analysis.
- **Bicycle Parking** identifies key locations citywide for bicycle parking installation, a bike parking plan for downtown and a recommended bicycle parking ordinance.

5.1. Network Improvements

This section includes bikeway network, pavement markings and signage improvements as well as a Complete Streets policy recommendation. The bikeway recommendations include over 36 miles of new facilities to increase San Mateo's bikeway connectivity and to create a comprehensive, safe, and logical network. At full build-out of the proposed bikeways, San Mateo will have 76 bikeway miles, improving connections from residential neighborhoods to attractors such as retail, transit and jobs. The pavement markings and signage will support the bikeway network by providing network identify. The Complete Streets policy will encourage future San Mateo transportation network design to consider all users.

Figure 5-1 shows the existing and proposed bikeway network and **Tables 5-1** through **5-3** list the bikeways by type and mileage. The proposed bikeways were developed with consideration for roadway widths, traffic volumes and speeds, connections to destinations. This Plan proposes four bikeway types, listed below and described in Sections 5.1.1 through 5.1.4.

- Class I Multi-Use Paths
- Class II Bicycle Lanes
- Class III Bicycle Routes
- Class III Bicycle Routes with Shared Lane Markings

The proposed bikeway network also includes bikeways along the North-South Bikeway. This bikeway is a priority corridor in the San Mateo County Comprehensive Bicycle and Pedestrian Master Plan. The North-South Bikeway is highlighted in yellow on **Figure 5-1**.

In addition to these standard bikeway types, San Mateo may consider the development of a bicycle boulevard system, to be designed and developed as this Plan is implemented in conjunction with the City's Neighborhood Traffic Management Plan (NMTP)[5-1] and subject to the City's traffic calming policy and procedures, developed in 2006. The design parameters for bicycle boulevards are introduced in this document in Appendix A, Design Guidelines, Guideline A.6.5.

[5-1] The City of San Mateo's website provides detailed information on traffic calming policies, procedures and accepted techniques. http://www.ci.sanmateo.ca.us/index.aspx?NID=2123

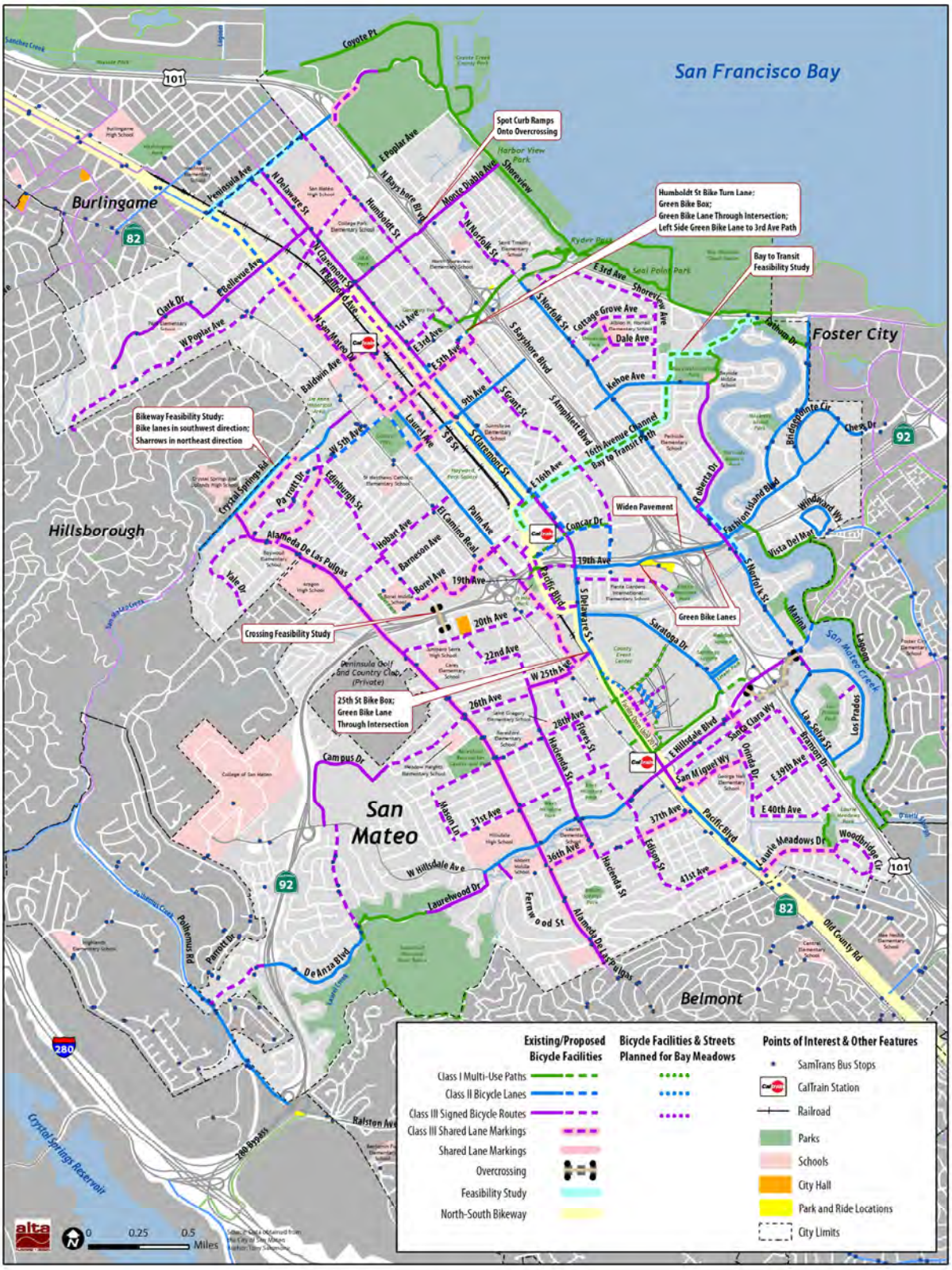


Figure 5-1: San Mateo Recommended Bikeway Network

5.1.1. Class I Bicycle Paths

A Class I Bicycle Path (shown in **Figure 5-2**) provides for bicycle and pedestrian travel on a paved right-of-way completely separated from streets or highways. These recommended facilities can be popular for recreational bicycling as well as for commuting.

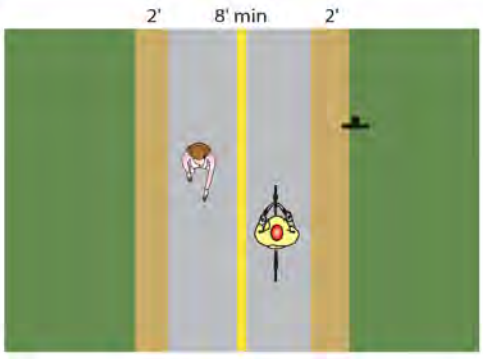


Figure 5-2: Class I Bicycle Path

Recommendations

The recommended Class I Paths include those proposed in the Hillsdale Station Area Plan and a "Bay to Transit" connector path along the 16th Avenue channel. This 16th Avenue Channel Path can serve recreation and commuting needs and connect children to school. The path will connect the Hayward Park Caltrain Station to the residential communities east, to the Bay Trail and the Shoreline Parks. It will also provide an additional and community-identified need to cross over US 101.

Table 5-1: Recommended Class I Paths and Crossings

Location	Bikeway Class	From	To	Length (Miles)
28th Ave Extension	I	El Camino Real	New Delaware St	0.09
31st Ave Extension	I	El Camino Real	Caltrain	0.22
Bay to Transit Path	I	17th Ave	Anchor Rd	1.82
Concar Dr	I	S Delaware St	Pacific Blvd	0.20
Concar Dr	I	S Grant St	S Delaware St	0.23
Franklin Path	I	Pacific Boulevard	Hillsdale Boulevard	0.17
Hillsdale Overcrossing	Crossing	Hillsdale Blvd	S Norfolk St	0.33
Laguna Vista Path	I	Los Prados	Laguna Vista	0.10
Laurel Woods/ Sugarloaf Park Path	I	Laurelwood Dr	Laurel Creek Rd	0.88
Rand Street Bridge	Crossing	Rand Street	San Mateo Creek	0.10
			Class I Total Miles	**4.14**

5.1.2. Class II Bicycle Lanes

Bicycle lanes provide a signed, striped and stenciled lane for one-way travel on both sides of a roadway. Class II bicycle lanes are often used by commuters, bicycle enthusiasts and casual riders (if on lower volume and lower speed roadways). Bicycle lanes are often recommended on roadways with moderate traffic volumes and speeds and where separation of users facilitates safer operation.

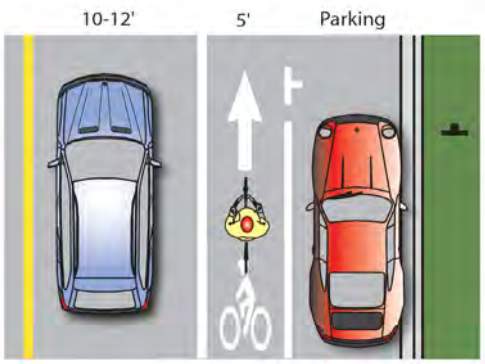


Figure 5-3: Class II Bike Lane

Recommendations

Class II Bicycle Lanes are recommended on higher volume roadways that serve as important connections in the bikeway network.

Table 5-2: Recommended Class II Bike Lanes

Location	Bikeway Class	From	To	Length (Miles)
Central Park Bike Lane	II	9th Ave	E 5th Ave	0.23
Concar Dr	II	Hayward Park Caltrain	Grant Street	0.43
E 4th Ave	II	S Grant St	S Humboldt St	0.07
E 5th Ave	II	El Camino Real	San Mateo Drive	0.13
Hillsdale Lagoon Bridge	II	S Norfolk St	City Limits	0.17
N San Mateo Dr	II	Peninsula Ave	W Poplar Ave	0.52
Peninsula Ave	II	Humboldt St	N San Mateo Dr	0.62
S Grant St	II	19th Ave	Concar Dr	0.20
S Norfolk St	II	Marina Lagoon	Roberta Dr	0.36
S Norfolk St	II	520' NW of E Hillsdale Blvd	E Hillsdale Blvd	0.10
W 5th Ave	II	Maple Street	El Camino Real	0.22
			Class II Total Miles	**3.03**

5.1.3. Class III Bicycle Routes

Class III Bicycle Routes provide for shared roadway use and are generally only identified with signing. Bicycle Routes may have a wide travel lane or shoulder that allow for parallel travel with automobiles.

Recommendations

The recommended Bicycle Routes provide connections through residential areas connecting residents to schools, retail districts and other community destinations.

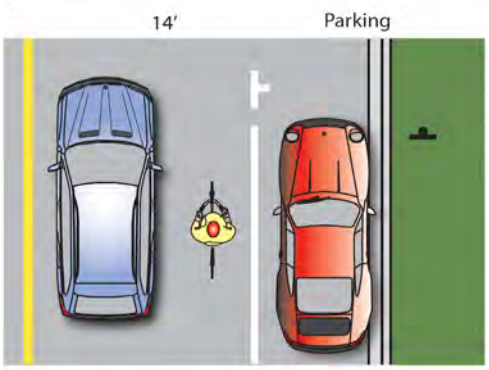


Figure 5-4: Class III Bicycle Route

Table 5-3: Recommended Class III Bike Routes

Location	Bikeway Class	From	To	Length (Miles)
17th Ave/Caltrain Access	III	Palm Ave	19th Ave	0.39
19th Ave	III	Palm Ave	Pacific Ave	0.07
19th Ave	III	Pacific Boulevard	19th Ave	0.19
22nd Ave	III	Isabelle Ave	Hacienda St	0.17
26th Ave	III	Campus Dr	Hacienda St	0.92
28th Ave	III	Mason Ln	El Camino Real	0.94
2nd Ave	III	S Fremont St	S Humboldt St	0.14
2nd Ave	III	S Delaware St	S Fremont St	0.13
31st Ave	III	Mason Ln	Edison St	0.86
37th Ave	III	Hacienda St	Edison St	0.24
41st Ave	III	Hacienda St	Beresford St	0.18
Branson Dr	III	Santa Clara Wy	40th Ave	0.54
Casanova Dr	III	E 40th Ave	Laurie Meadows Dr	0.03
Columbia -Yale Dr Rt	III	Alameda de las Pulgas	City Limits	0.56
Cottage Grove Ave	III	S Norfolk St	Shoreview Ave	0.46
Dale Ave	III	S Norfolk St	Shoreview Ave	0.36
De Anza Blvd	III	State Hwy 92	Polhemus Rd	0.34
E 16th Ave	III	S Claremont Dr	S Railroad Ave	0.05
E 39th Ave	III	Orinda Dr	Branson Dr	0.36
E 40th Ave	III	Branson Dr	Orinda Dr	0.47
E Hillsdale Ct	III	E Hillsdale Blvd	Hillsdale Overcrossing	0.21
Edinburgh -Virginia St Rt	III	Borel Ave	W 3rd Ave	0.95
Edison St	III	31st Ave	41st Ave	0.76
Flores St	III	W 25th St	31st Ave	0.50
Franklin St	III	Parrott Dr	Virginia Ave	0.06
Glendora Dr	III	De Anza Blvd	W Hillsdale Blvd	0.54

Location	Bikeway Class	From	To	Length (Miles)
Hacienda St	III	22nd Ave	W 25th Ave	0.18
Hobart Ave - 12th Ave Rt	III	Alameda de las Pulgas	Palm Ave	0.71
Humboldt St	III	Peninsula Ave	E 3rd Ave	1.22
Huron Ave - Norfolk St Rt	III	Monte Diablo Ave	E 3rd Ave	0.54
Isabelle Ave	III	20th Ave	22nd Ave	0.18
Marine View Ave	III	Seagate Dr	City Limit	0.02
Mason Ln	III	31st Ave	28th Ave	0.26
N Claremont St	III	Peninsula Ave	1st Ave	1.08
Orinda Dr	III	40th Ave	Santa Clara Way	0.38
Pacific Blvd	III	Concar Dr	S Delaware St	0.38
Palm Ave	III	South Blvd	19th Ave	0.26
Parrott Dr	III	Alameda de las Pulgas	Franklin St	0.47
Rand St	III	Shoreview Ave	San Mateo Creek	0.06
S Fremont St	III	2nd Ave	2nd Ave NW of Gateway Park	0.03
S Grant St	III	Concar Dr	E 4th Ave	1.24
S Humboldt St	III	E 5th Ave	E 4th Ave	0.06
Santa Clara Wy	III	Branson Dr	Orinda Dr	0.29
Seagate Dr	III	Woodbridge Cir	Marine View Ave	0.02
Shoreview Ave	III	S Norfolk St	Kehoe Ave	1.09
W 20th Ave	III	Alameda de las Pulgas	Palm Ave	0.74
W 5th Ave	III	Virginia Ave	Maple St	0.08
W Poplar Ave	III	City Limits (Glendale Dr)	Humboldt St	1.92
Woodbridge Cir	III	Laurie Meadows Dr	Seagate Dr	0.53
			Class III Total Miles	**22.17**

5.1.4. Class III Bicycle Routes with Shared Lane Markings

Class III Bicycle Routes with Shared Lane Markings (SLMs) are signed bicycle routes (see Section 5.1.3) with shared lane marking stencils in the travel lane.

Class III Bicycle Routes with SLMs are proposed on narrow roadways without wide travels lanes, roadways with high street-parking turnover in retail districts, and near schools to facilitate student travel. These bikeways will help bicycle mobility and access while increasing driver and bicycle awareness.

The 2010 California Manual on Uniform Traffic Control Devices (MUTCD) identifies that SLMs shall only be used on roadways with parallel parking and placed at minimum of 11 feet from the curb face. The Draft 2011 California MUTCD gives local engineers greater discretion with SLM placement on roadways with and

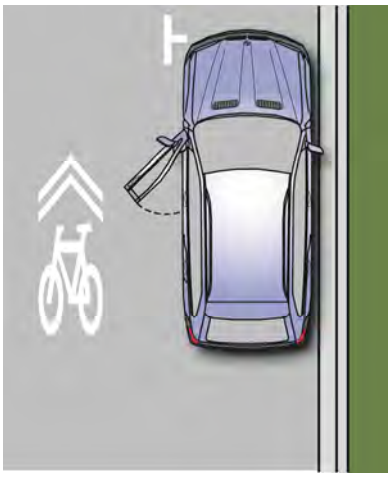


Figure 5-5: Class III Shared Lane Markings

without parking. The Draft 2011 California MUTCD reflects standards in the 2009 National MUTCD.

Recommendations

This Plan recommends SLMs be used on Class III Bicycle Routes where there are narrow travel lanes, high parking turn over, when bicyclists may need assistance with lane positioning, and where drivers may need additional notice to expect bicyclists regardless of the auto parking configuration. This Plan also recommends the SLMs be placed in the center of the travel lane to reduce maintenance and to direct bicyclists outside the door zone.

Table 5-4: Recommended Class III Bike Routes with SLMs

Location	Bikeway Class	From	To	Length (Miles)
17th Ave	III + SLM	Palm Ave	El Camino Real	0.10
1st Ave	III + SLM	B St	Claremont St	0.12
36th Ave	III + SLM	Hacienda St	Alameda De Las Pulgas	0.24
37th Ave	III + SLM	Edison St	El Camino Real	0.27
41st Ave	III + SLM	Beresford St	El Camino Real	0.15
9th Ave	III + SLM	Palm Ave	S B St	0.14
Alameda de las Pulgas	III+SLM	Crystal Springs Rd	La Casa Ave	3.00
Badwin Ave	III + SLM	S B St	N San Mateo Dr	0.11
Borel Ave	III + SLM	Bovet Rd	Edinburgh St	0.15
Bovet Rd	III + SLM	El Camino Real	Borel Ave	0.29
Coyote Pt Dr	III + SLM	Bayshore Blvd	end of Coyote Point Dr	0.21
Crystal Springs Rd	III + SLM	Alameda de las Pulgas	W 3rd Ave	0.39
E 5th Ave	III + SLM	San Mateo Dr	S Humboldt St	0.57
Harvard Rd	III + SLM	Nevada Ave	Virginia Ave	0.06
Laurie Meadows Dr	III + SLM	Pacific Blvd	Woodbridge Cir	0.41
N Claremont St	III + SLM	1st Ave	9th Ave	0.50
N San Mateo Dr	III + SLM	W POPLAR AVE	W 5th Ave	0.84
Nevada Ave	III + SLM	Alameda De Las Pulgas	Harvard Rd	0.24
Ocean View Ave	III + SLM	Cottage Grove Ave	Dale Ave	0.14
Otay Ave	III + SLM	Pacific Blvd	San Miguel Wy	0.06
Palm Ave	III + SLM	19th Ave	E 25th Ave	0.49
S B St	III + SLM	Baldwin Ave	9TH AVE	0.54
S Delaware St	III + SLM	E 16th Ave	Concar Dr	0.27
San Miguel Wy	III + SLM	Otay Ave	Orinda Dr	0.31
Saratoga Dr	III + SLM	Hillsdale Blvd	Santa Clara Way	0.12
Virginia Ave	III + SLM	Harvard Rd	Edinburgh St	0.18
W 25th Ave	III + SLM	Hacienda St	S Delaware St	0.35
			Class III + SLM Total Miles	**10.25**

5.1.5. Caltrain Station Area Plans

Bicycle access to the three Caltrain stations is of key importance for San Mateo residents and towards increasing bicycle mode share. The 2008 Caltrain Bicycle Access and Parking Plan addresses some access and parking challenges to the Downtown and Hillsdale Caltrain Stations but does not include the Hayward Park Station nor does it include information on existing or proposed connecting bikeways. This plan expands on that effort highlighting identified existing and planned station access routes and bike parking improvements for all three San Mateo Caltrain Stations.

The City can not directly improve bicycle facilities on Caltrain right-of-way including train capacity, bicycle access through stations and bicycle parking at stations. However, it can improve access to the stations on public roads and recommend improvements on Caltrain property. Recommended improvements for implementation by Caltrain are followed by: "(Caltrain)."

In addition to the station area improvement plans addressed here, future station area planning considerations may include bicycle sharing. Bicycle sharing is an innovative approach to providing bicycles for short-term rental and membership-based use in high density area and to enhance access to major transit. In 2011, the Metropolitan Transportation Commission (MTC) and Bay Area Air Quality Management District (BAAQMD) initiated planning for a bicycle share pilot program for San Francisco and the Caltrain corridor. The City of San Mateo is not currently a part of this pilot, but if the pilot is successful the region may elect to expand to additional stations and geographic areas. Should this program expand to San Mateo Caltrain stations, it will become increasingly important to provide high-quality bicycle infrastructure connecting stations to surrounding land uses.

Downtown San Mateo Caltrain Station Access Plan

Access Descriptions

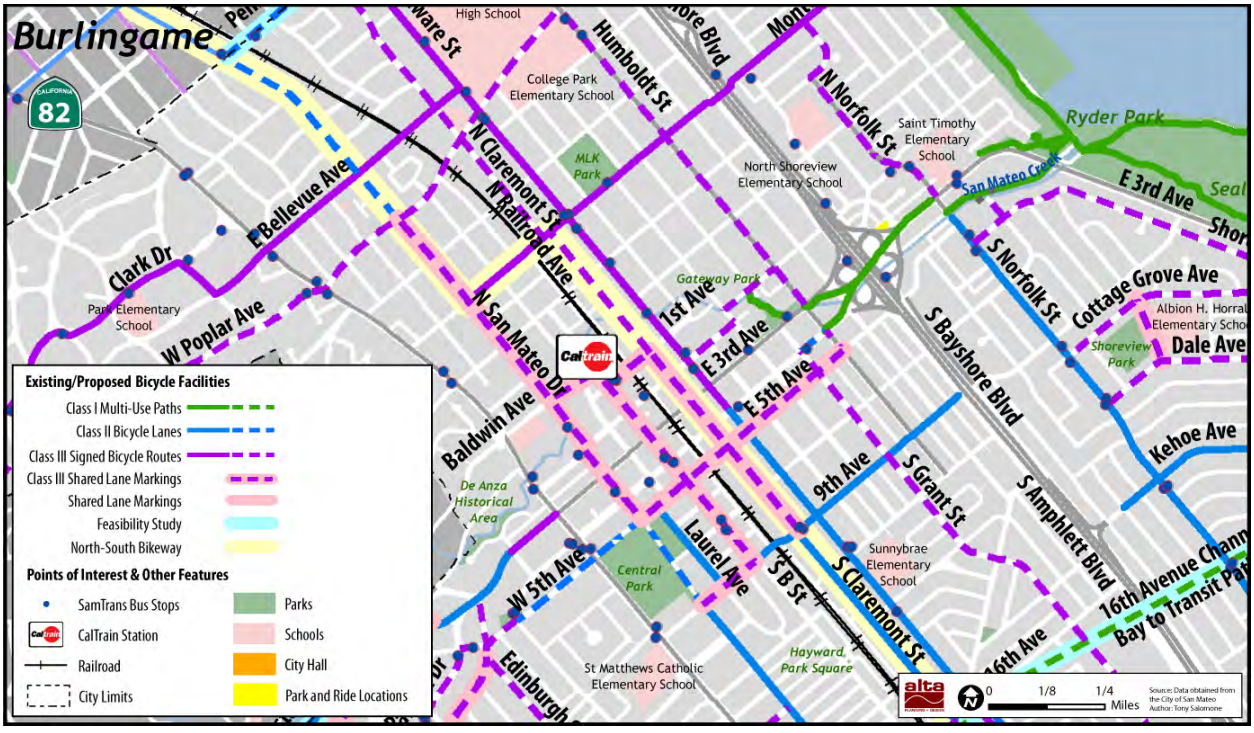
Description:

The Downtown San Mateo Caltrain Station is in the northeast corner of the downtown area adjacent to the heart of downtown and surrounded by multifamily and single family homes. The station is not served with existing bikeways however it does have 24 long-term rental bicycle lockers and bicycle racks that accommodate six bicycles.

Recommendations:

1. Install Class III Bike Routes with Shared Lane Markings on B Street and N Claremont St.
2. Convert/replace 18 existing keyed bicycle lockers with 18 electronic lockers. (Caltrain)
3. Add 18 new electronic lockers. (Caltrain)
4. Relocate existing bicycle racks to the station plaza area for better convenience and visibility. (Caltrain)
5. Consider implementation of a Bike Station or similar facility. (Caltrain)

Access Map



Hayward Park Caltrain Station Access Plan

Access Descriptions

Description:

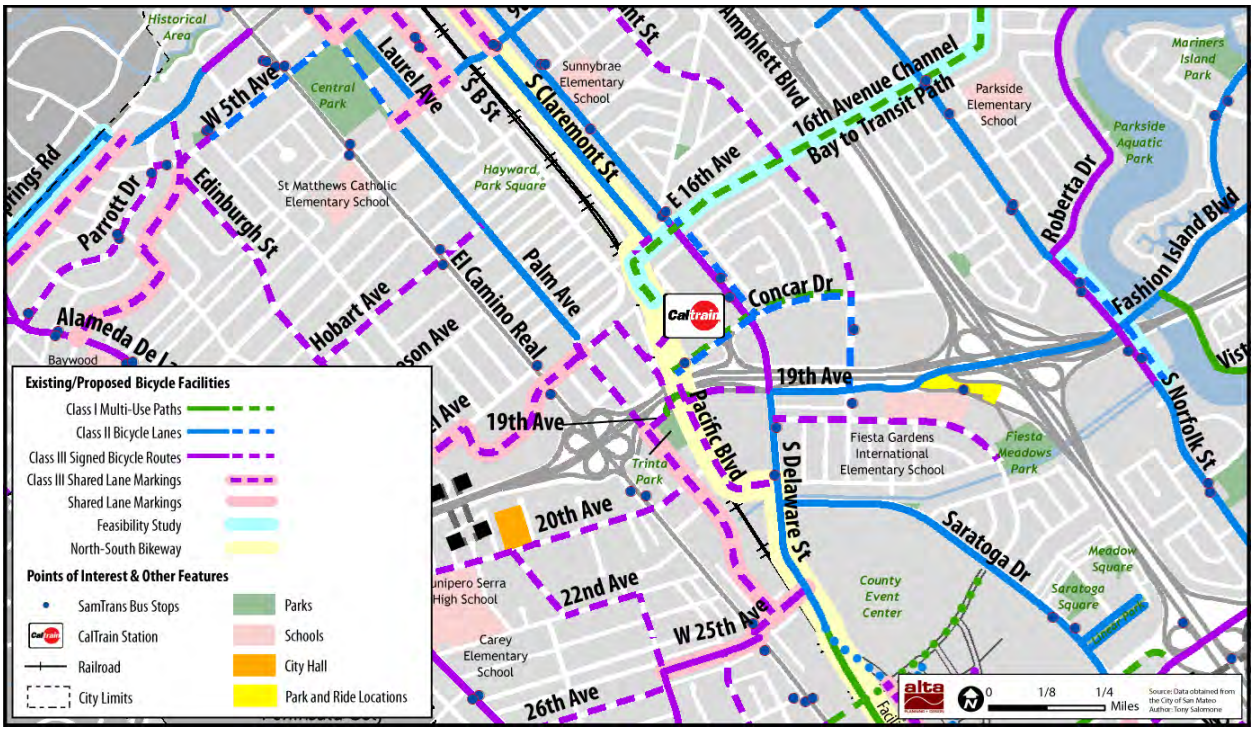
The Hayward Park Caltrain Station is in the physical center of the city. Residential communities lay to the east and west however access is limited by large parcels, limited roadways, and limited rail crossings. Access from the south is restricted by Highway 92. The station is not served with existing bikeways however it does have 12 long-term rental bicycle lockers and no bicycle racks.

Recommendations:

1. Install Class I Multi-Use Path along the north side of Concar Drive between Grant Street and the Station.
2. Install Class I Multi-Use Path along 16th Avenue Channel from Hayward Park Caltrain Station to San Francisco Bay Trail.
3. Install Class II Bike Lanes along the north side of Concar Drive between Grant Street and the Station.
4. Install Class III Bike Route on Pacific Boulevard between Delaware Street and the Station.
5. Install Class III Bike Route on 19th Avenue between Palm Avenue and Leslie Street.
6. Install Class III Bike Route on Leslie Street between 19th Avenue and 17th Avenue.
7. Install Class III Bike Route on 17th Avenue between Palm Avenue and Leslie Street.
8. Install Class III Bike Route on 20th Avenue between Alameda de las Pulgas to Palm Avenue.
9. Install Class III Bike Route with Shared Lane Markings on Bovet Road between Borel Avenue and El Camino Real.
10. Convert/replace 12 existing keyed bicycle lockers with 18 electronic lockers.

This Plan supports the development of new bicycle facilities in 31st Avenue between Edison Street and El Camino Real in conjunction with the redevelopment of that portion of the Hillsdale Shopping center in the case where a configuration can be developed that provides a balance of auto, bicycle and pedestrian circulation on 31st Avenue.

Access Map



Hillsdale Caltrain Station Access Plan

Access Descriptions

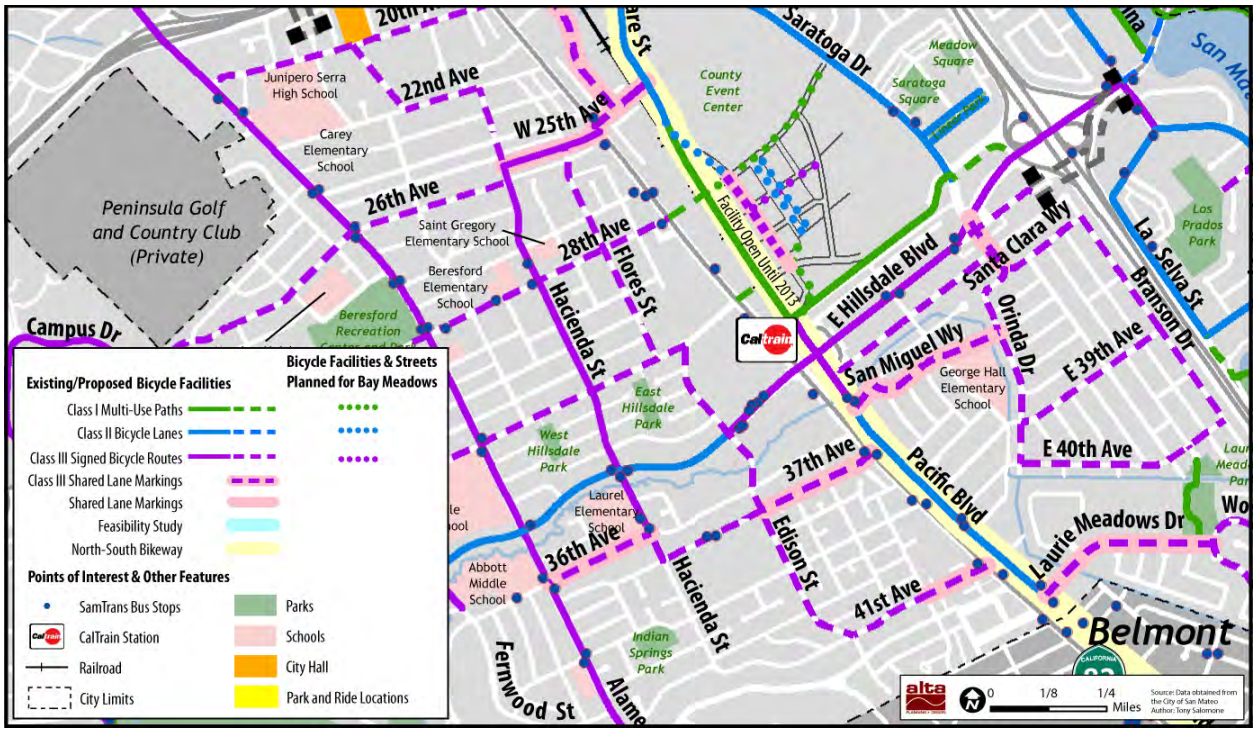
Description:

The Hillsdale San Mateo Caltrain Station is in the southern portion of the city. It is adjacent to the Hillsdale Shopping Center and a planned transit oriented development at the former Bay Meadows site. Residential communities lay to the northwest and south east however major roadways limit bicycle access from these communities. The station is currently served with a Class I path to Saratoga Drive, a temporary paved path that runs north-south along the rail line and Class III Bike Routes from the south on East Hillsdale Boulevard and Pacific Boulevard. Existing bicycle parking includes 22 long-term rental bicycle lockers and 12 bicycle racks.

Recommendations:

1. Implement proposed bikeway network presented in the Bay Meadows Transit Oriented Development Site Plan and Architectural Review documents.
2. Implement proposed bikeways in the Hillsdale Station Area Plan including:
    a) Class I Multi-Use Path on 31st Avenue between El Camino Real and Edison Street
    b) Class I Multi-Use Path on 28th Avenue between El Camino Real and proposed station to the east.
    c) Class III Bike Route on Edison Street between Hillsdale Boulevard and 31st Avenue
    d) Class III Bike Route on Flores Street between 31st Avenue and 25th Avenue
    e) Class III Bike Route on 28th Avenue between El Camino Real and Flores Street.
3. Install Class III Bike Route on 31st Avenue between Edison Street and Monterey Street.
4. Install Class III Bike Route on 28th Avenue between Flores Street and Hacienda Street.
5. Replace 6 existing keyed bicycle lockers with 35 electronic lockers in the west parking lot. (Caltrain)
6. Install 5 bicycle racks in each parking lot near the platform entrance stairways. (Caltrain)
7. Consider installation of bicycle wheel channels on stairways for easier access to and from platforms. (Caltrain)

Access Map



5.1.6. Standard Identification Signage

All bikeways in the City should conform to the signing standards identified in the Caltrans Highway Design Manual and/or the California Manual on Uniform Traffic Control Devices. These documents provide specific guidance on the type and location of signing for bicycle facilities. Appendix A provides specific design guidelines.

5.1.7. Wayfinding Signage

Wayfinding signs direct bicyclists along the bicycle network and to community destinations. These signs may also include "distance to" information, which displays mileage to community destinations.

Recommendations

This Plan recommends installation of CAMUTCD wayfinding signs at decision points and confirmation signs that display destinations and mileage.

Decision signs (**Figure 5-6**) mark the junction of two or more bikeways. Decision signs are comprised of a Bicycle Route Guide Sign (D11-1) and a Destination Supplemental Sign (D1-1b). Decision signs are located on the near-side of intersections. They include destinations and their associated directional arrows, but not distances.

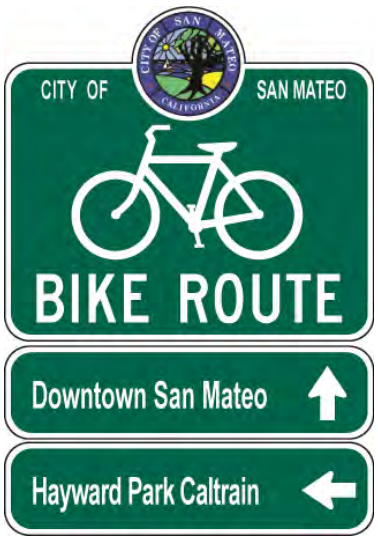


Figure 5-6: Example Decision Wayfinding Sign

Confirmation signs (**Figure 5-7**) confirm that a cyclist is on a designated bikeway. Each confirmation sign includes a Bicycle Route Guide Sign (D11-1) and a Destination Supplemental Sign (D1-1b). Confirmation signs are located mid-block or on the far-side of intersections. Confirmation signs include destinations and their associated distances, but not directional arrows.

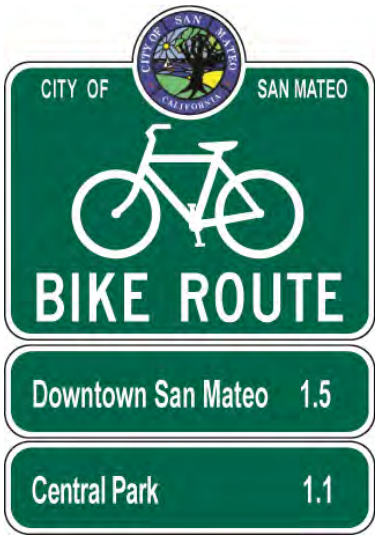


Figure 5-7: Example Confirmation Wayfinding Sign

Wayfinding signs may follow CAMUTCD standards, which use additional plaques that display destinations and mileage. The City would mount these plaques under existing bike route and lane signs. Alternatively, the City may decide to design guide signs that exhibit a unique symbol of San Mateo. These signs display community's identity and support of bicyclists.

The City may add a graphic to the left of "Bike Route" that symbolizes the community's unique character.

Sign Placement Principles

The following principles inform the placement of individual signs:

1. A confirmation sign will be located at the beginning of each bikeway.
2. When a bikeway turns, a turn sign will be located in advance of the turn (e.g., near-side of the intersection).
3. When bikeways intersect, a decision sign will be located on the near-side of each intersection approach.
4. To allow adequate notification of left turns, the decision or turn sign should be placed a distance before the intersection based on the number of lanes the bicyclist must merge across in order to make a legal left turn:
   a. Zero lane merge: 25'
   b. One lane merge: 100'
   c. Two lane merge: 200'

   The decision or turn sign should always be located in the block immediately preceding the junction or turn.
5. Confirmation signs will be located at intervals of one-half mile to one mile, based on the density of streets and intersecting bikeways (e.g., Downtown versus the western residential neighborhoods). It is desirable for confirmation signs to be located following decision signs on the far-side of intersections at the first convenient installation location.
6. Confirmation signs should be located immediately following bikeway junctions on streets that do not have bicycle lanes or shared lane markings (e.g., in Downtown San Mateo).

Sign Frequency

In general, there should be four to five wayfinding, two decision, and two confirmation signs for each directional mile of bikeway. The actual number of signs should be determined by the number of decision points along the signed route.

Supported Destinations

Bikeway wayfinding signage can be organized into three categories based on regional significance and travel distance:

1. Primary destinations include adjoining and/or en route jurisdictions and downtown that are located at distances up to five miles.
2. Secondary destinations consist of transit stations and local shopping or residential districts that are located at distances up to two miles.
3. Tertiary destinations include parks, landmarks, colleges, high schools, hospitals, and bikeways/trails.

Table 5-5, **Table 5-6**, and **Table 5-7** list potential primary, secondary and tertiary destinations within and near San Mateo with guidance on how distances are measured. Destination, direction, and distance information will be included on designated bikeways. It is recommended that the City departments work together to identify the signage destinations.

Table 5-5: Primary Destinations: Distances up to Five Miles

Destination	Sign Content	Distance Measured From
Belmont		
Burlingame		
Foster City		
Hillsborough		
Downtown San Mateo		

Table 5-6: Secondary Destinations: Distances up to Two Miles

Destination	Sign Content	Distance Measured From
Caltrain Stations		
Hayward Park		
Hillsdale		
San Mateo		
Districts		
Bridgepointe Shopping Center		
Hillsdale Shopping Center		

Table 5-7: Tertiary Destinations: Distances up to One Mile

Destination	Sign Content	Distance Measured From
Other Destinations		
City Hall		
Hillsdale Library		
Main Library		
Marina Library		
San Mateo County Event Center		
Hospitals		
San Mateo Medical Center		
Mills Health Center		
Colleges		
College of San Mateo		
High Schools		
Aragon High School		
Hillsdale High School		
Junipero Serra High School		
San Mateo High School		
Parks		
Bay Marshes Open Space		
Central Park and Recreation Center		
Coyote Point Recreation Area		
Shoreline Park		

Destination	Sign Content	Distance Measured From
Sugarloaf Mountain		
Trails		
Bay Trail		
Shoreline Path		

Pilot Corridor Wayfinding Signage Plan

To illustrate sign placement and frequency, a sample wayfinding plan for Downtown San Mateo and the Hayward Park Caltrain Station is presented below in **Figure 5-10**. **Figure 5-8** and **Figure 5-9** present sample decision and confirmation signage for one location along this route. Decision signs are placed along bikeways prior to bikeway junctions to direct bicyclists to the preferred route. Confirmation signs are placed along the preferred route following bikeway and non-bikeway junctions. Signs are placed at maximum half-mile intervals.

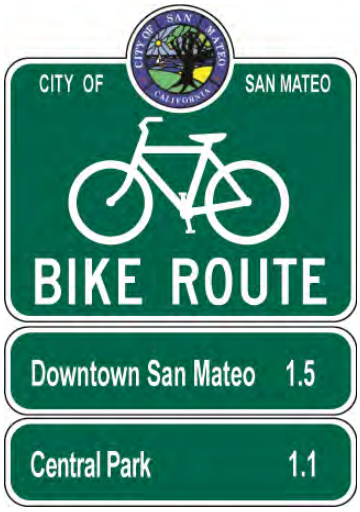


Figure 5-8: Sample Confirmation Sign

(for location along 9th Ave. west of S. Claremont St.)

Kaiser Path Access Wayfinding Project

The new Kaiser facility at the corner of Saratoga Drive and Franklin Parkway provides a multi-use path around the perimeter of the property. Accessing this path can be confusing, especially for bicyclists approaching the path on eastbound Franklin Parkway. This Plan recommends the City install decision signs on all legs of the Saratoga Drive and Franklin Parkway intersection to direct bicyclists continuing eastbound onto the Kaiser path, in addition to directing bicyclists traveling other directions to respective destinations.

3rd Avenue at Humboldt Street Access Wayfinding Project

The north fork of the 3rd Avenue median path brings users to the corner of 3rd Avenue and Humboldt Street. It is not clear to users how to leave the path and enter the roadway and/or bicycle network. This Plan recommends the City install wayfinding signage directing users on how to enter the network and list key destinations.

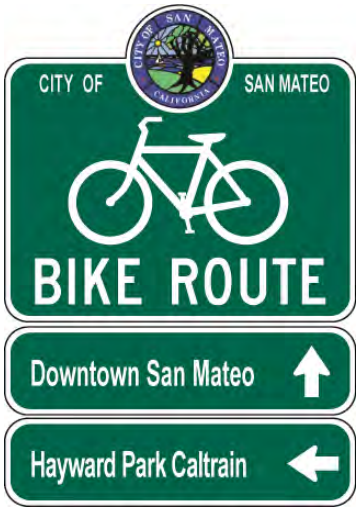


Figure 5-9: Sample Decision Sign

(for location along S. Claremont St. south of 9th Ave.)

Figure 5-10: Sample Wayfinding Signage Plan

5.1.8. Pavement Markings

The following section outlines recommendations for stencils. Appendix A provides specific design guidelines.

Bike Boxes

A bike box is a traffic control device at a signalized intersection designed to improve bicyclists' visibility and in some cases, help position bicyclists for safer travel through the intersection, as shown in **Figure 5-11**. The Bike Box requires motorists to stop a short distance before the crosswalk creating a space for bicyclist between the cars and the crosswalk. Bicycle Boxes increase the visibility and safety of bicyclists by positioning them in clear sight of cars and ahead of turning traffic to avoid 'right-hook' crashes.

While these treatments are not in the California or National MUTCD many communities use this treatment. Bicycle boxes are installed in San Francisco, Long Beach, and West Hollywood as well as in Portland, New York, Cambridge, Austin, Seattle, and Tucson.

Recommendations

This Plan recommends the City consider the installation of a bicycle box on the south-east leg of the 4th Avenue and Humboldt Street intersection. See Section 5.2.1. for further details.

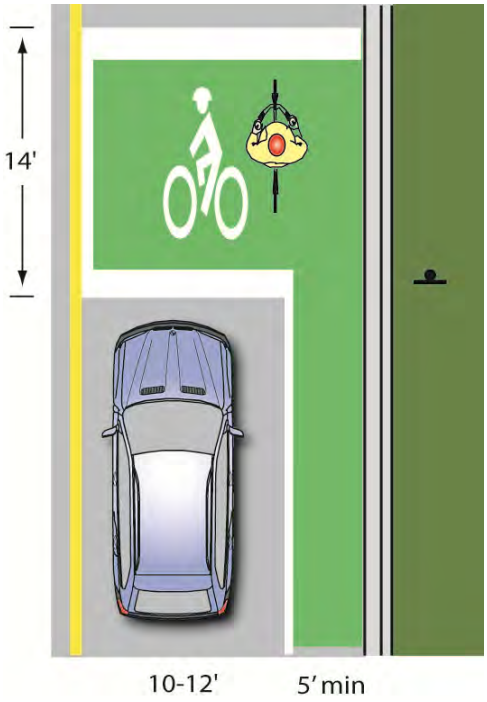


Figure 5-11: Example Bike Box

Green Bike Lanes Through Conflict Areas

Bicyclists are especially vulnerable at complex intersections that do not dedicate space or identify recommended a travel path. Intersections typically account for the majority of reported bicycle-auto crashes. Dedicated right-turn lanes often leave bicyclists unsure of proper positioning. Additionally, at complex intersections bicyclists may not know the recommended path of travel and motorists may not know where to expect bicyclists.

Color applied to bike lanes helps alert roadway users to the presence of bicyclists and clearly assigns right-of-way to cyclists. Motorists are expected to yield to cyclists in these areas.

Many communities have colored bike lanes through conflict areas including San Francisco, Portland, Cambridge, MA and Austin however, this treatment is not part of the California or National MUTCD.

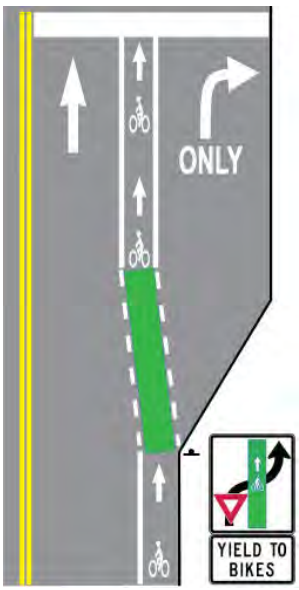


Figure 5-12: Example Green Bike Lane

Recommendations

This Plan recommends the City consider, with a study, a green bike lane through the 4th Avenue and Humboldt Street intersection (see Section 5.2.2) to direct bicyclists through the recommended path of travel. Signage should be installed in advance and at the colored bike lanes to direct motorists.

Raised Pavement Markers

Raised pavement markers used to supplement or replace roadway striping pose problems for bicyclists. The raised pavement markers are used throughout San Mateo because they are cost-effective. However, raised pavement markers discourage motorists from crossing the center of the roadway because driving over them bumps the car in the same way a rumble strip does. The markers may prevent motorists from passing a bicyclist at distance of 3-feet or greater, the recommended passing distance.

Recommendations

This Plan recommends the City consider a policy prohibiting raised pavement markers on Class III Bicycle Routes and Class III Bicycle Routes with Shared Lane Markings roadways with two travel lanes, where those travel lanes are less than 14-feet wide and are on roadways classified as local. This Plan also recommends the City consider removal of raised pavement markers on existing and proposed bikeways that meet the aforementioned criteria. **Table 5-8** lists the existing and proposed bikeways where removal of raised pavement markers is recommended.

Table 5-8: Recommended Bikeways with Raised Pavement Marker Removal

Name	Bikeway Class	From	To	Existing/Proposed
31st Ave	CL III	Monterey St	Flores St	Proposed Bike Route
Cottage Grove Ave	CL III	S Norfolk St	Ocean View Ave	Proposed Bike Route
E 5th Ave	CL III SML	El Camino Real	S Delaware St	Proposed Bike Route with SLM
Edison St	CL III	31st Ave	39th Ave	Proposed Bike Route
N Claremont St	CL III SML	2nd Ave	9th Ave	Proposed Bike Route with SLM
Roberta Dr	CL III	S Norfolk St	Kehoe Ave	Existing Bike Route
S Grant St	CL III	Concar Ave	Birch Ave	Proposed Bike Route
Shoreview Ave	CL III	S Norfolk St	Ocean View Ave	Proposed Bike Route

5.1.9. Bicycle Detection at Traffic Signals

Traffic signals control traffic by either using timers or actuation (detection). Bicycle detection at actuated traffic signals can provide a substantial improvement for bicycle access and mobility. California Assembly Bill 1581 requires all new and replacement actuated traffic signals to detect bicyclists. Caltrans Policy Directive 09-06 clarifies the requirements and permits loop and video detection. Many of San Mateo's actuated intersections detect bicyclists but not all do.

Recommendations

This Plan recommends that the City install bicycle detection at all actuated intersections along existing and proposed bikeways. Additionally, the City should consider installing bicycle detection at all actuated intersections. Where loop detection is used (see **Appendix A** Design Guidelines for details) a pavement stencil of the bicycle detection marking should be used to show bicyclists where to position themselves.

5.1.10. Complete Streets Policy

The California Complete Streets Act requires all cities and counties, when they update their general plan circulation element, to identify how the city or county will provide for routine accommodation of all roadway users including motorists, pedestrians, bicyclists, people with disabilities, seniors and users of public transportation – or to design 'complete streets' for all users. Local governments adopt Complete Streets policies in order to direct transportation planners and engineers to design roadways with all users in mind.

A good Complete Streets Policy:

- Specifies that 'all users' includes pedestrians, bicyclists, transit vehicles and users, and motorists, of all ages and abilities.
- Aims to create a comprehensive, integrated, connected network.
- Recognizes the need for flexibility: that all streets are different and user needs will be balanced.
- Is adoptable by all agencies to cover all roads.
- Applies to both new and retrofit projects, including design, planning, maintenance, and operations, for the entire right-of-way.

- Makes any exceptions specific and sets a clear procedure that requires high-level approval of exceptions.
- Directs the use of the latest and best design standards.
- Directs that Complete Streets solutions fit in with context of the community.
- Establishes performance standards with measurable outcomes.

More information: http://www.completestreets.org/

Recommendation

This Plan recommends the City of San Mateo pursue a Complete Streets policy.

5.1.11. Maintenance Program for Existing Public Access Facilities on Private Property

The City of San Mateo does not have a program in place for addressing maintenance on existing public access bikeway facilities on private property.

Recommendations

This Plan recommends the City develop a maintenance program to ensure public access bicycle facilities on private property are maintained on a regular basis, when and if the need arises.

5.1.12. Bicycle Facility Maintenance

The Public Works Pavement Management Program prioritizes roadways for repaving, surfacing, and striping. Uneven pavement can present both physical hazards and distractions to cyclists.

Recommendation

This Plan recommends the City include the presence of bikeways in the criteria used to determine repaving.

5.1.13. San Mateo Vehicles and Traffic Code 11.56.100 Revision

Current San Mateo Vehicles and Traffic Code 11.56.100 does not conform with California Vehicle Code. The code states:

> **11.56.100 RIDING -- ON ROADWAY OR SIDEWALK.** Every person riding or operating a bicycle on any public street, alley or public place in the city shall keep to the extreme right of the traffic lane, and it is unlawful for two or more bicycles to travel abreast. No person shall ride or operate a bicycle on the sidewalk in any of the business districts of the city, and no bicycle shall be operated on the sidewalks in any of the residential districts when and where the sidewalk is being used by pedestrians. (Prior code § 76.10).

Recommendation

The Plan recommends the City revise this section to conform with California Vehicle Code Section 21202 as follows:

> (a) Any person operating a bicycle upon a roadway at a speed less than the normal speed of traffic moving in the same direction at that time shall ride as close as practicable to the right-hand curb or edge of the roadway except under any of the following situations:

(1) When overtaking and passing a vehicle proceeding in the same direction.

(2) When preparing for a left turn at an intersection or into a private road or driveway.

(3) When reasonably necessary to avoid conditions (including, but not limited to, fixed or moving objects, vehicles, bicycles, pedestrians, animals, surface hazards, or substandard width lanes) that make it unsafe to continue along the right-hand curb or edge, subject to the provisions of Section 21656. For purposes of this section, a "substandard width lane" is a lane that is too narrow for a bicycle and a vehicle to travel safely side by side within the lane.

(4) When approaching a place where a right turn is authorized.

(b) Any person operating a bicycle upon a roadway of a highway, which highway carries traffic in one direction only and has two or more marked traffic lanes, may ride as near the left-hand curb or edge of that roadway as practicable.

(c) It is unlawful for any person to ride or operate a bicycle, motor driven cycle or motor scooter upon any sidewalk or upon any overhead pedestrian crossing over any street, roadway, state highway or state freeway that is signed for pedestrian use only within the city.

5.1.14. San Mateo Zoning Code 27.64.080 Revision

Current San Mateo Zoning Code 27.64.080 restricts the use of residential off-street parking and garage facilities to storage of automobiles; however residential off-street parking and garage facilities are logical locations for bicycle parking.

Recommendations

The Plan recommends the City revise this section as follows:

27.64.080 USE OF PARKING AND GARAGE FACILITIES. Off-street parking and garage facilities accessory to residential use and developed in any residential district in accordance with the requirements of Sections 27.64.080 through 27.64.150 shall be used solely for the storage of bicycles in assigned parking spaces and passenger automobiles owned by occupants of the dwelling structures to which such facilities are accessory or by guests of said occupants. Under no circumstances shall required parking and garage facilities accessory to residential structures be used for the storage of commercial vehicles or for the parking of automobiles belonging to the employees, owners, tenants, visitors or customers of business or manufacturing establishments.

5.2. Spot Improvements

Spot improvements include location specific engineering improvements. These engineering improvements are designed to address specific locations where the community reported a network barrier, it is a location with a high number of bicycle related collisions, or it is a location with a number of points of conflict. The following sections describe spot improvements key to improving bicycle access throughout the City.

5.2.1. 4th Avenue and Humboldt Street Improvements

Eastbound access to the 3rd Avenue Median Path from Humboldt Street is problematic because Humboldt Street has a double right turn lane and bicyclists must position themselves to travel to the north side of 4th Avenue to access the median path.

Recommendations

Table 5-9 below outlines the issues and recommended improvements.

Table 5-9: 4th Street and Humboldt Avenue Improvements

Issue	Recommended Improvement
Northbound Humboldt Street at 4th Avenue has double right turn lanes where bicyclist positioning is not clear	Install a bike box at the intersection to direct bicyclists to the proper positioning for travel on the left side of 4th Avenue. The City may consider a study to prohibit right turns on red to further protect bicyclists.
Access to the 3rd Avenue Median Path from 4th Avenue between Humboldt and the 3rd Avenue Median Path requires bicyclists to travel on the left side of the roadway. This requires explanation to bicyclists that travel through the intersection should be guided towards the left side of 4th Avenue.	Install a green bike lane through the intersection directing bicyclists to the recommended path of travel to the left side of 4th Avenue.
The 4th Avenue roadway configuration requires bicyclists take the left travel lane. This positioning is challenging because vehicle speeds are high, motorists do not expect bicyclists to be on the left side of the roadway and nor do bicyclists expect that left side positioning is required.	Install a green bike lane on 4th Avenue east to the 3rd Avenue Median Path entrance direction bicyclists of roadway placement and informing motorists to expect bicyclists.
Bicyclists do not have a user friendly access to path.	Install angled ramp from 4th Avenue to the 3rd Avenue Median Path to facilitate bicyclist access to the path.

Figure 5-13: Proposed 4th Avenue and Humboldt Street Improvements

5.2.2. 25th Avenue at S Delaware Street Improvements

Eastbound access to S. Delaware Street from 25th Avenue is problematic because 25th Avenue has a dedicated right turn lane, an optional right/left turn lane and a left turn lane. This configuration does not direct bicyclists to proper lane positioning and also does not inform drivers to expect bicyclists in the optional right/left turn lane.

In addition, bicyclists approaching this intersection on southbound S. Delaware Street and turning right must merge over two right turn only lanes. This lane configuration relies on bicyclists to "take the lane" and does not warn motorists of this movement.

Recommendations

The recommended improvement is to install a bike box across the dedicated right turn and optional right/left turn lanes to direct bicyclists on 25th Avenue to the proper positioning for turning left. A green bike lane through the intersection directing bicyclists to the recommended path of travel is also recommended. This improvement is similar to the 4th Avenue and Humboldt Street improvement project. A bike box is also recommended on southbound S. Delaware Street to warn motorists of merging bicyclists turning right.

5.2.3. 19th Avenue and US 101 Undercrossing Improvements

The existing bike lane between on 19th Avenue between Norfolk Street and Delaware presents a number of challenges to bicyclists including narrow bike lanes, unclear stenciling and signage, and travel across freeway ramps.

Recommendations

The recommended improvement for this bikeway segment is to widen the bike lane at pinch spots, stencil and sign the bike lane at frequent intervals to clearly identify the lane for both bicyclists and motorists and to install green bike lanes through the freeway ramps. Green bike lanes as described in Section 5.1.6, alert roadway users to the presence of bicyclists and clearly assigns right-of-way. Motorists are expected to yield to cyclists in these areas. Similar treatments have been used in San Francisco, Portland, Cambridge, Austin and are currently under study in San José.

5.2.4. Monte Diablo and US 101 Overcrossing Improvements

The existing Monte Diablo crossing over US 101 does not provide a transition from the street to the overcrossing for bicyclists.

Recommendations

The recommended improvement for this barrier is the installation of curb ramps at both overcrossing entrances. This will not only facilitate access for bicyclists, it will also improve pedestrian access.

5.2.5. Poinsettia Avenue and Pacific Boulevard Curb Cut Connection

The Poinsettia Avenue Class III Bike Route is an important bikeway alternative to Hillsdale Boulevard; however, the existing curb between Poinsettia Avenue and Pacific Boulevard does not allow bicyclists to pass easily between the roadways.

Recommendation

This Plan recommends the City construct a curb cut so bicyclists can access Poinsettia Avenue as an alternate route to Hillsdale Boulevard.

5.2.6. 31st Avenue from El Camino Real to Edison 'Street Share the Road' Signs

The existing right of way on 31st Avenue between Edison and El Camino Real is too narrow to fit a bike path or bike lane however bicyclists use this roadway. A bike route is not recommended because the existing high traffic volumes and high number of turning movements will not serve bicyclists of all skill levels.

Recommendation

If feasible, support the development of new bicycle facilities on 31st Avenue, in conjunction with redevelopment of that portion of the Hillsdale Shopping Center. The latter would only be considered feasible if a configuration can be developed that balances auto, bicycle, and pedestrian circulation on 31st Avenue.

5.2.7. 5th Avenue from El Camino Real to San Mateo Drive Road Diet

The existing roadway configuration on 5th Avenue between El Camino Real and San Mateo Drive includes three travel lanes: two traveling southwest and one northeast. This three lane configuration does not allow for inclusion of bicycle facilities. The City has conducted a traffic analysis regarding travel lane reduction to include bicycle lanes. The analysis revealed the City's acceptable level of service will be maintained with a lane reduction.

Recommendation

This Plan recommends the City conduct public outreach for the removal of one travel lane and the inclusion of bicycle lanes in both directions. The purpose of this project is to provide direct bicycle access across the City and to Central Park.

5.3. Studies

The section outlines studies intended to investigate the feasibility of proposed concepts or to further investigate opportunities for improvements.

5.3.1. Bay to Transit Path Feasibility Study

The Bay to Transit Path project envisions development of a paved two-mile pedestrian and bicycle pathway along the existing city-owned creek drainage channel from the Hayward Park Caltrain Station to the regional San Francisco Bay Trail.

Recommendation

This Plan recommends the City conduct a feasibility study in order to address right-of-way, site engineering, safety, security, privacy, delivery of emergency services, maintenance and operations, community interests and needs, and other unknowns associated with the development of a trail in this location.

5.3.2. 3rd Avenue Median Path Intersections Improvement Study

The 3rd Avenue Median Path entrance at Norfolk Street had the highest number of bicycle related collisions in the past five years (2003-2008). The path entrance is in the center of the roadway and requires bicyclists and pedestrians to awkwardly enter or leave the path using a number of turning movements.

At the west end of the path, it is equally confusing for bicyclists to navigate the intersection due to the confluence of the one-way 3rd Avenue and Highway 101 off ramp.

Recommendation

This Plan recommends the City initiate a study to improve access to the path entrances. Possible improvements may include signage and striping. Similar treatments are used where median paths end at an intersection including in Brooklyn, New York (**Figure 5-14**).

Figure 5-14: Example Median Path Striping

5.3.3. Franklin Parkway at Saratoga Drive Improvement Study

Franklin Parkway is an important bikeway connection. It serves as an alternative bikeway to the heavily traveled Hillsdale Boulevard and connects users to both the Hillsdale Caltrain Station and the proposed Hillsdale Bicycle and Pedestrian Overcrossing of US 101. It also connects residential areas from the east to retail and transit in the west. There are two challenges to this area.

The first challenge is a bikeway network gap between the existing Class I facility on Franklin Parkway near the Police Station and the Class I facility on the Kaiser site east of Saratoga Drive. The existing Class I on Franklin terminates west of the San Mateo Police Station and bicyclists are forced to ride on the sidewalk or in the street to reach the Franklin Parkway/Saratoga Drive intersection. The eastern approach to the Franklin/Saratoga intersection includes two dedicated right turn lanes, one through lane, and one left turn lane. This configuration is challenging for eastbound bicyclists to comfortably maneuver.

The second challenge is the uncontrolled crossing at the Franklin Parkway/Saratoga Drive intersection. Crosswalks exist across all approaches to the intersection except for the southern crossing that would link the Class I facilities on the east and west sides of Saratoga. This poses a challenge for bicyclists to cross up to six travel lanes.

Recommendation

This Plan recommends a study to address two issues: First, to provide the bicycle network gap closure between the two existing Class I facilities by constructing a Class I Bicycle Path along the frontage of the San Mateo Police Station site, and secondly to study crossing improvements at Saratoga Drive. Extension of the Class I bikeway will provide bicyclists dedicated off-street space and provide a connected Class I facility between the Hillsdale Caltrain Station and the Los Prados neighborhood. This study will include coordination with the San Mateo Police Department and the City's Parks and Recreation Department who maintains the landscaping along the property frontage.

This Plan also recommends the City conduct a feasibility study to improve the crossing environment for bicyclists. A potential study may include a signal warrant study. A split east-west signal phase on Franklin Parkway may be a potential option should the study find the intersection Level of Service (LOS) meets City standards.

5.3.4. Crystal Springs Road Bike Lane Feasibility Study

The existing bike lane on Crystal Springs Road is one-way, eastbound and downhill. There is no bike lane westbound in the uphill direction.

Recommendation

This Plan recommends the City work with the City of Hillsborough to conduct a study analyzing the feasibility of bikes lanes on the westbound, uphill direction of Crystal Springs Road Alameda De Las Pulgas and 3rd Avenue, and shared lane markings eastbound. The project may also include a bike box on Crystal Springs at Alameda De Las Pulgas.

5.3.5. Norfolk Street Bike Lane Feasibility Study

The existing lane configuration on Norfolk Street between Roberta Drive and the channel south of Fashion Island Boulevard does not include bike lanes.

Recommendation

This Plan recommends the City conduct a study to analyze the feasibility of installing bike lanes on this segment of Norfolk Street. Bike lanes will increase access to many restaurants and shopping outlets on Norfolk Street.

5.3.6. Peninsula Avenue Bike Lane Feasibility Study

The existing lane configuration on Peninsula Avenue does not include bike lanes. However, Peninsula Avenue is a major connection that runs on the San Mateo/Burlingame city limits.

Recommendation

This Plan recommends the City work with the City of Burlingame to complete a feasibility study of bike lanes on Peninsula Avenue.

5.3.7. Highway 92 Crossing Study

Highway 92 is a barrier to bicycle travel between El Camino Real and Alameda de las Pulgas and prevents the implementation of a north-south route west of El Camino Real.

Recommendation

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

5.3.8. Bicycle Share Program

Bicycle sharing programs like those in Boston, Washington D.C., Montreal, and Paris are popular and successful programs that provide bicycles on-demand for fast and easy transportation. Bicycles are located at

a bicycle share station where members can 'check-out' a bike for use. The system is similar to popular car-share programs.

Recommendation

This Plan recommends the City consider investigating the feasibility of a bike share program.

5.4. Bicycle Parking

Bicycle parking can range from a simple bicycle rack to storage in a bicycle locker or cage that protects against weather, vandalism and theft. The majority of San Mateo's bicycle parking facilities are located at community centers, large retail businesses and at the three Caltrain stations. Many of these existing facilities do not meet current bicycle rack standards. Across the City, bicyclists visiting community retail districts, places of employment and schools do not have available bicycle parking and instead many lock their bikes to street fixtures such as parking meters, trees, telephone poles, and sign poles. Use of these street fixtures is problematic for a variety of reasons including pedestrian accessibility and stability of the locked bicycle. Installation of bicycle parking will not only prevent bicyclists from locking to street fixtures, attractive and well placed bicycle parking can encourage bicycling activity.

Bicycle parking is an essential element of any bikeway network and this section presents recommended types of bicycle parking, citywide bicycle parking recommendations as well as specific locations in San Mateo's downtown. Following the site specific bike parking recommendations are recommended rates of bicycle parking for new development projects.

5.4.1. Recommended Types of Bicycle Parking

There are two classifications of bicycle parking and there are also standards regarding the acceptable types of bike parking. Bicycle parking can be categorized into short-term and long-term parking. Bicycle racks are the preferred device for short-term bike parking. These racks serve people who leave their bicycles for relatively short periods of time, typically for shopping or errands, eating or recreation. Bicycle racks provide a high level of convenience and moderate level of security. Long-term bike parking includes bike lockers and bike stations and serve people who intend to leave their bicycles for longer periods of time and are typically found at transit stations, multifamily residential buildings and commercial buildings. These facilities provide a high level of security but are less convenient than bicycle racks.

Recommendation

This Plan recommends the City and private developers only install bicycle parking that meets the following criteria. Short-term parking should support the bicycle at two points and have a design that is intuitive to use. A "U-rack" is an example of a standard and accepted bicycle rack and is the recommended standard for the City of San Mateo, while "wave racks" and "wheelbender" are not acceptable because they do not provide two points of contact, among other issues. Long-term bike parking should provide some weather protection and greater security than provide by bicycle racks. Bicycle lockers (electronic) and bike cages are examples of acceptable types of long-term bicycle parking.

5.4.2. Citywide Bicycle Parking Recommendations

Through the public workshop and input from the Plan website, community members expressed desire for bicycle parking at community centers and additional parking at transit centers. Specific locations for

recommended citywide bicycle racks are listed below in **Table 5-10**. A detailed review of civic facilities and recommended bicycle parking is presented in Appendix B.

Recommendation

In addition to bicycle rack installation, this Plan recommends the City provide a map of bicycle parking locations on its bicycling resource website. The website currently provides bicycle parking locations in a list format however, a map will give the community a geographic reference, help identify parking near locations not listed, and will be a greater community resource.

The City is also encouraged to work with commercial property owners to install bicycle parking for patrons. Ideal locations for bicycle parking include grocery stores and retail shopping centers.

Table 5-10: Recommended Citywide Bicycle Parking Locations

Category	Location	Details
Retail Districts	Hillsdale Shopping Center	Install bicycle racks (at minimum 4 racks)
	Bridgepointe Shopping Center	Install bicycle racks (at minimum 4 racks)
	Retail districts along 25th, 37th, and 41st Avenues, Norfolk Street and Hillsdale Boulevard.	Install bicycle racks (at minimum 4 racks) in each district
Caltrain Stations	Downtown San Mateo	Replace 18 existing keyed bicycle lockers with 18 electronic lockers Add 18 new electronic lockers Relocated existing bicycle racks to the station plaza area for better convenience and visibility. Consider implementation of a Bike Station or similar facility
	Hayward Park	Install 18 electronic bicycle lockers
	Hillsdale	*West Parking Lot:* Replace 6 existing keyed bicycle lockers with 8 electronic lockers on a level concrete pad. Keep remaining 2 keyed lockers. *East Parking Lot*: Install 20 electronic and 2 keyed bicycle lockers. *Platform Entrances:* Install 4 bicycle racks in each parking lot near the platform entrance stairways

It is also recommended that the City replace, as funding allows, existing bicycle racks that do not meet City standards. These identified locations are presented in **Appendix B.**

5.4.3. Downtown Bicycle Parking Recommendations

Bicycle parking downtown is important to San Mateo for a number of reasons. In order to achieve this Plan's goal and the Sustainable Initiatives strategy to increase bicycle and pedestrian mode share of trips less than one mile to 30 percent, bicycle parking will be necessary. Downtown San Mateo is community destination with many visitors, including bicyclists, but has limited available right-of-way for bicycle parking. In addition

to limited right-of-way, the City is in the process of removing parking meters to which bicyclists often lock when there are no bicycle racks.

Recommendations

Specific recommended bicycle parking locations for San Mateo's downtown are shown in **Figure 5-15**. The locations were chosen with consideration for available space free of fixtures and utilities as well as anticipated demand. **Appendix B** of this Plan includes a detailed downtown bicycle parking plan

Figure 5-15: Recommended Downtown Bicycle Parking Locations

5.4.4. Bicycle Parking Requirements for Development

Bicycle parking requirements for development ensures bicyclists have somewhere secure and convenient to park their bicycles at newly constructed buildings. Though this Plan identifies many specific locations for bicycle parking in the public right-of-way, it does not address the need for bicycle parking generated by new buildings. The City's current bicycle parking requirements do not provide clear guidance to developers in terms of design and location and the rates of required parking do not address the complexities of San Mateo's environment. As automobile parking is a key element of a transportation network, bicycle parking is a key element of a bicycle network.

The City of San Mateo often requires bicycle parking as part of large development projects that seek a site plan and architectural review. However, the City seeks to revise current bicycle parking requirements to ensure the type and rate of required bicycle parking meets the City's needs and to provide developers a clear understanding of requirements at project initiation.

Appendix B presents recommended rates of required bicycle parking. The recommended rates are based on the Association of Pedestrian and Bicycle Professional's "Bicycle Parking Guidelines" (2nd Edition), successful bicycle parking requirements in other Bay Area cities, and best practices.

6. Proposed Programmatic Improvements

Of the Five Es of bicycle planning, four are related to programs: encouragement, education, enforcement and evaluation. Programs will complement engineering improvements such as bike paths, lanes and routes by giving San Mateo residents the tools they need to safely and confidently use the bikeway network. All of the Five Es work together to enhance the bicycling experience in San Mateo. The following section presents recommended programs to support the vision and goals of this plan. The recommendations include continuation of those the City currently administers and those identified by the community, as well additional programs that have proven to be popular and effective in other bicycle-friendly cities.

6.1. Encouragement

The following programs are designed to encourage community members to ride bicycles. Through the public outreach process, community members identified encouragement programs as a way to increase bicycling mode share and reach the goals outlined in this plan as well as in the Sustainable Initiatives Plan. Community recommended programs include car-free streets and employer-based programs.

6.1.1. San Mateo Acting Responsibly Together

SMART is a citywide public outreach campaign encouraging businesses, schools and individuals to engage in behavior that reduces their carbon footprint. The City provides a website where participants can pledge to reduce their carbon footprint, calculate that reduction, and print flyers encouraging others to do so. Interested parties can request a SMART speaker to present about climate change and sustainable lifestyles that include bicycling as an integral transportation mode.

Recommendation

This Plan recommends the SMART website include information about bicycling as a way to reduce San Mateo's carbon footprint.

6.1.2. Safe Routes to School Program

Helping children walk and bicycle to school is good for children's health and can reduce congestion, traffic dangers and air pollution caused by parents driving children to school. Safe Routes to School programs use a "5 Es" approach using Engineering, Education, Enforcement, Encouragement, and Evaluation strategies to improve safety and encourage children walking and biking to school. The programs are usually run by a coalition of city government, school and school district officials, and teachers, parents, students, and neighbors.

Safe Routes to School programs increase the number of children walking and biking to school and improve traffic safety near schools

A San Mateo Safe Routes to School program will be a key element to implementing this Plan as well as the goals of the Sustainability Initiatives Plan. **Appendix C** provides a

Safe Routes to School Toolkit that gives an overview of the tools and strategies to improve safety and accessibility.

Recommendation

This Plan recommends the City pursue grant funding to develop and implement a Safe Routes to School program.

Resource Guide: National Center for Safe Routes to School: http://www.saferoutesinfo.org/

6.1.3. Bicycle Helmet Giveaway

In 2009, the San Mateo Police Department gave away bicycle helmets to children at schools, a program funded by a California Office of Traffic Safety (OTS) grant. Police officers also gave helmets to children observed bicycling without wearing helmets. In order to receive the helmet, the children's parents were required to return a "citation" issued by the officer.

The Police Activities League (PAL), a non-profit organization within the Police Department, continues to give away helmets from the same OTS grant. PAL's intention is to reinforce laws requiring safe bicycle use and promote trust between police officers and children.

Recommendation

This Plan recommends the City coordinate with and support the PAL in the Bicycle Helmet Giveaway.

6.1.4. Bike to Work Day

Bike to Work Day is a region wide event promoting bicycling to work and is typically the third Thursday in May. The Bay Area's traffic management organization, 511.org, organizes Bike to Work events throughout the Bay Area, including San Mateo. One of the most popular events are energizer stations, where volunteers set up a table with promotional items, coffee and snacks along popular bicycle commuting routes during the morning and afternoon commute hours.

Businesses and organizations located within the City played host to variety of Bike to Work events in recent years. In 2008, the private building company with its headquarters in San Mateo, Webcor kicked off Bike to Work week with an address discussing how to improve bicycling in San Mateo by its CEO.

Recommendation

This Plan recommends the City consider sponsoring a Bike to Work Day event. The event can include a Bike to Work Day celebration downtown or at a Caltrain Station with Pedal Pools (group rides), raffles and prizes, and speeches from Council Members or the Mayor. The type of events held can be developed through community input and the Public Works Commission.

6.1.5. Employer-Based Encouragment Programs

The San Mateo community identified employer-based bicycle encouragement programs. Though the City cannot host these programs, it can work with or provide information to employers about commuting by bicycle. Popular employer-based encouragement programs include hosting a bicycle user group to share information about how to bicycle to work and to connect experienced bicyclists with novice bicyclists. Employers can host bicycle classes (see Section 6.2.3) and participate in Bike to Work day.

Recommendation

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

6.1.6. Launch Party for New Bikeways

When a new bikeway is built, some residents will become aware of it and use it, while others may not realize that they have improved bikeway options available. A launch party/campaign is a good way to inform residents about a new bikeway and can also be an opportunity to share other bicycling materials (such as maps and brochures) and answer resident questions about bicycling. It can also be a media-friendly event, with elected official appearances, ribbon cuttings, and a press release that includes information about the new facility, other existing and future facilities, and any timely information about bicycling.

Sample Program: When a new bikeway is built, the City of Vancouver throws a neighborhood party to celebrate. Cake, t-shirts, media and festivities are provided and all neighbors are invited as well as city workers (engineers, construction staff, planners) who participated in project planning and implementation.

Recommendation

This Plan recommends the City host a launch party for all high priority projects recommended in this plan as well inform the public of all new bikeways through its bicycling website.

Closing streets for a car-free community event creates a temporary park for walking, cycling, skating, dancing, etc.

6.1.7. Car-Free Street Events

Car-free street events have many names: Sunday Parkways, Ciclovias, Summer Streets, and Sunday Streets. Sunday Parkways are periodic street closures (usually on Sundays) that create a temporary park that is open to the public for walking, bicycling, dancing, hula hooping, roller-skating, etc. They have been very successful internationally and are rapidly becoming popular in the United States. Car-free street events promote health by creating a safe and attractive space for physical activity and social contact, and are cost-effective compared to the cost of building new parks for the same purpose. Events can be weekly events or one-time occasions, and are generally very popular and well attended.

The community identified interest in a San Mateo car-free street event. One example is the San Mateo County's Streets Alive event, in which the City participated. This Plan recommends the City consider continued participation in Streets Alive. Specific locations for this and other events can be developed through community outreach and support.

Sample Programs:

- San Francisco Sunday Streets: http://sundaystreetssf.com/
- Oakland's Oaklavia http://oaklavia.org/media
- New York City Summer Streets: http://www.nyc.gov/html/dot/summerstreets/html/home/home.shtml
- Portland Sunday Parkways: http://portlandsundayparkways.org/

6.1.8. Bicycle Friendly Community

The League of American Bicyclists (LAB) recognizes communities that improve bicycling conditions through education, encouragement, enforcement and evaluation programs. Communities can achieve platinum, gold, silver, or bronze status or an honorary mention. Bicycle friendliness can indicate that a community is healthy and vibrant. Like good schools and attractive downtowns, bicycle friendliness can increase property values, spur business growth and increase tourism.

Recommendation

This Plan recommends the City to pursue Bicycle Friendly Community status. This Plan is a valuable resource for completing the LAB application efficiently. The following link provides detailed information about the application steps.

http://www.bikeleague.org/programs/bicyclefriendlyamerica/communities/

6.2. Education

Education programs are designed to improve safety and awareness. The needs analysis including community input and collision analysis for this Plan identified a need for education programs. Community members identified education classes as a way to reduce conflict and encourage more bicycling. Bicycle related collision data shows that in addition to engineering improvements, education about riding on the right side of the road and how to comfortably ride in traffic may reduce bicycle related collisions. The following outlines recommended education programs.

6.2.1. Bicycle Resource Website

The City of San Mateo hosts a bicycle resource website. To visit the website follow the links from the City's home page: Living › Getting Around › Bike Information, or try the link below. This website provides a bicycle map of the City, bicycle parking locations and information about the Bicycle and Pedestrian Committee and local advocacy groups.

The City dedicates a page of its website to bicycle information.

Recommended improvements to the resource website include:

- Dynamic bikeway and bike parking map
- Advertise all bikeways after implementation
- Bicycling tips including information on how to:
    - Carry items using baskets and panniers
    - Properly lock a bicycle
    - Ride in the rain with help from fenders and rain gear
    - Tips can also include information on the importance of bicycle lights and reflectors.
- Bikeway maintenance and repair phone number
- Driver speed feedback sign request forms
- Bicycle events calendar

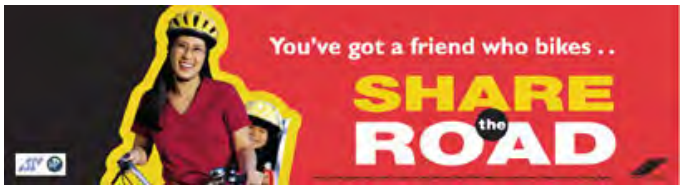
- Education and skill class information

This Plan also recommends the resource website provide information in Spanish and other languages.

http://www.cityofsanmateo.org/index.aspx?nid=206

6.2.2. Bicycle Safety Campaign

A marketing campaign that highlights bicyclist and pedestrian safety is an important part of creating awareness of bicycling and walking in San Mateo. This type of high-profile campaign is an effective way to reach the public, highlight bicycling and walking as viable forms of transportation, and reinforce safety for all road users.



Bicycle safety campaigns increase the general public's awareness of bicycling and can be used to promote safe roads by and for all users.

A well-produced safety campaign will be memorable and effective. One good example is the Sonoma County Transit "You've got a friend who bikes!" campaign. It combines compelling ads with an easy-to-use website focused at motorists, pedestrians, and bicyclists. This type of campaign is particularly effective when kicked off in conjunction with other bicycling/walking events or back to school in the fall. The safety and awareness messages should be displayed near high-traffic corridors (e.g., on billboards), printed in local publications, broadcast as radio and/or television ads and be available in Spanish and other languages.

Recommendation

This Plan recommends the City pursue grant funding to implement a bicycle safety campaign.

Sample program: Sonoma County (CA) Transit: http://www.sctransit.com/bikesafe/bikes.htm

6.2.3. Employer Hosted Bicycling Skills Classes

Most cyclists do not receive any training on safe cycling practices, the rules of the road and bicycle handling skills. Bicycling skills classes can address this education gap. The Peninsula Traffic Congestion Relief Alliance offers a bicycle skills course for employers to host, however no employers in San Mateo have taken advantage of this free program. Employer sponsored encouragement programs were identified by the community through the survey and public workshop as an identified need.

Recommendation

This Plan recommends the City highlight this free course on its bicycling and SMART website. The City may also encourage the Chamber of Commerce to advertise the classes and that information regarding the classes is distributed to the top 10 largest employers.

6.2.4. Adult Bicycling Skills Classes

In addition to employer hosted classes, community members can also particpate in private bicycling skills classes. The most common program is the League of American Bicyclists courses (including Road I, Road II, and Commuting), taught by League Certified Instructors. Courses cover bicycle safety checks, fixing a flat, on-

bike skills, crash avoidance techniques, and traffic negotiation. Courses are already available in other San Mateo County cities and are often hosted by the Silicon Valley Bicycle Coalition.

Adult bicycle skills courses can ensure that bicyclists have the information and skills they need to avoid hazards and follow the law.

Recommendation

This Plan recommends San Mateo invite the Silicon Valley Bicycle Coalition or a similar group to host adult bicycling skills classes in the city on a bi-annual basis, at minimum. The City may also highlight local or nearby courses on its bicycling and SMART website. The City should advertise the courses in multiple languages and use responses to the advertisement to determine the need for multi-lingual instruction.

Sample programs:

- League of American Bicyclists
  http://bikeleague.org/programs/education/courses.php

6.2.5. Senior Bicycle Education Classes

Senior bicycle education programs help older adults either re-learn bicycling or learn how to bicycle with less agility. Seniors who are no longer able to drive may still be able to bicycle shorter distances on either a regular two wheeled bicycle or an adult tricycle. The Portland Parks and Recreation Department hosts a free senior tricycle program that provides tricycles to senior centers and takes folks on guided rides.

Recommendation

This Plan recommends the City collaborate with interested agencies, heath departments and senior centers to evaluate interest and implement multi-lingual senior bicycle education classes.

Sample Program:

- Portland Senior Tricycle Program
  http://www.portlandonline.com/transportation/index.cfm?c=34772&a=155167

6.2.6. Youth Bicycle Safety Education Classes

Typical school-based bicycle education programs educate students about the rules of the road, proper use of bicycle equipment, biking skills, street crossing skills, and the benefits of biking. Education programs can be part of a Safe Routes to School program. These types of education programs are usually sponsored by a joint City/School District committee that includes appointed parents, teachers, student representatives, administrators, police, active bicyclists and engineering department staff.

Youth bicycle safety education provides children with knowledge and training about safe and proper bicycle use.

Recommendation

This Plan recommends the City pursue a Safe Routes to School Program that includes annual youth bicycle safety education classes. The City should consider the need for multi-lingual instruction.

Sample programs:

- League of American Bicyclists: http://www.bikeleague.org/programs/education/courses.php#kids1
- Bicycle Transportation Alliance – Portland, OR: http://www.bta4bikes.org/resources/educational.php

6.2.7. Bicycle Rodeo

Bicycle rodeos are events where police officers teach children safe bicycling skills and the rules of the road. In 2005, the Police Department hosted a bicycle rodeo that was open to the public, advertising through its website and the City's newspaper. Approximately 75 children participated in the event.

Recommendation

This Plan recommends the City work with the Police Department to continue the Bicycle Rodeo program on an annual basis.

6.2.8. Share the Road Outreach and StreetSmarts

Share the Road outreach is a way for the City to actively disseminate the rules of the road in person to residents. One way to conduct outreach is for the City conduct "checkpoints". Working with volunteers from a local advocacy group and the police department, officers could stop motorists and bicyclists to offer a brochure on the rules of the road as they pertain to motorists and bicyclists. An example of the Marin County Bicycle Coalition's Share the Road Checkpoints can be found at the link below.

http://www.marinbike.org/Campaigns/ShareTheRoad/Index.shtml

Recommendation

The City may also consider tabling at a Farmer's Market or street fair to conduct Share the Road outreach. Much like the checkpoints, the City could distribute Share the Road brochures and present illustrations of common misconceptions motorists and bicyclists have of one another.

On a citywide scale, the City could start a StreetSmarts media campaign, similar to those in San Jose, Marin, Davis and other California cities. Developed by the City of San Jose, StreetSmarts uses print media, radio spots and television spots to educate people about safe driving, bicycling and walking behavior. More information about StreetSmarts can be found at the link below.

http://www.getstreetsmarts.org/

6.3. Enforcement

Enforcement programs enforce legal and respectful use of the transportation network. The bicycle related collision analysis and community identified needs indicate enforcement programs will help educate both motorists and bicyclists about the rules and responsibilities of the road.

The following outlines recommended enforcement programs.

6.3.1. Bicycle Patrol

Police bicycle patrols not only increase the mobility of officers in dense areas but also provide law enforcement officers with an opportunity display safe and legal bicycle skills. Bicycle patrols also show the community that the City is engaged in sustainable transportation. The Police Department deploys up to two bicycle patrol officers in the Downtown area on an as-needed basis, typically Thursday through Sunday.

Recommendation

This Plan recommends the City continue its bicycle patrol in the Downtown area.

6.3.2. Speed Feedback Signs

Speed feedback signs display the speed of passing motor vehicles, with the intent that motorists will slow down if they are aware of their speed. The Department of Public Works and Police Department operate two mobile speed feedback signs, which are deployed in response to resident complaints about speeding and eight speed feedback signs at permanent locations

Recommendation

This Plan recommends the City include information on how to request a speed feedback sign on its bicycling resource website.

6.3.3. Targeted Enforcement

Targeted enforcement is focused efforts of police officers. For example, the Police Department conducts pedestrian stings at locations where pedestrians and motorists conflict and do not comply with traffic signals. Similar strategies may be applied to areas with bicycle traffic, however the Police Department has not implemented such strategies.

Recommendation

This Plan recommends the City coordinate with the Police Department to conduct targeted enforcement stings at locations known for noncompliance with traffic laws and at high conflict or high bicycle-related collision areas.

6.4. Evaluation

Evaluation programs help the City measure how well it is meeting the goals of this plan, the General Plan and the Sustainable Initiatives Plan and evaluation is a key component of any engineering or programmatic investment.

6.4.1. Annual Count and Survey Program

Evaluation programs measure and evaluate the impact of projects, policies and programs. Typical evaluation programs range from a simple year-over-year comparison of US Census Journey to Work data to bicycle counts and community surveys. Bicycle counts and community surveys act as methods to evaluate not only the impacts of specific bicycle improvement projects but can also function as way to measure progress towards reaching City goals such as increased bicycle travel for trips one mile or less.

Recommendation

This Plan recommends, at minimum:

- Before and after bicycle, pedestrian and vehicle counts on all roadway projects.
- Annual bicycle counts at a minimum of the nine locations counted as part of this Master Plan effort.
- Annual community survey to evaluate bicycling activity, impacts of bicycle programs and facilities and to measure the City's progress towards reaching its goals.

The City may consider the use of automatic count technologies for bicycle count efforts. In-pavement loop detectors accurately count on-street bicycle activity and infrared counters can count bicycle and pedestrian activities on paths.

The City may also produce an annual report or 'report card' on bicycling activity. Annual reports developed from count and survey efforts can help the City measure its success towards the goals of this Plan as well as those of the General Plan and Sustainable Initiatives Plan.

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7. Benefits of Bicycling

7.1. Why Bicycling is Important

Bicycling is important to San Mateo's future due to its potential to address the interrelated challenges of traffic, air quality, creating a sense of community, and public health. Non-motorized transportation infrastructure can also provide economic benefits to the community. By becoming a more bicycle-friendly city, San Mateo can affect all of these elements and can collectively influence the existing and future quality of life.

Fostering conditions where bicycling is accepted and encouraged increases a community's livability from a number of different criteria that are often difficult to measure, but nevertheless important. In areas where people ride a bicycle, there are more opportunities for chance meetings than where people generally travel by vehicle. People bicycling are also more likely to talk and interact on a more human level. More activity at a slower rate also provides more "eyes on the street", or the effect of people looking out for one another. All of these quality of life benefits can enhance San Mateo's sense of place.

This chapter outlines estimated future bicycling activity and the benefits of bicycling to San Mateo including traffic, economic, air quality and health benefits.

7.2. Future Usage and Benefits

Alta has developed a Caltrans approved bicycle model that estimates bicycle network usage and benefits associated with increased bicycling. **Table 7-1** quantifies the estimated reduction in vehicle miles traveled in San Mateo following implementation of the bikeway network, as well as an increase of bicycle mode share from 1.35 percent to 5.39 percent.

7.2.1. Traffic Benefits

As identified in the General Plan, heavy traffic conditions characterize most arterials and the two highways in San Mateo. In the downtown area, local streets experience continued congestion at several intersections. Each time residents in San Mateo choose to bicycle for utilitarian purposes, automobile trips are removed from the road. As San Mateo's downtown, other retail and employment districts become more inviting to bicycles, more work, school, shopping, and recreational trips will be made on bicycle. Cumulatively, this pattern may reduce traffic in some areas and, subsequently, improve air quality. Assuming 73 percent of these bicycle trips replace vehicular trips; buildout of the Bikeways Master Plan would result in approximately 29,615 fewer vehicle miles driven per weekday or 7.7 million fewer vehicle miles per year.

Table 7-1: San Mateo Estimated Future (Year 2030) Bicycle Trips and Benefits

Data		Source and Assumptions
Future Commute Statistics		
Future study area population	119,800	2030 General Plan (based on ABAG 2007 projections)
Future employed population	48,512	Based on 2030 General Plan number of employed residents (Assumes 4.7% (2010 data) of employed residents work at home)
Future bike-to-work mode share	10%	Assumes 5% of work commuters bicycle to work after full bikeway network buildout
Future number of bike-to-work commuters	4,851	Assumes the mode share will increase with implementation of the increase bikeway network
Future work-at-home mode share	4.7%	2008 US Census American Community Survey
Future number of work-at-home bike commuters	113	Assumes 10% of population working at home makes at least one daily bicycle trip
Estimated number of people who use Caltrain and SamTrans	5,391	Applies 2008 US Census American Community Survey ratio of Estimated number of people who use Caltrain and SamTrans to San Mateo Population (4.5%) to 2030 San Mateo Population
Future transit-to-work mode share	18.0%	Assumes 18% of transit users access by bike (based on 2009 Caltrain Ridership Counts)
Future transit bicycle commuters	970	Assumes 18% of transit users access by bike (based on 2009 Caltrain Ridership Counts)
Future school children, ages 6-14 (grades K-8)	9,225	Applies 2008 US Census American Community Survey ratio of School Children Grades K-8 to San Mateo Population (7.7%) to 2030 San Mateo Population
Future school children bicycling mode share	5.0%	Assumes 5% will bicycle to school with implementation of the Safe Routes to School toolkit
Future school children bike commuters	461	School children population * children bike mode share
Future number of college students in study area	6,469	Applies 2008 US Census American Community Survey ratio of College Students to San Mateo Population (5.4%) to 2030 San Mateo Population
Future estimated college bicycling mode share	1.0%	National Bicycling & Walking Study, FHWA, Case Study No. 1, 1995 [Review of bicycle commute share in seven university communities (5%), adjusted to consider site-specific topographic constraints (1%)]
Future college bike commuters	65	College population * college bike mode share
Future total number of bike commuters	6,461	Total of bike-to-work, transit, school, college and utilitarian bicycle commuters (Does not include recreation)
Total daily bicycling trips	12,922	Total bicycle commuters x 2 (for round trips)
Estimated Adjusted Mode Share	5.39%	Estimated bicycle commuters divided by population
Future Vehicle Trips and Miles Reduction		
Reduced Vehicle Trips per Weekday	3,916	Assumes 73% of bicycle trips replace vehicle trips for adults/college students and 53% for school children
Reduced Vehicle Trips per Year	1,022,014	Reduced number of weekday vehicle trips multiplied by 261 (weekdays in a year)
Reduced Vehicle Miles per Weekday	29,615	Assumes average round trip travel length of 8 miles for adults/college students and 1 mile for schoolchildren
Reduced Vehicle Miles per Year	7,729,495	Reduced number of weekday vehicle miles multiplied by 261 (weekdays in a year)
Future Air Quality Benefits		
Reduced PM10 (tons/weekday)	545	Daily mileage reduction multiplied by 0.0184 tons per reduced mile
Reduced NOX (tons/weekday)	14,772	Daily mileage reduction multiplied by 0.4988 tons per reduced mile
Reduced ROG (tons/weekday)	2,150	Daily mileage reduction multiplied by 0.0726 tons per reduced mile
Reduced C02 (pounds/weekday)	6,570,071	Yearly mileage reduction multiplied by 0.85 pounds per reduced mile
Reduced PM10 (tons/year)	142,223	Yearly mileage reduction multiplied by 0.0184 tons per reduced mile
Reduced NOX (tons/year)	3,855,472	Yearly mileage reduction multiplied by 0.4988 tons per reduced mile
Reduced ROG (tons/year)	561,161	Yearly mileage reduction multiplied by 0.0726 tons per reduced mile
Reduced C02 (pounds/year)	6,570,071	Yearly mileage reduction multiplied by 0.85 pounds per reduced mile

**PM10: particulate matter of 10 nanometers or less in diameter; NOX: Nitrous Oxide; ROG: Reactive Organic Gases; CO2: Carbon Dioxide*

7.2.2. Economic Benefits

An inviting bicycle network and supportive programs have the potential to improve the following economic factors:

- The majority of studies reviewed found that home prices near trails are higher than home prices farther away from trails.
- Bicycle-related tourism has been shown to bring in significant revenue to a region. Studies of bicycle tourism in Colorado, Maine and the Outer Banks Region of North Carolina estimate annual bicycle tourism revenues ranging from $19.5 million to $250.6 million.
- Bicycle and pedestrian facilities can lead to increased spending by consumers. A 1991 National Park Service study found that long rural trails generated more revenue per person than shorter urban trails. The study estimated average expenditures of rail-trail users at $3.02 per person to $23.63 per person.
- A high-quality bicycling environment can bring bicycle-related businesses to the region. Portland, Oregon's bicycle industry was worth approximately $90 million in 2009, and a study of the economic impact of bicycling in Colorado found that manufacturing contributes $990 million and retail sales and service contribute up to $251 million.

While data are not available to quantitatively estimate the economic impacts of constructing a high-quality network in San Mateo, this Plan's implementation may contribute to increased property values, tourism, retail sales and bicycle-related businesses.

7.2.3. Air Quality Benefits

Increased bicycle commute trips would have the additional benefit of improving air quality levels over levels projected without improvements to the bicycle network. Analysis conducted for this Plan found that buildout of the bicycle network in year 2030 could result in approximately 12,922 daily commute and utilitarian bicycle trips. The corresponding reduction in vehicle miles driven would reduce air pollution emissions, including particulate matter (by approximately 0.5 ton/weekday), nitrogen oxides (14.7 ton/weekday), reactive organic gases (2.5 ton/weekly), and carbon dioxide (16.5 ton/weekday). Measuring environmental improvements by reduction in greenhouse gases allow easy measurement and tracking of real benefits.

7.2.4. Health Benefits

Bicycling can improve public health through increased physical activity. In recent years public health professionals and urban planners have become increasingly aware that the impacts of vehicles on public health extend far beyond asthma and other respiratory conditions caused by air pollution. Dependency on vehicles has decreased physical activity, which in turn is linked to cardiovascular disease, stroke, hypertension, Type-2 diabetes and osteoporosis. In comparison to European countries and Canada, the U.S. has a higher rate of obesity and lower rate of walking, bicycling, and public transportation use. Improving non-motorized facilities may help alleviate these disorders and reduce obesity.

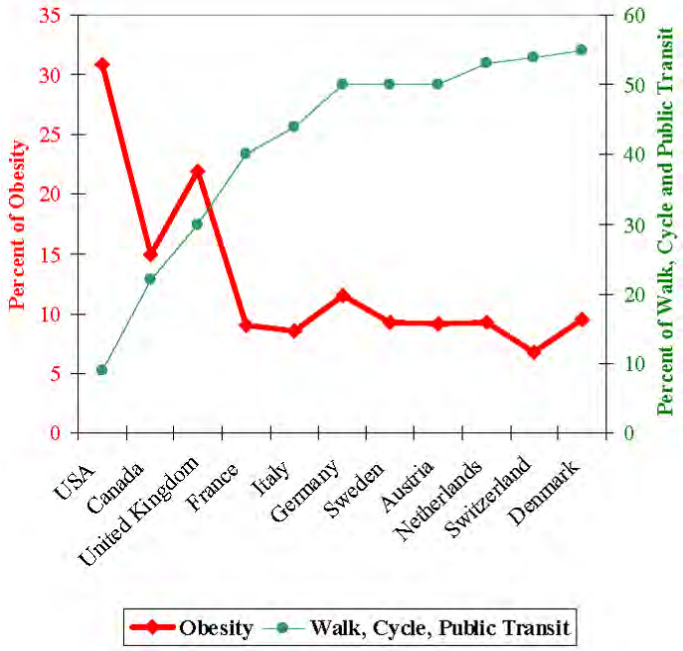

Figure 7-1: Transportation and Obesity Rates

The Centers for Disease Control recommend that all healthy adults aged 18 to 65 need moderate-intensity physical activity at least three days each week. Community design, including bicycle facilities, influences the ability of San Mateo residents to attain these levels of exercise through daily activities such as commuting to work, school or for recreation. As **Figure 7-1**[7-1] shows, there may be a link between walking, bicycling, and transit use and obesity. In comparison to listed European countries and Canada, the US has a higher rate of obesity and a lower percent of walking, bicycling, and public transportation use.

[7-1] Pucher and Dijkstra, "Promoting Safe Walking and Cycling to Improve Public Health, Am Journal of Public Health, September 2003.

8. Implementation

This chapter provides a strategy for implementing the capital project recommendations in this Plan. This implementation strategy and sequence is guided by a criteria-based ranking consistent with the goals of this plan as well as the goals of other City plans including the General Plan and the Sustainable Initiatives Plan.

Phased implementation of the recommended projects and programs presented in **Chapter 5** and **Chapter 6** will take a significant amount of time, subject to a large number of variables. The most important of these variables include availability of funding for non-motorized transportation, City of San Mateo success in obtaining competitive grant funding, and local community and political support.

In the near-term, it is critically important to focus on a group of achievable, high priority projects. The high priority projects identified in **Table 8-8** of this chapter represent roughly $12 million dollars in capital improvements and site-specific technical traffic studies to support near-term project refinement and development. These high priority projects are drawn directly from the results of the criteria-based ranking process presented in **Table 8-2** and supplemented with additional spot improvements and Downtown priorities.

These projects are intended for near-term implementation in the next one to five years. While this is a significant jump in expenditure for the City of San Mateo compared to the $450,000 dollars the city has spent on bicycle facility improvements in recent years, current trends indicate that San Mateo is poised to make this jump. It is important to note the priority projects include the Hillsdale Overcrossing, estimated to cost $10.7 million.[8-1] The city's commitment to implementing the goals of the Sustainable Initiatives Plan, to implementing transit oriented development, to continued investment in the Downtown; and commitment to the preparation of the Bicycle Master Plan, will certainly attract the wide variety of transportation funding and generate other financing required to complete this high priority project list.

8.1. Bikeway Project Ranking

The intent of ranking projects is to create a prioritized list of bicycle projects for implementation. As projects are implemented, lower ranked projects move up the list. The project list and individual projects outlined in this Plan are flexible concepts that serve as a guideline. The high-priority Tier 1 project list, and perhaps the overall system and segments themselves, may change over time as a result of changing bicycling patterns, land use patterns, implementation constraints and opportunities and the development of other transportation system facilities. The City of San Mateo should review the project list and project ranking at regular intervals to ensure it reflects the most current priorities, needs, and opportunities for implementing the bicycle network in a logical and efficient manner.

The plan's vision and goals inform the ranking criteria, which were developed with input from the City of San Mateo and the Bicycle Master Plan Steering Committee. These criteria are described in **Table 8-1** and outlined below.

[8-1] Estimated cost in 2011 dollars when adjusted for 8.8% inflation (Bureau of Labor and Statistics).

The criteria include:

- Safety
- Transit Connectivity
- Access to Community Destinations
- Access to Major Employers
- School Connections
- Network Connectivity

Based on the nature of the criterion, the projects were scored:

- Score / No Score
- Full Score / Half Score / Zero Score
- Scaled range from zero to ten

For example, projects evaluated for network connectivity will receive either a zero score or a full score. The project either extends the existing network/overcomes a freeway barrier or does not. By contrast, projects that connect to community destinations can receive a full, half or no score depending on whether it directly connects, indirectly connects or does not connect to a community destination.

All criteria have a maximum score of ten, giving each equal value or weight to each. The maximum potential score for each project is the sum of the maximum potential scores of all project criteria (60).

The Plan's vision and goals inform the ranking criteria, which were developed with input from the City of San Mateo and the Bicycle Master Plan Steering Committee. These criteria are described in **Table 8-1.** The overall score for a project is the sum of scores for individual criteria.

Table 8-1: Project Ranking Criteria

Criteria	Description	Maximum Score
Safety	This ranking is based on available 2003-2008 collision data identifying corridors with high incidents of bicycle related collisions within a quarter mile buffer of the proposed improvement. Projects are scored on a scaled ranking from zero to ten with locations with the most collisions receiving the maximum score.	10
Transit Connections	Projects that directly connect to SamTrans or Caltrain Stations receive 10 points. Projects located within a half mile of transit stations that connect to a bikeway directly connected to the station receive 5 points. Project that do not connect to transit receive zero points.	10
Community Center Connections	Projects that directly connect to community destinations including retail districts, libraries, community centers, and parks, receive 10 points. Projects located within a half mile of these destinations that connect to a bikeway directly connected to the destination receive 5 points Projects that do not connect to a community center receive zero points.	10
Employment Connections	Projects that directly connect to any of the ten largest employers or the highest employment census blocks in the City receive 10 points. Projects that connect to a bikeway that connects directly to one of these employers or areas of moderate employment density receive 5 points. Projects that do not connect to major employers, high or moderate employment density areas receive zero points.	10
School Connections	Projects that directly connect to schools receive 10 points. Projects that connect to a bikeway that directly connect to a school receive 5 points. Projects that do not connect to schools receive zero points.	10
Network Connectivity	Significant barriers to bicycle travel include crossings of US Highway 101, Highway 92, Caltrans, El Camino Real and the rail line. Projects that extend existing bikeways or that overcome these barriers receive 10 points. Projects that do not overcome these barriers or do not extend existing bikeways receive zero points.	10
	Maximum Total Score	60

Projects were then placed into three phasing groups: Tier 1, Tier 2, and Tier 3.

- ›30 points: Tier 1 projects have the highest potential for addressing the City's goals for bicycle transportation and are intended for near-term project implementation within one to five years.
- 20-30 points: Tier 2 projects are intended for development within 6 to 10 years.
- ‹20 points: Tier 3 projects are not currently ready for implementation but are included as long-term potential bicycle-specific projects over the next 11 to 20 years.

Table 8-2 lists the projects and their scores, organized into the three Tiers.

Table 8-2: Prioritized Projects by Tier

Rank	Tier	Class	Location	From	To	Length	Transit Access	School Access	Network Connectivity	Employment Connections	Community Destinations	Collision Score	Total Score
Tier 1													
1	1	III	28th Ave	Mason Ln	El Camino Real	0.94	10	10	10	10	10	0.19	50.19
2	1	3 + SLM	Alameda de las Pulgas	Crystal Springs Rd	La Casa Ave (City Limit)	3.00	10	10	10	10	10	0.03	50.03
3	1	III + SLM	1st Ave	B Street	Claremont Street	0.12	10	5	10	5	10	10.00	50.00
4	1	I	31st Ave Extension	El Camino Real	Caltrain	0.22	10	5	10	5	10	1.13	41.13
5	1	III	W Poplar Ave	City Limits (Glendale Dr)	Humboldt St	1.92	10	10	10	5	5	0.19	40.19
6	1	III + SLM	Baldwin Ave	S B St	N San Mateo Dr	0.11	10	0	0	10	10	8.16	38.16
7	1	III + SLM	E 5th Ave	San Mateo Dr	S Humboldt St	0.57	5	0	10	10	10	2.30	37.30
8	1	II	S Grant St	19th Ave	Concar Dr	0.20	10	5	10	5	5	0.88	35.88
9	1	II	Concar Dr	Hayward Park Caltrain	Grant Street	0.43	10	0	10	5	10	0.63	35.63
10	1	Feasibility Study	Bay to Transit Path	17th Ave	Anchor Rd	1.82	10	5	10	0	10	0.20	35.20
11	1	II	Peninsula Ave	Humboldt St	N San Mateo Dr	0.62	10	5	10	0	10	0.20	35.20
12	1	III + SLM	S B St	Baldwin Ave	9TH AVE	0.54	10	0	0	10	10	2.57	32.57
13	1	II	W 5th Ave	Maple Street	El Camino Real	0.22	10	0	10	0	10	1.82	31.82
14	1	III + SLM	N San Mateo Dr	W Poplar Ave	W 5th Ave	0.84	5	5	0	10	10	1.40	31.40
15	1	III + SLM	9th Ave	Palm Ave	S B St	0.14	5	0	10	5	10	1.36	31.36
16	1	I	28th Ave Extension	El Camino Real	New Delaware St	0.09	5	5	10	5	5	1.31	31.31
17	1	III + SLM	37th Ave	Edison Street	El Camino Real	0.27	5	0	10	5	10	1.20	31.20
18	1	III	17th Avenue/Caltrain Access	Palm Avenue	19th Avenue	0.39	10	0	10	0	10	1.07	31.07
Tier 2													
19	2	III + SLM	W 25th Ave	Hacienda St	S Delaware St	0.35	5	0	10	5	10	0.57	30.57
20	2	III	Hobart Ave - 12th Ave Rt	Alameda de las Pulgas	Palm Ave	0.71	10	5	10	0	5	0.45	30.45
21	2	III	Humboldt St	Peninsula Ave	E 3rd Ave	1.22	10	10	0	0	10	0.45	30.45
22	2	III	Edison St	31st Ave	41st Ave	0.76	5	5	0	10	10	0.39	30.39
23	2	III	31st Ave	Mason Ln	Edison St	0.86	10	10	0	5	5	0.32	30.32
24	2	III	W 20th Ave	Alameda de las Pulgas	Palm Ave	0.74	5	10	0	5	10	0.30	30.30

Rank	Tier	Class	Location	From	To	Length	Transit Access	School Access	Network Connectivity	Employment Connections	Community Destinations	Collision Score	Total Score
25	2	III	26th Ave	Campus Dr	Hacienda St	0.92	5	5	10	5	5	0.16	30.16
26	2	III + SLM	N Claremont St	1st Ave	9th Ave	0.50	5	5	0	5	10	2.87	27.87
27	2	III + SLM	Saratoga Dr	Hillsdale Blvd	Santa Clara Way	0.12	5	0	0	10	10	2.18	27.18
28	2	III + SLM	41st Ave	Beresford St	El Camino Real	0.15	5	0	10	0	10	1.52	26.52
29	2	III	N Claremont St	Peninsula Ave	1st Ave	1.08	5	10	0	0	10	1.32	26.32
30	2	Crossing	Hillsdale Overcrossing	Hillsdale Blvd	S Norfolk St	0.33	5	0	10	0	10	1.20	26.20
31	2	III + SLM	Ocean View Ave	Cottage Grove Ave	Dale Ave	0.14	5	10	0	0	10	1.03	26.03
32	2	III	Palm Ave	South Blvd	19th Ave	0.26	5	0	10	5	5	0.87	25.87
33	2	III	Hacienda St	22nd Ave	W 25th Ave	0.18	5	5	0	5	10	0.83	25.83
34	2	III	Dale Ave	S Norfolk St	Shoreview Ave	0.36	10	5	0	0	10	0.61	25.61
35	2	III	Shoreview Ave	S Norfolk St	Kehoe Ave	1.09	5	0	10	0	10	0.56	25.56
36	2	III	Flores St	W 25th St	31st Ave	0.50	5	5	0	10	5	0.49	25.49
37	2	III	Cottage Grove Ave	S Norfolk St	Shoreview Ave	0.46	10	5	0	0	10	0.32	25.32
38	2	III	37th Ave	Hacienda St	Edison St	0.24	10	5	0	5	5	0.31	25.31
39	2	II	N San Mateo Dr	Peninsula Ave	W Poplar Ave	0.52	10	5	0	5	5	0.29	25.29
40	2	III	Edinburgh - Virginia St Rt	Borel Ave	W 3rd Ave	0.95	10	10	0	0	5	0.23	25.23
41	2	III	Glendora Dr	De Anza Blvd	W Hillsdale Blvd	0.54	10	0	0	5	10	0.00	25.00
42	2	II	E 5th Ave	El Camino Real	San Mateo Drive	0.13	5	0	0	5	10	4.64	24.64
43	2	III	2nd Ave	S Fremont St	S Humboldt St	0.14	5	5	0	0	10	4.37	24.37
44	2	III	19th Ave	Palm Ave	Pacific Ave	0.07	5	0	0	5	10	3.05	23.05
45	2	II	S Norfolk St	520' NW of E Hillsdale Blvd	E Hillsdale Blvd	0.10	10	0	10	0	0	2.99	22.99
46	2	III	S Humboldt St	E 5th Ave	E 4th Ave	0.06	5	0	0	5	5	7.04	22.04

Rank	Tier	Class	Location	From	To	Length	Transit Access	School Access	Network Connectivity	Employment Connections	Community Destinations	Collision Score	Total Score
47	2	I	Franklin Path	Pacific Boulevard	Hillsdale Boulevard	0.17	0	0	10	10	0	1.79	21.79
48	2	III	W 5th Ave	Virginia Ave	Maple St	0.08	5	5	0	0	10	1.78	21.78
49	2	III	E Hillsdale Ct	E Hillsdale Blvd	Hillsdale Overcrossing	0.21	5	0	0	5	10	1.30	21.30
50	2	III	Franklin St	Parrott Dr	Virginia Ave	0.06	10	5	0	0	5	1.26	21.26
Tier 3													
51	3	III + SLM	S Delaware St	E 16th Ave	Concar Dr	0.27	10	5	0	0	5	0.99	20.99
52	3	I	Concar Dr	S Grant St	S Delaware St	0.23	5	0	0	5	10	0.98	20.98
53	3	III	Pacific Blvd	Concar Dr	S Delaware St	0.38	5	0	10	0	5	0.85	20.85
54	3	III + SLM	Borel Ave	Bovet Rd	Edinburgh St	0.15	5	5	0	5	5	0.83	20.83
55	3	III	Huron Ave - Norfolk St Rt	Monte Diablo Ave	E 3rd Ave	0.54	10	0	0	0	10	0.78	20.78
56	3	III + SLM	Palm Ave	19th Ave	E 25th Ave	0.49	5	5	0	5	5	0.75	20.75
57	3	II	S Norfolk St	Marina Lagoon	Roberta Dr	0.36	0	0	10	0	10	0.14	20.14
58	3	III + SLM	36th Ave	Hacienda St	Alameda de las Pulgas	0.24	0	10	10	0	0	0.10	20.10
59	3	III	Monterey St	31st Ave	28th Ave	0.26	5	5	0	5	5	0.09	20.09
60	3	III	De Anza Blvd	State Hwy 92	Polhemus Rd	0.34	0	0	10	0	10	0.00	20.00
61	3	I	Laguna Vista Path	Los Prados	Laguna Vista	0.10	0	0	10	0	10	0.00	20.00
62	3	Crossing	Rand Street Bridge	Rand Street	San Mateo Creek	0.01	0	0	10	0	0	10.00	20.00
63	3	III	S Fremont St	2nd Ave	2nd Ave NW of Gateway Park	0.03	0	0	0	0	10	10.00	20.00
64	3	III	Sugarloaf Mountain Path	Laurelwood Dr	Laurel Creek Rd	0.88	10	0	0	0	10	0.00	20.00
65	3	II	E 4th Ave	S Grant St	S Humboldt St	0.07	10	0	0	0	0	7.72	17.72
66	3	II	Central Park Bike Lane	9th Ave	E 5th Ave	0.23	0	0	0	5	10	2.69	17.69
67	3	III	Rand St	Shoreview Avenue	San Mateo Creek	0.06	5	0	0	0	5	7.11	17.11

Rank	Tier	Class	Location	From	To	Length	Transit Access	School Access	Network Connectivity	Employment Connections	Community Destinations	Collision Score	Total Score
68	3	III	2nd Ave	S Delaware St	S Fremont St	0.13	0	0	0	0	10	6.59	16.59
69	3	III	19th Ave	Pacific Boulevard	19th Avenue	0.19	5	0	10	0	0	1.44	16.44
70	3	III	41st Ave	Hacienda St	Beresford St	0.18	5	0	0	5	5	0.96	15.96
71	3	III + SLM	San Miguel Wy	Otay Ave	Orinda Dr	0.31	5	10	0	0	0	0.88	15.88
72	3	III + SLM	Bovet Rd	El Camino Real	Borel Ave	0.29	0	0	0	5	10	0.68	15.68
73	3	III	S Grant St	Concar Dr	E 4th Ave	1.24	5	0	0	5	5	0.55	15.55
74	3	III	Parrott Dr	Alameda de las Pulgas	Franklin St	0.47	10	5	0	0	0	0.26	15.26
75	3	Crossing	Hwy 92 Crossing	Borel Pl	Spuraway Dr	0.14	0	0	10	5	0	0.17	15.17
76	3	III	Isabelle Ave	20th Ave	22nd Ave	0.18	0	5	0	0	10	0.00	15.00
77	3	III + SLM	17th Ave	Palm Ave	El Camino Real	0.10	5	0	0	0	5	1.97	11.97
78	3	II	Hillsdale Lagoon Bridge	S Norfolk St	City Limits	0.17	10	0	0	0	0	1.71	11.71
79	3	I	Concar Dr	S Delaware St	Pacific Blvd	0.20	10	0	0	0	0	1.34	11.34
80	3	III	Santa Clara Wy	Branson Dr	Orinda Dr	0.29	0	0	0	5	5	0.94	10.94
81	3	III	Casanova Dr	E 40th Ave	Laurie Meadows Dr	0.03	0	0	0	0	10	0.85	10.85
82	3	III + SLM	Virginia Ave	Harvard Rd	Edinburgh St	0.18	5	5	0	0	0	0.54	10.54
83	3	III + SLM	Laurie Meadows Dr	Pacific Blvd	Woodbridge Cir	0.41	0	0	0	0	10	0.36	10.36
84	3	III + SLM	Coyote Pt Dr	Bayshore Blvd	end of Coyote Point Dr	0.21	0	0	0	0	10	0.23	10.23
85	3	III	Columbia -Yale Dr Rt	Alameda de las Pulgas	City Limits	0.56	5	5	0	0	0	0.09	10.09
86	3	III	Woodbridge Cir	Laurie Meadows Dr	Seagate Dr	0.53	0	0	0	0	10	0.05	10.05
87	3	III + SLM	Otay Ave	Pacific Blvd	San Miguel Wy	0.06	0	5	0	0	0	3.50	8.50
88	3	III	E 16th Ave	S Claremont Dr	S Railroad Ave	0.05	5	0	0	0	0	2.77	7.77
89	3	III	Seagate Dr	Woodbridge Cir	Marine View Ave	0.02	0	0	0	0	5	0.99	5.99
90	3	III	Orinda Dr	40th Ave	Santa Clara Way	0.38	0	5	0	0	0	0.45	5.45
91	3	III	22nd Ave	Isabelle Ave	Hacienda St	0.17	0	0	0	0	5	0.45	5.45

Rank	Tier	Class	Location	From	To	Length	Transit Access	School Access	Network Connectivity	Employment Connections	Community Destinations	Collision Score	Total Score
92	3	III	E 40th Ave	Branson Dr	Orinda Dr	0.47	0	0	0	0	5	0.21	5.21
93	3	III + SLM	Harvard Rd	Nevada Ave	Virginia Ave	0.06	0	0	0	0	0	1.53	1.53
94	3	III	Branson Dr	Santa Clara Wy	40th Ave	0.54	0	0	0	0	0	0.50	0.50
95	3	III + SLM	Nevada Ave	Alameda de las Pulgas	Harvard Rd	0.24	0	0	0	0	0	0.40	0.40
96	3	III + SLM	Crystal Springs Rd	Alameda de las Pulgas	W 3rd Ave	0.39	0	0	0	0	0	0.32	0.32
97	3	III	E 39th Ave	Orinda Dr	Branson Dr	0.36	0	0	0	0	0	0.00	0.00
98	3	III	Marine View Ave	Seagate Dr	City Limit	0.02	0	0	0	0	0	0.00	0.00

8.2. Project Cost Estimates

This section presents typical planning level unit costs for constructing bikeways in the San Francisco Bay Area in **Table 8-3** and **Table 8-4** lists summary cost estimates for each of the recommended bikeway projects. Unit costs presented here are planning-level cost estimates based on typical or average costs experienced by California cities and counties when constructing similar project. While these costs also reflect the urban nature of the City of San Mateo, they do not consider project-specific factors such as intensive grading, landscaping, intersection modifications, and right-of-way acquisition that may increase actual construction costs. For some segments project costs may be significantly greater.

Table 8-3: Estimated Bikeway Unit Costs

Item	Quantity	Units	Unit Cost	Total
Class III Bike Route - Urban - Per Mile				
Bike Route Sign/Wayfinding[1]	10	EA	$ 300	$ 3,000
Shared Lane Marking[2]	20	EA	$ 250	$ 5,000
Total Cost Per Mile				**$ 8,000**
Class II Bike Lanes				
Bike Lane Sign/Wayfinding	10	EA	$ 300	$ 3,000
Striping Removal	10,560	LF	$ 1.25	$ 13,200
Striping and Stenciling	10,560	LF	$ 2.50	$ 26,400
Total Cost Per Mile				**$ 42,600**
Class I Shared Use Path - 10' paved, 2' shoulders				
Wayfinding	4	EA	$ 300	$ 1,200
Clear and Grub	73,920	SF	$ 1.00	$ 73,920
Asphalt Concrete Pavement	52,800	SF	$ 8.00	$ 422,400
Decomposed Granite Shoulders	21,120	SF	$ 5.00	$ 105,600
Striping[4]	15,840	LF	$ 2.50	$ 39,600
Total Cost Per Mile				**$ 642,720**

[1] Assumes five signs per mile in each direction.
[2] Assumes shared lane marking are placed every 265 feet.
[3] Assumes two signs per mile in each direction.
[4] Includes center stripe and striping along path edges.

The construction of recommended facilities will also require additional field work to verify conditions. These include but are not limited to: roadway width, travel lanes, actual motor vehicle speeds, motor vehicle volumes, bicycle and motor vehicle travel patterns and conflicts, and pavement conditions. Final bikeway treatments should be selected based on verified conditions.

Table 8-4 summarizes the cost estimates for the recommended bicycle improvements organized into project ranking and tier. The cost estimate for the Hillsdale Overcrossing was developed during the Hillsdale Overcrossing Feasibility Study and adjusted for inflation.

Table 8-4: Estimated Bikeway Improvement Costs

Rank	Location	From	To	Class	Length	Cost
Tier 1						
1	28th Ave	Mason Ln	El Camino Real	III	0.94	$2,800
2	Alameda de las Pulgas	Crystal Springs Rd	La Casa Ave (City Limit)	III	2.99	$24,000
3	1st Ave	B Street	Claremont Street	III + SLM	0.12	$900
4	31st Ave Extension	El Camino Real	Caltrain	I	0.22	$139,600
5	W Poplar Ave	City Limits (Glendale Dr)	Humboldt St	III	1.92	$5,800
6	Baldwin Ave	S B St	N San Mateo Dr	III + SLM	0.11	$900
7	E 5th Ave	San Mateo Dr	S Humboldt St	III + SLM	0.57	$4,500
8	S Grant St	19th Ave	Concar Dr	II	0.20	$8,400
9	Concar Dr	Hayward Park Caltrain	Grant Street	II	0.43	$18,200
10	Bay to Transit Path	17th Ave	Anchor Rd	Feasibility Study	1.82	TBD
11	Peninsula Ave	Humboldt St	N San Mateo Dr	II	0.62	$26,200
12	S B St	Baldwin Ave	9th Ave	III + SLM	0.54	$4,300
13	W 5th Ave	Maple Street	El Camino Real	II	0.22	$9,200
14	N San Mateo Dr	W Poplar Ave	W 5th Ave	III + SLM	0.84	$6,700
15	9th Ave	Palm Ave	S B St	III + SLM	0.14	$1,200
16	28th Ave Extension	El Camino Real	New Delaware St	I	0.09	$60,200
17	37th Ave	Edison Street	El Camino Real	III + SLM	0.27	$2,100
18	17th Avenue/Caltrain Access	Palm Avenue	19th Avenue	III	0.39	$1,200
					Total Tier 1	**$316,200**
Tier 2						
19	W 25th Ave	Hacienda St	S Delaware St	III + SLM	0.35	$2,800
20	Hobart Ave - 12th Ave Rt	Alameda de las Pulgas	Palm Ave	III	0.71	$2,100
21	Humboldt St	Peninsula Ave	E 3rd Ave	III	1.22	$3,600
22	Edison St	31st Ave	41st Ave	III	0.76	$2,300
23	31st Ave	Mason Ln	Edison St	III	0.86	$2,600
24	W 20th Ave	Alameda de las Pulgas	Palm Ave	III	0.74	$2,200
25	26th Ave	Campus Dr	Hacienda St	III	0.92	$2,800
26	N Claremont St	1st Ave	9th Ave	III + SLM	0.50	$4,000
27	Saratoga Dr	Hillsdale Blvd	Santa Clara Way	III + SLM	0.12	$1,000
28	41st Ave	Beresford St	El Camino Real	III + SLM	0.15	$1,200
29	N Claremont St	Peninsula Ave	1st Ave	III	1.08	$3,200
30	Hillsdale Overcrossing	Hillsdale Blvd	S Norfolk St	Crossing	0.33	$10,700,000
31	Ocean View Ave	Cottage Grove Ave	Dale Ave	III + SLM	0.14	$1,100
32	Palm Ave	South Blvd	19th Ave	III	0.26	$800
33	Hacienda St	22nd Ave	W 25th Ave	III	0.18	$500
34	Dale Ave	S Norfolk St	Shoreview Ave	III	0.36	$1,100
35	Shoreview Ave	S Norfolk St	Kehoe Ave	III	1.09	$3,300
36	Flores St	W 25th St	31st Ave	III	0.50	$1,500

Rank	Location	From	To	Class	Length	Cost
37	Cottage Grove Ave	S Norfolk St	Shoreview Ave	III	0.46	$1,400
38	37th Ave	Hacienda St	Edison St	III	0.24	$700
39	N San Mateo Dr	Peninsula Ave	W Poplar Ave	II	0.52	$22,000
40	Edinburgh -Virginia St Rt	Borel Ave	W 3rd Ave	III	0.95	$2,800
41	Glendora Dr	De Anza Blvd	W Hillsdale Blvd	III	0.54	$1,600
42	E 5th Ave	El Camino Real	San Mateo Drive	II	0.13	$5,600
43	2nd Ave	S Fremont St	S Humboldt St	III	0.14	$400
44	19th Ave	Palm Ave	Pacific Ave	III	0.07	$200
45	S Norfolk St	520' NW of E Hillsdale Blvd	E Hillsdale Blvd	II	0.10	$4,200
46	S Humboldt St	E 5th Ave	E 4th Ave	III	0.06	$200
47	Franklin Path	Pacific Boulevard	Hillsdale Boulevard	I	0.17	$106,100
48	W 5th Ave	Virginia Ave	Maple St	III	0.08	$200
49	E Hillsdale Ct	E Hillsdale Blvd	Hillsdale Overcrossing	III	0.21	$600
50	Franklin St	Parrott Dr	Virginia Ave	III	0.06	$200
					Total Tier 2	**$10,882,300**
Tier 3						
51	S Delaware St	E 16th Ave	Concar Dr	III + SLM	0.27	$2,200
52	Concar Dr	S Grant St	S Delaware St	I	0.23	$144,800
53	Pacific Blvd	Concar Dr	S Delaware St	III	0.38	$1,100
54	Borel Ave	Bovet Rd	Edinburgh St	III + SLM	0.15	$1,200
55	Huron Ave - Norfolk St Rt	Monte Diablo Ave	E 3rd Ave	III	0.54	$1,600
56	Palm Ave	19th Ave	E 25th Ave	III + SLM	0.49	$3,900
57	S Norfolk St	Marina Lagoon	Roberta Dr	II	0.36	$15,200
58	36th Ave	Hacienda St	Alameda de las Pulgas	III + SLM	0.24	$1,900
59	Monterey St	31st Ave	28th Ave	III	0.26	$800
60	De Anza Blvd	State Hwy 92	Polhemus Rd	III	0.34	$1,000
61	Laguna Vista Path	Los Prados	Laguna Vista	I	0.10	$66,400
62	Rand Street Bridge	Rand Street	San Mateo Creek	Crossing	0.01	TBD
63	S Fremont St	2nd Ave	2nd Ave NW of Gateway Park	III	0.03	$100
64	Sugarloaf Mountain Path	Laurelwood Dr	Laurel Creek Rd	III	0.88	$567,900
65	E 4th Ave	S Grant St	S Humboldt St	II	0.07	$3,000
66	Central Park Bike Lane	9th Ave	E 5th Ave	II	0.23	$9,700
67	Rand St	Shoreview Avenue	San Mateo Creek	III	0.06	$200
68	2nd Ave	S Delaware St	S Fremont St	III	0.13	$400
69	19th Ave	Pacific Boulevard	19th Avenue	III	0.19	$600
70	41st Ave	Hacienda St	Beresford St	III	0.18	$500
71	San Miguel Wy	Otay Ave	Orinda Dr	III + SLM	0.31	$2,500
72	Bovet Rd	El Camino Real	Borel Ave	III + SLM	0.29	$2,300
73	S Grant St	Concar Dr	E 4th Ave	III	1.24	$3,700
74	Parrott Dr	Alameda de las Pulgas	Franklin St	III	0.47	$1,400

Rank	Location	From	To	Class	Length	Cost
75	Hwy 92 Crossing	Borel Pl	Spuraway Dr	Crossing	0.14	TBD
76	Isabelle Ave	20th Ave	22nd Ave	III	0.18	$500
77	17th Ave	Palm Ave	El Camino Real	III + SLM	0.10	$800
78	Hillsdale Lagoon Bridge	S Norfolk St	City Limits	II	0.17	$7,300
79	Concar Dr	S Delaware St	Pacific Blvd	I	0.20	$129,800
80	Santa Clara Wy	Branson Dr	Orinda Dr	III	0.29	$900
81	Casanova Dr	E 40th Ave	Laurie Meadows Dr	III	0.03	$100
82	Virginia Ave	Harvard Rd	Edinburgh St	III + SLM	0.18	$1,500
83	Laurie Meadows Dr	Pacific Blvd	Woodbridge Cir	III + SLM	0.41	$3,300
84	Coyote Pt Dr	Bayshore Blvd	end of Coyote Point Dr	III + SLM	0.21	$1,700
85	Columbia -Yale Dr Rt	Alameda de las Pulgas	City Limits	III	0.56	$1,700
86	Woodbridge Cir	Laurie Meadows Dr	Seagate Dr	III	0.53	$1,600
87	Otay Ave	Pacific Blvd	San Miguel Wy	III + SLM	0.06	$500
88	E 16th Ave	S Claremont Dr	S Railroad Ave	III	0.05	$200
89	Seagate Dr	Woodbridge Cir	Marine View Ave	III	0.02	$100
90	Orinda Dr	40th Ave	Santa Clara Way	III	0.38	$1,100
91	22nd Ave	Isabelle Ave	Hacienda St	III	0.17	$500
92	E 40th Ave	Branson Dr	Orinda Dr	III	0.47	$1,400
93	Harvard Rd	Nevada Ave	Virginia Ave	III + SLM	0.06	$500
94	Branson Dr	Santa Clara Wy	40th Ave	III	0.54	$1,600
95	Nevada Ave	Alameda de las Pulgas	Harvard Rd	III + SLM	0.24	$1,900
96	Crystal Springs Rd	Alameda de las Pulgas	W 3rd Ave	III + SLM	0.39	$3,100
97	E 39th Ave	Orinda Dr	Branson Dr	III	0.36	$1,100
98	Marine View Ave	Seagate Dr	City Limit	III	0.02	$100
					Total Tier 3	**$1,617,700**

8.3. Maintenance Cost Estimates

Bikeways require regular maintenance and repair. On-street bikeways are maintained as part of the normal roadway maintenance program and extra emphasis should be placed on keeping bike lanes and roadway shoulders clear of debris and keeping vegetation overgrowth from blocking visibility. The high cost of maintaining Class I facilities may be shared among various agencies or departments. The typical maintenance costs for the bikeway network are shown in **Table 8-5**.

Table 8-5: Bikeway Maintenance Frequency and Cost Estimates

Facility Type	Unit Cost	Description	Length (Miles)	Annual Cost	Notes
Class I	$8,500	Miles/Year	3.71	$31,500	Lighting and removal of debris and vegetation overgrowth
Class II	$2,000	Miles/Year	3.03	$6,100	Repainting lane stripes and stencils, sign replacement as needed
Class III	$1,000	Miles/Year	22.17	$22,200	Sign replacement as needed
Class III + SLM	$1,250	Miles/Year	10.25	$12,800	Sign and shared use stencil replacement as needed
			Annual Cost	**$72,500**	

8.4. Bikeway Cost By Class and Tier

Table 8-6 presents a summary of bikeway miles and cost estimates by bikeway class. The total estimate for all the bikeway projects in this Plan is $12.1 million. A significant amount of this cost estimate is due to the cost of the Class I bike paths and overcrossings. The recommended Class II, Class III, and Class III with SLM projects total $277,400.

Table 8-6: Summary of Costs and Miles by Bikeway Class

Facility Type	Cost Estimate	Miles
I	$1,214,800	3.71
II	$129,000	3.03
III	$66,400	22.17
III + SLM	$82,000	10.25
Crossing	$10,700,000	0.48
Total	**$12,092,200**	**39.64**

Table 8-7 presents a summary of bikeway projects by implementation tier. Tier 1, intended for implementation in the next five years, is estimated to cost $316,200.

Table 8-7: Summary of Costs and Miles by Tiers

Tier	Cost Estimate	Miles
1	$316,200	12.42
2	$10,882,300	13.99
3	$993,700	13.24
Total	**$12,092,200**	**39.65**

Table 8-8 at the end of this chapter outlines the high priority projects that include the Tier 1 bikeway infrastructure projects, as well as studies and priority programs.

8.5. High Priority Projects

This high priority project list can be implemented in the next one to five years. These high priority projects are drawn directly from the results of the criteria-based ranking process presented in **Table 8-2** and supplemented with additional spot improvements and Downtown priorities. As discussed above in section 8.1, this plan places an overall priority on implementing bikeways that provide direct access to transit, jobs, schools and that improve safety for all bicyclists in San Mateo. For this reason, all of the Tier I projects identified through the ranking process are included in this high priority projects list. In addition to these Tier 1 projects, many of the recommended spot improvements identified in Section 6.2 and the Downtown Bicycle Parking Plan were identified as high priority by the Bicycle Plan Steering Committee, community-at-large and numerous important stakeholders in the plan. Thus, these projects are recommended for near-term implementation in addition to the Tier 1 projects.

Table 8-8 below presents the high priority projects and costs. It should be noted the 31st and 28th Ave Class I facilities are part of the Hillsdale Station Area Plan, a transit-oriented development project, and will be eligible for funding from a number of sources. The Bay to Transit Path may also be eligible for funding from a number of sources including Safe Routes to School and Safe Routes to Transit.

Table 8-8: High Priorty Projects

Location	From	To	Class	Cost
28th Ave	Mason Ln	El Camino Real	III	$2,800
Alameda de las Pulgas	Crystal Springs Rd	La Casa Ave (City Limit)	III + SLM	$24,000
1st Ave	B Street	Claremont Street	III + SLM	$900
31st Ave Extension	El Camino Real	Caltrain	I	$139,600
W Poplar Ave	City Limits (Glendale Dr)	Humboldt St	III	$5,800
Baldwin Ave	S B St	N San Mateo Dr	III + SLM	$900
E 5th Ave	San Mateo Dr	S Humboldt St	III + SLM	$4,500
S Grant St	19th Ave	Concar Dr	II	$8,400
Concar Dr	Hayward Park Caltrain	Grant Street	II	$18,200
Peninsula Ave	Humboldt St	N San Mateo Dr	II	$26,200
S B St	Baldwin Ave	9TH AVE	III + SLM	$4,300
W 5th Ave	Maple Street	El Camino Real	II	$9,200
N San Mateo Dr	W Poplar Ave	W 5th Ave	III + SLM	$6,700
9th Ave	Palm Ave	S B St	III + SLM	$1,200
28th Ave Extension	El Camino Real	New Delaware St	I	$60,200
37th Ave	Edison Street	El Camino Real	III + SLM	$2,100
17th Avenue/Caltrain Access	Palm Avenue	19th Avenue	III	$1,200
3rd Ave &Norfolk Intersection Improvement Study				$10,000
4th Ave & Humboldt Intersection Improvements				$15,000
19th Ave & US 101 Undercrossing Improvements				$21,600
Bay to Transit Path Feasibility Study				$150,000
Hillsdale Overcrossing				$10,700,000
Monte Diablo & US 101 Overcrossing Improvements				$4,000
Downtown Bicycle Parking				$147,400
Civic Facilities Bicycle Parking				$71,400
Franklin Parkway/Saratoga Drive Improvement Study				$15,000
		Total Estimated Cost of High Priority Projects		**$11,450,600**

9. Funding

Bicycle funding is administered at all levels of government. This chapter begins with explaining the current state of federally-administered funding and the anticipated new transportation bill, which influences State, regional and local funding and is followed by a description of funding sources that may be pursued to implement facilities and programs in this Plan. **Table 9-1** lists the acronyms commonly used to describe funding resources and government agencies. **Table 9-2** lists the funding sources described in this chapter and summarizes important funding source components, such as funding amount available, application deadlines and eligible applicants.

9.1. Federally-Administered Funding

The passage of the Intermodal Surface Transportation Efficiency Act (ISTEA) in 1991 signaled a major change to allocation of federal funding for transportation projects. As the first federal legislation after the completion of the Interstate Highway System, ISTEA presented an intermodal approach to transportation planning and funding, giving additional control to the country's Metropolitan Planning Organizations. ISTEA and subsequent transportation legislation, the Transportation Equity Act for the 21st Century (TEA-21) (1998) and the Safe, Accountable, Flexible, Efficient Transportation Equity Act, a Legacy for Users (SAFETEA-LU) (2005), have allocated dedicated funding for transit, bicycle and pedestrian projects and programs. Bicycle and pedestrian projects are funded at a very small percentage compared to highway projects, but SAFETEA-LU provided broader eligibility requirements than previous acts that allow bicycle and pedestrian projects to qualify for traditional "highway" funding.

On June 29, 2012 a new transportation bill (MAP-21) was passed that has many changes to the funding of Complete Streets elements. SAFETEA-LU, the previous legislation contained dedicated programs including - Transportation Enhancements, Safe Routes to School, and Recreational Trails - which were all commonly tapped sources of funding to make non-motorized improvements nationwide. MAP-21 combines these programs into a single source called 'Transportation Alternatives.' Overall levels of funding for these programs were reduced from $1.2 billion annually to approximately $800 million – a reduction of one third. Additionally, states may 'opt-out' of up to 50 percent of the funding and use it for other projects. If Montana decides to opt-out, this will result in a reduction in funding for Complete Street related improvements by up to two-thirds when compared to 2011 levels.

At the time of publication of this Plan, these funding mechanisms are new, implications of MAP-21 are not yet fully clear.

9.2. State-Administered Funding

The State of California uses both federal sources and its own budget to fund the following bicycle projects and programs.

9.2.1. Bicycle Transportation Account

The Bicycle Transportation Account (BTA) provides state funding for local projects that improve the safety and convenience of bicycling for transportation. Because of its focus on transportation, BTA projects must serve a transportation purpose. Funds are available for both planning and construction. Caltrans administers BTA funds, and requires eligible cities and counties to have adopted a Bicycle Transportation Plan. This Bicycle Master Plan meets BTA requirements for state funding. City Bicycle Transportation Plans must be approved by the Metropolitan Transportation Commission (local MPO) prior to Caltrans approval. Out of $7.2 million available statewide, the maximum amount available for individual projects is $1.2 million.

Online resource: www.dot.ca.gov/hq/LocalPrograms/bta/btawebPage.htm

9.2.2. Federal Safe Routes to School (SRTS) and California Safe Routes to School (SR2S)

Caltrans administers funding for Safe Routes to School projects through two separate and distinct programs: the state-legislated Program (SR2S) and the federally-legislated Program (SRTS). Both programs competitively award reimbursement grants with the goal of increasing the number of children who walk or bicycle to school.

California Safe Routes to School Program requires a 10 percent local match and is eligible to cities and counties, and targets children in grades K-12. The fund is primarily for construction, but applicants may use up to 10 percent of the program funds for education, encouragement, enforcement and evaluation activities. Cycle 9 provided $24.25 million for FY 10/11.

The Federal Safe Routes to School Program is now incorporated in to MAP-21 and the specific implications to this program are unclear at the time of this publication.

Online resource: http://www.dot.ca.gov/hq/LocalPrograms/saferoutes/saferoutes.htm

9.2.3. Recreational Trails Program

The Recreational Trails Program (RTP) of SAFETEA-LU allocates funds to states to develop and maintain recreational trails and trail-related facilities for both non-motorized and motorized recreational trail uses. Examples of trail uses include hiking, bicycling, in-line skating, equestrian use, and other non-motorized and motorized uses. The State Department of Parks and Recreation administers RTP funds in California. A minimum 12 percent of local match is required. California received a $1.3 million apportionment for FY 2010 and continuation of the program is dependent on Federal authorization of a new transportation bill. RTP projects must be ADA-compliant and may be used for:

- Maintenance and restoration of existing trails
- Purchase and lease of trail construction and maintenance equipment
- Construction of new trails, including unpaved trails
- Acquisition of easements or property for trails

- State-administrative costs related to this program (limited to seven percent of a State's funds)
- Operation of educational programs to promote safety and environmental protection related to trails (limited to five percent of a State's funds).

Online resource: http://www.fhwa.dot.gov/environmnet/rectrails/index.htm.

9.2.4. California Conservation Corps

The California Conservation Corps (CCC) is a public service program that occasionally provides assistance on construction projects. The CCC may be written into grant applications as a project partner. In order to utilize CCC labor, project sites must be public land or publicly-accessible. CCC labor will not perform regular maintenance, but will perform annual maintenance, such as the opening of trails in the spring.

Online resource: http://www.ccc.ca.gov/

9.2.5. Transportation Planning Grant Program

The Transportation Planning Grant Program, administered by Caltrans, provides two grants for bicycle project planning and construction.

The Community-Based Transportation Planning Grant funds projects that exemplify livable community concepts, including bicycle improvement projects. Eligible applicants include local governments, MPOs, and RPTAs. A 20 percent local match is required and projects must demonstrate a transportation component or objective. There is $3 million available annually statewide. The maximum grant award is $300,000.

The Environmental Justice: Context Sensitive Planning Grants promote context sensitive planning in diverse communities and funds planning activities that assist low-income, minority, and Native American communities to become active participants in transportation planning and project development. Grants are available to transit districts, cities, counties, and tribal governments. This grant is funded by the State Highway Account at $1.5 million annually statewide. The maximum grant award is $300,000.

Online resource: www.dot.ca.gov/hq/tpp/grants.html

9.2.6. Highway Safety Improvement Program

The Highway Safety Improvement Program funds are allocated to States as part of SAFETEA-LU. The goal of HSIP funds is to achieve a significant reduction in traffic fatalities and serious injuries on all public roads. As required under the Highway Safety Improvement Program (HSIP) California Department of Transportation has developed and is in the process of implementing a Strategic Highway Safety Plan (SHSP). A portion of the HSIP funds allocated to each state is set aside for construction and operational improvements on high-risk rural roads. If the state has a Strategic Highway Safety Plan, the remainder of the funds may be allocated to other programs, including projects on bicycle pathways or trails and education and enforcement. The local match varies between 0 and 10 percent. The maximum grant award is $900,000.

Caltrans issues an annual call for projects for HSIP funding. Projects must meet the goals of the Strategic Highway Safety Plan.

Federal HSIP online resource: http://www.fhwa.dot.gov/safetealu/factsheets/hsip.htm

Caltrans HSIP online resource: http://www.dot.ca.gov/hq/LocalPrograms/hsip.htm

9.2.7. Land and Water Conservation Fund

Land and Water Conservation Fund (LWCF) is a federally funded program, run through the National Park Service that provides grants for planning and acquiring outdoor recreation areas and facilities, including trails. The fund is administered by the California Department of Parks and Recreation. The fund has been reauthorized until 2015.

Cities, counties, and districts authorized to acquire, develop, operate, and maintain park and recreation facilities are eligible to apply. Applicants must fund the entire project, and will be reimbursed for 50 percent of costs. Property acquired or developed under the program must be retained in perpetuity for public recreational use.

On June 3, 2009, Secretary of the Interior Ken Salazar signed the LWCF 2009 Certificate of Apportionment, which distributes over $27 million to the States, Territories, and the District of Columbia. Approximately $2.3 million is available for projects in California.

National Park Service website: http://www.nps.gov/lwcf/

California LWCF website: http://www.parks.ca.gov/default.asp?page_id=21360

9.2.8. Wildlife Conservation Board Public Access Program

The Wildlife Conservation Board (WCB) is a California State board that provides grants to public agencies and non-profit groups and organizations. The focus of the Board's grant funding program is the acquisition of lands or improvements that preserve wildlife habitat or provide recreational access for hunting, fishing, or other wildlife-oriented activities. Up to $250,000 dollars are available per project. Applications are accepted quarterly. Projects eligible for funding include interpretive trails, river access, and trailhead parking areas. The State of California must have a proprietary interest in the project. Local agencies are generally responsible for the planning and engineering phases of each project.

Wildlife Conservation Board online resource: http://www.wcb.ca.gov/

9.2.9. Environmental Enhancement and Mitigation Funds

The Environmental Enhancement Mitigation Program (EEMP) provides grant opportunities for projects that indirectly mitigate environmental impacts of new transportation facilities. Projects should fall into one of the following three categories: highway landscaping and urban forestry, resource lands projects, or roadside recreation facilities. Funds are available for land acquisition and construction. The local Caltrans District must support the project. The average award amount is $250,000.

Online resource: http://resources.ca.gov/eem/

9.2.10. State Highway Operations & Protection Program

The State Highway Operations and Protection Program (SHOPP) is a Caltrans funding source with the purpose of purpose of maintaining and preserving the investment in the State Highway System and supporting infrastructure. Projects typically fall into the following categories: collision reduction, major damage restoration, bridge preservation, roadway preservation, roadside preservation, mobility enhancement, and preservation of other transportation facilities related to the state highway system. In the past, SHOPP funds have been used to construct bicycle projects, including curb ramps, overcrossings, bike paths,

sidewalks, and signal upgrades to meet ADA requirements. Jurisdictions work with Caltrans' districts to have projects placed on the SHOPP list.

The total amount available for the four-year SHOPP period between 2010/11 and 2013/14 fiscal years is $6.75 billion, which is a reduction in funding from prior SHOPP programs. Past project awards have ranged from approximately $140,000 to $4.68 million.

The American Recovery and Reinvestment Act (ARRA) granted funding to this program in California.

Online resource: http://www.dot.ca.gov/hq/transprog/shopp.htm

9.2.11. Petroleum Violation Escrow Account (PVEA)

In the late 1970s, a series of Federal court decisions against selected United States oil companies ordered refunds to the States for price overcharges on crude oil and refined petroleum products during a period of price control regulations. To qualify for PVEA funding, a project must save or reduce energy and provide a direct public benefit within a reasonable time frame. In the past, the PVEA has been used to fund programs based on public transportation, computerized bus routing and ride sharing, home weatherization, energy assistance and building energy audits, highway and bridge maintenance, and reducing airport user fees. In California, Caltrans administers funds for transportation-related PVEA projects. PVEA funds do not require a match and can be used as match for additional Federal funds.

Online resource: http://www.dot.ca.gov/hq/LocalPrograms/lam/prog_g/g22state.pdf

9.2.12. Office of Traffic Safety (OTS) Grants

Office of Traffic Safety Grants are supported by Federal funding under the National Highway Safety Act and SAFETEA-LU. In California, the grants are administered by the Office of Traffic Safety.

Grants are used to establish new traffic safety programs, expand ongoing programs or address deficiencies in current programs. Bicycle safety is included in the list of traffic safety priority areas. Eligible grantees are governmental agencies, state colleges, state universities, local city and county government agencies, school districts, fire departments, and public emergency services providers. Grant funding cannot replace existing program expenditures, nor can traffic safety funds be used for program maintenance, research, rehabilitation, or construction. Grants are awarded on a competitive basis, and priority is given to agencies with the greatest need. Evaluation criteria to assess need include potential traffic safety impact, collision statistics and rankings, seriousness of problems, and performance on previous OTS grants.

The California application deadline is January of each year. There is no maximum cap to the amount requested, but all items in the proposal must be justified to meet the objectives of the proposal.

California OTS online resource: http://www.ots.ca.gov/Grants/default.asp

9.2.13. Community Development Block Grants

The CDBG program funds projects and programs that develop viable urban communities by providing decent housing and a suitable living environment and by expanding economic opportunities, principally for persons of low and moderate income. Federal Community Development Block Grant Grantees may use CDBG funds for activities that include (but are not limited to) acquiring real property; building public facilities and improvements, such as streets, sidewalks, and recreational facilities; and planning and administrative

expenses, such as costs related to developing a consolidated plan and managing CDBG funds. The state makes funds available to eligible agencies (cities and counties) through a variety of different grant types. Grantees enter into a contract with the state. Eligible agencies are determined based on a formula, and are listed on the HUD website.

California received a $42.8 million allocation for all CDBG programs in FY 2010. The maximum grant amount is $800,000 for up to two eligible projects or $400,000 for a public service program.

Online resource: http://www.hud.gov/offices/cpd/communitydevelopment/programs/index.cfm

Eligible CDBG Agencies in California: http://www.hud.gov/local/ca/community/cdbg/#state

9.3. Locally-Administered Funding

Local funding sources are generally administered by Metropolitan Planning Organizations, Congestion Management Agencies, Transportation Improvement Authorities, or other regional agencies. Counties or cities may administer some funding sources. These funding sources are supported by federal, state, or local revenue streams.

9.3.1. Regional Surface Transportation Program

The Regional Surface Transportation Program (RSTP) is a block grant program that provides funding for bicycle projects, among many other transportation projects. Under the RSTP, Metropolitan planning organizations, such as the Metropolitan Transportation Commission's (MTC), prioritize and approve projects that will receive RSTP funds. Metropolitan planning organizations can transfer funding from other federal transportation sources to the RSTP program in order to gain more flexibility in the way the monies are allocated. In California, 76 percent of RSTP funds are allocated to urban areas with populations of at least 200,000. The remaining funds are available statewide.

Online resource: http://www.mtc.ca.gov/funding/STPCMAQ/

9.3.2. Transportation for Livable Communities Program

The Transportation for Livable Communities Program (TLC) provides grant monies to public agencies to encourage land use decisions that support compact, bicycle-friendly development near transit hubs. MTC's Transportation Plan 2035 stipulates all eligible TLC projects to be within Priority Development Areas (PDAs), which focus growth around transit. MTC selects projects based on their status (planned or proposed) and their development intensity. MTC administers the TLC program with funds from the Regional Surface Transportation Project and caps grants at $400,000. Funds may be used for capital projects or planning.

Online resource: www.mtc.ca.gov/planning/smart_growth/tlc_grants.htm

9.3.3. Transportation Fund for Clean Air

Administered by the Bay Area Air Quality Management District (BAAQMD), the Transportation Fund for Clean Air (TFCA) is a grant program funded by a $4 surcharge on motor vehicles registered in the Bay Area. This surcharge generates approximately $22 million per year in revenue. TFCA's goal is to implement the most cost-effective projects in the Bay Area that will decrease motor vehicle emissions, and therefore improve air quality. Projects must be consistent with the 1988 California Clean Air Act and the Bay Area Ozone Strategy. TFCA funds covers a wide range of project types, including bicycle facility improvements such as

bike lanes, bicycle racks, and lockers; arterial management improvements to speed traffic flow on major arterials; and smart growth.

Online resource: http://www.baaqmd.gov/Divisions/Strategic-Incentives/Funding-Sources/TFCA.aspx

9.3.4. Bicycle Facilities Program

The BAAQMD Bicycle Facility Program (BFP) provides grant funding to reduce motor vehicle emissions through the implementation of new bikeways and bicycle parking facilities in the Bay Area. The TFCA program funds the BFP. Projects must cost between $10,000 and $120,000 and the applicant must have secured 50 percent in matching funds. The BAAQMD typically releases a call for projects in June or July, requiring an application submittal in September and announcing project awards in November.

Online resource: http://www.baaqmd.gov/Divisions/Strategic-Incentives/Bicycle-Facility-Program.aspx

9.3.5. Safe Routes to Transit (SR2T)

Regional Measure 2 (RM2), approved in March 2004, raised the toll on seven state-owned Bay Area bridges by one dollar for 20 years. This fee increase funds various operational improvements and capital projects that reduce congestion or improve travel in the toll bridge corridors.

MTC allocates the $20 million of RM2 funding to the Safe Routes to Transit Program, which provides competitive grant funding for capital and planning projects that improve bicycle access to transit facilities. Eligible projects must reduce congestion on one or more of the Bay Area's toll bridges. Transform and the East Bay Bicycle Coalition administer SR2T funding. Awarded in five $4 million grant cycles, the first round of funding was awarded in December 2005. Future funding cycles will be in 2011 and 2013.

Online resource: http://www.transcoalition.org/c/bikeped/bikeped_saferoutes.html

9.3.6. TDA Article 3

Transportation Development Act (TDA) Article 3 funds are state block grants awarded annually to local jurisdictions for transit and bicycle projects in California. Funds originate from the Local Transportation Fund (LTF), which is derived from a quarter-cent of the general state sales tax. LTF funds are returned to each county based on sales tax revenues. MTC estimates allocating $22 million in revenues to San Mateo County. San Mateo City/County Association of Governments (C/CAG) develops a list of TDA Article 3 projects for San Mateo County through a competitive process, and then receives funding from MTC to distribute to local agencies.

Eligible bicycle projects include: construction and engineering for capital projects; maintenance of bikeways; bicycle safety education programs (up to five percent of funds); and development of comprehensive bicycle facilities plans. A city or county may apply for funding to develop or update bicycle plans not more than once every five years. TDA funds may be used to meet local match requirements for federal funding sources. Two percent of the total TDA apportionment is available for bicycle and pedestrian funding.

Online resource: http://www.mtc.ca.gov/funding/STA-TDA/

9.3.7. Regional Bicycle Program

The Regional Bicycle Program funds construction of bikeways on the Regional Bikeway Network for the Bay Area. MTC administers RBP funds to county CMA's based on population, bikeway network capital cost, and unbuilt network miles. In San Mateo County, C/CAG administers and distributes this funding.

Online resource: www.mtc.ca.gov/planning/bicyclespedestrians/regional.htm

9.3.8. Measure A

San Mateo County Voters approved Measure A in 1988, increasing local sales tax by one-half of one percent for transportation improvements designated in the Transportation Expenditure Plan. The measure's 2004 reauthorization extended it through 2033. The San Mateo County Transportation Authority (TA) administers Measure A revenues to fund a wide variety of transportation-related projects and programs. In 2011, the TA will issue its first call for bicycle projects funded through Measure A.

Online resource: http://www.smcta.com/

9.3.9. Peninsula Traffic Congestion and Relief Alliance

The Peninsula Traffic Congestion and Relief Alliance (The Alliance) is San Mateo County's Transportation Demand Management Agency. The Alliance's mission is to reduce the number of single occupancy vehicles traveling in, to, and through San Mateo County, reducing vehicle emissions resulting in improved air quality. The Alliance is funded by the C/CAG, the San Mateo County TA, the BAAQMD and the MTC.

The Alliance provides small grants and cash incentives that allow communities and employers to provide bicycle parking and provide commuter benefits that encourage transit and biking. Programs include the Commute Benefit Employer Incentive Program, which allows employers to provide employees with up to $230 pre-tax for most commute expenses, and the Bicycle Parking Incentive Program, which reimburses employers for 50 percent of the cost of bicycle parking, up to $500 per unit.

Online resource: www.commute.org

9.3.10. New Construction

Future construction projects are a means of providing trails, bicycle parking, and other bicycle facilities. To ensure that roadway construction projects provide facilities where needed and feasible, it is important that an effective review process be in place so that new roads meet the cities' standards and guidelines for the development of bicycle facilities. A developer may also attempt to reduce the number of trips by paying for on- and off-site bicycle improvements designed to encourage residents, employees and visitors to the new development to bike rather than drive. Related City policies and ordinances include the San Mateo Transportation Fee Ordinance and General Plan Policy C4.3: Desication of Needed Right-of-way for bikeways where not unreasonable.

9.3.11. General Funds

One of the local revenue sources of cities, towns, and counties available for use on bicycle improvements are general funds resulting from sales taxes, property taxes, and other miscellaneous taxes and fees. There are generally few restrictions on the use of these funds, which are utilized for a large variety of local budget needs. As such, there is typically high demand for these funds for numerous government services. Design and

construction of pathways through use of this funding source usually receives limited support from local governments unless their constituents lobby effectively for such use.

In some cases, a component of local general funds can be dedicated to transportation improvements including the construction and repair of pathways.

9.3.12. Special Improvement Districts

Cities may establish special improvement districts to provide funding for specified public improvement projects within the designated district. Property owners in the district are assessed for the improvements and can pay the amount immediately or over a span of 10 to 20 years. Street pavement, curb and gutter, and streetlights are some of the common improvements funded by Special Improvement Districts. Business Improvement Districts and Special Assessment Districts are example of special improvement districts.

9.3.13. Mello-Roos Community Facilities Act

In 1982, California Legislature passed the Mello-Roos Community Facilities Act in response to reduced funding opportunities resulting from Proposition 13. The Mello-Roos Act allows any county, city, special district, school district, or joint powers of authority to establish a Community Facility Districts (CFD) for the purpose of selling tax-exempt bonds to fund public improvements within that district. CFDs must be approved by a two-thirds margin of qualified voters in the district. Property owners within the district are responsible for paying back the bonds. Construction and maintenance of bicycle facilities are eligible for funding under CFD bonds.

Online resource: http://mello-roos.com/pdf/mrpdf.pdf

9.3.14. Parks and Recreation Funds

Local parks and recreation funds are generally derived from property and sales taxes and some fee revenues, and they are sometimes used directly for pathway or pathway-related facilities, including bathrooms, pocket parks, lighting, parking, and landscaping. Parks and recreation funds are also utilized to cover pathway maintenance costs incurred by these departments. Assessed funds may be used for projects within only the district from which they were assessed.

9.3.15. Integration into Larger Projects

"Routine accommodation" policies at Caltrans and MTC require agencies to design, construct, operate, and maintain transportation facilities using best practices for bicyclists. Local jurisdictions can begin to expect that some portion of a bicyclist project costs, when they are built as part of larger transportation projects, will be covered in project construction budgets.

9.4. Other Sources

9.4.1. Community Action for a Renewed Environment (CARE)

CARE is a competitive grant program that offers an innovative way for a community to organize and take action to reduce toxic pollution in its local environment. Through CARE, a community creates a partnership that implements solutions to reduce releases of toxic pollutants and minimize people's exposure to them. By providing financial and technical assistance, EPA helps CARE communities get on the path to a renewed environment. Transportation and "smart-growth" types of projects are eligible. Grants range between $75,000 and $300,000.

Online resource: http://www.epa.gov/care/

9.4.2. Bikes Belong Grant

Bikes Belong is an organization sponsored by bicycle manufacturers with the intent to increase bicycle riding in the United States. Bikes Belong provides grant opportunities up to $10,000 with a minimum 50 percent match to organizations and agencies seeking to support facility and advocacy efforts. Eligible projects include bike paths, trails, and bridges, mountain bike facilities, bike parks, and BMX facilities.

Online resource: http://www.bikesbelong.org/grants

9.4.3. Volunteer and Public-Private Partnerships

Local schools or community groups may use the bikeway projects as a project for the year, possibly working with a local designer or engineer. Work parties may be formed to help clear the right-of-way where needed. A local construction company may donate or discount services. A challenge grant program with local businesses may be a good source of local funding, where corporations 'adopt' a bikeway and help construct and maintain the facility.

Table 9-1: Funding Acronyms, Online Resources and Government Jurisdictions

Acronyms
BAAQMD – Bay Area Air Quality Management District
Caltrans - California Department of Transportation
C/CAG – City/County Association of Governments of San Mateo County
CMAQ - Congestion Mitigation and Air Quality
CTC - California Transportation Commission
FHWA - Federal Highway Administration
RTPA - Regional Transportation Planning Agency
State DPR - California Department of Parks and Recreation (under the State Resources Agency)
SAFETEA-LU – Safe Accountable Flexible, Efficient Transportation Equity Act: A Legacy for Users
TA – San Mateo County Transportation Authority
Jurisdictions for San Mateo County, California:
Caltrans - Caltrans District 4
Congressional District 12 and 14

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Table 9-2: Funding Sources

Grant Source	Due Date	Administering Agency	Annual Total	Matching Requirement	Eligible Applicants	Planning	Construction	Other	Comments
State-Administered Funding									
Bicycle Transportation Account	December	Caltrans	$7.2 m	min. 10% local match on construction	city, county	X	X		State-funded. Projects that improve safety and convenience of bicycle commuters. Contact Penny Gray, Caltrans, (916) 653-2750. Maximum project award is $500,000.
Federal Safe Routes to School	Mid-July	Caltrans	$46 m	none	state, city, county, MPOs, RTPAs and other organizations that partner with one of the above.		X	X	Construction, education, encouragement and enforcement program to encourage walking and bicycling to school.
California Safe Routes to School	Late May/ Early June	Caltrans	$24.5 m	10%	city, county		X	X	Primarily construction program to enhance safety of bicycle facilities.
Recreational Trails Program	Oct. 1	CA Dept. of Parks and Recreation	$1.3 m in2010	12%	Agencies and organizations that manage public lands	X	X	X	Funds can be used for acquisition of easements for trails from a willing seller.
California Conservation Corps	On-going	California Conservation Corps	CCC donates labor hours	None	Federal and state agencies, city, county, school district, NPO, private industry		X	X	CCC provides labor assistance on construction projects and annual maintenance. Contact the Corps at (916) 341-3100.
Community Based Transportation Planning Demonstration Grant Program	November	Caltrans	$3 m	20% local	MPO, RPTA, city, county		X		Projects that exemplify livable community concepts. Contact Leigh Levine, Caltrans, (916) 651-6012.
Highway Safety Improvement Program	Oct in CA	Caltrans, NDOT	$50m in 2009	Varies between 0% and 10%	Local or regional governments	X	X	X	Projects must address safety issue. Education and enforcement programs are eligible.
Land and Water Conservation Fund	March	NPS, CA Dept. of Parks and Recreation	$2.3 m in CA in 2009	50%	Cities, counties and districts authorized to operate, acquire, develop and maintain park and recreation facilities	X		X	Lands acquired through program must be retained in perpetuity for public recreational use. Individual project awards are not available.
Wildlife Conservation Board Public Access Program	Quarterly	Wildlife Conservation Board	Grants can be up to $250,000	Up to 50%	Public agencies and nonprofits		X		State of California must have a proprietary interest in the project. Project awards are not available.
Environmental Enhancement and Mitigation Program	November	California Natural Resources Agency	$10 m	None	Federal, State, local agencies and NPO		X	X	EEMP funds projects in California, at an annual project average of $250,000. Funds may be used for land acquisition.

Grant Source	Due Date	Administering Agency	Annual Total	Matching Requirement	Eligible Applicants	Planning	Construction	Other	Comments
State Highway Operations and Protection Program (SHOPP)	Not Available	Caltrans	$1.69 m statewide annually through FY 2013/14	Not Available	Local and regional agencies		X	X	Capital improvements and maintenance projects that relate to maintenance, safety and rehabilitation of state highways and bridges.
Petroleum Violation Escrow Account	Not Applicable	Caltrans	Varies annually	None	Local and regional agencies		X	X	Funds programs based on public transportation, computerized bus routing and ride sharing, home weatherization, energy assistance and building energy audits, highway and bridge maintenance, and reducing airport user fees.
Office of Traffic Safety (OTS) Grants	January	Caltrans	Varies annually	None	Government agencies, state colleges, state universities, city, county, school district, fire department, public emergency service provider			X	Contact OTS at (916) 509-3030.
Community Development Block Grants	Varies between grants	U.S. Dept. of Housing and Urban Development (HUD)	$42.8 m	Varies between grants	City, county	X	X	X	Funds local community development activities such as affordable housing, anti-poverty programs, and infrastructure development. Can be used to build sidewalks, recreational facilities.
Locally-Administered Funding									
Regional Surface Transportation Program	Varies	Caltrans, RTPAs	Varies annually	Not applicable	Regional, local agencies	X	X		
Transportation for Livable Communities	Varies	MTC	$400,000 per project	Not applicable	Local and regional agencies	X	X	X	
Transportation Fund for Clean Air	Varies	Bay Area Air Quality Management District	$22 m	Not applicable	Local and regional agencies		X	X	
Bicycle Facilities Program	June/July	Bay Area Air Quality Management District	$10 - $120 k per project	50%	Local and regional agencies		X	X	Transportation Fund for Clean Air (TFCA) program funds the BFP.
Safe Routes to Transit	Varies	Transform/EBBC	$4 m annually	None	Local and regional agencies	X	X	X	

Grant Source	Due Date	Administering Agency	Annual Total	Matching Requirement	Eligible Applicants	Planning	Construction	Other	Comments
Transportation Development Act (TDA) Article 3 (2% of total TDA)	Jan.	C/CAG	varies	None	City, county, joint powers agency	X	X		Projects must be included in either a detailed circulation element or plan included in a general plan or an adopted comprehensive bikeway plan and must be ready to implement within the next fiscal year.
Regional Bicycle Program	Not applicable	MTC and C/CAG	varies	None	Not Applicable		X		MTC administers RBP funds to county CMA's based on population, bikeway network capital cost and unbuilt network miles.
Measure A	Not applicable	SMCTA	Varies	Not Applicable	Not Applicable		X		In 2011, the TA will issue its first call for bicycle projects funded through Measure A.
Peninsula Traffic Congestion Relief Alliance	None	Peninsula Traffic Congestion Relief Alliance	Varies	50%	Public agencies and private enterprises			X	"The Alliance" reimburses applicants 50% the cost of bicycle parking.
New Construction	Not applicable	City, county, joint powers authority	Varies	Not Applicable	City, county, joint powers authority		X		Fees related to new construction to provide bicycle amenities that mitigate transportation effects of new development.
General Funds	Not Applicable	City, county	Varies	Not Applicable	City, county	X	X	X	
Special Improvement Districts	Not Applicable	City, county, joint powers authority	Varies	Not Applicable	Neighborhoods, communities		X		Only those who benefit from the improvement may be taxed. Taxes should be tied to the amount of benefit received.
Mello-Roos Community Facilities Act	Not Applicable	City, county, special district, school district, joint powers authority	Varies	Not Applicable	city, county, special district, school district, joint powers of authority		X	X	Property owners within the district are responsible for paying back the bonds. May include maintenance.
Parks and Recreation Funds	Not applicable	City, county	Varies	Not Applicable	City, county	X	X	X	
Integration into Larger Projects	Not applicable	City, county, state, tribal agencies, non-profits	Varies	Not Applicable	City, county, state, tribal agencies, non-profits	X	X	X	Bicycle projects can be integrated into larger construction projects.
Other Sources									
Community Action for a Renewed Environment	March	US EPA	Varies	Not Available	applicant must fall within the statutory terms of EPA's research and demonstration grant authorities	X		X	Grant program to help community organize and take action to reduce toxic pollution in its local environment
Bikes Belong Grant	Multiple dates throughout year.	Bikes Belong	Not Available	50% minimum	organizations and agencies		X	X	
Volunteer and Public-Private Partnerships	Not Applicable	City, county, joint powers authority	Varies	Not Applicable	Public agency, private industry, schools, community groups		X	X	Requires community-based initiative to implement improvements.

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Appendix A. Design Guidelines

This appendix presents an overview of bicycle facility designs, based on appropriate California Manual of Uniform Traffic Control Devices (California MUTCD) and Highway Design Manuals, and supplemented by AASHTO best practices and San Mateo-specific design guidelines. The purpose is to provide readers and project designers with an understanding of the facility types that are proposed in the Plan, and with specific treatments that are recommended or required.

Appendix A Table of Contents

A.1. Bicycle Design Standards

The City of San Mateo Bicycle Design Guidelines present standards and recommendations that specifically provide for consistency in the City of San Mateo, or where details are needed beyond what is provided by state and federal design standards. All projects must also meet state and federal design standards. Therefore, in addition to these City of San Mateo Design Guidelines, engineers, planners and designers should also refer to the following documents and their subsequent updates when planning and designing bicycle and pedestrian facilities.

Signage in San Mateo is governed by the California MUTCD. As of January 21, 2010, the California Department of Transportation (Caltrans) has revised the California MUTCD 2010 to include FHWA's 2003 MUTCD Revision 2 dated December 21, 2007. FHWA has released the new 2009 MUTCD but it is not effective in California until Caltrans and the California Traffic Control Devices Committee (CTCDC) review it and incorporate the changes into California MUTCD through formal efforts. California has until January 15, 2012 to accomplish this task and a Draft 2011 MUTCD is currently under review. In the event that a specific treatment is not in the California MUTCD, it may be necessary to go through experimental testing procedures. Experimental testing is overseen by the California Traffic Control Devices Committee.

The following manuals, guides, policies, directives, and plans informed these design guidelines:

- California Manual on Uniform Traffic Control Devices, 2010 Update. http://www.dot.ca.gov/hq/traffops/signtech/mutcdsupp/ca_mutcd2010.htm
- Manual on Uniform Traffic Control Devices (MUTCD), Federal Highway Administration. http://mutcd.fhwa.dot.gov/
- Caltrans Complete Intersections: A Guide to Reconstructing Intersections and Interchanges for Bicyclists and Pedestrians (2010).
- Caltrans Policies and Directives. http://www.dot.ca.gov/hq/traffops/signtech/signdel/policy.htm including:
    - Traffic Operations Policy Directive 09-06 "Provide Bicycle and Motorcycle Detection on all new and modified approaches to traffic-actuated signals in the state of California."
    - Caltrans Deputy Directive DD-64 " Complete Streets – Integrating the Transportation System."
    - Caltrans Highway Design Manual. http://www.dot.ca.gov/hq/oppd/hdm/hdmtoc.htm
    - Caltrans Design Information Bulletins. http://www.dot.ca.gov/hq/oppd/dib/dibprg.htm

      including:
        - DIB 80-01 Roundabouts
        - DIB 82-03 Design Information Bulletin 82-03 "Pedestrian Accessibility Guidelines for Highway Projects"
    - Caltrans Standard Plans. http://www.dot.ca.gov/hq/esc/oe/project_plans/HTM/06_plans_disclaim_US.htm

- ADA Accessibility Guidelines for Buildings and Facilities (ADAAG). http://www.access-board.gov/adaag/html/adaag.htm
- Revised Draft Guidelines for Accessible Public Rights-of-Way, Access Board. http://www.access-board.gov/prowac/draft.htm
- Guidelines for the Development of Bicycle Facilities, AASHTO. Guidelines for the Planning, Design, and Operations of Pedestrian Facilities, AASHTO. https://bookstore.transportation.org/home.aspx
- A Policy on Geometric Designs of Highways, AASHTO. https://bookstore.transportation.org/Item_details.aspx?id=110
- National Association of City Transportation Officials Urban Bikeway Design Guide http://nacto.org/cities-for-cycling/design-guide/

This appendix is not intended to replace existing state or national mandatory or advisory standards, nor the exercise of engineering judgment by licensed professionals.

Cost estimates cited in the document reflect 2009 dollars and are included for reference only. All costs are for equipment and materials, and do not include labor. Actual costs to construct the facilities may vary depending on market fluctuations, design specifications, engineering requirements and availability of materials.

A.2. Bikeway Classification

A.2.1. Bikeway Classification Overview

Discussion

Caltrans has defined three types of bikeways in Chapter 1000 of the Highway Design Manual: Class I/shared use path, Class II/Bike Lane, and Class III/Bike Route. This document uses the generic terms "shared use path", "bike lane" and "bike route".

Design Summary

Path Width:

8 feet is the minimum allowed for a two-way bicycle path and is only recommended for low traffic situations.

10 feet is recommended in most situations and will be adequate for moderate to heavy use.

12 feet is recommended for heavy use situations with high concentrations of multiple users such as joggers, bicyclists, rollerbladers and pedestrians. A separate track (5' minimum) can be provided for pedestrian use.

Bike Lane Width with Adjacent On-Street Parking:

5 feet minimum recommended when parking stalls are marked

Bike Lane Width without Adjacent Parking:

4 feet minimum when no gutter is present (rural road sections)

5 feet minimum when adjacent to curb and gutter (3' more than the gutter pan width if the gutter pan is greater than 2')

Recommended Width: 6 feet where right-of-way allows

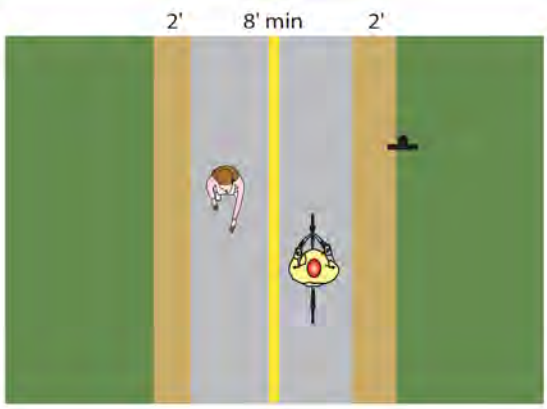
Lane Width for Bicycle Route With Wide Outside Lane:

Fourteen feet (14') minimum is preferred. Fifteen feet (15') should be considered if heavy truck or bus traffic is present. Bike lanes should be considered on roadways with outside lanes wider than 15 feet.

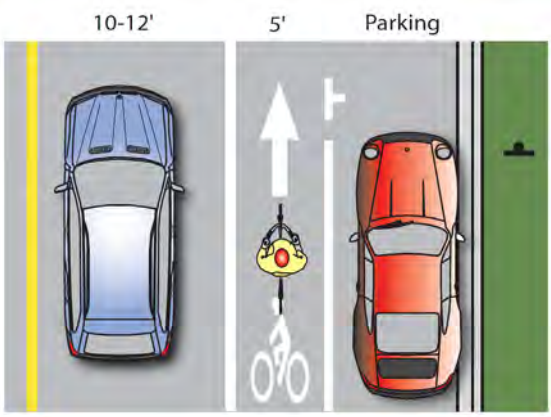
Sign Spacing

Bikeway signs shall be installed at the beginning of bikeways and at every decision point (intersection). Signs should be placed at every decision point and at quarter mile intervals. End signs may be placed at the end of bikeways.

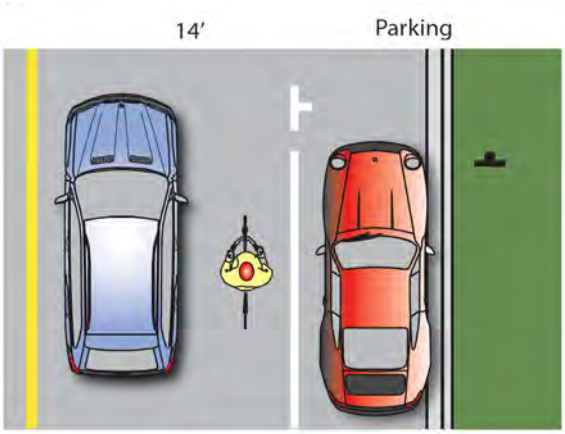
Design Example



Class I Shared Use Bike Path



Class II Bike Lane

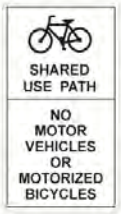


Class III Bike Route

Recommended Design

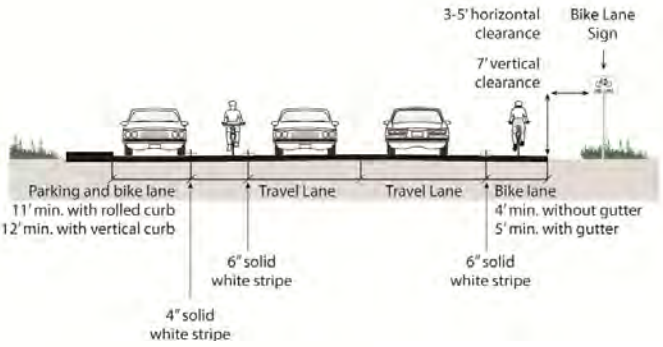
CLASS I
Multi-Use Path

Provides a completely separated right of way for the exclusive use of bicycles and pedestrians with crossflow minimized.



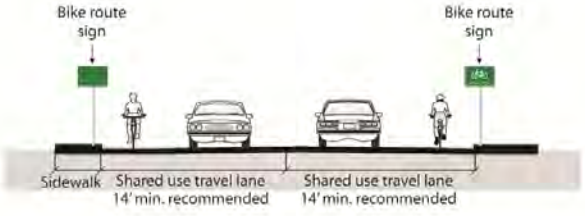
CLASS II
Bike Lane

Provides a striped lane for one-way bike travel on a street or highway.



CLASS III
Bike Route
Signed Shared Roadway

Provides for shared use with motor vehicle traffic, typically on lower volume roadways.



Guidance	Cost
• Caltrans Highway Design Manual (Chapter 1000: Sections 1003.1(1) and (2), 1003.2(1), 1003.3(1), and 1003.5) • California MUTCD Chapter 9 • AASHTO Guide for the Development of Bicycle Facilities, Chapter 2	• Class I Path: $500,000 - $4,000,000 per mile • Class II Bike Lane: $5,000 - $500,000 per mile • Class III Bike Route: $1,000 - $300,000 per mile

A.3. Shared Use Paths

A shared use path (Class I) allows for two-way, off-street bicycle use and also may be used by pedestrians, skaters, wheelchair users, joggers and other non-motorized users. These facilities are frequently found in parks, along rivers, beaches, and in greenbelts or utility corridors where there are few conflicts with motorized vehicles. Class I facilities can also include amenities such as lighting, signage, and fencing (where appropriate).

A.3.1. General Design Practices:

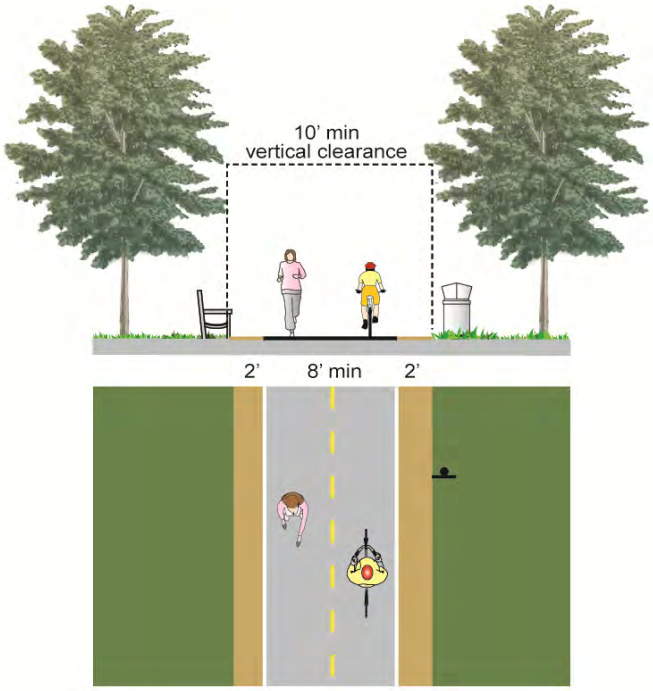
Both the California Highway Design Manual Chapter 1000 and the AASHTO Guide for the Development of Bicycle Facilities generally recommend against the development of shared use paths directly adjacent to roadways. Also known as "sidepaths," these facilities create a situation where a portion of the bicycle traffic rides against the normal flow of motor vehicle traffic and can result in wrong-way riding when either entering or exiting the path. This can also result in an unsafe situation where motorists entering or crossing the roadway at intersections and driveways do not notice bicyclists coming from their right, as they are not expecting traffic coming from that direction. Stopped cross-street motor vehicle traffic or vehicles exiting side streets or driveways may frequently block path crossings. Even bicyclists coming from the left may also go unnoticed, especially when sight distances are poor.

Shared use paths may be considered along roadways under the following conditions:

- The path will generally be separated from all motor vehicle traffic.
- Bicycle and pedestrian use is anticipated to be high.
- In order to provide continuity with an existing path through a roadway corridor.
- In order to direct bicycle and pedestrian traffic away from freeway ramps
- The path can be terminated at each end onto streets with good bicycle facilities, or onto another well-designed path.
- There is adequate access to local cross-streets and other facilities along the route.

As bicyclists gain experience and realize some of the advantages of riding on the roadway, many stop riding on paths adjacent to roadways. Bicyclists may also tend to prefer the roadway as pedestrian traffic on the bicycle path increases due to its location next to an urban roadway. When designing a bikeway network, the presence of a nearby or parallel path should not be used as a reason to not provide adequate shoulder or bicycle lane width on the roadway, as the on-street bicycle facility will generally be superior to the "sidepath" for experienced bicyclists and those who are cycling for transportation purposes. Bicycle lanes should be provided as an alternate (more transportation-oriented) facility whenever possible.

A.3.2. Pathway Design

Discussion	Recommended Design
Ten-foot wide paved paths are usually best for accommodating all uses, and better for long-term maintenance and emergency vehicle access. When motor vehicles are driven on shared use paths, their wheels often will be at or very near the edges of the path. Since this can cause edge damage that, in turn, will reduce the effective operating width of the path, adequate edge support should be provided. Edge support can be either in the form of stabilized shoulders, a concrete "ribbon curb" along one or more edges of the path, or constructing additional pavement width or thickness. Constructing a typical pavement width of 10 feet, where right-of-way and other conditions permit, lessens the edge raveling problem. **Surfacing and Path Construction** Thicker surfacing and a well-prepared sub-grade will reduce deformation over time and reduce long-term maintenance costs. At a minimum, off-street paths should be designed with sufficient surfacing structural depth for the sub-grade soil type to support maintenance and emergency vehicles. Asphalt and concrete are the most common surface treatment for multi-use paths, however the material composition and construction methods used can have a significant determination on the longevity of the pathway. Surface selection should take place during the design process. If trees are adjacent to the path, a root barrier should be installed along the path to avoid root uplift.	

Design Summary	Design Example
Width 8 feet minimum paved path width (Caltrans). AASHTO recommends a paved width of 10 feet. A 3 to 4-foot wide native surface path may be considered alongside shared-use paths for runners. (This design differs from the Caltrans required 2-foot shoulders for Class I paths in that wider shoulders are optional if accommodation of joggers is desired.) **Paving** Hard, all-weather pavement surfaces are usually preferred over those of crushed aggregate, sand, clay or stabilized earth (AASHTO). **Separation From Highway** When two-way shared use paths are located adjacent to a roadway, wide separation between a shared use path and the adjacent highway is desirable. Bike paths closer than 5 feet from the edge of the shoulder shall include a physical barrier to prevent bicyclists from encroaching onto the highway (Caltrans). Where used, the barrier should be a minimum of 42 inches high (AASHTO).	 **Guidance** • Caltrans Highway Design Manual (Chapter 1000 Section 1003.1(1) and (2), and 1003.5) • AASHTO Guide for the Development of Bicycle Facilities, Chapter 2 • California MUTCD Chapter 9B. Signs Guidelines for Accessible Public Rights-of-Way **Cost** • Class I Path: $500,000 - $4,000,000 per mile (Note 1: This assumes an asphalt or concrete path. Note 2: The concrete option is likely to cost 50 percent more than a standard asphalt pathway.)

A.3.3. Bollards

Discussion

Minimize the use of bollards to avoid creating obstacles for bicyclists. Bollards, particularly solid bollards, have caused serious injury to bicyclists. The California MUTCD explains, "Such devices should be used only where extreme problems are encountered" (Section 9C.101). Instead, design the path entry and use signage to alert drivers that motor vehicles are prohibited.

Bollards are ether fixed or removable and may be flexible or rigid. Flexible bollards and posts are designed to give way on impact and can be used instead of steel or solid posts. Bollards are typically installed using one of two methods: 1) The bollard is set into concrete footing in the ground; and 2) the bollard is attached to the surface by mechanical means (mechanical anchoring or chemical anchor).

Design Summary

- Where removable bollards are used, the top of the mount point should be flush with the path's surface so as not to create a hazard. Posts shall be permanently reflectorized for nighttime visibility and painted a bright color for improved daytime visibility.
- Striping an envelope around the post is recommended.
- When more than one post is used, an odd number of posts at 1.5m (5-foot) spacing is desirable. Wider spacing can allow entry by adult tricycles, wheelchair users and bicycles with trailers.

Guidance

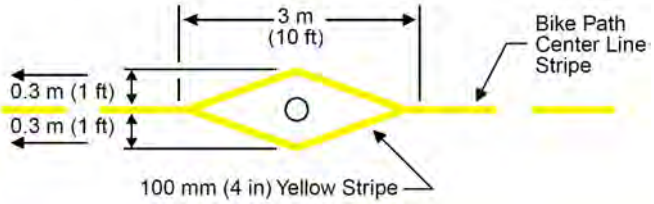
- MUTCD – California Supplement (Section 9C.101-CA)
- AASHTO Guide for the Development of Bicycle Facilities Chapter 2

Cost

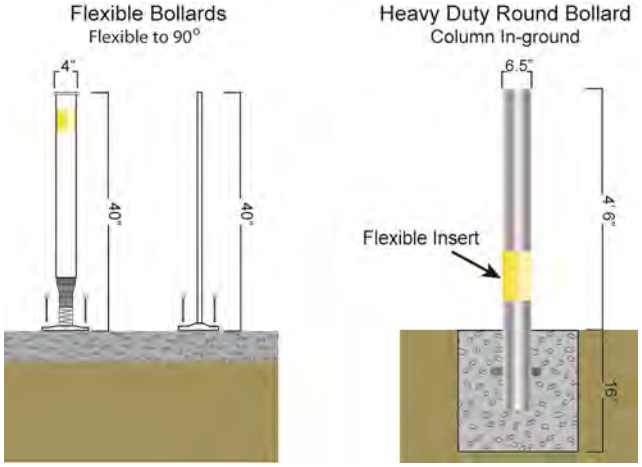
- Bollard, fixed: $220 - $800 each
- Bollard, removable: $680 - $940 each

Recommended Design

Barrier Post Striping



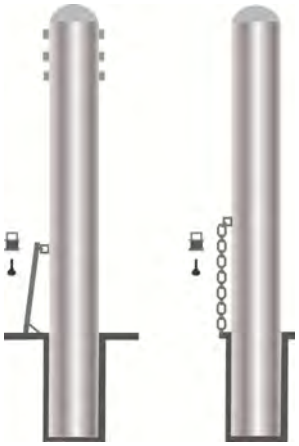
Flexible Bollards



Source: Lighthouse Bollards

Source: Andian Sales

Removable Bollards



Source: Reliance Foundry Co. Ltd

A.3.4. Recommended Path Signage

Discussion

Custom signage may be installed to guide trail users on proper trail etiquette (see graphic), especially in areas where conflicts are likely to occur. Because pedestrians typically travel at slower speeds than bicyclists, it is recommended that any signage direct pedestrians to walk on the right. Where signage is necessary, any of the three types of signage to the right are recommended as ways to encourage path users to yield to each other and to keep the paths clear.

A centerline marking is particularly beneficial in the following circumstances: A) Where there is heavy use; B) On curves with restricted sight distance; and C) Where the path is unlighted and nighttime riding is expected.

Design Summary

Signage

The Shared-Use Path Restriction (R9-7) sign may be installed on facilities shared by pedestrians and bicyclists.

Recommended Design

User Etiquette Signs along Multi-Use Paths

Guidance

- MUTCD, Sections 9B.12 and 9C.03
- MUTCD – California Supplement, Section 9B.11 and 9C.03
- AASHTO Guide for the Development of Bicycle Facilities, Chapter 2

Cost

- Signs, trail regulation: $150 each
- Signs, trail wayfinding / information: $500 - $2,000 each

A.4. Pathway Crossing

Shared use paths can intersect with roadways at midblock locations, or as part of a roadway-roadway intersection. Common issues at intersections of shared use paths and roadways include:

- Bicyclists entering or exiting the path may travel against motor vehicle traffic;
- Motorists crossing the shared use path at driveways and intersections may not notice path users, particularly path users coming from the right;
- Stopped motor vehicle traffic or vehicles exiting side streets or driveways may block the path; and
- Motorists may not expect or be able to yield to fast-moving bicyclists at the intersection.

A.4.1. Treatments

Bicycle and pedestrian pathway designers and traffic engineers generally have four options for designing multi-use pathway crossings. These include:

Option 1- Reroute to the nearest at-grade controlled intersection crossing;

Option 2- Create a new at-grade midblock crossing with traffic controls where the pathway intersects with the roadway;

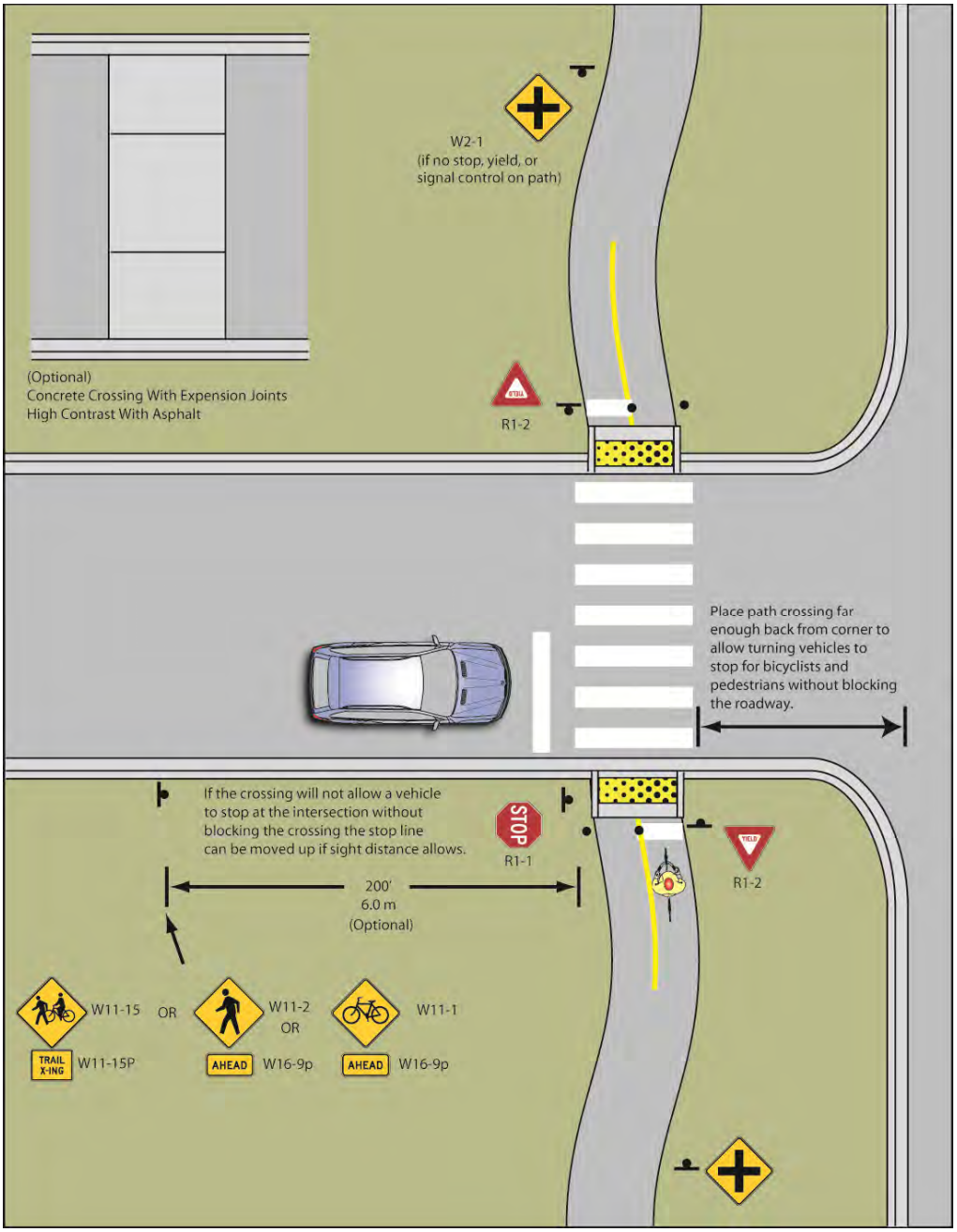
Option 3- Create a new unprotected midblock crossing where the pathway intersects with the roadway; and

Option 4- Create a grade-separated undercrossing or overcrossing of the roadway where the pathway intersects the roadway.

A.4.2. Path Crossing at Intersection

Discussion	Design Summary
The evaluation of a roadway crossing involves analysis of vehicular traffic and path user travel patterns, including speeds, street width, traffic volumes (average daily traffic, peak hour traffic), line of sight, and trail user profile (age distribution and destinations). When engineering judgment determines that the visibility of the intersection is limited on the shared-use path approach, Intersection Warning signs should be used.	A path should be routed to a signalized intersection if the path would cross a major arterial with a high ADT within 350 feet of a signalized intersection. **Signage** Intersection Warning (W2-1 through W2-5) signs may be used on a roadway, street, or shared-use path in advance of an intersection to indicate the presence of an intersection and the possibility of turning or entering traffic. A trail-sized stop sign (R1-1) should be placed about 5 feet before the intersection. **Traffic Calming** Reducing the speed of the conflicting motor vehicle traffic should be considered. Options may include: transverse rumble strips approaching the trail crossing or sinusoidal speed humps. **Crosswalk Markings** Colored and/or high visibility crosswalks should be considered. **Path Speed Control** A chicane, or swerve in multi-use path approaching the crossing is recommended to slow bicyclist speed. Path users traveling in different directions should be separated either with physical separation (bollard or raised median) or a centerline. If a centerline is used, it should be striped for the last 100 feet of the approach.

Recommended Design



Recommended "Typical" At-Grade Crossing at an Intersection Where Trail is Adjacent to a Road

Design Example

Typical "at grade" roadway crossing.

Source: PBIC Image Library

Photographer: Danny McCullough

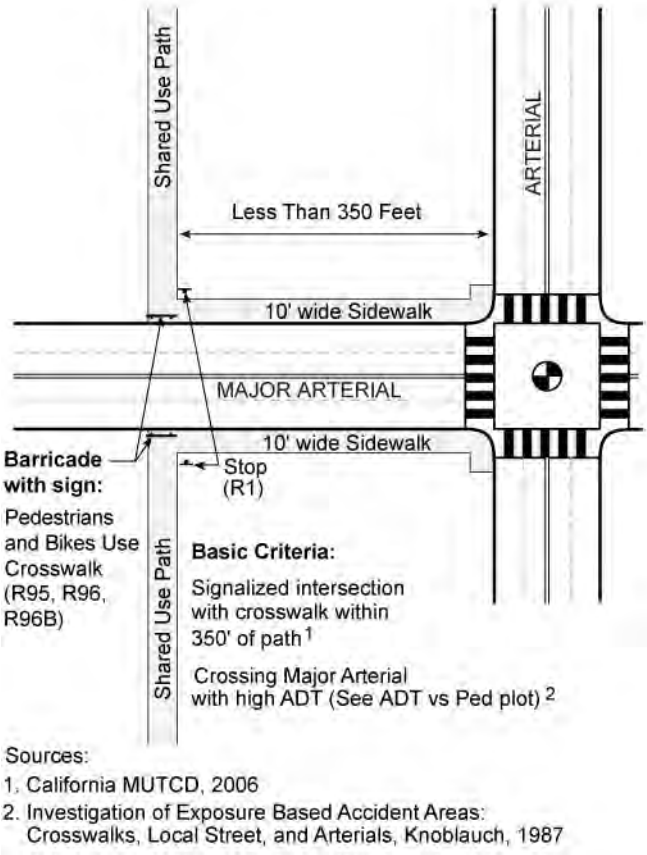
Guidance

- Caltrans Highway Design Manual (Chapter 1000 Section 1003.1(4))
- MUTCD – California Supplement, Part 9
- AASHTO Guide for the Development of Bicycle Facilities and "A Policy on the Geometric Design of Highways and Streets"
- FHWA-RD-87-038 Investigation of Exposure-Based Pedestrian Accident Areas: Crosswalks, Sidewalks, Local Streets, and Major Arterials.

Cost

- Crosswalk, Transverse (parallel) Lines: $320 - $550 each
- Crosswalk, Thermoplastic: $6 per square foot
- Stop bar: $210 each
- Stop Limit Bars / Yield Teeth: $210 - $530 each
- Stop Pavement Markings: $420 each
- Curb Ramps, Retrofit (diagonal, per corner): $800 – 5,340 each
- Curb Ramps, Retrofit (perpendicular, per corner): $5,340 - $10,000 each
- Signs, High-Visibility: $430 each
- Bollard, fixed: $220 - $800 each
- Bollard, removable: $680 - $940 each

Recommended Design (Continued)



Recommended "Typical" At-Grade Crossing of a Major Arterial at an Intersection Where Trail is Within 350 Feet of a Roadway Intersection

A.4.3. Uncontrolled Mid-Block Crossing

Discussion

The table on the following page is a summary for implementing at-grade roadway crossings in the City of San Mateo. The number one (1) indicates a ladder style crosswalk with appropriate signage is warranted. (1/1+) indicates the crossing warrants enhanced treatments such as flashing beacons, or in-pavement flashers. (1+/3) indicates Pedestrian Light Control Activated (Pelican), or Hawk signals should be considered.

Design Summary

Placement

Mid-block crosswalks should be installed where there is a significant demand for crossing and no nearby existing crosswalks.

Yield Lines

If yield lines are used for vehicles, they shall be placed 20 to 50 feet in advance of the nearest crosswalk line to indicate the point at which the yield is intended or required to be made and 'Yield Here to Pedestrians' signs shall be placed adjacent to the yield line. Where traffic is not heavy, stop or yield signs for pedestrians and bicyclists may suffice.

Warning Signs

The Bicycle Warning (W11-1) sign alerts the road user to unexpected entries into the roadway by bicyclists, and other crossing activities that might cause conflicts.

Pavement Markings

A ladder crosswalk should be used. Warning markings on the path and roadway should be installed.

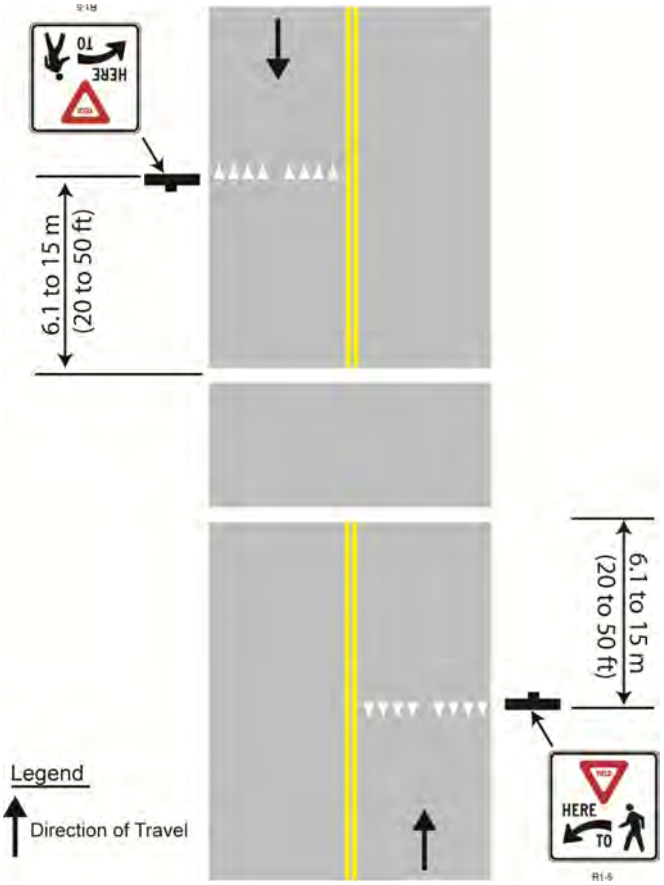
Other Treatments

See table on the following page to determine if treatments such as raised median refuges, flashing beacons should be used.

Beacons

See **Section A.4.4.** of this document

Recommended Design



Source: California MUTCD, Figure 3B-15

R1-5 R1-5a

Guidance	Recommended Design (continued)
• Caltrans Highway Design Manual (Chapter 1000) • MUTCD – California Supplement, Parts 2 and 9 • AASHTO Guide for the Development of Bicycle Facilities	 CA MUTCD

Table A-1: Crosswalk Decision Matrix

Roadway Type (Number of Travel Lanes and Median Type)	Vehicle ADT < 9,000			Vehicle ADT (> 9,000 to 12,000)			Vehicle ADT >12,000 to 15,000			Vehicle ADT > 15,000		
	Speed Limit**											
	<30 MPH	35 MPH	40 MPH	<30 MPH	35 MPH	40 MPH	<30 MPH	35 MPH	40 MPH	<30 MPH	35 MPH	40 MPH
2 Lanes	1	1	1/1+	1	1	1/1+	1	1	1+/3	1	1/1+	1+/3
3 Lanes	1	1	1/1+	1	1/1+	1/1+	1/1+	1/1+	1+/3	1/1+	1+/3	1+/3
Multi-Lane (4 or more lanes) with raised median***	1	1	1/1+	1	1/1+	1+/3	1/1+	1/1+	1+/3	1+/3	1+/3	1+/3
Multi-Lane (4 or more lanes) without raised median	1	1/1+	1+/3	1/1+	1/1+	1+/3	1+/3	1+/3	1+/3	1+/3	1+/3	1+/3

*General Notes: Crosswalks should not be installed at locations that could present an increased risk to bicyclists and pedestrians, such as where there is poor sigh 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 bicyclists and pedestrians. Whether or not marked crosswalks are installed, it is important to consider other 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 which treatment to use. For each trail-road way crossing, an engineering study is needed to determine the proper location. For each 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.

**Where the speed limit exceeds 40 MPH (64.4 km/h), marked crosswalks alone should not be used at unsignalized locations.

***The raised median or crossing island must be at least 4 ft (1.2 m) wide and 6 ft (1.8 m long) to adequately serve as a refuge area for pedestrians in accordance with MUTCD and AASHTO guidelines. A two-way center turn lane is not considered a median.

1 = Type 1 Crossings. Ladder-style crosswalks with appropriate signage should be used.

1/1+ = With the higher volumes and speeds, enhanced treatments should be used, including marked ladder style crosswalks, median refuge, flashing beacons, and/or in-pavement flashers. Ensure there are sufficient gaps through signal timing, as well as sight distance.

1+/3 = Carefully analyze signal warrants using a combination of Warrant 2 or 5 (depending on school presence) and EAU factoring. Make sure to project usage based on future potential demand. Consider Pelican or Hawk signals in lieu of full signals. For those intersections not meeting warrants or where engineering judgment or cost recommends against signalization, implement Type 1 enhanced crosswalk markings with marked ladder style crosswalks, median refuge, flashing beacons, and/or in-pavement flashers. Ensure there are sufficient gaps through signal timing, as well as sight distance.

A.4.4. Crossing Beacons

Discussion

Beacons are typically used to supplement advance warning signals or at midblock crosswalks.

Types of Beacons

MUTCD identifies the following types of flashing beacons relevant to shared use trail - roadway intersections:

- Intersection control beacon - a beacon used only at an intersection to control two or more directions of travel
- Warning beacons - a beacon used only to supplement an appropriate warning or regulatory sign or marker
- Stop beacons - a beacon used to supplement a STOP sign, a DO NOT ENTER sign, or a WRONG WAY sign

Experimental Treatments

There are other experimental pedestrian beacons that have been shown to have higher yielding rates than the standard flashing beacon. These include:

- The Rectangular-Shaped Rapid Flash LED Beacons, which have been shown to have an 80 to 90 percent compliance rate in the field; and
- The Pedestrian Hybrid Beacon, or High-Intensity Actuated Crosswalk (HAWK). The HAWK has a driver yielding rate of 97 percent and reduces pedestrian-motor vehicle crashes by 58 percent.

The application of experimental treatments within California should follow the California Traffic Control Devices Committee's (CTCDC) approval process (http://www.dot.ca.gov/hq/traffops/signtech/newtech/).

Jurisdictions within California can apply to the CTCDC for permission to use experimental treatments. Note that the CTCDC has not approved the HAWK treatment to date. (See CTCDC's October 11, 2007 agenda and meeting minutes available on the Committee's website.)

Recommended Design

HAWK Crossing

(This beacon type has not been approved for use in California)

Design Summary

Traffic Control Signal Warrants

MUTCD Section 4C.01 identifies the minimum use and spacing parameters that must be met in order to warrant installation of a beacon.

Overhead flashing pedestrian beacons are governed under Section 4K.03 of the CA MUTCD.

CA MUTCD Section 4K.103 (CA) permits flashing beacons at school crosswalks. Section 4C.06 describes warrants (i.e., minimum requirements) for installation of a signal on a route to school.

Guidance

- MUTCD – California Supplement, Sections 4C and 4K
- ITE – Alternative Treatments for At-Grade Pedestrian Crossings

Cost

- Signs, Overhead Beacon: $15,000-$55,120 each
- Detection, Automated Beacon: $800 each
- Crossing, Hawk: $50,000 each
- Actuated Pedestrian Crossing: $40,000 each

A.4.5. Signalized Mid-Block Crossing

Discussion

Warrants from the MUTCD combined with sound engineering judgment should be considered when determining the type of traffic control device to be installed at path-roadway intersections. Traffic signals for path-roadway intersections are appropriate under certain circumstances. The MUTCD lists 11 warrants for traffic signals, and although path crossings are not addressed, bicycle traffic on the path may be functionally classified as vehicular traffic and the warrants applied accordingly.

Pedestrian volumes can also be used for warrants.

Experimental Treatment

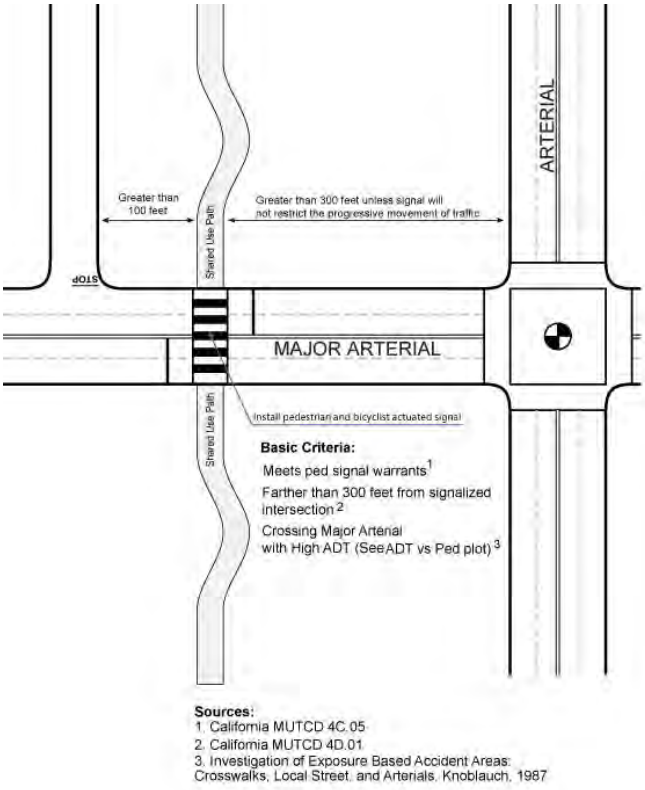
A Toucan crossing (derived from: "two can cross") is used in higher traffic areas where pedestrians and bicyclists are crossing together.

Design Summary

Warrants
Section 4C.05 in the CAMUTCD describes pedestrian volume minimum requirements (referred to as warrants) for a mid-block pedestrian-actuated signal.

Pavement Markings
Stop lines at midblock signalized locations should be placed at least 40 feet in advance of the nearest signal indication.

Recommended Design



Design Example

Toucan Crossing (This experimental treatment has not been approved for use in California)

Guidance

- MUTCD – California Supplement, Chapters 3 and 9 and Section 4C.05 and 4D
- AASHTO Guide for the Development of Bicycle Facilities, Chapter 2

Cost

- Crossing, Toucan: $90,000 each

A.5. On-Street Bicycle Facility Design

A.5.1. Bike Lanes

Bike lanes or Class II bicycle facilities (Caltrans designation) are defined as a portion of the roadway that has been designated by striping, signage, and pavement markings for the preferential or exclusive use of bicyclists. Bike lanes are generally found on major arterial and collector roadways and are 4 to 7 feet wide. Bike lanes can be found in a large variety of configurations, and can even incorporate special characteristics including coloring and placement, if beneficial.

Bike lanes enable bicyclists to ride at their preferred speed without interference from prevailing traffic conditions and facilitate predictable behavior and movements between bicyclists and motorists. Bicyclists may leave the bike lane to pass other bicyclists, make left turns, avoid obstacles or debris, and to avoid other conflicts with other roadway users.

A.5.2. General Design Guidance:

A.5.2.1. Width: Varies depending on roadway configuration, see following pages for design examples.

A.5.2.2. Striping:

Line separating vehicle lane from bike lane (typically left sideline): 6 inches
Line separating bike lane from parking lane (if applicable): 4 inches
Dashed white stripe when:

- Vehicle merging area: Varies
- Delineate conflict area in intersections(optional): Length of conflict area

A.5.2.3. Signing:

Use R-81 Bike Lane Sign at:

- Beginning of bike lane;
- Far side of all intersection crossings;
- At approaches and at far side of all arterial crossings;
- At major changes in direction; and
- At intervals not to exceed ½ mile.

R-81 Sign

A.5.2.4. Pavement Markings:

There are three potential variations of pavement markings for bike lanes allowed by the California MUTCD. Most cities nationwide use the graphic representation of cyclist with directional arrow (pictured right). This stencil should be used at:

- Beginning of bike lane;
- Far side of all bike path (Class I) crossings;
- At approaches and at far side of all arterial crossings;
- At major changes in direction;
- At intervals not to exceed ½ mile; and
- At beginning and end of bike lane pockets at approach to intersection.

Recommended Bike Lane Stencil

A.5.3. Bike Lane with No On-Street Parking

Discussion

Recommended bicycle lane width is 5 feet minimum when adjacent to curb and gutter. Wider bicycle lanes are desirable in certain circumstances such as on higher speed arterials (45 mph+) where a wider bicycle lane can increase separation between passing vehicles and bicyclists, which is especially preferable on uphill grades. Appropriate signing and stenciling is important with wide bicycle lanes to ensure motorists do not mistake the lane for a vehicle lane or parking lane. Bicycle lanes wider than seven feet are not recommended.

Design Summary

Bike Lane Width:

4 feet minimum when no gutter is present (rural road sections)

5 feet minimum when adjacent to curb and gutter (3' more than the gutter pan width if the gutter pan is greater than 2')

Recommended Width:

6 feet where right-of-way allows and up hills

Recommended Design

Guidance

- MUTCD
- Caltrans Highway Design Manual (Chapter 1000)
- MUTCD – California Supplement
- AASHTO Guide for the Development of Bicycle Facilities

Cost

- Class II Bike Lane: $5,000-$500,000 per mile

A.5.4. Bike Lane With On-Street Parallel Parking

Discussion

Bike lanes adjacent to parallel parking should be designed to be wide enough to allow bicyclists to ride outside of the "door zone" (i.e., five feet minimum).

Design Summary

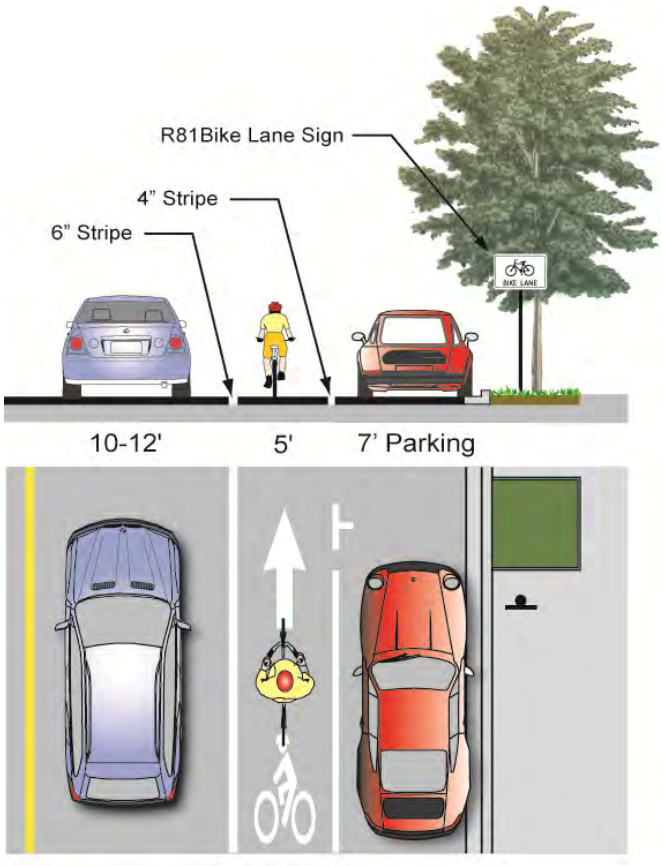
Bike Lane Width:

5 feet minimum recommended when parking stalls are marked

7 feet maximum (wider lanes may encourage vehicle loading in bike lane)

12 feet for a shared lane adjacent to a curb face (13 feet is preferred where parking is substantial or turnover is high), or 11' minimum for a shared bike/parking lane on streets without curbs where parking is permitted.

Recommended Design



Guidance

- Caltrans Highway Design Manual (Chapter 1000)
- MUTCD – California Supplement
- AASHTO Guide for the Development of Bicycle Facilities

Cost

- Class II Bike Lane: $5,000-$500,000 per mile

A.6. Bike Routes

Bike routes, or Class III bicycle facilities – (Caltrans designation) are defined as facilities shared with motor vehicles. They are typically used on roads with low speeds and traffic volumes, however can be used on higher volume roads with wide outside lanes or with shoulders. Bike routes can be established along through routes not served by shared use paths (Class I) or bike lanes (Class II), or to connect discontinuous segments of bikeway. A motor vehicle driver will usually have to cross over into the adjacent travel lane to pass a bicyclist, unless a wide outside lane or shoulder is provided.

Bicycle Routes can employ a large variety of treatments from simple signage to complex treatments including various types of traffic calming and/or pavement stenciling. The level of treatment to be provided for a specific location or corridor depends on several factors.

A.6.1. General Design Guidance:

A.6.1.1. Signing:

Use D11-1 Bicycle Route Sign at:

- Beginning or end of bicycle route (with applicable M4 series sign);
- Entrance to bicycle path (Class I) – optional;
- At major changes in direction or at intersections with other bicycle routes (with applicable M7 series sign); and
- At intervals along bicycle routes not to exceed ½ mile.

D11-1 Sign

A.6.1.2. Pavement Markings:

Shared Lane Markings may be applied to bicycle routes per **Section A.6.3.**

A.6.2. Bike Route

Discussion

Bicycle routes on local streets should have vehicle traffic volumes under 1,000 vehicles per day. Traffic calming may be appropriate on streets that exceed this limit.

Bicycle routes may be placed on streets with outside lane width of less than 15 feet if vehicle speeds and volumes are low.

Design Summary

Bicycle Route signage may include City specific logos. See design example below.

Route signage should be applied at intervals frequent enough to keep bicyclists informed of changes in route direction and to remind motorists of the presence of bicyclists.

Design Example

Guidance

- Caltrans Highway Design Manual (Chapter 1000)
- MUTCD – California Supplement
- AAASHTO Guide for the Development of Bicycle Facilities

Cost

- Class III Bike Route: $1,000-$40,000 per mile (assumes no major renovation is required)
- $150,000 - $300,000 (assuming moderate to major roadway renovation)

Recommended Design

A.6.3. Class III Bike Route with Shared Lane Markings (SLM)

Discussion

Recently, Shared Lane Marking (SLM) stencils (also called "Sharrows") have been introduced for use in California as an additional treatment for bike route (Class III) facilities and are currently approved in conjunction with on-street parking. The stencil can serve a number of purposes, such as making motorists aware of the need to share the road with bicyclists, showing bicyclists the direction of travel, and, with proper placement, reminding bicyclists to bike further from parked cars to prevent "dooring" collisions.

The 2010 California MUTCD specifies that SLM only be used on roadways with parallel parking, but the forthcoming 2011 edition will give local engineers greater discretion with SLM placement on roadways with or without parking.

SLM should be placed a minimum of 11 feet from the curb. Where there are two or more travel lanes per direction, if the outside lane is less than 14 feet, or where there is high parking turnover or where bicyclists may need positioning guidance, the SLM may be placed in the middle of the outside travel lane. Additionally SLM's may be placed where drivers may need additional notice to expect bicyclists.

Though not always possible, placing the SLM markings outside of vehicle tire tracks will increase the life of the markings and the long-term cost of the treatment.

Design Summary

Door Zone Width:

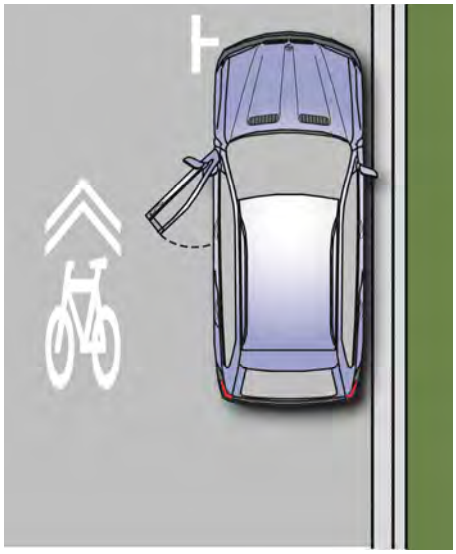
The width of the door zone is generally assumed to be 2.5 feet from the edge of the parking lane.

Recommended SLM placement:

A Minimum of 11.5 feet from edge of curb where on-street parking is present.

Where there are two or more travel lanes per direction, if the outside lane is less than 14 feet, or where there is high parking turnover or where bicyclists may need positioning guidance, the SLM may be placed in the middle of the outside travel lane.

Recommended Design



Guidance

- MUTCD – California Supplement, Section 9C.103

Cost

- Stencils only: $250 each

A.6.4. Additional Bike Route Signage

Discussion

'Share the Road' signs are intended to 'reduce motor vehicle/bicyclist conflict' and are appropriate to be placed on routes that lack paved shoulders or other bicycle facilities. They typically work best in rural situations, or when placed near activity centers such as schools, shopping centers and other destinations that attract bicycle traffic.

In urban areas, many cities around the country have been experimenting with a new type of signage that encourages bicyclists to take the lane when the lane is too narrow. This type of sign is becoming known as BAUFL (Bikes Allowed Use of Full Lane). This can be quantified to lanes being less than 14 feet wide with no parking and less than 22 feet wide with adjacent parallel parking. The 2009 update to the MUTCD recognizes the need for such signage and has designated the white and black sign at right (R4-11). The 2010 CA MUTCD states that Shared Lane Markings (which serve a similar function as Bikes May Use Full Lane signage) should not be placed on roadways that have a speed limit above 40 mph. Dedicated bicycle facilities are recommended for roadways with speed limits above 40 mph where the need for bicycle access exists.

Design Summary

Placement:

Signs should be placed at regular intervals along routes with no designated bicycle facilities.

Guidance

- MUTCD – California Supplement Section 9C.103

Cost

- Sign, regulation: $150 each

Recommended Design

Share The Road Signs

CA MUTCD Sign R4-11

A.6.5. Bicycle Boulevards

Discussion

Bicycle boulevards have been implemented in a variety of locations including Palo Alto, San Luis Obispo, Berkeley and Davis, California and Portland, Oregon. Bicycle boulevards, also known as bicycle priority streets, are non-arterial streets that are designed to allow bicyclists to travel at a consistent, comfortable speed along low-traffic roadways and to cross arterials conveniently and safely. Bicycle boulevards typically include treatments that allow bicyclists to travel along the bicycle boulevard with minimal stopping while discouraging motor vehicle traffic. Traffic calming and traffic management treatments such as traffic circles, chicanes, and diverters are used to discourage motor vehicles from speeding and using the bicycle boulevard as a cutthrough. Quick-response traffic signals, median islands, or other crossing treatments are provided to facilitate bicycle crossings of arterial roadways.

Design Summary

- Residential streets with low traffic volumes (typically between 3000 to 5000 average daily vehicles).
- Can include secondary commercial streets.
- Bicycle boulevard pavement markings should be installed in conjunction with wayfinding signs.
- Can be designed to accommodate the particular needs of the residents and businesses along the routes, and may be as simple as pavement markings with wayfinding signs or as complex as a street with traffic diverters and bicycle signals.

Guidance

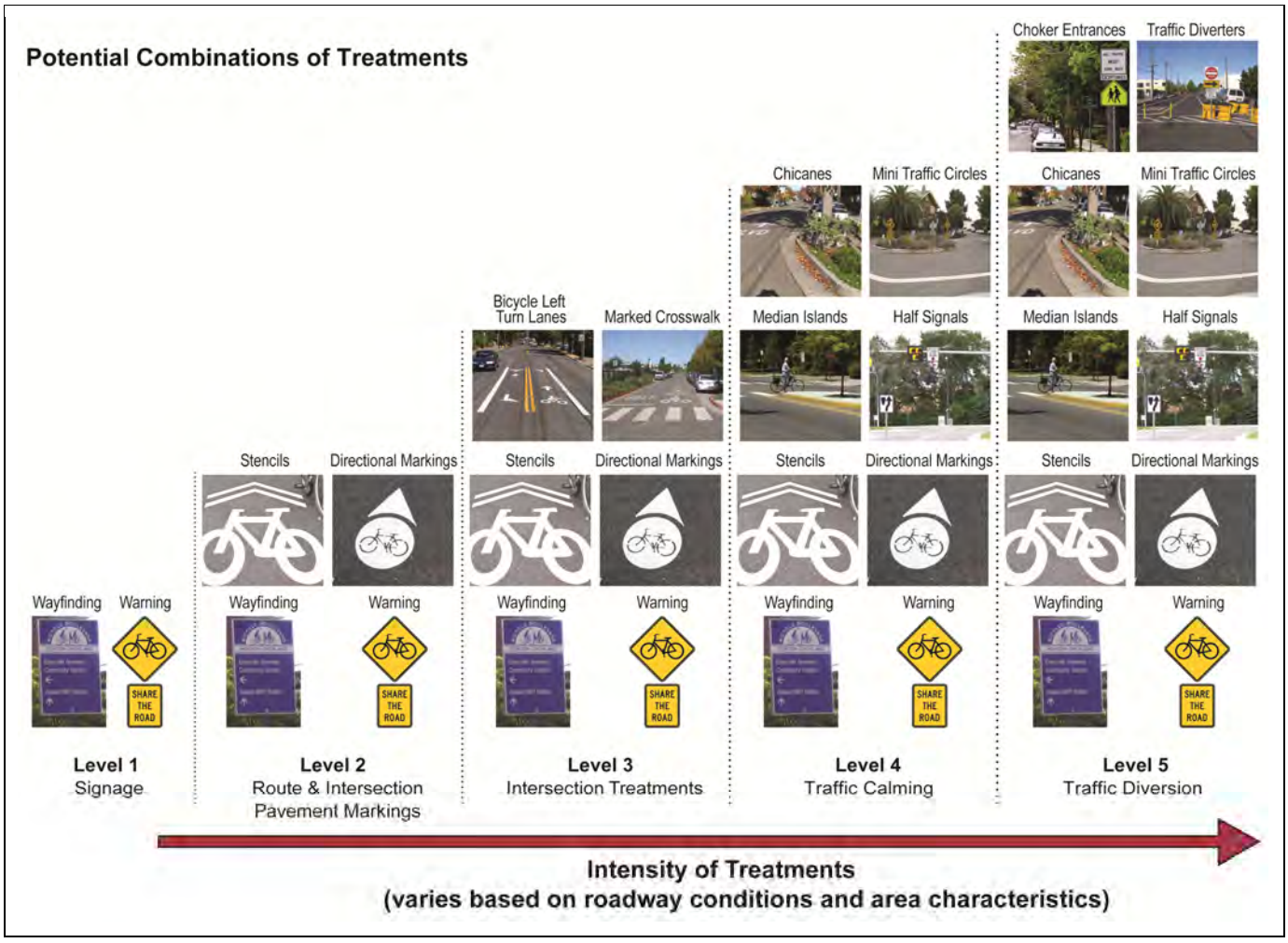
- This treatment is not currently present in any State or Federal design standards
- Berkeley Bicycle Boulevard Design Tools and Guidelines: http://www.ci.berkeley.ca.us/ContentDisplay.aspx?id=6652

Cost

- $310,500 per mi (source: San Benito Bike Plan, 2008)

Design Example

See next page.


Potential Combinations of Treatments
Choker Entrances
Traffic Diverters
Chicanes
Mini Traffic Circles
Chicanes
Mini Traffic Circles
Bicycle Left Turn Lanes
Marked Crosswalk
Median Islands
Half Signals
Median Islands
Half Signals
Stencils
Directional Markings
Stencils
Directional Markings
Stencils
Directional Markings
Stencils
Directional Markings
Wayfinding
Warning
Wayfinding
Warning
Wayfinding
Warning
Wayfinding
Warning
Wayfinding
Warning
SHARE THE ROAD
Level 1
Signage
Level 2
Route & Intersection Pavement Markings
Level 3
Intersection Treatments
Level 4
Traffic Calming
Level 5
Traffic Diversion
Intensity of Treatments
(varies based on roadway conditions and area characteristics)

A.6.6. Buffered Bike Lanes

Discussion

A buffered bike lane, also called an enhanced bike lane or protected bike lane, is a five-foot-wide bike lane that is buffered by a striped "shy zone" between the bike lane and the moving vehicle lane. With the shy zone, the buffered lane offers a more comfortable riding environment for bicyclists who prefer not to ride adjacent to traffic. This design makes movement safer for both bicyclists and vehicles. Motorists can drive at a normal speed and only need to watch for cyclists when turning right at cross-streets or driveways and when crossing the buffered lane to park. The advantages of the buffered bicycle lane design are that it provides a more protected and comfortable space for cyclists than a conventional bike lane and does not have the same turning movement constraints as cycletracks that accommodate two-way bicycle travel along one side of the roadway.

The buffer area may only be painted on the road or it may be physically separated by devices such as bots dots or bollards.

Design Summary

- A spatial buffer increases the distance between the bike lane and the automobile travel lane or the parking zone.
- Appropriate for roadways with high automobile traffic speeds and volumes, and/or high volume of truck/oversized vehicle traffic, and roadways with bike lanes adjacent to high turnover on-street parking.

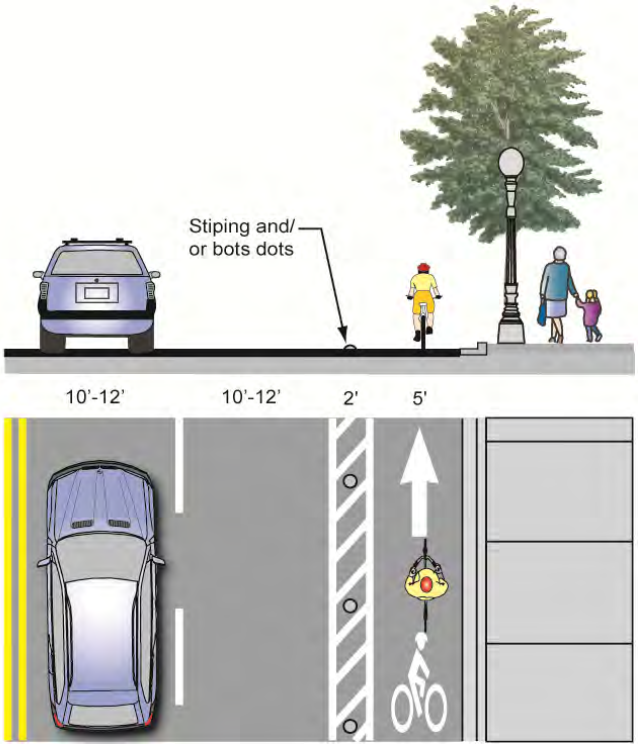
Design Example

Buffered bike lane in Fairfax, CA

Cost

- Bike lanes with 2-foot buffers on each side were installed for 3,000 linear feet in Portland for $45,000 in 2009.

Recommended Design



A.6.7. Colored Bike Lanes

Discussion

Color applied to bike lanes helps alert roadway users to the presence of bicyclists and clearly assigns right-of-way to cyclists. Motorists are expected to yield to cyclists in these areas. Some cities apply color selectively to highlight potential conflict zones, while others use it to mark all non-shared bicycle facilities in high volume traffic situations.

Color Considerations:

There are three colors commonly used in bicycle lanes: blue, green, and red. All help the bike lane stand out in merging areas. The City of Portland began using green lanes in 2008, as blue, the color used previously, is a color associated with ADA related signage on roadways. Green is the color recommended for use in the City of San Mateo.

Material Options:

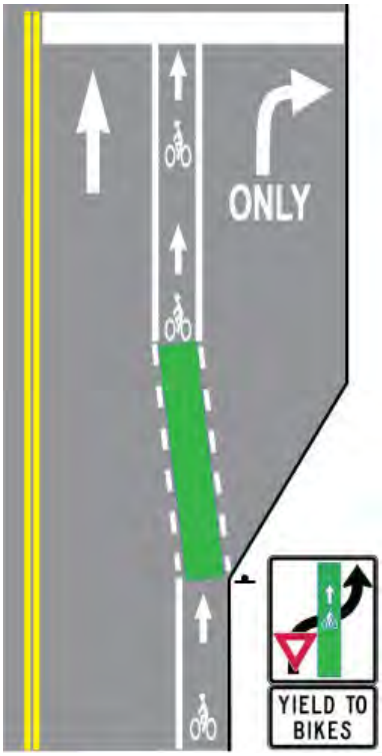
Colored bike lanes require additional cost to install and maintain. Techniques include:

- Paint – less durable and can be slippery when wet
- Colored asphalt – colored medium in asphalt during construction – most durable.
- Colored and textured sheets of acrylic epoxy coating.

Design Summary

- Bike lane width: See Section A.5.
- Appropriate for heavy auto traffic streets with bike lanes; at transition points where cyclists, motorists and/or pedestrians must weave with one another; conflict areas or intersections with a record of crashes; and to emphasize bicycle space in unfamiliar or unique design treatments.

Recommended Design



Colored bike lanes used to designate a conflict zone

Design Example

Guidance

- FHWA provides blanked approval for green colored pavement in marked bike lanes and bike lane extensions.
- Caltrans has approval (IA-14.10 – Green Colored Pavement for Bike Lanes – California Statewide).
- Agencies that use this treatment must provide location to the CTCDC.

A.6.8. Manholes & Drainage Grates

Discussion

Utility infrastructure within the roadway can present significant hazards to bicyclists. Manholes, water valve covers, drain inlets and other obstructions can present an abrupt change in level, or present a situation where the bicyclist's tire could become stuck, potentially creating an accident. As such, every effort should be made to locate such hazards outside of the likely travel path of bicyclists on new roadway construction.

For existing roadways, the roadway surface can be ground down around the manhole or drainage grate to be no more than half an inch of vertical drop. When roadways undergo overlays, this step is often omitted and significant elevation differences can result in hazardous conditions for bicyclists.

Bicycle drainage grates should not have longitudinal slats that can catch a bicycle tire and potentially cause an accident. Acceptable grate designs are presented (top right) as A: patterned, B: transverse grate, or C: modified longitudinal with no more than 6" between transverse supports). Type C is the least desirable as it could still cause problems with some bicycle tires.

The drop in-inlet avoids all issues with grates in the bicyclists' line of travel, however, these drainage inlets are not recommended by Caltrans for use on California Highways.

The CA MUTCD recommends providing a diagonal solid white line for hazards or obstructions in bikeways (see right).

Design Summary

Placement:

Manholes should be placed outside of any bike lanes. Drainage grates should be of one of the types at right.

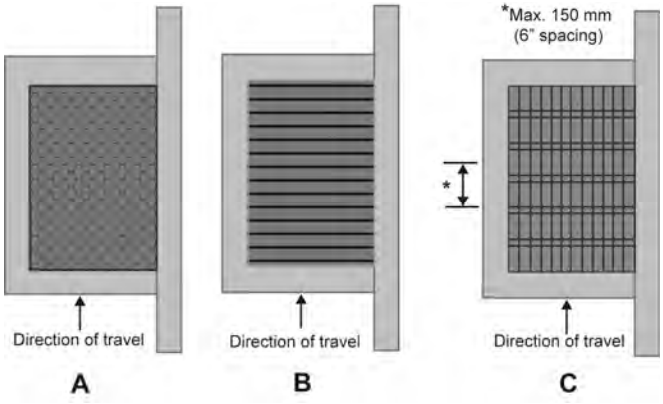
Guidance

- Caltrans Highway Design Manual (Chapter 1000)
- MUTCD – California Supplement
- AASHTO Guide for the Development of Bicycle Facilities

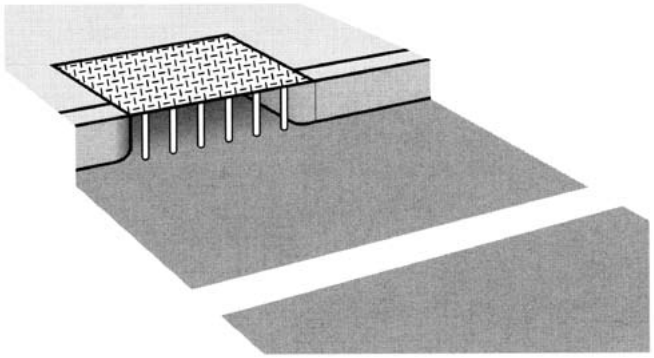
Cost

- Striping: $2 per linear foot
- Drainage grate: $500

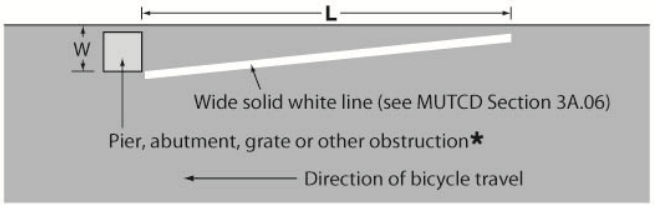
Recommended Design



Bicycle Compatible Drainage Grates



Drop-in inlet flush with the curb face (Oregon DOT)



L = WS, where W is the offset in feet and S is bicycle approach speed in mph

* Provide an additional foot of offset for a raised obstruction and use the formula L= (W+1) S for the taper length

Figure 9C-8

A.6.9. Bicycle Access During Construction Activities

Discussion

When construction impedes a bicycle facility, the provision for bicycle access should be developed during the construction project planning. Long detour routing should be avoided due to lack of compliance.

Advance warning of the detour should be placed at appropriate locations and clear wayfinding should be implemented to enable bicyclists to continue safe operation along travel corridor. Bicyclists shall not be led into conflicts with mainline traffic, work site vehicles, or equipment.

Caltrans Traffic Operation Policy Directive 11-01 states bicyclists shall not be led into direct conflicts wit h mainline traffic, work site vehicles, or equipment moving through or around the temporary traffic control (TTC) zone.

Design Summary

Construction Detour Signs

Detours should be adequately marked with standard temporary route and destination signs (M409a or M4-9c). The Pedestrian/Bicycle Detour sign should have an arrow pointing in the appropriate direction.

When existing accommodations for bicycle travel are disrupted or closed in a long-term duration project and the roadway width is inadequate for allowing motor vehicles and bicyclists to travel side-by-side, "share the road" signage (W11-1 and W16-1) should be used to advise motorists of the presence of bicyclists in the travel lane.

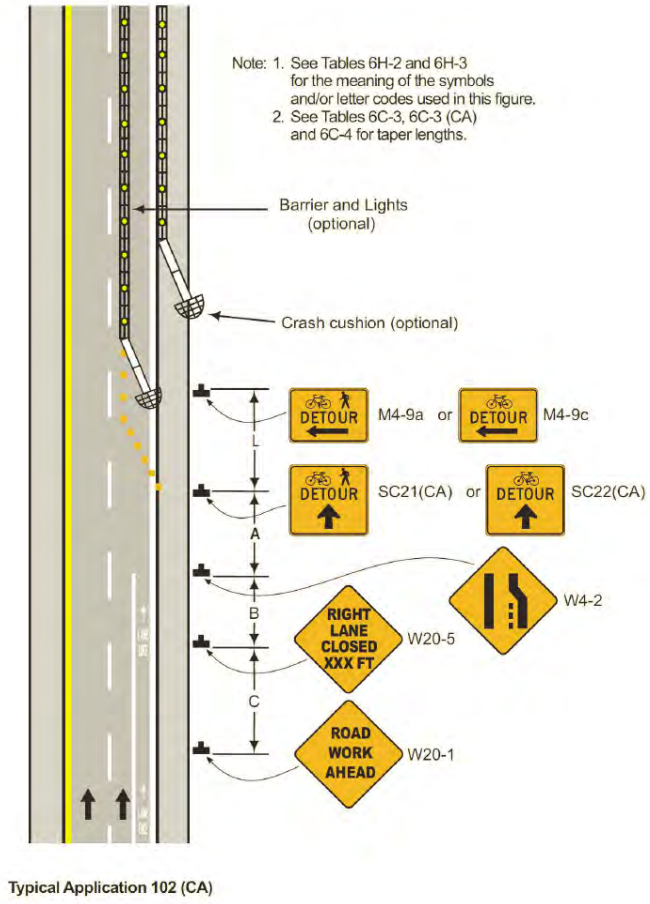
Signs should be places such that they do not block the bicyclist's path of travel and they do not narrow any existing pedestrian passages to less than 1200 mm (48 in).

Recommended Design

M4-9a M4-9c

National MUTCD

California MUTCD

Design Example	Guidance
 Typical Application 102 (CA)	• California MUTCD – Part 6 • California Highway Design Manual • Caltrans Traffic Operations Policy Directive 11-01 **Cost** • Sign, regulation: $150 each

A.7. Intersection and Interchange Design for Bicyclists

Adequately accommodating bicyclists at traffic intersections and interchanges can be challenging for traffic engineers as the needs and characteristics of bicycles and motor vehicles vary greatly. This chapter contains sections on detection of bicycles at signals, bicycle pavement markings at signals, and bicycle signals.

A.7.1. Bicycle Detection at Signalized Intersections

Discussion

Traffic Operations Policy Directive 09-06, issued August 27, 2009 by Caltrans modified CA MUTCD 4D.105 to require bicyclists to be detected at all traffic-actuated signals on public and private roads and driveways. If more than 50 percent of the limit line detectors need to be replaced at a signalized intersection, then the entire intersection should be upgraded so that every line has a limit line detection zone. Bicycle detection must be confirmed when a new detection system has been installed or when the detection system has been modified.

The California Policy Directive does not state which type of bicycle detection technology should be used. Two common types of detection are video and in pavement loop detectors. Push buttons may not be used as a sole method of bicycle detection.

Design Summary

Limit Lines

- The Reference Bicycle Rider must be detected with 95% accuracy within a 6 foot by 6 foot Limit Line Detection Zone.

Loop Detection

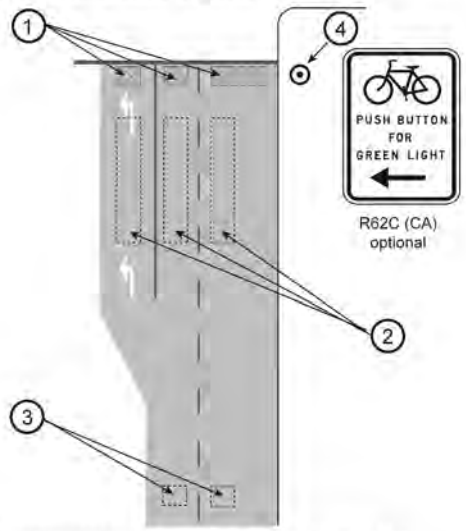
- In order to minimize delay to bicyclists, it is recommended to install one loop about 100 feet from the stop bar within the bike lane, with a second loop located at the stop bar.

Details of saw cuts and winding patterns for inductive detector loop types appear on the following page and Caltrans Standard Detail ES-5B.

NOTE: In California, Caltrans "Type C" and "Type D" quadruple loop detectors have been proven to be the most effective at detecting bicycles at signalized intersections and are presented on the following page.

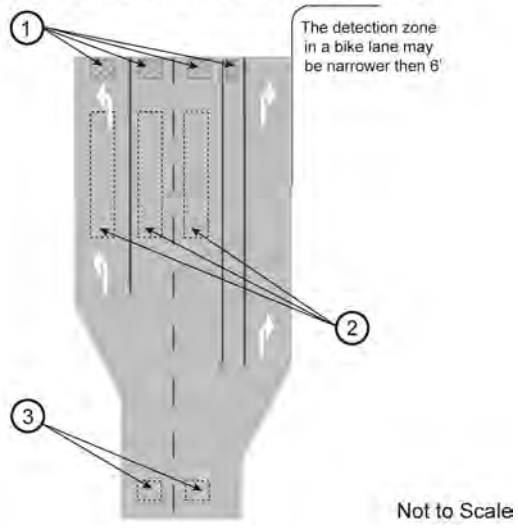
Recommended Design

A. Intersection with a wide right/through lane



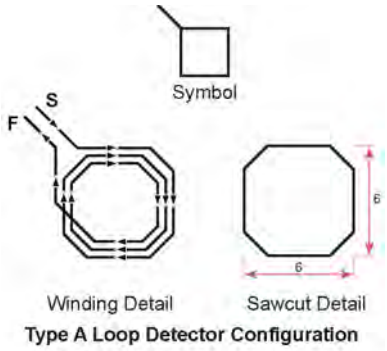
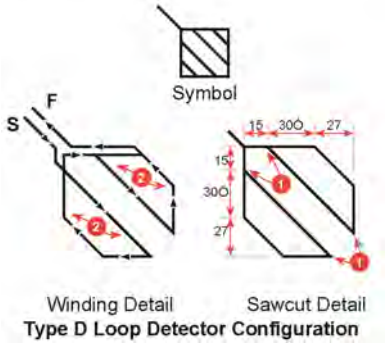
1. Typical technology-neutral limit line detection locations. See Section 4D.105(CA).
2. Typical presence detection locations. See Section 4D.103(CA).
3. Typical advance detection locations.
4. A bicyclist pushbutton may be used to activate a traffic signal to supplement the required limit line detection. A pushbutton should be located so it is convenient to use by bicyclists. See Section 9B.1 for bicycle regulatory signs.

B. Intersection with a Bike Lane and right-turn lane



Source: Traffic Operations Policy Directive 09-06

Video Detection – Designs not available

Design Examples	Guidance
 **Type A Loop Detector Configuration**  **Type D Loop Detector Configuration**	• Caltrans Highway Design Manual (Chapter 1000) • Caltrans Standard Plans (1999) ES-5B • MUTCD – California Supplement • AASHTO Guide for the Development of Bicycle Facilities • Caltrans Traffic Operation Policy Directive 09-06 **Cost** • Bicycle Loop Detector: $1,000-$2,500 each

A.7.2. Loop Detector Pavement Markings and Signage

Discussion

Bicycle Detector Pavement Markings guide bicyclists to position themselves at an intersection to trigger signal actuation. Frequently these pavement markings are accompanied by signage that can provide additional guidance (see right).

Design Summary

Locate Bicycle Detector Pavement Marking over center of quadrupole loop detector if in bike lane, or where bicycle can be detected in a shared lane by loop detector or other detection technology.

Design Example

Guidance

- Caltrans Highway Design Manual (Chapter 1000)
- Caltrans Standard Plans (1999) ES-5B
- MUTCD – California Supplement
- AASHTO Guide for the Development of Bicycle Facilities

Cost

- Bicycle Loop Detector, Install stencils: $100 per intersection leg

Recommended Design

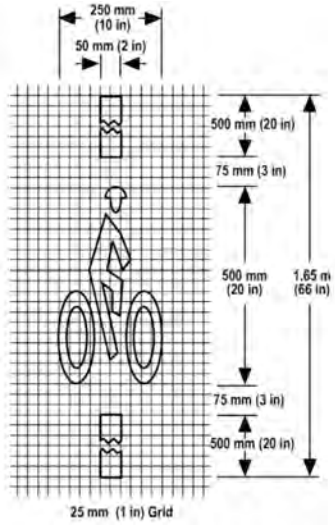


Figure 9C-7 – CAMUTCD

Accompanying Signage (R10-22)

A.7.3. Bike Lane at Intersection with Right Turn Only Lane

Discussion

A bicyclist continuing straight through an intersection from the right of a right turn lane would be inconsistent with normal traffic behavior and would violate the expectations of right-turning motorists. Specific signage, pavement markings and striping are recommended to improve safety for bicyclists and motorists.

The appropriate treatment for right-turn only lanes is to place a bike lane pocket between the right-turn lane and the right-most through lane or, where right-of-way is insufficient, to drop the bike lane entirely approaching the right-turn lane. The design (right) illustrates a bike lane pocket, with signage indicating that motorists should yield to bicyclists through the merge area.

- Dropping the bike lane is not recommended, and should only be done when a bike lane pocket cannot be accommodated.
- Travel lane reductions may be required to achieve this design.

Some communities have experimented with colored bicycle lanes through the weaving zone. See Portland's Blue Bike Lanes: http://www.portlandonline.com/shared/cfm/image.cfm?id=58842.

Where the right turn only lane is separated with a raised island, the island should be designed to allow adequate width to stripe the bike lane up to the intersection.

Design Summary

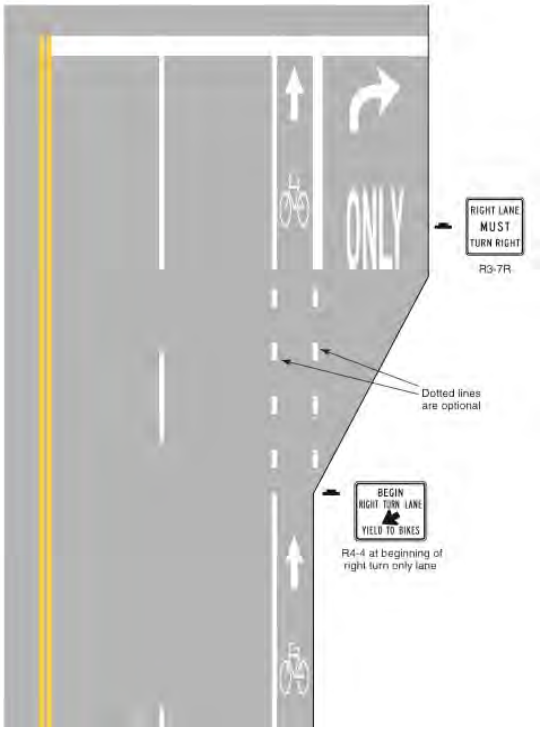
Bike Lane Placement
A through bicycle lane shall not be positioned to the right of a right turn only lane.

Bike Lane Width
Bike Lane through merge area of 5 feet is required.

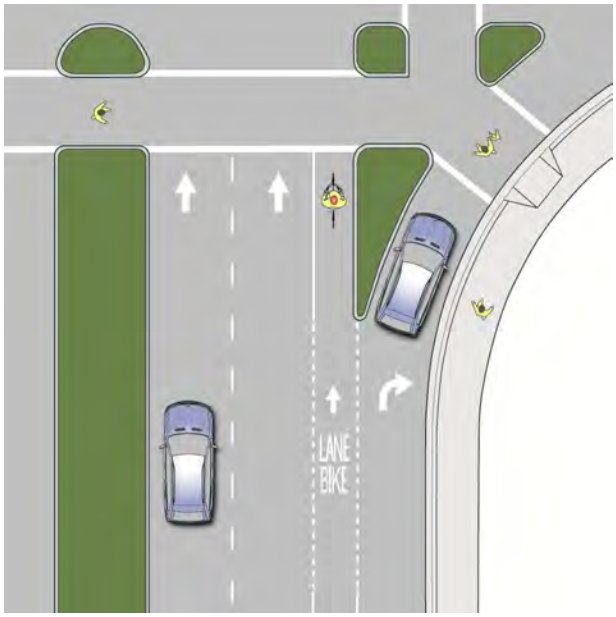
Bike Lane Striping
When the right through lane is dropped to become a right turn only lane, the bicycle lane markings should stop at least 100 feet before the beginning of the right turn lane. Through bicycle lane markings should resume to the left of the right turn only lane (MUTCD).

Where motorist right turns are permitted, the solid bike lane shall either be dropped entirely, or dashed beginning at a point between 100 and 200 feet in advance of the intersection.

Recommended Design



Bike Lane Next to a Right Turn Only Lane



Bike Lane Next to a Right Turn Only Lane Separated by a Raised Island

Design Summary (continued)	
Signage Refer to CA MUTCD.	
Guidance	
• Caltrans Highway Design Manual (Chapter 1000) • MUTCD – California Supplement Section 9C.04 • AASHTO Guide for the Development of Bicycle Facilities	

A.7.4. Bicycle Boxes

Discussion

A bike box is generally a right angle extension to a bike lane at the head of a signalized intersection. The bike box allows bicyclists to get to the front of the traffic queue on a red light and proceed first when that signal turns green. The bike box can also act as a storage area if heavy bicycle traffic exists. On a two-lane roadway the bike box can also facilitate left turning movements for bicyclists. Motor vehicles must stop behind the white stop line at the rear of the bike box.

Bike Boxes should be located at signalized intersections only, and right turns on red should be prohibited unless a separate right turn pocket is provided to the right of the bike box.

Bike boxes can be combined with dashed lines through the intersection for green light situations to remind vehicles to be aware of bicyclists traveling straight, similar to the colored bike lane treatment in **Section A.6.7.** Bike Boxes have been installed with striping only or with colored treatments to increase visibility.

Design Summary

Bike Box Dimensions

The Bike Box should be 10-14 feet deep to allow for bicycle positioning.

Signage

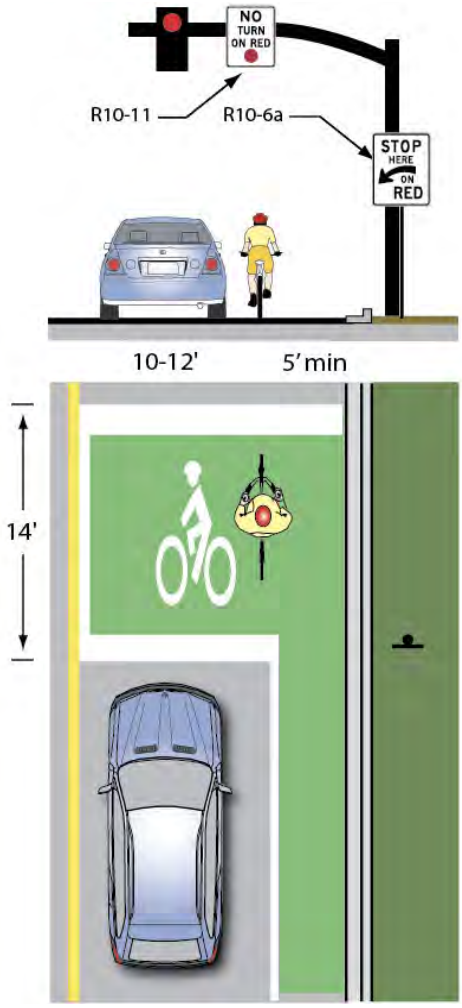
Appropriate signage as recommended by the MUTCD applies. Signage should be present to prevent 'right turn on red' and to indicate where the motorist must stop.

Design Example

Guidance

- This treatment is not currently present in any State or Federal design standards

Recommended Design



A.7.5. Interchange Design

Discussion

Interchanges often provide the only bicycle access across a highway within one or more miles, but are not always designed to provide comfortable or safe bicycle access. The best interchange configurations for bicyclists are those where the ramp intersects the crossroad at a 90 degree angle and where the intersection is controlled by a stop or signal. These characteristics cause motorists to slow down before turning, increasing the likelihood that they will see and yield to nonmotorists. If an impact occurs, severity is lessened by slower speeds.

The Caltrans Highway Design Manual classifies interchanges into 13 different types. As illustrated to the right, six of these types have ramp intersection designs that meet the crossroad at 90 degrees and are STOP-controlled or signalized. These interchanges generally incorporate diamond-type ramps or J loop ramps.

On high traffic bicycle corridors non-standard treatments may be desirable over current practices outlined in Figure 9C-103 in the CA MUTCD. Dashed bicycle lane lines with or without colored bike lanes may be applied to provide increased visibility for bicycles in the merging area.

Design Summary

Alignment

- Ramps intersection the crossroad at a 90 degree angle.
- The intersection is stop- or signal-controlled.

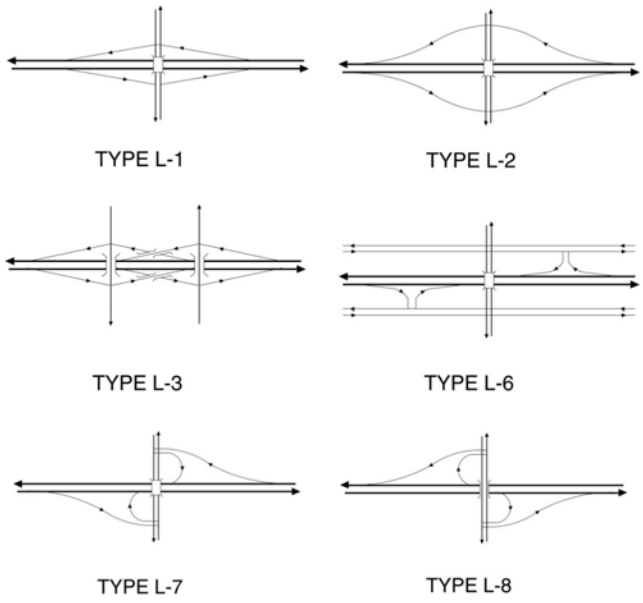
Bike lane/shared roadway width

- See Chapter 3. The minimum shoulder width through the interchange area is four feet, or five feet if a gutter exists.

Guidance

- Caltrans Highway Design Manual (Chapter 500)
- MUTCD – California Supplement Section 9C.04 and Figure 9C-103
- AASHTO Guide for the Development of Bicycle Facilities, p. 62

Recommended Design



Interchange types that accommodate bicyclists

Source: Figure 502.2 Caltrans Highway Design Manual

A.7.6. Accommodating Bicyclists at On and Off-Ramps

Discussion

When crossing free-flow ramps, pedestrians and bicyclists face challenges related to motorists not yielding, high motor vehicle speeds, limited visibility, and the absence of bicycle or pedestrian facilities. Bicyclists additionally face challenges related to unclear path of travel.

Treatments for addressing pedestrian and bicyclist concerns at on- and off-ramps range from using striping and signage to make motorists more aware of and more likely to yield to pedestrians and bicyclists, to reconstructing the intersection to eliminate all free-flow turning movements and reconfiguring intersections so that on and off ramps meet the crossroad at or near 90 degrees.

Design Summary

Bike Lane Width

Bike Lane should follow guidance in Chapter 3.

Signage

Install warning signage at all uncontrolled crossings.

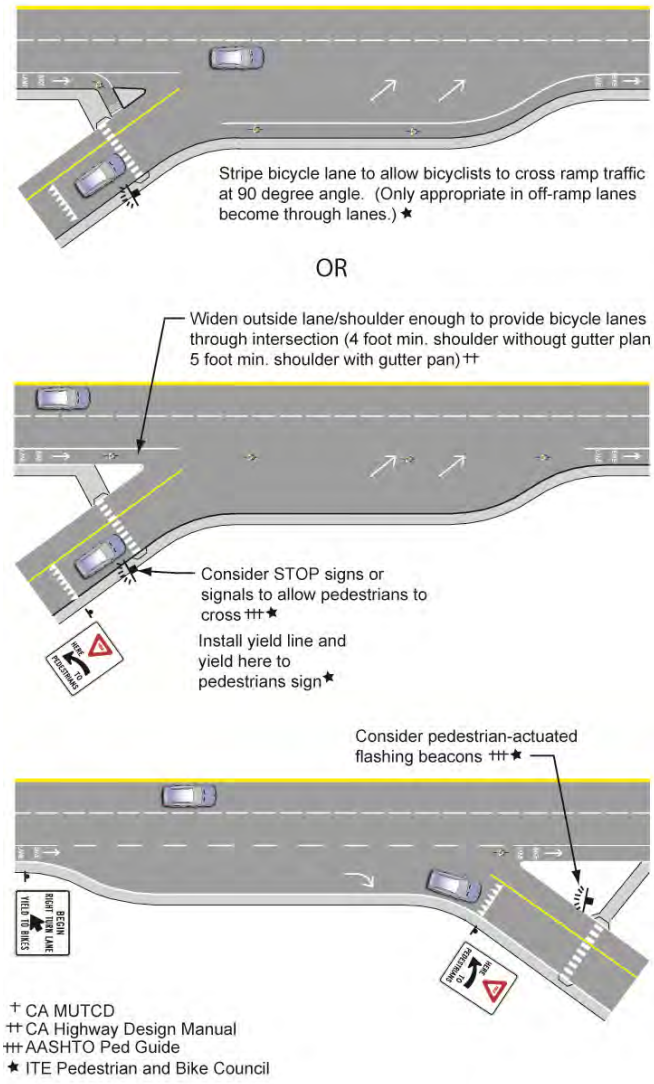
Striping

Stripe high-visibility crosswalks at all intersections. Stripe on- and off-ramps so that through-moving bicyclists do not need to weave across turning motorists, but instead can travel straight. Where bicyclists weave across a vehicle lane, drop the bicycle lane to encourage the bicyclist to use their judgment when deciding when to weave. Where bicyclists travel between moving vehicles for more than 200 feet, install a painted or raised buffer. Install yield lines at all uncontrolled crossings.

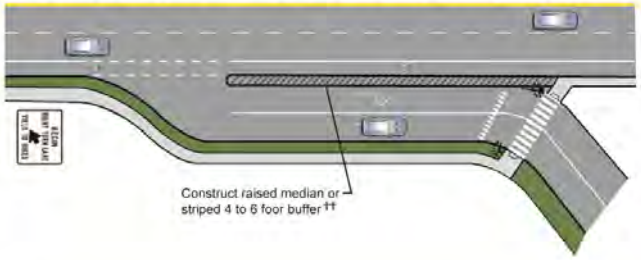
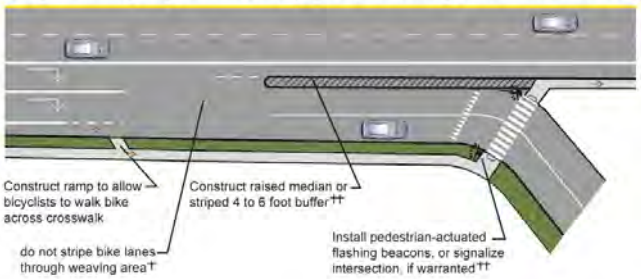
Beacons

Install pedestrian-actuated beacons at all uncontrolled crossings.

Recommended Design



Signage and Striping Treatments for Free-Flow Ramp

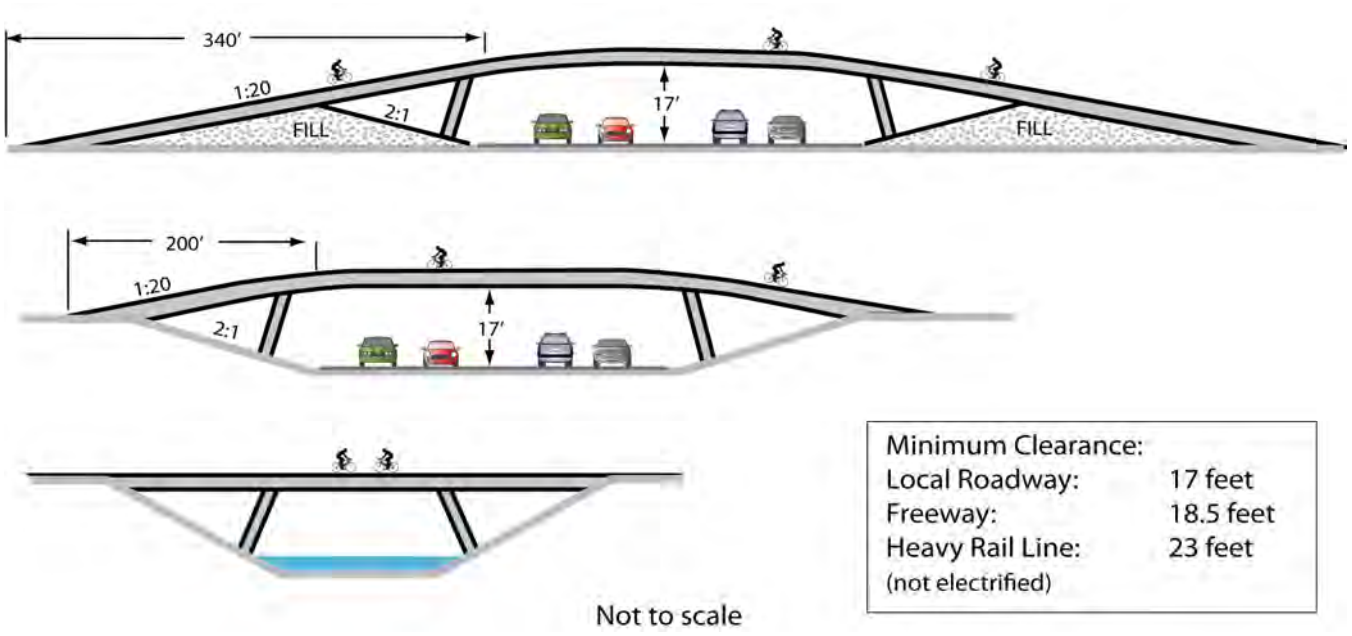
Guidance	Recommended Design (continued)
• Caltrans Highway Design Manual (Chapter 500) • MUTCD – California Supplement Section 9C.04 and Figure 9C-103 • AASHTO Guide for the Development of Bicycle Facilities, p. 62	**Short Dual Right Turn On-Ramp (right turn lanes less than or equal to 200 feet)††**  **Long Dual Right Turn On-Ramp (right turn lanes greater than 200 feet)††**  **Long Dual Trap Right Turn Lane (right turn lanes greater than 200 feet)††**  Figures adapted from ITE Pedestrian and Bike Council † CA MUTCD †† ITE Pedestrian and Bike Council Treatments for Dual-Lane On-Ramps

A.7.7. Bicycle and Pedestrian Overcrossing Design

Discussion	Design Example
Overcrossings require a minimum of 17 feet of vertical clearance to the roadway below versus a minimum elevation differential of around 12 feet for an undercrossing. This results in potentially greater elevation differences and much longer ramps for bicycles and pedestrians to negotiate. See following page for additional discussion.	See next page.

Design Summary	Guidance
Width 8 feet minimum, 14 feet preferred. If overcrossing has any scenic vistas additional width should be provided to allow for stopped path users. A separate 5 foot pedestrian area may be provided for facilities with high bicycle and pedestrian use. **Height** 10 feet headroom on overcrossing; clearance below will vary depending on feature being crossed. **Signage & Striping** The overcrossing should have a centerline stripe even if the rest of the path does not have one. **ADA Compliance** Either ramp slopes to 5% (1:20) with landings at 400 foot intervals or ramp slopes of 8.33% (1:12) with landings every 30 feet. **Lighting** See Section 3.1.2.	• Caltrans Highway Design Manual (Chapters 200 & 1000) • Caltrans Bridge Design Specifications • MUTCD – California Supplement • AASHTO Guide for the Development of Bicycle Facilities • AASHTO Guide Specifications for Design of Pedestrian Bridges

Recommended Design



Additional Discussion – Grade Separated Overcrossing

Ramp Considerations:

Overcrossings for bicycles and pedestrians typically fall under the Americans with Disabilities Act (ADA), which strictly limits ramp slopes to 5% (1:20) with landings at 400 foot intervals, or 8.33% (1:12) with landings every 30 feet.

Overcrossing Use:

Overcrossings should be considered when high volumes of bicycles and pedestrians are expected along a corridor and:

- Vehicle volumes/speeds are high.
- The roadway is wide.
- An at-grade crossing is not feasible.
- Crossing is needed over a grade-separated facility such as a freeway or rail line.

Advantages of Grade Separated Overcrossing

- Improves bicycle and pedestrian safety while reducing delay for all users.
- Eliminates barriers to bicyclists and pedestrians.

Disadvantages / Potential Hazards

- If crossing is not convenient or does not serve a direct connection it may not be well utilized.
- Overcrossings require at least 17 feet of clearance to the roadway below involving up to 400 feet or greater of approach ramps at each end. Long ramps can sometimes be difficult for the disabled.
- Potential issues with vandalism, maintenance.
- High cost.

A.7.8. Bicycle and Pedestrian Undercrossing Design

Discussion

See following page for discussion.

Design Summary

Width
14 feet minimum to allow for access by maintenance vehicles if necessary

Greater widths may increase security

Height
10 feet minimum

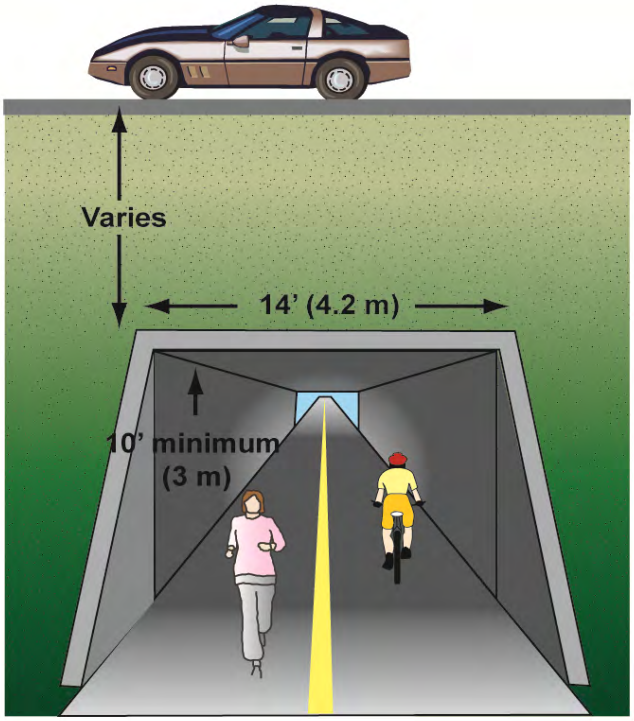
Signage & Striping

The undercrossing should have a centerline stripe even if the rest of the path does not have one.

Lighting

Lighting should be considered during design process for any undercrossing with high anticipated use or in culverts or tunnels.

Recommended Design



Design Example

Guidance

- AASHTO Guide for the Development of Bicycle Facilities
- Caltrans Highway Design Manual (Chapter 1000)

Additional Discussion – Grade Separated Undercrossing

General Notes On Grade-Separated Crossings

Bicycle/pedestrian overcrossings and undercrossings provide critical non-motorized system links by joining areas separated by any number of barriers. Overcrossings and undercrossings address real or perceived safety issues by providing users a formalized means for traversing "problem areas" such as deep canyons, waterways or major transportation corridors. In most cases, these structures are built in response to user demand for safe crossings where they previously did not exist. For instance, an overcrossing or undercrossing may be appropriate where moderate to high pedestrian/ bicycle demand exists to cross a freeway in a specific location, or where a flood control channel separates a neighborhood from a nearby bicyclist destination. These facilities also overcome barriers posed by railroads, and are appropriate in areas where frequent or high-speed trains would create at-grade crossing safety issues, and in areas where trains frequently stop and block a desired pedestrian or bicycle crossing point. They may also be an appropriate response to railroad and other agency policies prohibiting new at-grade railroad crossings, as well as efforts to close existing at-grade crossings for efficiency, safety, and liability reasons.

Overcrossings and undercrossings also respond to user needs where existing at-grade crossing opportunities exist but are undesirable for any number of reasons. In some cases, high vehicle speeds and heavy traffic volumes might warrant a grade-separated crossing. Hazardous pedestrian/bicycle crossing conditions (e.g., few or no gaps in the traffic stream, conflicts between motorists and bicyclists/pedestrians at intersections, etc.) could also create the need for an overcrossing or undercrossing.

Undercrossing Use

Undercrossings should be considered when high volumes of bicycles and pedestrians are expected along a corridor and:

- Vehicle volumes/speeds are high.
- The roadway is wide.
- An at-grade crossing is not feasible.
- Crossing is needed under another grade-separated facility such as a freeway or rail line.

Advantages of Grade Separated Undercrossing

- Improves bicycle and pedestrian safety while reducing delay for all users.
- Eliminates barriers to bicyclists and pedestrians.
- Undercrossings require 10' of overhead clearance from the path surface. Undercrossings often require less ramping and elevation change for the user versus an overcrossing, particularly for railroad crossings.

Disadvantages / Potential Hazards

- If crossing is not convenient or does not serve a direct connection it may not be well utilized.
- Potential issues with vandalism, maintenance.
- Security may be an issue if sight lines through undercrossing and approaches are inadequate. Undercrossing width greater than 14 feet, lighting and /or skylights may be desirable for longer crossings to enhance users' sense of security.
- High cost.

A.8. Design of Interpretive and Wayfinding Signage

A.8.1. Wayfinding Signage - General

Discussion

The 2000 Comprehensive Bicycle Route Plan recommended wayfinding signage and bicycle signal detection along the 37.4-mile North-South Bike Route corridor paralleling El Camino Real.

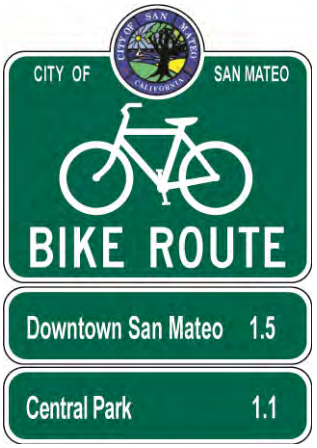
Wayfinding signage acts as a "map on the street" for cyclists, pedestrians, and trail users. Signage and wayfinding is an important component for trail users. Visitors who feel comfortable and empowered will keep coming back to an area, and an effective wayfinding system is key to creating that comfort level. Wayfinding also plays an important role in trail use safety, connecting users with emergency services.

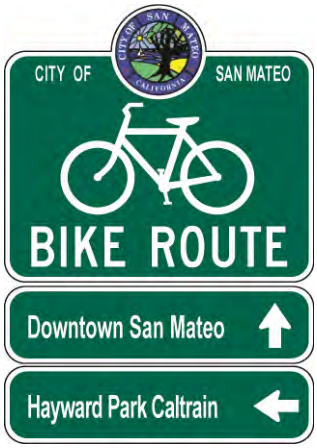
Wayfinding signs are typically placed at key locations leading to and along bicycle facilities, including where multiple routes intersect and at key bicyclist "decision points." Wayfinding signs displaying destinations, distances and "riding time" can dispel common misperceptions about time and distance while increasing users' comfort and accessibility to the priority street network. Wayfinding signs also visually cue motorists that they are driving along a bicycle route and should correspondingly use caution. Note that too many road signs tend to clutter the right-of-way, and it is recommended that these signs be posted at a level most visible to bicyclists and pedestrians, rather than per vehicle signage standards.

Design Summary

- If used, Bicycle Route Guide (D11-1) signs should be provided at decision points along designated bicycle routes, including signs to inform bicyclists of bicycle route direction changes. Bicycle Route Guide signs should be repeated at regular intervals so that bicyclists entering from side streets will have an opportunity to know that they are on a bicycle route.
    - Similar guide signing should be used for shared roadways with intermediate signs placed for bicyclist guidance.
    - Signage should be focused along major routes near key destinations.
    - Signage should be oriented toward both commuter and recreational cyclists.
- Destination signage should be easy to read. Signage should be installed on existing Bike Route or Bike Lane signs where possible to avoid sign clutter.

Recommended Design





Design Example	Guidance
 City of Berkeley, CA Wayfinding Sign	• Caltrans Highway Design Manual (Chapter 1000) • MUTCD, Section 9B.20 • MUTCD – California Supplement, Section 9B.19 through 21 • AASHTO Guide for the Development of Bicycle Facilities **Cost** • Sign, regulatory: $150 - $250 per sign

A.9. Bicycle Parking

A.9.1. Bicycle Rack Design

Design Summary

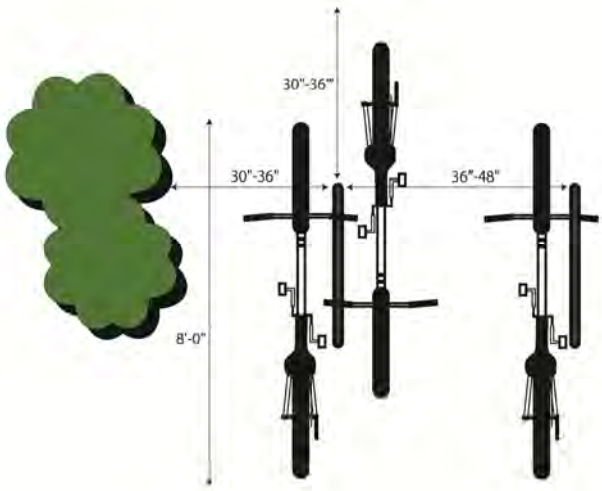
- Bicycle racks should be a design that is intuitive and easy to use.
- A standard inverted-U style rack shall be the standard for the City of San Mateo.
- Bicycle racks should be securely anchored to a surface or structure.
- The rack element (part of the rack that supports the bicycle) should keep the bicycle upright by supporting the frame in two places without the bicycle frame touching the rack. The rack should allow one or both wheels to be secured.
- Avoid use of multiple-capacity "wave" style racks. Users commonly misunderstand how to correctly park at wave racks, placing their bikes parallel to the rack and limiting capacity to 1 or 2 bikes.
- Position racks so there is enough room between parked bicycles. Racks should be situated on 36" minimum centers.
- A five-foot aisle for bicycle maneuvering should be provided and maintained beside or between each row of bicycle racks.
- Empty racks should not pose a tripping hazard for visually impaired pedestrians. Position racks out of the walkway's clear zone.
- For sidewalks with heavy pedestrian traffic, at least seven feet of unobstructed right-of-way is required.
- Racks should be located close to a main building entrance, in a lighted, high-visibility area protected from the elements.

Manufacturers

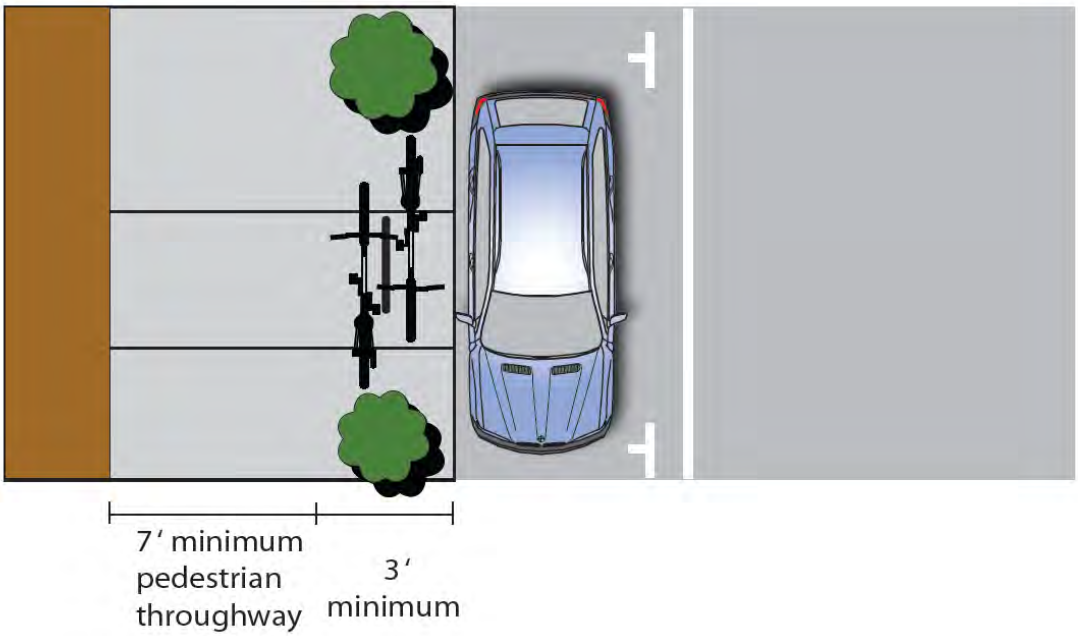
- Palmer: www.bikeparking.com
- Park-a-Bike: www.parkabike.com
- Dero: www.dero.com
- Creative Pipe: www.creativepipe.com
- Cycle Safe: www.cyclesafe.com

City Standard Design

Inverted-U Bicycle Rack



Recommended Design (continued)



Design Example

Short-term bicycle parking showing recommended clearances (non-local)

Guidance

- Association of Bicycle and Pedestrian Professionals Bicycle Parking Guidelines (2nd edition 2010)
- City of Oakland, CA Bicycle Parking Ordinance (2008)

Cost

- Bicycle racks: $150-$200 each

A.9.2. Bicycle Locker Design

Design Summary

- Bicycle lockers should be a design that is intuitive and easy to use.
- Bicycle lockers should be electronically accessed.
- Electronic bicycle locker models from elocker and CycleSafe allow users to access lockers with a SmartCard (linked to a credit card) or mobile phone, respectively.
- Bicycle lockers should be securely anchored to a surface or structure.
- Bicycle lockers should be constructed to provide protection from theft, vandalism and weather.
- A five-foot aisle for bicycle maneuvering should be provided and maintained beside or between each row of bicycle lockers.
- Lockers should be located close to a main building entrance, in a lighted, high-visibility area protected from the elements. Long-term parking should always be protected from the weather.

Manufacturers

- Palmer: www.bikeparking.com (includes keyed lockers with optional conversion to use a "u-lock" to lock the locker)
- Park-a-Bike: www.parkabike.com
- Dero: www.dero.com
- Creative Pipe: www.creativepipe.com
- Cycle Safe: www.cyclesafe.com
- Elock Technologies / BikeLink: www.bikelink.org

Operators

- BikeLink: www.bikelink.org
- CycleSafe SmartTek: www.cyclesafe.com

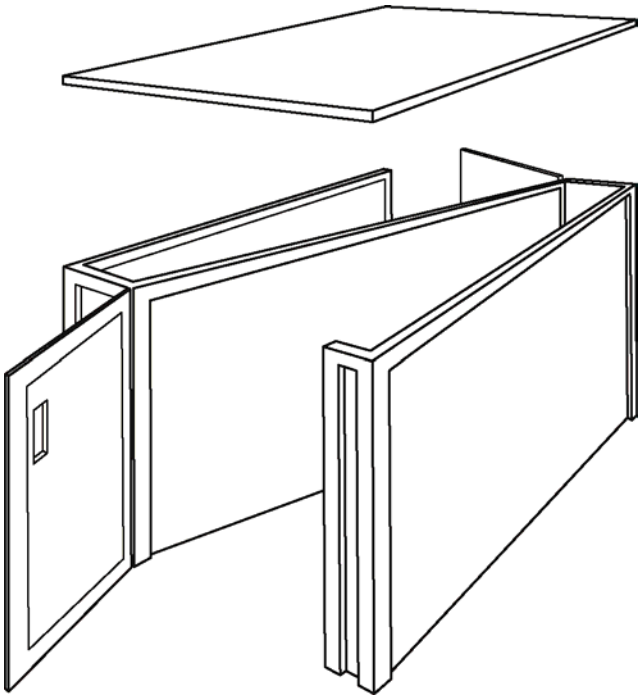
Guidance

- Association of Bicycle and Pedestrian Professionals Bicycle Parking Guidelines (2nd edition, 2010)
- City of Oakland, CA Bicycle Parking Ordinance (2008)

Cost

- Bicycle lockers: $1,350-$2,000 each

Recommended Design



A.10. Maintenance Standards

Like all roadways, bicycle and pedestrian facilities require regular maintenance. This includes sweeping, re-striping, maintaining a smooth roadway, ensuring that the gutter-to-pavement transition remains relatively flat, and installing bicycle-friendly drainage grates. Shared use paths also require regular plant trimming. The following recommendations are provided as a maintenance guideline for the City of San Mateo to consider as it augments and enhances its maintenance capabilities.

A.10.1. Shared Use Path Maintenance Standards

Recommended Standards Summary

Maintenance Activity	Frequency
Surface gap repair	As needed (see additional guidance below)
Inspections	Twice a year
Pavement sweeping/ blowing	As needed
Pavement markings replacement	3-5 years
Signage replacement	As needed when vandalized, 5-10 years as maintenance
Shoulder plant trimming (weeds, trees, brambles)	Yearly
Tree and shrub plantings, trimming	1 – 3 years
Major damage response (washouts, fallen trees, flooding)	As soon as possible

SURFACE GAP REPAIR

Path Surface

- The surface of the pedestrian access route shall be firm, stable and slip resistant (Draft Guidelines for Public Rights of Way, Section R301.5).

Vertical Changes in Level

- Changes in level up to ¼ inch may be vertical and without edge treatment. Changes in level between ¼ inch and ½ inch shall be beveled with a slope no greater than 1:2. Changes in level greater than ½ inch shall be accomplished by means of a ramp that complies with ADAAG Section 4.7 or 4.8 (ADAAG Section 4.5.2).
- Surface discontinuities shall not exceed ½ inch maximum. Vertical discontinuities between ¼ inch and ½ inch maximum shall be beveled at 1:2 minimum. The bevel shall be applied across the entire level change (Draft Guidelines for Public Rights of Way, Section R301.5.2).

Gaps and Elongated Openings

- If gratings are located in walking surfaces, then they shall have spaces no greater than ½ inch wide in one direction. If gratings have elongated openings, then they shall be placed so that the long dimension is perpendicular to the dominant direction of travel (ADAAG Section 4.5.4).
- Walkway Joints and Gratings. Openings shall not permit passage of a sphere more than ½ inch in diameter. Elongated openings shall be placed so that the long dimension is perpendicular to the dominant direction of travel (Draft Guidelines for Public Rights of Way, Section R301.7.1).

Discussion	Maintenance Challenges
Basic Maintenance • Path pavement should be repaired as need to avoid safety issues and to ensure ADA compliance. • Paths should be swept regularly. • Shoulder vegetation should be cleared and trimmed regularly. **Long-Term Maintenance** • Paths should be slurry sealed, at minimum, 10 years after construction. • Paths should receive an overlay, at minimum, 15 years after construction. Agencies or districts with dedicated funding for maintenance generally provide more maintenance activities.	• Most agencies pay for sidewalk and path maintenance out of their maintenance and operations budget. This funding is generally enough to provide seasonal maintenance, but is not enough to fund long-term preventative maintenance, such as overlays. • Grant funding is not generally available for maintenance activities.
Guidance	
• ADAAG • Draft Guidelines for Public Rights of Way (2005)	
Cost	
• $1,000-14,000 per mile per year	

A.10.2. On-Street Facility Maintenance Standards

Recommended Standards Summary

Maintenance Activity	Frequency
Inspections	Seasonal – at beginning and end of Summer
Pavement sweeping/blowing	As needed, weekly in Fall
Pavement sealing, potholes	5 - 15 years
Culvert and drainage grate inspection	Before Winter and after major storms
Pavement markings replacement (including crosswalks)	1 – 3 years
Signage replacement	1 – 3 years
Shoulder plant trimming (weeds, trees, brambles)	Twice a year; middle of growing season and early Fall
Tree and shrub plantings, trimming	1 – 3 years
Major damage response (washouts, fallen trees, flooding)	As soon as possible

NOTE: Caltrans recommends tolerance of surface discontinuities no more than ½ inch wide when parallel to the direction of travel on bike lanes (Class II) and bike routes (Class III).

Discussion

Basic Maintenance

Bicyclists often avoid shoulders and bike lanes filled with sanding materials, gravel, broken glass and other debris; they will ride in the roadway to avoid these hazards, causing conflicts with motorists. A regularly scheduled inspection and maintenance program helps ensure that roadway debris is regularly picked up or swept. Roadways should also be swept after automobile collisions.

Long-Term Maintenance

Roadway surface is a critical issue for bicyclists' quality. Bicycles are much more sensitive to subtle changes in roadway surface than are motor vehicles. Examine pavement quality and transitions during every roadway project for new construction, maintenance activities, and construction project activities that occur in streets.

Cost

- $1,000-$2,000 per mile per year

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Appendix B. Bicycle Parking

This appendix presents a Downtown San Mateo bicycle parking plan, locations for recommended bicycle parking upgrades, and recommended bicycle parking requirements for new development.

B.1. Downtown Bicycle Parking Plan

The Downtown Bike Parking Plan (Plan) presents recommendations for bicycle parking throughout the City of San Mateo's downtown as well as designs for bicycle parking at seven specific locations. The recommended locations and layouts were chosen based on available right-of-way, proximity to businesses that attract bicyclists, and impacts to pedestrian activity and automobile parking.

The seven designs presented on the following pages include descriptions of the proposed modifications and identification of benefits, impacts to the pedestrian activity and automobile parking.

The seven locations discussed in the Downtown Bike Parking Plan are:

- 3rd Avenue and San Mateo Drive
- 3rd Avenue and B Street
- 5th Avenue and B Street
- 4th Avenue between El Camino Real and San Mateo Drive
- 3rd Avenue and Ellsworth Avenue
- 3rd Avenue between El Camino Real and San Mateo Drive
- Ellsworth Avenue between 1st Avenue and 2nd Avenue

This Plan recommends the City conduct outreach in English and Spanish to visitors, employers and employees regarding use of Downtown bicycle parking.

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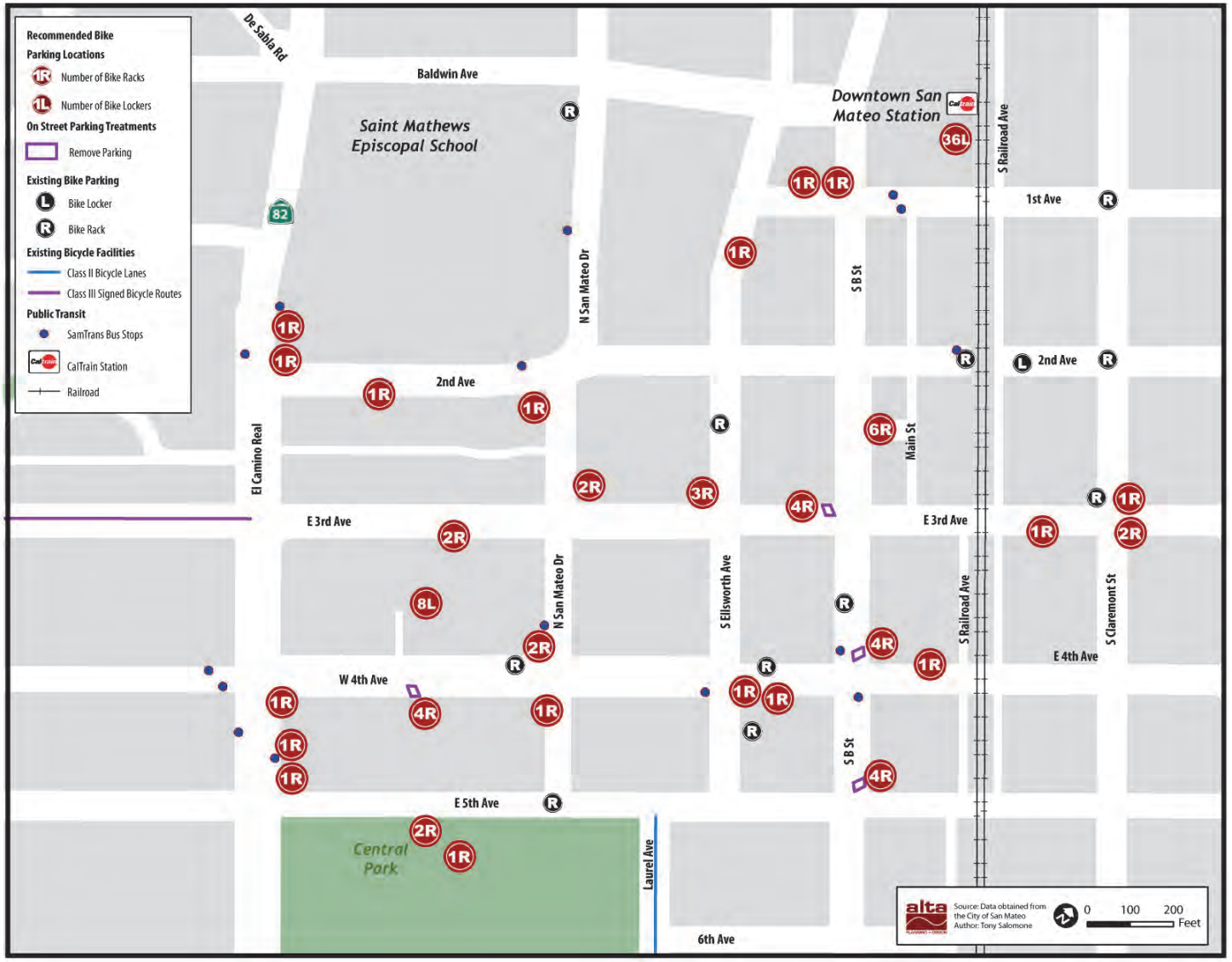


Figure B-1: Downtown Bicycle Parking Map

Figure B-2: 3rd Avenue and San Mateo Drive Bicycle Parking Photo Simulation

B.1.1. 3rd Avenue and San Mateo Drive

B.1.1.1. Description

The recommended bicycle parking at 3rd Avenue and San Mateo Drive is adjacent to several businesses that attract patrons on bicycles, including Baskin Robins and Togo's, in the heart of downtown San Mateo. The project would create four bicycle parking spaces at a red curb zone area in an area with limited available right-of-way. The bicycles would be protected with bollards and rubber parking blocks.

B.1.1.2. Benefits

Parking spaces for four bicycles would be placed in an area where there is little available space for siting bicycle racks in the sidewalk zone.

B.1.1.3. Impacts to Pedestrian Activity

None. The bicycle racks would be placed outside of the pedestrian zone and will not block pedestrians exiting their automobile and accessing the sidewalk.

B.1.1.4. Impacts to Automobile Parking

None. This project will occupy unused on-street space and no automobile parking spaces will be removed.

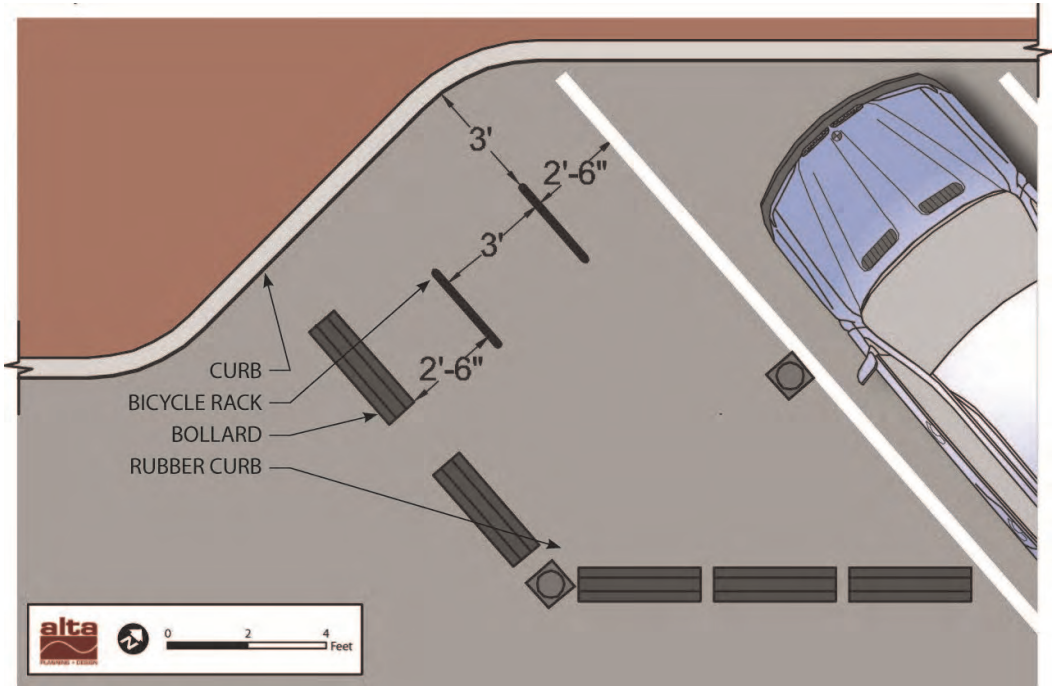


Figure B-3: 3rd Avenue and San Mateo Drive Bicycle Parking Plan View

Figure B-4: 3rd Avenue and B Street Photo Simulation

B.1.2. 3rd Avenue and B Street

B.1.2.1. Description

The recommended bicycle parking at 3rd Avenue and B Street is adjacent to a major bicycle attractor, Peet's Coffee, in the heart of downtown San Mateo. The project would replace one auto parking space with parking for eight bicycles in an area with limited available right-of-way. The bicycles would be protected with bollards and rubber parking blocks. In addition, edgeline striping and cross hatching would direct motorists around the turn when entering 3rd Avenue from B Street and away from the bollards outside the travel lane.

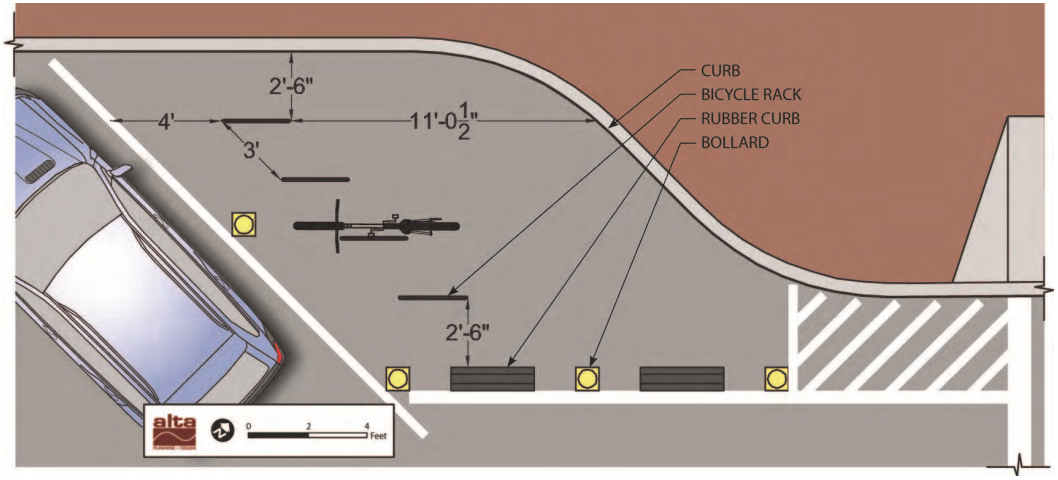


Figure B-5: 3rd Avenue and B Street Bicycle Parking Plan View

B.1.2.2. Benefits

Parking spaces for eight bicycles would be placed in an area where there is little available space in the sidewalk zone.

B.1.2.3. Impacts to Pedestrian Activity

None. The bicycle racks would be placed outside of the pedestrian zone and will not block pedestrians exiting their automobile and accessing the sidewalk.

B.1.2.4. Impacts to Automobile Parking

Removal of one auto parking space.

Figure B-6: 5th Avenue and B Street Photo Simulation

B.1.3. 5th Avenue and B Street

B.1.3.1. Description

The recommended bicycle parking on B Street at 5th Avenue between is adjacent to a major bicycle attractor, Talbots Toyland and Cyclery. The project would replace one auto parking space with parking for eight bicycles in an area with limited available right-of-way. The bicycles would be protected with bollards and rubber parking blocks.

B.1.3.2. Benefits

Parking spaces for eight bicycles would be placed in an area where there is little available space in the sidewalk zone.

B.1.3.3. Impacts to Pedestrian Activity

None. The bicycle racks would be placed outside of the pedestrian zone and will not block pedestrians exiting their automobile and accessing the sidewalk.

B.1.3.4. Impacts to Automobile Parking

Removal of one auto parking space.

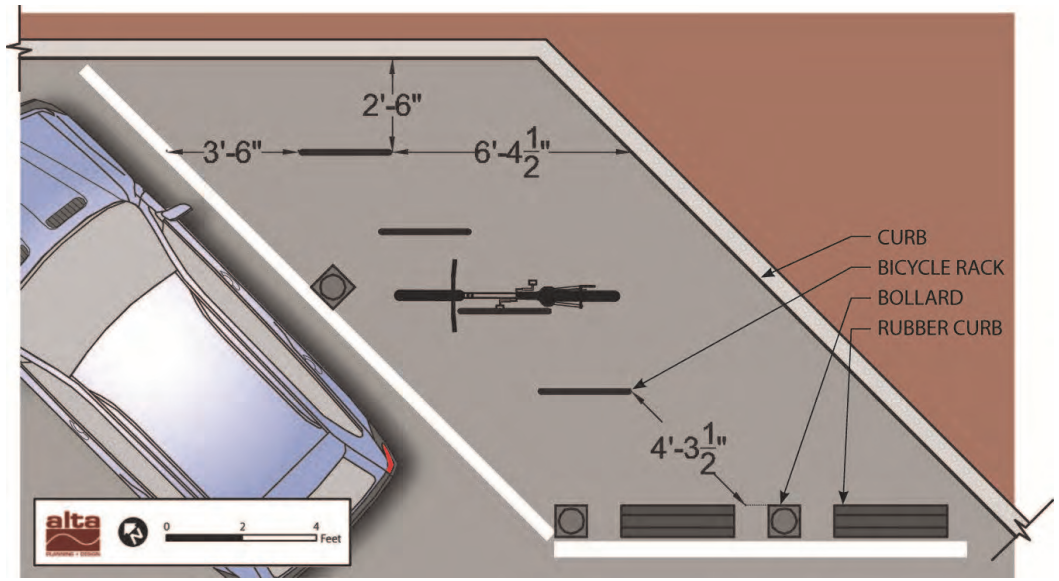


Figure B-7: 5th Avenue and B Street Bicycle Parking Plan View

Figure B-8: 4th Avenue between El Camino Real and San Mateo Drive Photo Simulation

B.1.4. 4th Avenue between El Camino Real and San Mateo Drive

B.1.4.1. Description

The recommended bicycle parking on 4th Avenue between El Camino Real and San Mateo Drive is adjacent to several food service businesses that regularly attract customers on bicycles, including Starbucks, Noah's Bagels and Jamba Juice. The project would replace one auto parking space with parking for eight bicycles in an area with limited available right-of-way. The bicycles would be protected with bollards and rubber parking blocks.

B.1.4.2. Benefits

Parking spaces for eight bicycles would be placed in an area where there is little available space in the sidewalk zone. Existing conditions include automobile impacts to the adjacent midblock crosswalk. Cars backing out of the parking space impede on the crosswalk. This bicycle parking project will remove that conflict.

B.1.4.3. Impacts to Pedestrian Activity

The bicycle racks would be placed outside of the pedestrian zone and will not block pedestrians exiting their automobile and accessing the sidewalk.

This project would remove automobile conflict with pedestrians in the crosswalk and therefore improve the pedestrian environment.

B.1.4.4. Impacts to Automobile Parking

Removal of one auto parking space.

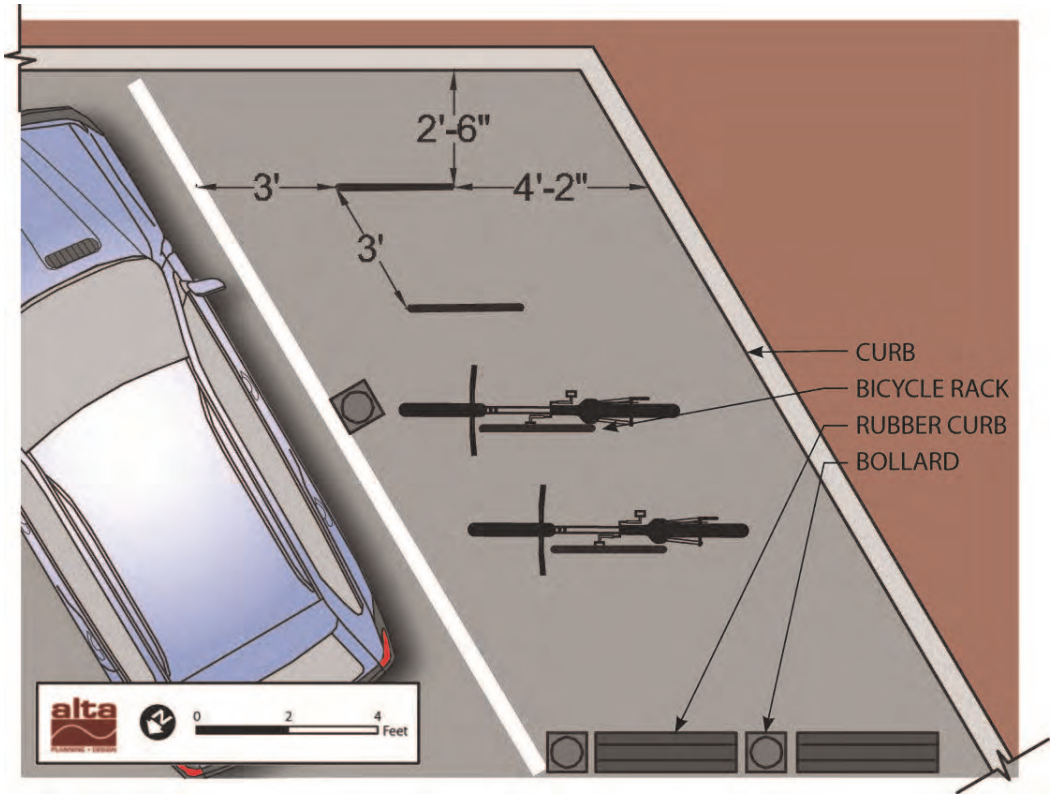


Figure B-9: 4th Avenue between El Camino Real and San Mateo Drive Bicycle Parking Plan View

Figure B-10: 3rd Avenue and Ellsworth Avenue Photo Simulation

B.1.5. 3rd Avenue and Ellsworth Avenue

B.1.5.1. Description

The recommended bicycle parking on 3rd Avenue at Ellsworth is on an existing curb extension in an area with otherwise limited available right-of-way. The project would place parking for six bicycles near attractors such as Walgreens, Aaron Brothers and many restaurants. The bicycles would be adjacent to the through pedestrian zone but would not impact pedestrian activity.

B.1.5.2. Benefits

Parking spaces for six bicycles would be placed in an area where there is little available space.

B.1.5.3. Impacts to Pedestrian Activity

The bicycle racks would be placed outside the through pedestrian zone or path of travel and will not impact pedestrian activity

B.1.5.4. Impacts to Automobile Parking

None.

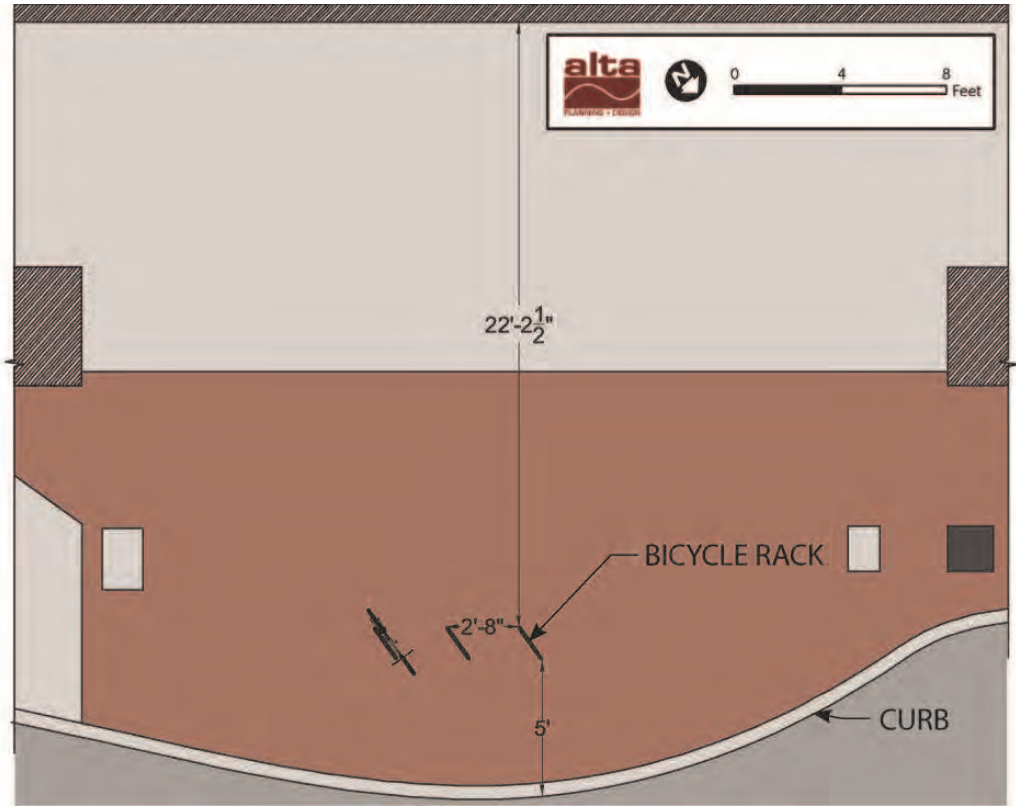


Figure B-11: 3rd Avenue and Ellsworth Avenue Bicycle Parking Plan View

Figure B-12: 3rd Avenue between El Camino Real and San Mateo Drive Photo Simulation

B.1.6. 3rd Avenue between El Camino Real and San Mateo Drive

B.1.6.1. Description

The recommended bicycle parking on 3rd Avenue between El Camino Real and San Mateo Drive is on an existing curb extension in an area with otherwise limited available right-of-way. The project would place parking for four bicycles near attractors such as restaurants and banks. The bicycles would be adjacent to the commercial loading zone however they will be outside the area used for loading and unloading.

B.1.6.2. Benefits

Parking spaces for four bicycles would be placed in an area where there is little available space.

B.1.6.3. Impacts to Pedestrian Activity

The bicycle racks would be placed outside the through pedestrian zone or pedestrian path of travel.

The bicycles will be near the pedestrian seating area but will not impact access or enjoyment.

B.1.6.4. Impacts to Automobile Parking

None.

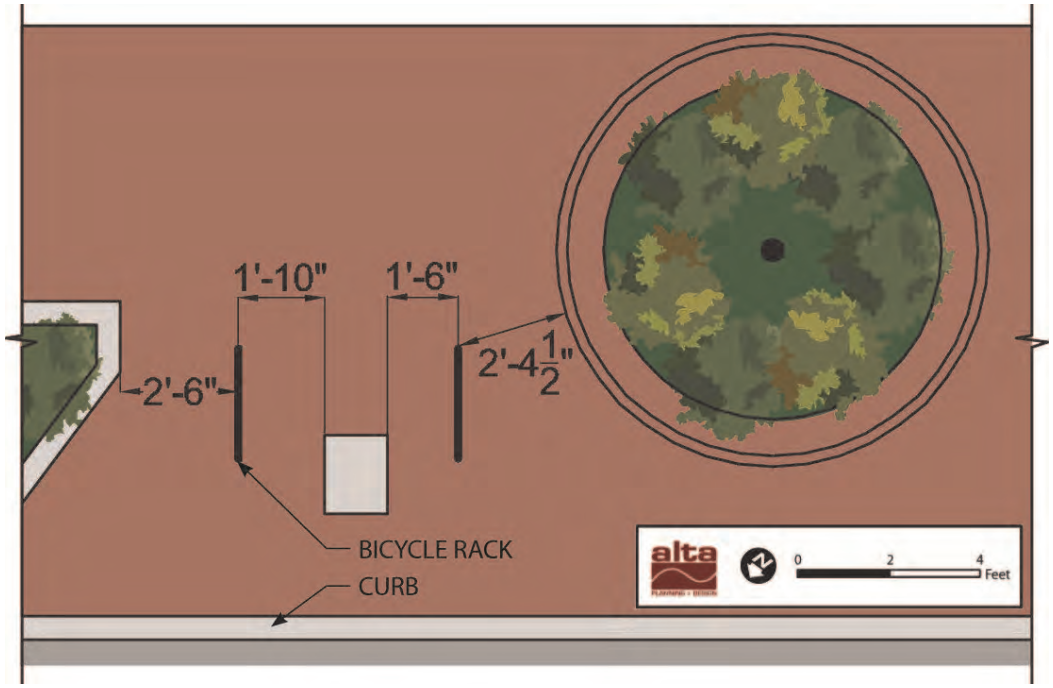


Figure B-13: 3rd Avenue between El Camino Real and San Mateo Drive Bicycle Parking Plan View

Figure B-14: Ellsworth Avenue between 1st Avenue and 2nd Avenue Photo Simulation

B.1.7. Ellsworth Avenue between 1st Avenue and 2nd Avenue

B.1.7.1. Description

The recommended bicycle parking on Ellsworth Avenue between 1st and 2nd Avenues would be in the existing sidewalk furnishing zone in an area with otherwise limited available right-of-way. The project would place parking for two bicycles in front of a large downtown office building at a red curb. The bicycles would not impact pedestrian activity.

B.1.7.2. Benefits

Parking spaces for two bicycles would be placed in an area where there is little available space.

B.1.7.3. Impacts to Pedestrian Activity

The bicycle racks would be placed outside the through pedestrian zone or path of travel and will not impact pedestrian activity.

B.1.7.4. Impacts to Automobile Parking

None.

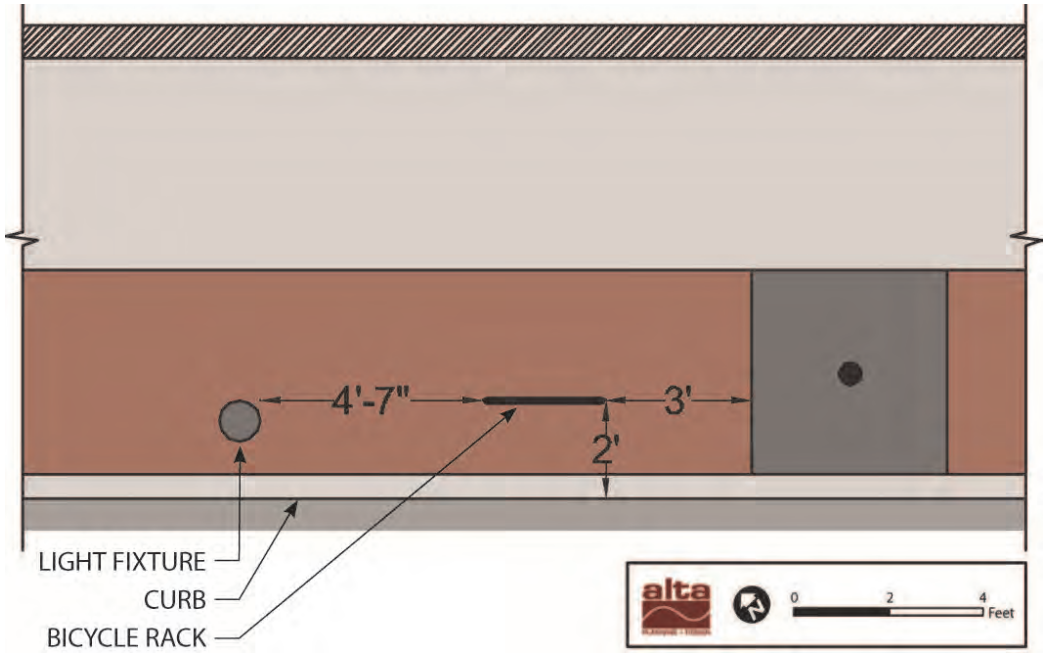


Figure B-15: Ellsworth Avenue between 1st Avenue and 2nd Avenue Bicycle Parking Plan View

B.2. Recommended Locations for Bicycle Parking at Civic Facilities

Community members expressed desire for improved bicycle parking at civic facilities including parks and recreation centers. Specific locations for improved bicycle parking are presented on the following pages.

B.2.1. Bay Meadows Linear Park

1010 Park Place, 94403
Uses: Open space, seating

Table B-1: Bay Meadows Linear Park Proposed Bicycle Parking

ID	Type	Notes
A	4 U-racks	Install

B.2.2. Bayside-Joinville Park Swim Center

2111 Kehoe Ave., 94403
Uses: Medium size playground, open space, recreation and swim center, baseball field, soccer field, and two tennis courts

Table B-2: Bayside-Joinville Park Swim Center Proposed Bicycle Parking

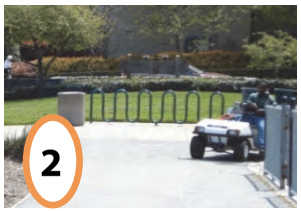
ID	Type	Notes
1	1 wave rack	Existing
2	1 wave rack	Existing
A	2 U-racks	Install
B	2 U-racks	Install

B.2.3. Beresford Park and Recreation Center

2720 Alameda de las Pulgas, 94403
Uses: Recreation center, 4 tennis courts, bocce ball court, 3 baseball fields, 2 playground areas, basketball court, and community garden

Table B-3: Beresford Park and Recreation Center Proposed Bicycle Parking

ID	Type	Notes
1	1 wheel bender	Remove and install ID C
2	1 wave rack	Existing
3	1 wave rack	Existing
A	2 U-racks	Install
B	2 U-racks	Install
C	4 U-racks	Install



B.2.4. Central Park and Recreation Center

50 E. 5th Ave., 94401

Uses: Recreation center, rose garden, Japanese tea garden, 6 tennis courts, 1 baseball field, large playground area, picnic areas, and open space

Table B-4: Central Park and Recreation Center Proposed Bicycle Parking

ID	Type	Notes
A	2 U-racks	Install
B	4 U-racks	Install
C	4 U-racks	Install
D	4 U-racks	Install
E	4 U-racks	Install

B.2.5. City Hall

330 W. 20th Avenue, 94403
Uses: Civic facility

Table B-5: City Hall Proposed Bicycle Parking

ID	Type	Notes
1	1 wave rack	Existing
2	16 lockers	Existing
3	1 wave rack	Existing
A	4 U-racks (covered)	Install

B.2.6. Concar Playground

650 Connie Ave., 94404
Uses: Medium size playground and open space

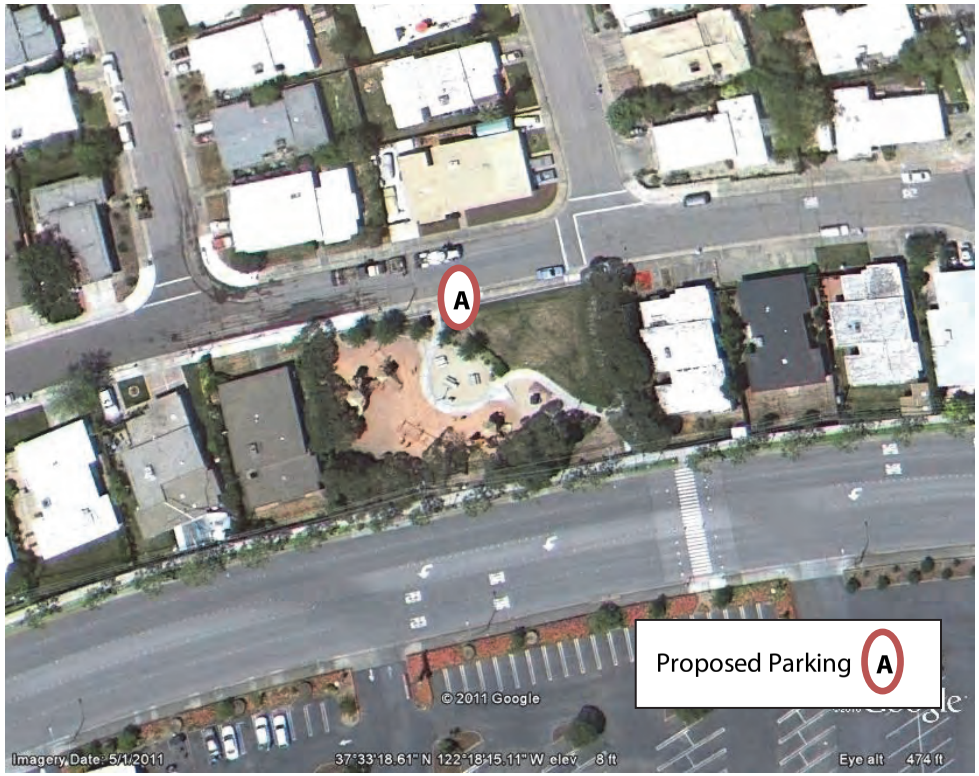


Table B-6: Concar Playground Proposed Bicycle Parking

ID	Type	Notes
A	4 U-racks	Install

B.2.7. Central Parking Structure

Downtown – Under San Mateo Drive ramp
Uses: Parking garage

Table B-7: Central Parking Structure Proposed Bicycle Parking

ID	Type	Notes
1	1 wave rack	Existing (under ramp)
A	8 lockers and 4 U racks	Install

B.2.8. Harbor View Park

1775 Monte Diablo Ave., 94401
Uses: Medium size playground area, baseball field, half basketball court, and Bay trail access

Table B-8: Harbor View Park Proposed Bicycle Parking

ID	Type	Notes
1	3 U-racks	Existing
A	3 U-racks	Install

B.2.9. East Hillsdale Park

123 31st Ave., 94403

Uses: Small size playground, open space, and 1 tennis court

Table B-9: East Hillsdale Park Proposed Bicycle Parking

ID	Type	Notes
A	2 U-racks	Install
B	2 U-racks	Install

B.2.10. Fiesta Meadows Park

1141 Bermuda Dr., 94403
Uses: Open space and soccer field

Table B-10: Fiesta Meadows Park Proposed Bicycle Parking

ID	Type	Notes
A	4 U-racks	Install

B.2.11. Gateway Park

800 E. 3rd Ave., 94401
Uses: Open space, creek, and small size playground

Table B-11: Gateway Park Proposed Bicycle Parking

ID	Type	Notes
A	2 U-racks	Install

B.2.12. Indian Springs Park

313 W. 39th Ave., 94403
Uses: Open space and small size playground

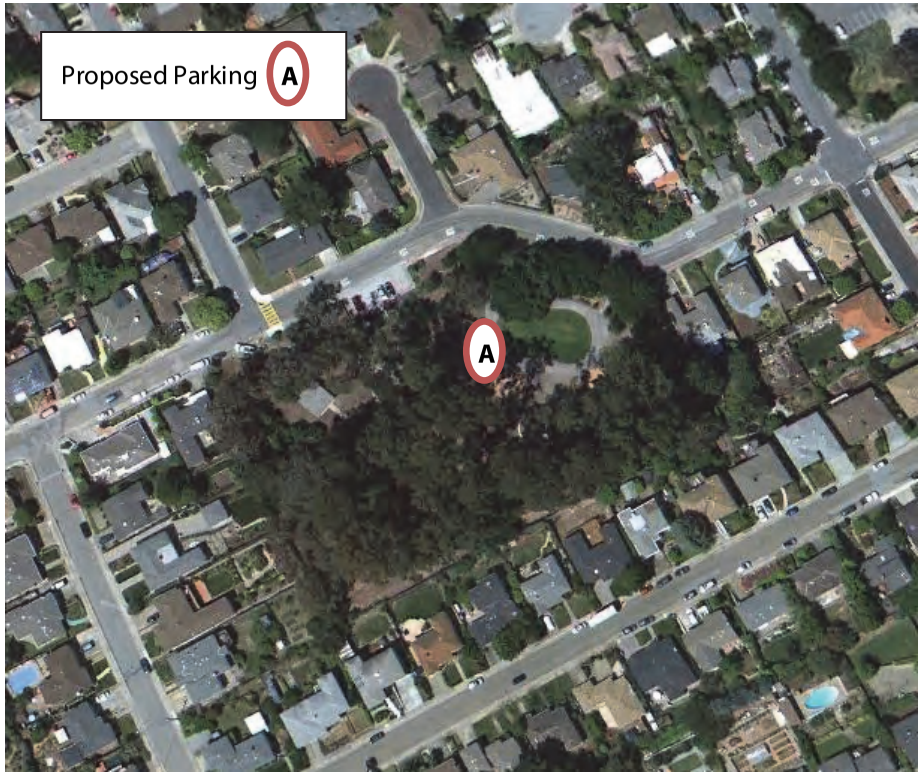


Table B-12: Indian Springs Park Proposed Bicycle Parking

ID	Type	Notes
A	4 U-racks	Install

B.2.13. Library, Hillsdale Branch

205 W. Hillsdale Blvd, 94403
Uses: Library, meetings

Table B-13: Hillsdale Branch Library Proposed Bicycle Parking

ID	Type	Notes
1	1 wave rack	Existing
A	4 U-racks (covered)	Install

B.2.14. Library, Main Branch

55 W. 3rd Ave, 94402
Uses: Library, meetings

Table B-14: Main Branch Library Proposed Bicycle Parking

ID	Type	Notes
1	6 circle racks	Existing
A	4 U-racks (covered)	Install

B.2.15. Library, Marina Branch

1530 Susan Ct., 94403
Uses: Library, meetings

Table B-15: Marina Branch Library Proposed Bicycle Parking

ID	Type	Notes
1	1 wave rack	Existing
A	4 U-racks (covered)	Install

B.2.16. Lakeshore Park and Recreation Center

1500 Marina Court, 94403
Uses: Recreation center, 2 baseball fields, small playground, basketball court, and beach access

Table B-16: Lakeshore Park and Recreation Center Proposed Bicycle Parking

ID	Type	Notes
1	4 U-racks	Existing
2	4 U-racks	Existing
A	4 U-racks	Install

B.2.17. Laurelwood Park

3471 Glendora Dr., 94403
Uses: 2 playgrounds, open space, access to Sugarloaf Mountain, and trails

Table B-17: Laurelwood Park Proposed Bicycle Parking

ID	Type	Notes
1	3 U-racks	Existing
2	3 U-racks	Existing
A	4 U-racks	Install

B.2.18. Laurie Meadows Park

111 Laurie Meadows Dr., 94403
Uses: Open space, 2 small playgrounds, and batting cage

Table B-18: Laurie Meadows Park Proposed Bicycle Parking

ID	Existing	Notes
1	2 wave racks	Existing
A	2 U-racks	Install

B.2.19. Los Prados Park

1837 Bahia St., 94403
Uses: Open space, soccer field, 2 baseball fields, basketball court, 2 tennis courts, and small playground

Table B-19: Los Prados Park Proposed Bicycle Parking

ID	Type	Notes
A	4 U-racks	Install
B	4 U-racks	Install
C	4 U-racks	Install

B.2.20. Mariners Island Park

1550 Shoal Dr., 94404
Uses: Small size playground, open space, baseball field, lagoon, and picnic area

Table B-20: Mariners Island Park Proposed Bicycle Parking

ID	Type	Notes
1	2 8-capacity wheel bender racks	Remove and replace with ID A
A	6 U-racks (replace existing parking)	Install to replace ID 1
B	4 U-racks	Install

B.2.21. Martin Luther King Jr. Community Center and Park

725 Monte Diablo Ave., 94401
Uses: Recreation center, basketball court, 1 baseball field, small playground, soccer field, and swimming pool

Table B-21: Martin Luther King Jr. Community Center and Park Proposed Bicycle Parking

ID	Existing	Notes
1	1 wave rack	Remove and replace with ID A
2	1 toaster rack	Remove and replace with ID B
A	6 U-racks, covered (replace existing parking)	Install to replace ID 1
B	4 U-racks (replace existing parking)	Install to replace ID 2

B.2.22. Meadow Square Park

Between David St. & Wayne Way
Uses: Small playground and open space

Table B-22: Meadow Square Park Proposed Bicycle Parking

ID	Type	Notes
A	4 U-racks	Install

B.2.23. Parkside Aquatic Park

100 Seal Ct., 94403
Uses: Open space, small playground, picnic tables, beach access, and lagoon

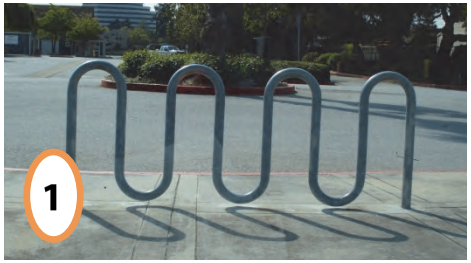


Table B-23: Parkside Aquatic Park Proposed Bicycle Parking

ID	Type	Notes
1	1 wave rack	Existing
A	4 U-racks	Install

B.2.24. Saratoga Square Park

Between David St. & Saratoga Drive
Uses: Open space, medium playground, and picnic tables

Table B-24: Saratoga Square Park Proposed Bicycle Parking

ID	Type	Notes
1	1 wave rack	Existing
A	4 U-racks	Install

B.2.25. Senior Center

2645 Alameda de las Pulgas, 94403
Uses: Community center

Table B-25: Senior Center Proposed Bicycle Parking

ID	Type	Notes
A	2 U-racks	Install

B.2.26. Shoreview Park and Recreation Center

950 Ocean View Ave., 94401
Uses: Recreation center, small playground, skate park, 1 tennis court, 1 basketball court, and 1 baseball field

Table B-26: Shoreview Park and Recreation Center Proposed Bicycle Parking

ID	Existing	Notes
1	1 toaster rack	Existing
2	5 U-racks	Existing
3	5 U-racks	Existing
A	4 U-racks	Install
B	4 U-racks	Install
C	4 U-racks	Install

B.2.27. Sunnybrae Playground

625 Folkstone Ave., 94402
Uses: Medium playground

Table B-27: Sunnybrae Playground Proposed Bicycle Parking

ID	Type	Notes
A	4 U-racks	Install

B.2.28. Trinta Park

150 19th Ave., 94403
Uses: 2 baseball fields, 1 small playground, and half basketball court

Table B-28: Trinta Park Proposed Bicycle Parking

ID	Type	Notes
1	1 toaster rack	Existing
A	4 U-racks	Install

B.2.29. Washington Playground

1768 Washington Ave., 94403
Uses: Medium playground and 1 basketball court

Table B-29: Washington Playground Proposed Bicycle Parking

ID	Type	Notes
A	4 U-racks	Install

B.2.30. West Hilldale Park

345 31st Ave., 94403
Uses: Open space, small playground and basketball court

Table B-30: West Hillsdale Park Proposed Bicycle Parking

ID	Type	Notes
A	4 U-racks	Install

B.3. Recommended Locations for Bicycle Rack Upgrades

Through the public workshop and input from the Plan website, community members expressed desire for the City to replace, as funding allows, existing racks that do not meet City standards. Bicycle racks that do not meet City standards include wheelbender and wave racks. These do not meet City standards because they do not provide two points of contact and therefore bicycles are not stable and can fall over becoming tripping hazards. The locations of the bicycle racks recommended for upgrade are presented in **Table B-31**.

Table B-31: Recommended Bicycle Racks Upgrades

Location	Rack Quantity	Existing Rack Type
Aragon High School	1	Wheelbender
Bayside Academy, parking enclosed by fence	1	Wheelbenders (enclosed by fence)
Fiesta Gardens International School	1	Wheelbender
Fiesta Gardens International School	1	Wheelbender
Hillsdale, Shopping Center Lower floor of parking structure	1	Wheelbender
Hillsdale, Shopping Center Upper floor of parking structure	1	Wheelbender
Horrall Elementary School	1	Wheelbender
Laurelwood Elementary School	1	Wheelbender
Martin Luther King Jr. Park, by front door	1	Wheelbender
Mid Peninsula Boys and Girls Club	1	Wheelbender
Near Bank of America	1	Wheelbender
Near California Pizza Kitchen, in alcove	1	Wheelbender
Near Safeway	1	Wheelbender
Near Trader Joe's	1	Wheelbender
Shoreview Rec Center, at entrance to main building	1	Wheelbender
Shoreview Shopping Center	1	Wheelbender

B.4. Example Bicycle Parking Code Language and Rates

The following text presents language and rates for inclusion in the City's Zoning Code in 24.04.058 [Definition of a] Bicycle Parking Facility and 27.64 Off-street Parking and Loading, I. Off-street Parking, 27.64.262 Bicycle parking facilities.

B.4.1. Code Language

24.04 DEFINITIONS

27.04.058 **BICYCLE PARKING FACILITY.** "Bicycle parking facility" means a space exclusively for the storage of bicycles.

27.64 OFF-STREET PARKING AND LOADING

27.64.262 BICYCLE PARKING FACILITIES

These bicycle parking requirements shall apply to the indicated activities as specified below.

(a) Bicycle Parking Required for New and Existing Uses. Bicycle parking shall be provided for new development projects, additions to existing buildings, and new living units in existing buildings. Bicycle parking as prescribed hereafter shall be provided for activities occupying buildings, or portions of, which are constructed, established, wholly reconstructed, or moved onto a new lot, except to the extent that existing bicycle parking exceeds such requirements for any existing facilities. The required amount of new bicycle parking shall be based on the cumulative increase in floor area, or other applicable unit of measurement prescribed hereafter. If an existing building is altered or changed in occupancy so as to result in an increase in the number of residential living units, bicycle parking shall be provided for the new units.

(b) More Than One (1) Activity on a Lot. Whenever a single lot contains different activities with the same bicycle parking requirement, the overall bicycle parking requirement shall be based on the sum of all such activities. Whenever a single lot contains activities with different bicycle parking requirements, the overall requirement shall be the sum of the requirements for each activity calculated separately.

(c) Determination by Zoning Administrator. For uses not listed in the schedules of bicycle parking requirements, bicycle parking spaces shall be provided on the same basis as required for the most similar listed use, or as determined by the Zoning Administrator.

(d) Standards for Required Bicycle Parking.

(1) Types of Required Bicycle Parking.

(A) Long-Term Bicycle Parking. Each long-term bicycle parking space shall consist of a locker or a rack located within a locked enclosure, such as a secure room or controlled access area, providing protection for each bicycle from theft, vandalism and weather. Long-term bicycle parking is meant to accommodate employees, students, residents, commuters, and others expected to park more than two (2) hours.

(B) Short-Term Bicycle Parking. Short-term bicycle parking shall consist of a bicycle rack or racks and is meant to accommodate visitors, customers, messengers, and others expected to park not more than two (2) hours.

(2) Minimum Specifications for Required Bicycle Parking.

(A) All bicycle parking facilities shall be dedicated for the exclusive use of bicycle parking and shall not be intended for the use of motorized two-wheeled or similar vehicles.

(B) All required short-term bicycle parking spaces shall permit the locking of the bicycle frame and one (1) wheel with a U-type lock, support the bicycle in a stable horizontal position without damage to wheels, frame, or components, and provide two (2) points of contact with the bicycle's frame. Art racks are subject to review by the Zoning Administrator.

(C) All required long-term bicycle parking spaces, with the exception of individual bicycle lockers, shall permit the locking of the bicycle frame and one (1) wheel with a U-type lock and support the bicycle in a stable position without damage to wheels, frame, or components.

(D) Bicycle parking facilities shall be securely anchored so they cannot be easily removed and shall be of sufficient strength and design to resist vandalism and theft.

(E) The overall design and spacing of such facilities shall meet the standards of subsection (3).

(3) Location and Design of Required Bicycle Parking. Required bicycle parking shall be placed on site(s) as set forth below:

(A) A short-term bicycle parking space shall be at least two and one-half (2.5) feet in width by six (6) feet in length to allow sufficient space between parked bicycles.

(B) Bicycle parking facilities shall not impede pedestrian or vehicular circulation.

(i)Bicycle parking racks located on sidewalks should be kept clear of the pedestrian through zone.

(C) Bicycle parking facilities are subject to the following standards:

(i) Short-term bicycle racks shall be located with at least 30 inches clearance in all directions from any obstruction, including but not limited to other racks, walls, and landscaping. Large retail uses, supermarkets, and grocery stores are encouraged to locate racks with a 36-inch clearance in all directions from any vertical obstruction, including but not limited to other racks, walls, and landscaping.

(ii) All bicycle facilities shall provide a minimum four (4) foot aisle to allow for unobstructed access to the designated bicycle parking area.

(iii) All long-term bicycle parking facilities shall include a variety of rack types to accommodate different bicycle sizes, styles, and users, as determined by the Zoning Administrator.

(D) Bicycle parking facilities within auto parking facilities shall be protected from damage by cars by a physical barrier such as curbs, wheel stops, poles, bollards, or other similar features capable of preventing automobiles from entering the designated bicycle parking area.

(E) Short-term bicycle parking facilities serving community activity centers such as libraries and community centers should incorporate weather-protective enclosures shielding the designated bicycle area from typical inclement weather when feasible.

(F) Bicycle parking facilities shall be located in highly visible well-lighted areas. In order to maximize security, whenever possible short-term bicycle parking facilities shall be located in areas highly visible from the street and from the interior of the building they serve (i.e., placed adjacent to windows).

(G) The location and design of required bicycle parking shall be of a quality, character and color that harmonize with adjoining land uses. Required bicycle parking shall be incorporated whenever possible into building design or street furniture.

(H) Long-term bicycle parking shall be covered and shall be located on site or within 200 feet of the main building entrance. The main building entrance is defined as publicly accessible entrances and shall exclude gated private garage entrances, trash room entrances, and other building entrances that are not publicly accessible.

(I) Short-term bicycle parking must be along project frontage and within 50 feet of the main entrance to the building or commercial use or up to 100 feet where existing conditions do not allow placement within 50 feet. It should be in a well-trafficked location visible from the entrance. When the main entrance fronts the sidewalk, the installer must apply for an encroachment permit from the City to install the bicycle parking in the public right-of-way. The main building entrance excludes garage entrances, trash room entrances, and other building entrances that are not publicly accessible.

(J) If required bicycle parking is not visible from the street or main building entrance, a sign must be posted at the main building entrance indicating the location of the bicycle parking.

(e) Minimum Number of Required Bicycle Parking Spaces. The rules for calculating the minimum number of bicycle parking spaces are:

(1) If after calculating the number of required bicycle parking spaces a quotient is obtained containing a fraction of one-half or more, an additional space shall be required; if such fraction is less than one-half it may be disregarded.

(2) When the bicycle parking requirement is based on number of employees or number of students, the number of spaces shall be based on the number of working persons on the lot during the largest shift of the peak season or the highest expected student capacity. If the Zoning Administrator determines that this number is difficult to verify for a specific facility, then the number of required long-term bicycle parking spaces shall be a minimum of two (2) spaces or five (5) percent of the amount of required automobile spaces for the proposed facility, whichever is greater.

(3) When the bicycle parking requirement is based on number of seats, in the case of pews or similar facilities each 18 inches shall be counted as one seat.

(4) The calculation of short-term bicycle parking may include existing racks that are in the public right-of-way and are within 100 feet of the main entrance.

(f) Bicycle Parking Rates. Required bicycle parking rates vary depending on whether the associated land use is located within or outside the Downtown Area as shown below:

(1) Downtown Area.

(A) Minimum Parking Requirements. Where a parcel of real property is located within the Downtown Area, new projects to be located on said parcel shall meet the bicycle parking requirements as follows:

MINIMUM BICYCLE PARKING STALLS REQUIRED

Downtown Planning Area		
Uses	**Minimum Short-Term Bike Parking Spaces Required**	**Minimum Long-Term Bike Parking Spaces Required**
(A) Hotels, excluding accessory restaurants and bars	1 per 20 units	1 per 20 employees
(B) Indoor Theatres and Cinemas		
Weekly matinees	1 per 20 fixed seats	1 per 40 fixed seats
Weekend matinees and evenings	1 per 20 fixed seats	1 per 40 fixed seats
(C) Offices		
Financial	1 per 20,000 s.f.	1 per 10,000 s.f.
General	1 per 20,000 s.f.	1 per 10,000 s.f.
Medical	1 per 20,000 s.f.	1 per 10,000 s.f.
(D) Residential uses (within the Retail Core Subarea as defined in the Down-town Specific Plan)		
Studio	0.05 per unit	1.0 per unit
One-bedroom	0.05 per unit	1.0 per unit
Two-bedrooms	0.10 per unit	1.25 per unit
Three or more bedrooms	0.15 per unit	1.5 per unit
(E) Restaurants and bars, excluding fast food restaurants	1 per 5,000 s.f.	1 per 12,000 s.f.
(F) Retail stores	1 per 2,000 s.f.	1 per 12, 000 s.f.
(G) Services	1 per 10,000 s.f.	1 per 20,000 s.f.
(H) Fast food, drive-in, drive-thru, and take-out restaurants	1 per 10,000 s.f.	1 per 20,000 s.f.

(2) Outside Downtown Area.

(A) Minimum Parking Requirements. For the following uses on property located outside the Downtown Area, bicycle parking stalls shall be provided as listed below. Bicycle parking stalls required on an employee basis shall be based on the maximum number of employees on duty, or residing, or both, on the premises at any one (1) time.

MINIMUM BICYCLE PARKING STALLS REQUIRED

Outside Downtown Specific Planning Area		
Uses	**Minimum Short-Term Bike Parking Spaces Required**	**Minimum Long-Term Bike Parking Spaces Required**
1. Residential Uses:		
a. Single Family Dwelling (Detached with private garage. If includes shared garage, bicycle parking requirements for Multiple Family Dwelling shall apply.)	No spaces required	No spaces required
Under 3,000 sq. ft. of floor area*	No spaces required	No spaces required
3,000 - 3,749 sq. ft. of floor area*	No spaces required	No spaces required
3,750 sq. ft. of floor area* and above	No spaces required	No spaces required
b. Secondary Unit	No spaces required	No spaces required
c. Multiple Family Dwelling (two-family, townhouse, condominium, apartments and apartment hotels)		
Studio	0.05 per unit	1.0 per unit
One-bedroom	0.05 per unit	1.0 per unit
Two-bedroom	0.10 per unit	1.25 per unit
Three or more bedroom (or any dwelling unit over 1,400 square feet in floor area	0.15 per unit	1.5 per unit
* Excluding enclosed parking facilities, uninhabitable accessory structures and covered patios.		
2. Commercial Shopping Centers:		
a. Community Shopping Center	1 per 5,000 s.f.	1 per 12,000 s.f.
b. Regional Shopping Center	1 per 10,000 s.f.	1 per 20,000 s.f.
Note: The above requirements will apply for all commercial shopping centers in the city; however, whenever the zoning administrator determines that delineation of independent uses is required, the following standards shall apply:		
3. Commercial, Retail, and Service Uses:		
a. Automobile service and gas stations (see Section 27.64.185)	2 spaces	Min. of 1 space
b. Automobile washing and cleaning establishments, except self-service.	None	Min. of 2 spaces
c. Barber shops or beauty parlors	1 per 2,000 s.f.	1 per 12,000 s.f.
d. Buildings used solely for coin-operated laundromats	1 per 2,000 s.f.	1 per 5,000 s.f.
e. Cemeteries, mausoleums, and columbaria	0.05 per acre	0.05 per acre
f. Contractors' storage yards in connection with contractor's business; salvage yard; junk yard; automobile wrecking yard; storage yard	No spaces required	No spaces required
g. Dry cleaners	1 per 2,000 s.f.	1 per 12,000 s.f.
h. Home improvement centers	1 per 10,000 s.f.	1 per 20,000 s.f.
i. Retail stores, food stores, and drugstores	1 per 2,000 s.f.	1 per 12,000 s.f.
j. Self-service automobile washes	No spaces required	No spaces required

Outside Downtown Specific Planning Area		
Uses	**Minimum Short-Term Bike Parking Spaces Required**	**Minimum Long-Term Bike Parking Spaces Required**
4. Commercial and Public Recreation Uses:		
a. Public Parks [Public parks are considered a single lot with different activities. Rates shall be a sum of activities as described in 27.64.262 (c)].		
Parks of any size.	1 per acre	No spaces required
Sports courts (e.g., tennis, bocci ball and basketball)	1 per court	No spaces required
Ball fields (e.g., soccer and softball)	1 per acre	No spaces required
Group picnic areas	2 spaces per picnic table or per 10 seats	No spaces required
Passive useable turf whose primary purpose is for informal play, family picnics or relaxation and play/courtyards. (Excludes areas that are less than 5,000 square feet.)	1 per 20,000 s.f.	No spaces required
Play areas (children)	1 per acre	No spaces required
Recreation center	1 per 5,000 s.f.	1 per 20,000 s.f.
b. Health studios and spas	1 per 2,000 s.f.	1 per 20,000 s.f.
c. Dance Studio	1 per 2,000 s.f.	1 per 12,000 s.f.
5. Educational Uses:		
a. Colleges, universities, and institutions of higher learning, parochial and private	1 for every 10 students of planned capacity	1 per 10 employees
b. Day nurseries, including preschools and nursery schools	1 per 20 students	1 per 20 employees
c. Elementary and junior high schools	1 per 20 students	1 per 10 employees
d. Senior high schools	1 per 20 students	1 per 10 employees
e. Trade schools, business colleges, and commercial schools	1 per 20 students	1 per 10 employees
6. Health Uses:		
a. Dental clinics or offices; medical clinics or offices	1 per 5,000 s.f.	1 per 12,000 s.f.
b. Health centers, government operated	1 per 5,000 s.f.	1 per 12,000 s.f.
c. Hospitals	1 per 20,000 s.f.	1 per 20 employees or 70,000 s.f., whichever fewer
d. Veterinary hospitals & clinics	1 per 5,000 s.f.	1 per 12,000 s.f.
7. Office, Professional Uses:		
a. Commercial banks, savings and loan office, other financial institutions, including stock brokerages	1 per 2,000 s.f.	1 per 12,000 s.f.
b. Offices	1 per 20,000 s.f.	1 per 10,000 s.f.

Outside Downtown Specific Planning Area		
Uses	**Minimum Short-Term Bike Parking Spaces Required**	**Minimum Long-Term Bike Parking Spaces Required**
8. Manufacturing Plants and Kindred Uses:		
a. Wholesale establishments, warehouses, storage buildings, or structures	1 per 5,000 s.f.	1 per 20,000 s.f.
9. Places of Assembly:		
a. Fast food, drive-in, drive-thru, and take-out restaurants	1 per 10,000 s.f.	1 per 20,000 s.f.
b. Libraries, art galleries and museums; Public	1 per 10,000 s.f.	1 per 20,000 s.f.
c. Restaurants, taverns, lounges, and other establishments for the sale and consumption on the premises of food and beverages	1 per 10,000 s.f.	1 per 20,000 s.f.
d. Theaters (indoor)	1 per 40 fixed seats	1 per 80 fixed seats

(Ord. 2012-5 § 2; Ord. 2011-10 § 4; Ord. 1986-13 § 1; Ord. 1981-27 § 48; Ord. 1979-7 § 19)

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Appendix C. Safe Routes to Schools Toolkit

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C.1. What is Safe Routes to School?

Safe Routes to School (SR2S) is a program intended to help children get to school by walking and bicycling. It envisions active kids using safe streets, helped by engaged adults (from teachers to parents to police officers), surrounded by responsible drivers.

Safe Routes to School programs use a variety of strategies to make walking and biking to school easy, fun and safe for children. These strategies are often categorized according to the "Five Es."

Students enjoying a bike ride to school

Education: Programs designed to teach children about traffic safety, bicycle and pedestrian skills, and traffic decision-making.

Encouragement: Programs that make it fun for kids to walk and bike. These programs may be challenges, incentive programs, regular events (e.g. "Walk and Bike Wednesdays") or classroom activities.

Engineering: Physical projects that are built to improve walking and bicycling conditions.

Enforcement: Law enforcement strategies to improve driver behavior near schools.

Evaluation: Programs implemented to measure the effectiveness of SR2S programs and identify opportunities for improvement

C.1.1. Who is This Toolkit For?

This Toolkit is for any adult who wants to improve traffic safety and air quality at and around schools, help children be more physically active and "ready to learn" and improve our neighborhoods.

Whether you are a parent, a teacher, a school administrator, a neighbor, a public health professional, city staff, or a city official, this Toolkit will provide you with facts and figures, as well as ideas, inspiration and proven techniques. This toolkit covers the Why, Who and How of Safe Routes to School in the City of San Mateo.

C.1.2. History of the Safe Routes to School Movement

Based on the success of programs in Marin County, New York, and Florida, Safe Routes to School became a nationwide effort in 2005, when Congress included a national SR2S program in the reauthorization of Federal highway legislation. The program distributed $612 million in dedicated SR2S funds around the nation. As a result, every state has a SR2S coordinator and a grant program.

The movement responded to a staggering decline in the percentage of schoolchildren walking and bicycling to school. In 1969, over 40% of schoolchildren walked or bicycled to school. Today, that number has dropped to 13%, and it continues to decline. As fewer kids biked and walked, more were bused and, increasingly, driven to school. As a result, children are less physically active, contributing to the highest childhood obesity rates in history. Today over 25% of morning rush-hour traffic is parents driving children to school. Traffic safety and air quality have declined near schools.

In the 1970s and 1980s, numerous European communities noticed that children were no longer walking and bicycling to school. Denmark was first to implement a program named "Safe Routes to School" and its success inspired similar programs in Australia, Canada and the United States. In the US, the first SR2S programs were implemented in Marin County (CA), New York City, Arlington (MA), and the state of Florida.

C.2. Benefits of Walking and Bicycling to School

Active kids are healthy kids, and walking or bicycling to school is an easy way to make sure that children get daily physical activity. Benefits to children include:

- Increased physical fitness and cardiovascular health
- Increased ability to focus on school
- A sense of independence and confidence about their transportation and their neighborhood

SR2S also benefits neighborhoods:

- Improved air quality as fewer children are driven to school
- Decreased congestion as fewer children are driven to school
- Fewer crashes in the neighborhood
- More community involvement as parents, teachers and neighbors are involved and put "eyes on the street"

Schools also benefit:

- Fewer discipline problems because children arrive "ready to learn"
- Fewer private cars arriving to drop off and pick up children
- Opportunities to integrate walking, bicycling and transportation topics into curriculum (e.g. "Walk & Bike Across America," mapping lessons, graphs and charts of distance walked or biked)
- Safe Routes to Schools Maps
- Sheriff's Teen Traffic Offender Program

C.3. How to Get Started

C.3.1. School Site Audit

A school site audit, sometimes called a walking audit or walkabout, is an evaluation of the pedestrian and bicycling conditions around the school environment. Typically school site audits are conducted by the local school group or task force on foot by walking the routes that the students use to get to school. A site audit may also be conducted on bicycle in order to better evaluate bicycling conditions. The audit will help to identify specific issues that measures in this toolkit can address.

The goal of a site audit is to document conditions that may discourage walking and bicycling to school, and to identify solutions to improve those conditions. The audit should involve an assessment of the built environment around a school (for example, streets, sidewalks, pathways, crosswalks and intersections, bike routes, traffic controls), drop-off and pick-up operations (e.g. presence of designated loading areas), as well as behaviors of students, parents, and motorists that could contribute to unsafe conditions for bicyclists or pedestrians (e.g. speeding, jaywalking, failure to yield to pedestrians).

A School Site Audit checklist form has been provided at the end of this Toolkit that asks for detailed information related to:

- Student Drop-Off and Pick-Up Areas
- Bus Loading Zones
- Sidewalks and Bicycle Routes
- Intersections Near the School Property
- Sight Distance
- Traffic Signs, Speed Controls and Pavement Markings

The local school task force can use the School Site Audit checklist as a basis for conducting their walkabout.

Along with the checklist, an aerial map of the school area is helpful for the site audit. Aerial photos can be marked up with identified issues and suggested improvements.

C.3.2. Customizing the Approach

Families in San Mateo enjoy certain advantages in walking and bicycling to school as compared to other cities. For example, mild Northern California weather means that most days are comfortable for walking and bicycling, and there are strong bicycling advocacy organizations active in San Mateo and surrounding areas. However, at the same time, families face challenges that can make walking or bicycling difficult, such as crossing El Camino Real.

Because each school differs based on characteristics such as terrain and the amount of nearby traffic, a solution that works at one school may not be appropriate at another school in the city. For example, some schools may already be located on quiet, low-traffic streets and programmatic approaches may be most effective. In partnership with parents, schools and neighbors, the City of San Mateo can design programs that reflect the unique opportunities and challenges faced by each school's population.

C.4. Engineering Tools

The environment near the school is often a deciding factor when a parent or guardian decides whether or not to let their child walk or bicycle to school. There are many engineering improvements that help improve pedestrian and bicyclist safety and comfort near schools. The engineering improvements help slow cars, increase the visibility of students walking and biking and make it easier for students to cross the street. While some engineering efforts can be costly, many (such as posting signs and striping crosswalks or bike lanes) are relatively inexpensive. The City of San Mateo's Public Works Department is responsible for maintenance and new installation streets, sidewalks, and traffic signals throughout the City.

C.4.1. Traffic Calming

Traffic calming measures are intended to enhance pedestrian safety and encourage safe driving by slowing vehicles and reducing cut-through traffic on local neighborhood streets. Types of traffic calming include:

C.4.1.1. Medians and Pedestrian Refuge Islands

Medians and pedestrian refuge islands are located at an intersection or in the middle of a block. Medians are curbed areas in the center of the roadway that reduce the roadway width and reduce the speed of traffic. Pedestrian refuge islands are medians with a cut-out ("refuge") for pedestrians. Pedestrian refuge islands are often used with a marked crosswalk. They improve the safety of the pedestrian by creating a curb-protected location in the middle of the street. This allows the student to cross one lane of traffic at a time. These are best used on higher volume streets with high visibility crosswalks and signs.

A pedestrian refuge island

C.4.1.2. Speed Tables and Speed Humps

Speed tables and humps slow vehicles by forcing them to go over a raised surface (they are also known as "vertical deflection"). Speed tables are longer and wider than jarring speed bumps found in locations like parking lots. They are generally used on lower volume streets and may not be permitted or advised on larger or higher-volume streets.

Speed humps help to control speeds

C.4.1.3. Chicanes

Chicanes are two curb extensions or roadside islands that create a serpentine path for autos. Street traffic must slow down to effectively maneuver around the in-street barriers. Chicanes are mainly used on local streets near a school site.

A chicane

C.4.1.4. Traffic circles

Traffic circles are in-street speed reduction devices found at residential intersections. They slow traffic because straight through vehicle traffic must slow down to go around them, while turning vehicles must slow to make a sharper turn. Traffic circles can be used to visually enhance the street using plants or public art.

C.4.1.5. Single Lane Roundabouts

Roundabouts can be used at intersections instead of using a traffic signal. They reduce the speed of traffic while maintaining traffic flow through an intersection. They can be used on low and high traffic volume roads. Decreased auto speeds improve pedestrian safety.

A landscaped traffic circle

C.4.1.6. Pinch Points

Pinch points are very similar to chicanes. Chicanes are offset curb extensions, while pinch points are paired curb extensions or roadside islands used create a single auto lane. Pinch points slow traffic by reducing the width of the street. Pinch points are used on neighborhood streets.

Pinch points discourage high speeds

C.4.1.7. Reduced Corner/Turning Radius

Reducing the turning radius for right-hand turns means creating a tighter turning angle for the motorist. This reduces the speed at which a motorist can make a right turn. It also improves the visibility of the pedestrian to the motorists and increases the sight distance of the pedestrian.

The turning radius at this intersection has been reduced

C.4.2. Bicycle Facilities

It is legal in San Mateo for younger children to bicycle on the sidewalk, and they may be more comfortable there. As older children become more confident in their cycling skills and ride at faster speeds, designated on-street facilities may help to reduce bicycle/pedestrian conflicts on congested walkways near schools and increase visibility for students arriving by bike. Use of on-street facilities is more appropriate for children with better bike handling skills, as they need to know how to stay within the bike lane (if striped) or to the right of traffic (on signed routes), obey stop signs and other traffic signals, and watch for traffic pulling out of side streets or driveways. Bike lanes provide a striped and stenciled lane for one-way travel on the roadway. Bike routes provide for shared use of the roadway lane with motor vehicle traffic and are identified only by signing.


Bike lane on 1st Avenue in San Mateo

C.4.2.1. Bicycle Lanes

Bicycle lanes are a striped portion of the road that forms an area specifically for bicycles. Bicycle lanes increase the visibility of bicycles to motorists by giving them designated space on the road. Bicycle lanes are better suited for older and more experienced children who have learned the skills needed for bicycle handling, avoiding road hazards and following the rules of the road. Bike lanes can be striped on any street that meets the width requirements and has the characteristics of a good bicycle route.


Secure bicycle parking

Secure Bicycle Parking

Providing a secure and convenient location for bicycle parking is one way to help encourage more children to bicycle to school. Good bike parking is located conveniently (near the school entrance, for example), and protects bicycles from vandalism/theft, damage and weather.

C.4.2.2. Loop Detectors/Video Detectors for Bikes

When a minor road crosses a major road at a signalized intersection, sometimes the light on the minor road turns green only when a car is detected. Often, the devices that detect cars (loop detectors or video detectors) don't detect smaller objects, like bicycles. These devices can be calibrated to detect bicyclists as well as cars. Loop detectors are used at intersections that are actuated by the presence of a vehicle in the roadway and allow for a bicycle to "trip" the signal and receive a green light. They are in-pavement devices that turn the light green when a bicyclist is detected. When a bicyclist stops over a loop detector, the detector uses a magnetic field to detect the metal in a bicycle. Video detectors are mounted on a traffic signal and detect bicycles over a larger area. Video detectors also turn the light green for a bicyclist.

Cyclist positioned over a loop detector

C.4.3. Pedestrian Facilities

C.4.3.1. School Area Signage

Signs inform street users about what to expect from the street surroundings. School Zone signs notify motorists that they are entering an environment where there are vulnerable road users. The city is required to follow guidelines listed in the California Manual on Uniform Traffic Control Devices when installing signs. Key signs include the School Warning, School Crosswalk Warning, School Speed Limit and School Advance Warning. One way of increasing the visibility of school area signage is through the use of fluorescent yellow-green signs.

High-visibility signage

C.4.3.2. Sidewalks

Sidewalks are the most fundamental element of the pedestrian network, designating protected space for pedestrians and young bicyclists. A complete sidewalk network is an important component of the transportation system for students. An incomplete sidewalk network or sidewalks in disrepair create a hazard for students walking and biking and may force students to walk in the roadway.

Sidewalks are essential near schools

C.4.3.3. Trails and Pathways

Trails, and pathways are often viewed as recreational facilities, but they can also serve an important function as a walking and bicycling corridor to school. Multi-use pathways serve both bicyclists and pedestrians, and provide additional width over a standard sidewalk. Pathways may be constructed adjacent to roads, through parks or open space areas, along creeks, or along linear corridors, such as abandoned railroad lines. Regardless of the type, pathways constructed next to the road should have some type of buffer to separate the path area from the adjacent travel lane.

C.4.3.4. Human-Scale Lighting

Safe sidewalks are essential components of good pedestrian environments, and well-lit environments convey a feeling of comfort and safety, particularly at night. Lighting should illuminate the sidewalk and roadway crossings to increase pedestrian visibility. Lighting is also an important element for multi-use pathways, at underpasses and at other isolated locations. Lights should be low enough to the street to scaled for pedestrians increase pedestrian visibility to road users and light their walking path.

Curb extensions shorten crossing distance

C.4.3.5. Curb Extensions/Bulbouts

Curb extensions (sometimes called curb bulbs or bulb-outs) have many benefits for pedestrians. They shorten the street crossing distance, provide additional space at corners, allow pedestrians to see and be seen before entering the crosswalk, and simplify the placement of curb ramps.

C.4.3.6. High-Visibility Crosswalk Striping

High-visibility striping makes crosswalks more noticeable to motorists. Crosswalks located on roads within a certain distance of a school may be painted yellow. Several different crosswalk striping patterns can be used – the most common types of crosswalk striping patterns are shown in the diagram on this page. The standard crosswalk striping pattern consists of two parallel lines, called the "transverse" pattern. A number of "high-visibility" patterns are also in use, such as the ladder, zebra and continental patterns, which add bars for increased visibility.

A high-visibility continental design crosswalk

High-visibility markings should be considered for all high-volume crossings near schools, and where the conditions warrant an increased visibility marking (e.g. a mid-block location). Standardizing crosswalk markings helps both motorists and pedestrians recognize designated crossings.

C.4.3.7. Advance Stop and Yield Lines

Motorist obeying an advance stop line

In-Street Yield to Pedestrian signs are flexible plastic signs installed in the median to enhance a crosswalk at crossing locations that do not have a signal. These signs usually say 'State Law: Yield to Pedestrians'. At school crosswalks, these signs are sometimes installed on a portable base and brought out in the morning and back in at the end of each day by school staff, which may reduce the chance that the sign will become invisible to motorists by being left out all the time. For permanently-installed signs, maintenance can be an issue as the signs may be run over by vehicles and need to be replaced occasionally. Installing the signs in a raised median can help extend their lifetime.

C.4.3.8. Grade-Separated Crossings

Occasionally, it may be necessary to raise or lower a pedestrian or bicycle crossing above or below the existing street level, using a pedestrian bridge or underpass. Due to their high cost, grade-separated crossings should only be considered when there are no safe and convenient alternative routes, such as at a freeway, major highway, rail line or waterway. Even in these cases, pedestrian-only grade-separated crossings should be built only after careful consideration. Those that require significant elevation change, such as to cross over a freeway, may not be used. Grade-separated crossings may also feel unsafe because pedestrians are isolated from others. For this reason, pedestrian and bicycle facilities should be incorporated into existing and new vehicle crossings where feasible.

C.4.4. Traffic Signals

Many treatments at signalized intersections can improve pedestrian safety around schools.

C.4.4.1. Pedestrian Countdown Signals

Pedestrian countdown signal

Pedestrian countdown signals give pedestrians information about how much time left they have to cross the street. Young pedestrians are still learning the skills needed to be a safe pedestrian. Without proper information, a flashing hand can confuse some child pedestrians and lead to running in the crosswalk in order to complete the crossing before the signal changes. Countdown signals help children make good decisions about whether or not to enter the crosswalk by telling them how much time they left have to cross the street.

Pedestrian countdown signals are recommended at all signalized intersections where feasible.

C.4.4.2. Leading Pedestrian Interval

A Leading Pedestrian Interval (LPI) is an option that can be added to a traffic signal. An LPI gives pedestrians a walk signal before the motorists get a green light, which makes pedestrians more visible to motorists and therefore makes motorists more likely to yield to them.

C.4.4.3. Pedestrian-Only Signals

One type of pedestrian only signal is called a HAWK (High-intensity Activated crossWalK). It can be used at mid-block crossings with high pedestrian volumes or at intersections that do not already have a traffic signal. Pedestrians use a push button to activate the warning signal and motorists receive a flashing red light and then a solid red light. When the motorists have a solid red light, pedestrians then see a white "walk" light, letting them know they are allowed to cross the street. After pedestrians have finished crossing the street, motorists then receive a blinking red light that lets them know that they may proceed when safe.

A HAWK signal at a pedestrian crossing

C.5. Education

Safe Routes to School refers to a variety of multi-disciplinary programs aimed at increasing the number of students walking and bicycling to school. Education programs are an essential component of a Safe Routes to School program. Education programs generally include outreach to students, parents and guardians, and motorists. Students are taught bicycle, pedestrian and traffic safety skills. Parents and motorists receive information on transportation options and driving safely near schools.

C.5.1. Safety Education

Pedestrian and bicycle safety education makes sure that each child understands basic traffic laws and safety rules. Pedestrian safety education teaches children basic traffic safety rules, sign identification and decision-making tools. Pedestrian training is typically recommended for first- and second-graders, and teaches basic lessons such as "look left, right, and left again," "walk with your approved walking buddy," "stop, look, and listen," and "lean and peek around obstacles before crossing the street." Trained safety professionals can administer pedestrian safety in the classroom or gym class. Classroom teachers may use established pedestrian safety curriculum, such as the curriculum taught by the Bicycle Transportation Alliance (http://www.bta4bikes.org/at_work/pedsafetyeducation.php) to make sure children know how and where to walk and cross the street.

A police officer teaches children about traffic safety

Bicycle safety training is normally appropriate beginning in or after the third grade and helps children understand that they have the same responsibilities as motorists to obey traffic laws. The League of American Bicyclists offers an extensive bicycle safety curriculum called Kids II. This seven-hour class is aimed at 5th and 6th grade students and teaches necessary bicycle riding skills and how to pick safe bicycling routes. The curriculum is designed to have a League Certified Instructor (LCI) teach the class. There are 13 LCIs within 15

miles of San Mateo (http://www.bikeleague.org/cogs/resources/findit/). This program or a similar program can be used to teach children where and how to ride a bicycle.

Local resources for pedestrian and bicycle safety training include Safe Moves (http://www.safemoves.org/) and C.I.C.L.E (http://www.cicle.org/).

C.5.2. Bicycle Rodeos

Bicycle Rodeos are family-friendly events that incorporate a bicycle safety check, helmet fitting, instruction about the rules of the road and an obstacle course. Adult volunteers can administer rodeos, or they may be offered through the local Police or Fire Department. The San Mateo Police Department has sponsored Bicycle Rodeos in the past. These events can be incorporated into health fairs, back to school events and Walk and Bike to School days. Rodeos also provide an opportunity to check children's bikes and instruct them on proper helmet use.

A bicycle rodeo

C.5.3. Classroom Lessons and Activities

A variety of existing lessons and classroom activities are available to help teach students about walking, bicycling, health and traffic safety. These can include lessons given by law enforcement officers or other trained professionals, or as a lesson plan developed by teachers. Example topic lessons are: Safe Street Crossing; Helmet Safety; Rules of the Road for Bicycles; and Health and Environmental Benefits of Walking and Biking.

The lessons should be grade-appropriate and can be incorporated into the subjects of health, environment, social science, math and physics. Sample lesson plans are available at the sample program websites.

C.5.4. School Zone Traffic Safety Campaign

A School Zone Traffic Safety Campaign creates awareness of students walking and bicycling to school. A safety campaign is an effective way to reach the general public and encourage drivers to slow down and look for students walking and biking to school.

Traffic Safety Campaign

A School Zone Traffic Safety Campaign uses signs and banners located near schools (for example, in windows of businesses, yards of people's homes and print publications) to remind drivers to slow down and be careful in school zones. This campaign can be kicked off at the start of each school year or in conjunction with special events, such as Walk and Bike to School Month in October. Banners and signs can be effective tools to remind motorists about traffic safety in school zones. Large banners can be hung over or along roadways near schools with readable letters cautioning traffic to slow down, stop at stop signs or watch for students in crosswalks with catch phrases such as:

- Drive 25, Keep Kids Alive
- Give Our Kids a Brake

C.5.5. Bus Safety Campaign

Many schools use buses to transport students who are too far away to walk to school. School buses are large and restrict sight lines for drivers and pedestrians. It is difficult for drivers and students to see each other around school buses. Schools can implement a bus safety campaign that reminds students to walk and ride cautiously around buses and to wave and communicate to the bus driver.

C.6. Encouragement

Encouragement programs focus on the fun of walking and bicycling while increasing public awareness of the benefits of walking and biking to school. Encouragement events and activities help increase the number of students walking and biking to school. The activities often include a variety of special events and contests, outreach campaigns and presentations to school and community groups.

Encouragement programs can also be used to educate parents, school personnel, students and the community about the health and safety benefits of a successful Safe Routes to School program. Encouragement programs do not need significant funding, but their success depends on a school champion or group of volunteers for sustained support.

C.6.1. Walk and Bike to School Day/Week/Month

Walk and Bike to School Day/Week/Month are special events to encourage students to try walking or bicycle to school. The most well-known of these is International Walk to School Day, a major annual event that attracts millions of participants in over 30 countries in October. In 2011, Walk to School Day occurs on October 5th.

Walk and bike to school days can be held yearly, monthly, or even weekly, depending on the level of support and participation from students, parents and school and local officials. Some schools organize more frequent days, such as weekly Walking/Wheeling Wednesdays or Walk and Roll Fridays, to give people an opportunity to enjoy the event on a regular basis. Parents and other volunteers accompany the students and staging areas can be designated along the route to school where groups can gather and walk or bike together. These events can be promoted through press releases, articles in school newsletters and posters and flyers for students to take home and circulate around the community.

International Walk to School: http://www.walktoschool-usa.org

C.6.2. Suggested Route to School Maps

Suggested Route to School maps show stop signs, signals, crosswalks, sidewalks, trails, overcrossings, and crossing guard locations around a school. These can be used by families to identify the best way to walk or bike to school. Liability concerns are sometimes cited by cities or school districts as reasons not to publish walking route maps. While no walking route will ever be completely free of pedestrian safety concerns, a well-defined walking route should provide the greatest physical separation between walking students and traffic, expose students to the lowest traffic speeds and have the fewest roadway crossings.

C.6.3. Friendly Walking/Biking Competitions (Incentive Programs)

Contests and incentive programs reward students by tracking the number of times they walk, bike, carpool or take transit to school. Contests can be individual, classroom competition or inter-school competitions. Local

businesses may be willing to provide incentive prizes for these activities. Students and classrooms with the highest percentage of students walking, biking or carpooling compete for prizes and "bragging rights." Small incentives, such as shoelaces, stickers and bike helmets, can be used to increase participation. It can also be effective to allow different grades and schools (high school vs. grade school vs. middle school) to compete against each other in a mobility challenge. Each of the examples of programs below can be modified for students who live too far away from school to walk or bike. Modification can include walking or biking at lunch time or gym class. Also, students can count the miles walked or biked with parents and guardians outside of the school day. The following sections describe examples of walking and biking competitions.

C.6.3.1. On-campus walking clubs (mileage clubs)

Children are issued tally cards to keep track of "points" for the each time they walk, bike, bus or carpool to or from school. When they earn a specified number of points they get a small prize and are entered in a raffle for a larger prize. At the end of the school year, there is a drawing for major prizes.

C.6.3.2. Pollution Punchcard

This year-round program is designed to encourage school children and their families to consider other options for getting to school, such as biking, walking, carpooling and public transportation. Every time a student walks, bikes or carpools to school, a parent volunteer or school representative stamps the card. Then students receive a reward when the punch card is complete.

C.6.3.3. Walk and Bike Challenge Week/Month

This month-long encouragement event is generally held in conjunction with National Bike Month in May. Students are asked to record the number of times they walk and bike during the program. The results are tallied and competing school or classrooms compare results. Students who are unable to walk or bike to school can participate by either walking during a lunch or gym period or getting dropped off further away from the school and walking with their parents the last several blocks. Golden Sneaker Award - Each class keeps track of the number of times the students walk, bike, carpool or take the bus to school and compiles these figures monthly. The class that has the most participation gets the Golden Sneaker Award. (The award can be created by taking a sneaker, mounting it to a board like a trophy, and spray painting it gold.)

C.6.3.4. Walk Across America/California/to the Golden Gate Bridge

This is a year-round program and is designed to encourage school children to track the number of miles they walk throughout the year. Students are taught how to track their own mileage through learning about how many steps or blocks are in a mile and also learn about places in the United States on their way. Teacher or volunteer support is required. Each of these programs can use incentives to increase participation and reward the students for their efforts. Examples of incentives include:

- Shoelaces
- Dog tags
- Pedometers
- Reflective zipper pulls
- Bicycle helmets
- Raffle tickets for a bicycle from a local bike shop
- Extra recess time
- Pizza parties

C.6.4. Back-to-School Blitz

Families set transportation habits during the first few weeks of the school year and many are not aware of the many transportation options available to them. Because of this, most families will develop the habit of driving to school. A "Back to School Blitz" can be used at the beginning of the school year to promote bus, carpool, walking and bicycling as school transportation options. The "Back to School Blitz" includes many of the other programs in this Toolkit, including Suggested Route Maps, articles in school newsletters and enforcement activity. A back-to-school packet can also be given to each family containing information about school transportation options, including:

- Cover letter signed by the principal encouraging parents to create transportation habits with students that promote physical activity, reduce congestion, increase school safety and improve air quality
- School transportation maps or suggested routes to school maps that include bicycling and walking routes, transit and school bus stops, drop-off and parking areas and bike parking locations
- Transit schedules
- Pledge forms to reduce the number of times that families drive to school; raffle entries for a prize donated by local businesses.

In addition to the packet, the following strategies can be included:

- Table at back-to-school night with materials and trained volunteers who can answer questions about transportation issues
- Post "schoolpool map" showing all student households as dots; parents then check the corresponding school directory listing to see families located in their neighborhood who are interested in walking, biking and carpooling to school together. Only families who opt into the directory are listed
- Article in first school newsletter about transportation options and resources
- Enforcement activities, such as school zone speed and crosswalk enforcement
- Strict enforcement of parking policies during first month of school (and throughout the year if possible)

C.6.5. Stop and Walk

This year-round campaign is designed to encourage parents to stop several blocks from school and walk the rest of the way to school. Not all students are able to walk or bike the entire route to school. They may live too far away from school to walk or their route to school may include hazardous traffic situations, such as a major arterial road. This type of campaign allows students who are unable to walk or bike to school a chance to participate in school walking programs. It also helps reduce traffic congestion at the school.

A Walking School Bus

The program can be included as a part of other encouragement activities, such as the Golden Sneaker Award, Walk Across California and the Mileage Clubs. An additional benefit to implementing a "Stop and Walk" program is reduced traffic volume directly

surrounding a school. Reducing the number of motor vehicles in the school environment increases traffic safety and encourages walking and biking to school.

C.6.6. Walking School Buses

Parents and guardians often cite distrust of strangers and the dangers of traffic as reasons why they do not allow their students to walk to school. Walking School Buses are a way to make sure that children have adult supervision as they walk to school. Walking School Buses are formed when a group of children walk together to school and are accompanied by one or two adults (usually parents or guardians of the children on the "bus"). As the walking school bus continues on the route to school they pick up students at designated meeting locations.

Walking school buses can be informal arrangements between neighbors with children attending the same school or official school-wide endeavours with trained volunteers and structured meeting points with a pick-up timetable. A detailed implementation example of a Walking School can be found in section C.10, below.

C.6.7. Bike Trains

A bicycle train is very similar to a walking school bus; groups of students accompanied by adults bicycle together on a pre-planned route to school. Routes can originate from a particular neighborhood or, in order to include children who live too far to bicycle, begin from a park, parking lot or other meeting place. They may operate daily, weekly or monthly.

Bike trains help address parents' concerns about traffic and personal safety while providing a chance for parents and children to socialize and be active. They are best suited for older students that have undergone bicycle safety training. Also, helmets and parent waivers should be required before participating in a bike train.

Students and volunteers participate in a bike train

C.7. Enforcement Tools

Enforcement tools are aimed at ensuring compliance with traffic and parking laws in school zones. Enforcement activities help to reduce common poor driving behavior, such as speeding, failing to yield to pedestrians, turning illegally, parking illegally and other violations. Enforcement strategies, in conjunction with education efforts, are intended to clearly demonstrate what is expected of drivers of motor vehicles and to hold them accountable for the consequences of their actions. While most enforcement is the responsibility of police and other law enforcement, there are numerous complementary strategies that can be undertaken by school officials, crossing guards, parents and volunteers.

C.7.1. School Safety Patrols and Crossing Guards

School safety patrols are trained student volunteers responsible for enforcing drop-off and pick-up procedures. Student safety patrols may also assist with street crossing; they do not stop vehicular traffic, but rather look for openings and then direct students to cross. According to the National Safe Routes Clearinghouse, "student safety patrols... [increase] safety for students and traffic flow efficiency for parents. Having a student safety patrol program at a school requires approval by the school and a committed teacher or parent volunteer to coordinate the student trainings and patrols."Crossing guards are trained adults, paid or volunteer, who are legally empowered to stop traffic to assist students with crossing the street.

A crossing guard helping children to cross

The San Mateo-Foster City School District has a crossing guard program. Specific traffic conditions must be met before a crossing guard can be located at a school.

C.7.2. Crosswalk Sting

In a crosswalk sting operation, the local police department targets motorists who fail to yield to pedestrians in school crosswalk. A plain-clothes "decoy" police officer ventures into a crosswalk or crossing guard-monitored location, and motorists who do not yield are given a citation by a second officer stationed nearby. The police department or school district may alert the media to crosswalk stings to increase public awareness of the issue of crosswalk safety, and news cameras may accompany the police officers to report on the sting.

C.7.3. School Parking Lot "Citations"

If on-site parking problems exist at a school, such as parents leaving vehicles unattended in loading zones, school staff may issue parking lot "citations" to educate parents about appropriate parking locations. These "citations" are actually warnings designed to look like actual police tickets, intended to educate parents about how parking in improper zones can create safety hazards or disrupt traffic flow for other parents during the pick-up/drop-off period.

Other informal enforcement programs include posting "cell free zone" signs in the school parking lot during drop-off and pick-up, and sending drop-off and pick-up procedures home with students at the beginning of the year and after returning from school vacations.

C.7.4. Neighborhood Speed Watch

In areas where speeding problems have been identified by residents, a Neighborhood Speed Watch can be used to warn motorists that they are exceeding the speed limit. A radar unit is loaned out to a designated neighborhood representative to record speed information about vehicles. The person operating the radar unit must record information, such as make, model and license number of offending vehicles. This information is sent to the local law enforcement agency, which then sends a letter to the registered vehicle owner, informing them that the vehicle was seen on a specific street exceeding the legal speed limit. Letters are typically sent

out to those driving at least 5 mph over the speed limit. Although not a formal citation, the letter explains that local residents are concerned about safety for their families and encourages the motorist to drive within the speed limit.

Yard signs can also be incorporated into the speed watch program. Participating neighbors post signs stating that children live in the neighborhood and it is necessary to slow down for their safety.

C.7.5. Radar Trailer

Radar trailers can be moved frequently as needed

Speed Radar Trailers can be used to reduce speeds and enforce speed limit violations in known speeding problem areas. In areas with speeding problems, police set up an unmanned trailer that displays the speed of approaching motorists along with a speed limit sign. Speed radar trailers can be used as both an educational and enforcement tool. By itself, the unmanned trailer serves as effective education to motorists about their current speed compared to the speed limit. As an alternative enforcement measure, the police department may choose to station an officer near the trailer to issue citations to motorists exceeding the speed limit. Because they can be easily moved, radar trailers are often deployed on streets where local residents have complained about speeding problems. If frequently left in the same location without officer presence, motorists may learn that speeding in that location will not result in a citation and the strategy can lose its benefits. For that reason, radar trailers should be moved frequently.

C.7.6. Speed Feedback Sign

Feedback signs deter speeding

A permanent speed radar sign can be used to display approaching vehicle speeds and speed limits on roadways approaching the school site. The unit is a fixed speed limit sign with built-in radar display unit that operates similar to a radar trailer. In order to maximize effectiveness for school settings, the radar display unit should be set to only activate during school commute hours.

Roadways approaching the school site are the most appropriate location to display speeds, instead of streets along the school frontage that will likely have lower speeds due to pick-up/drop-off traffic and license number of offending vehicles. This information is sent to the local law enforcement agency, which then sends a letter to the registered vehicle owner, informing them that the vehicle was seen on a specific street exceeding the legal speed limit. Letters are typically sent out to those driving at least 5 mph over the speed limit. Although not a formal citation, the letter explains that local residents are concerned about safety for their families and encourages the motorist to drive within the speed limit.

Yard signs can also be incorporated into the speed watch program. Participating neighbors post signs stating that children live in the neighborhood and it is necessary to slow down for their safety.

C.8. Evaluation

Evaluation of the Safe Routes to School program is important to understand the effectiveness of the program, identify improvements that are needed and ensure that the program can continue in the long-term. Evaluation can measure shift in travel behavior, changes in attitudes toward biking and walking, awareness of the Safe Routes to School program, grant money received and projects completed.

C.8.1. Program Evaluation

There are many different education, encouragement, and enforcement programs that can be implemented in a school environment to help increase the number of students walking and biking to school. Not every program is the correct fit for every school. It is important to evaluate programs in the context of the school environment prior to deciding what would be a good choice for your school. Once the programs have been implemented it is necessary determine whether or not it was a good choice for your school and what about the program worked and what did not work quite as well. Below are some suggested steps for proceeding with the program evaluation process.

Program evaluation can be administered by following these steps:

- Survey local traffic conditions and issues (much of this information can be found from the school site audit)
- Determine the goals of the program
- Identify methods to implement programs
- Determine success benchmarks to evaluate the effectiveness of the program efforts
- Interview program administrators (teachers, volunteers) and participants (students) to discuss what worked and what did not

C.8.2. Perform Annual Hand Tally and Parent Surveys

Since 2005, the federal Safe Routes to School program has set aside federal funding to help states, cities, towns and schools increase the number of students walking and biking to school. One requirement of receiving this money is that schools must perform annual hand tally and parent surveys so that the national program can track the effectiveness of the various programs across the country.

The National Center for Safe Routes to School has developed a recommended methodology, survey and count forms and reporting forms. A teacher administers the hand tally survey to the students in their classroom. The parent surveys are either mailed or sent home to parents or guardians. If you receive a parent survey, please fill it out and help your school district comply with current and future funding requirements.

C.9. Policies

The policies in this chapter focus on methods to ensure that vehicle traffic, busing and transit, and walking and bicycling to school is conducted in the safest and most efficient way possible. Many of the identified policies focus on vehicle pick-up and drop-off activities. Implementing policies can often be very low cost, although they may involve a greater outlay of staff resources and new procedures may take some time to gain acceptance.

C.9.1. Parent Drop-off/Pick-up Operations

Creation of a parent drop-off/pick-up "loop" can help maximize capacity and safety and minimize delay in drop-off and pick-up operations. The loop can be either a dedicated lane just for pick-up/drop-off, or a portion of the larger parking lot that has been marked with cones to serve as the pick-up/drop-off loop. Having supervisors present can help to ensure that loading/unloading moves forward smoothly, efficiently and safely.

C.9.2. Valet Drop-off

Valet drop-off is a technique to improve traffic flow within the drop-off and pick-up loop by assisting students into and out of vehicles. A "valet" is present at the pick-up/drop-off area to open car doors and assist students into and out of arriving vehicles, improving the traffic flow. The valet system eliminates the need for parents to get out of the vehicle to open the door for a child and remove bags or other items. The valet system is typically staffed by school staff or parent volunteers, who can quickly and efficiently move children into and out of vehicles and hold onto backpacks, umbrellas and other items. Some schools use older grade students as valets, for example 5th or 6th graders help younger students. However, student volunteers must get out of class early to prepare for pickup.

A supplement to the valet system is a nameplate in the vehicle window that identifies what student needs to be picked up. This allows the valet to find students and bring them to the vehicle as it arrives. Signs outside the school inform parents about pick-up and drop-off procedures

C.9.3. Platooning Drop-off/Pick-up System

In a platooning system, all vehicles are unloaded/loaded simultaneously, then proceed to the exit. If a vehicle unloads or loads more efficiently than the vehicle in front of it, the rear vehicle must wait for the lead vehicle to finish the unloading/loading, then follow it out of the loop. This tool is best used to control the parent inclination to always drop-off and pick-up the student directly in front of the school. Often additional curb loading is available downstream of the school and is severely underutilized, creating excess congestion and delay prior to entering the lot. At least two monitors are needed to effectively operate the vehicle platoon – one at the loop entrance to direct the maximum number of vehicles into the lot for a single cycle, and a second to ensure that the lead vehicle proceeds to the front-most loading stall.

C.9.4. Dedicated Bus Zones

Establishing separate areas for vehicular and bus traffic can help improve traffic flows in the pick-up/drop-off area. Conflicts often occur when private vehicles and buses arrive at the same time and in the same location. Separating traffic often necessitates establishing an off-street bus zone, dedicated solely to buses. Private vehicles should not be allowed to load/unload in the bus zone. Bus zones need to be large enough to accommodate all the buses that might be parking there at one time. Sometimes it is possible to stagger the arrival times of the buses, thus requiring less space. The zones must be clearly marked and there should be adequate sidewalk space for students to wait for the bus.

C.9.5. Staggered Bell Times

Staggered bell times can help to disperse the traffic peak at schools with a large student population or when two or more schools are in close proximity to one another. For a single school application, students' start and end time should be grouped by grade levels. The start times of these groups should be at least 15 minutes

apart. This allows the vehicles from the first group to leave the school or be completely out of the area by the time the second group arrives. With multiple schools, staggering the bell times can be coordinated among two or more schools to ensure that significant levels of vehicles do not use competing transportation facilities simultaneously.

C.10.Detailed Implementation Example

C.10.1. Establishing a Walking School Bus

How does the Walking School Bus program work? A walking school bus is a group of children walking to school with one or more adults. The "bus" follows the same route every time and picks up children from their homes at designated times.

Children like the Walking School Bus because it gives them active social time before the school day begins (or, as one participating child put it, "it's like recess before school!"). Adults like the walking school bus because they feel more comfortable with children walking when there are trained, trustworthy adult escorts. Teachers and principals like the walking school bus because it helps kids arrive ready to concentrate on school.

C.10.2. How can we get started with a Walking School Bus?

Ideally, the program should run every day so families can count on it. However, it is possible to start small by selecting one or two days per week, and/or by targeting specific neighborhoods (e.g. a housing development close to the school) as a way to begin developing the program. You might even start with a special one-time walking school bus, such as for International Walk to School day in October.

A walking school bus can be an informal effort begun by a few parents in one neighborhood. For a school-wide program, however, it is important to designate a coordinator. In some cases a dedicated volunteer coordinator can be successful, but it is highly recommended that this be a paid position to ensure consistency and reliability.

Some programs only travel to school, because in many children have after-school programs or go somewhere other than their home after school, or may not have a parent waiting for them at home.

One way to increase participation is to designate a "bus stop" where families who live far from the school can drop off children to join the bus. A park or community center (with parking facilities) is ideal for this purpose.

C.10.3. What planning needs to happen?

The school walking school bus coordinator should begin by assessing both resources (such as parent volunteers) and interest. A school-wide survey (paper and/or electronic) distributed to parents can help to identify interested households and volunteers. (Sample survey:

http://www.dot.state.co.us/BikePed/WalkToSchool/Walk%20to%20School%20Survey.pdf)

When interested households have been identified, the school coordinator should map out draft walking routes. Walking routes should be sited on streets with complete pedestrian facilities, prioritizing safe crossings and lower traffic speeds and volumes, as well as low-crime streets. Stops may either be at each child's house (which is more convenient for parents but may take longer) or at gathering points (e.g. one meeting place per block, as well as gathering spaces at parks). Finalized routes and stop locations should be mapped out for parent and volunteer reference.

Once routes have been developed and the number of children on each route has been determined, the coordinator should decide how many adults will be needed for each route. The US Center for Disease Control recommends one adult per three children for children ages 4 to 6 and one adult for six children for older elementary children ages 7 to 9.

Walking school bus organizers should work closely with the school district to address liability concerns. The school district risk management specialist should be able to figure out if the program can be covered under the existing liability coverage, and, if not, what options exist. Partnership with a third party (such as the PTA or the City) may also allow access to existing liability coverage. Parents should also sign permission slips and liability waivers (the exact language should be determined by the risk manager).

C.10.4. Who are the bus "drivers"?

Bus "drivers" (aka route leaders) are usually volunteers, but it is important to make sure that the volunteers are dedicated, responsible, and well-supported. Some communities have had outstanding success partnering with a local college or university, where volunteers are recruited at the beginning of the semester each year. While students do not receive payment, they do receive college credit, which can increase their commitment to the program. An active senior group may also be a good partner organization to find volunteers who are available during the day. Interested parents are also natural volunteers. It is also an option to pay route leaders a small stipend (as some crossing guard programs do). The school coordinator should screen each potential volunteer through an interview and criminal background check. All route leaders must also attend a detailed training covering:

- The goals and outline of the walking school bus program
- Expectations for route leaders
- Traffic safety and group management techniques
- Emergency procedures (including injury protocol and what to do if a route leader cannot serve on a given day)
- Alternate school schedule and inclement weather policy
- What to do if a child is late or if a child's behavior is inappropriate
- Any tracking protocols that should be followed (such as a daily attendance worksheet)

The coordinator should also provide first aid kits and safety vests to each volunteer, along with the route map and parent contact information for each participating family.

C.10.5. What can kids and families expect?

Outreach begins two weeks after the start of school. Strategies to promote the program include:

- Sending home materials with other school orientation materials
- Reaching out to/through the PTAs
- Hosting a booth at back to school night
- Distributing newspaper/radio ads
- Creating an easy-to-use website where families can sign up online

Parents need to sign a permission slip, emergency contact form, and liability waiver for their child to participate in the program. Once families are signed up, the route leader (who has passed a criminal background check and received training) calls the family to introduce him- or herself. Parents get to know the

ride leader, and they also know that if the bus gets canceled for any reason, or if there will be a substitute "driver," they will receive a prompt call from the school coordinator. Some routes, especially larger ones, are shared by several leaders.

Parents also receive an information packet containing the route map, their nearest stop, expectations for child behavior, protocol for if a child is late to a stop, what to do if their child will not attend on a given day, and alternate school schedule and inclement weather policy. They will also receive phone numbers for their route leader(s) and the school coordinator.

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Appendix D.
Bicycle Transportation Account Compliance

Caltrans Bicycle Transportation Account is a significant source of funding for bicycle facilities. To be eligible for BTA funding, applicants must have an adopted Bicycle Master Plan that is approved by Caltrans. Table D-1 demonstrates how this Bicycle Master Plan complies with BTA requirements and is provided for the convenience of Caltrans reviewers.

Table D-1: BTA Compliance Table

BTA 891.2	Required Plan Elements	Compliant Elements in Plan	Page
(a)	The estimated number of existing bicycle commuters in the plan area and the estimated increase in the number of bicycle commuters resulting from implementation of the plan.		
	Existing Bicycle Commuters	Section 4.4	4-8
	Future Bicycle Commuters	Section 7.2	7-2
(b)	A map and description of existing and proposed land use and settlement patterns which shall include, but not be limited to, locations of residential neighborhoods, schools, shopping centers, public buildings, and major employment centers.		
	Map and description of existing and proposed land use.	Figure 1-1	1-2
(c)	A map and description of existing and proposed bikeways.		
	Map and description of existing and proposed bikeways	Figure 5-1 Section 3.1.1 Section 5.1.1 – 5.1.4	5-2 3-3 5-3 – 5-7
(d)	A map and description of existing and proposed end-of-trip bicycle parking facilities. These shall include, but not be limited to, parking at schools, shopping centers, public buildings, and major employment centers.		
	Map and description of existing and proposed end of trip bicycle parking facilities.	Section 3.1.4 Figure 3-3 Section 5.4.2 Figure 5-15 Appendix B	3-8 3-9 5-27 - 5-30 5-29 B-1

BTA 891.2	Required Plan Elements	Compliant Elements in Plan	Page
(e)	A map and description of existing and proposed bicycle transport and parking facilities for connections with and use of other transportation modes. These shall include, but not be limited to, parking facilities at transit stops, rail and transit terminals, ferry docks and landings, park and ride lots, and provisions for transporting bicyclists and bicycles on transit or rail vehicles or ferry vessels.		
	Map and description of existing and proposed bicycle transport and parking facilities for connection with use of other transportation modes	Section 3.1.5 Section 5.1.5	3-8 5-8 -5-11
(f)	A map and description of existing and proposed facilities for changing and storing clothes and equipment. These shall include, but not be limited to, locker, restroom, and shower facilities near bicycle parking facilities.		
	Map and description of existing and proposed facilities for changing and storing clothes and equipment	This Plan does not recommend facilities for storing and changing clothes.	
(g)	A description of bicycle safety and education programs conducted in the area included within the plan, efforts by the law enforcement agency having primary traffic law enforcement responsibility in the area to enforce provisions of the Vehicle Code pertaining to bicycle operation, and compile existing data on the resulting effect on accidents involving bicyclists.		
	Description of bicycle safety and education programs	Section 3.5 Section 6.2	3-12 6-4
(h)	A description of the extent of citizen and community involvement in development of the plan.		
	Description of the extent of citizen and community involvement	Section 1.3	1-3
(i)	A description of how the bicycle transportation plan has been coordinated and is consistent with other local or regional transportation, air quality, or energy conservation plans, including, but not limited to, programs that provide incentives for bicycle commuting.		

BTA 891.2	Required Plan Elements	Compliant Elements in Plan	Page
	Description of coordination and consistency with other local or regional plans.	Appendix E	E-1
(j)	A description of the projects proposed in the plan and a listing of their priorities for implementation.		
	Description of the project prioritization.	Section 8.1	8-1
(k)	A description of past expenditures for bicycle facilities and future financial needs for projects that improve safety and convenience for bicycle commuters in the plan area.		
	Description of past expenditures on bicycle facilities and future financial needs.	Section E.1.4 Section 8.5	E-4 8-14

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Appendix E. Planning and Policy Review

This appendix reviews planning and policy documents relevant to this Bicycle Master Plan. The review is organized by City, County, Regional and State documents and policies. Where applicable, the review of each document includes the most relevant policies to this Citywide Bicycle Master Plan. This planning and policy context is important to the successful implementation of this plan because much of the money for bikeway projects comes from county sales tax, and federal and state money administered regional and state agencies. A clear understanding of this policy context enables San Mateo to position projects that fulfill the policies adopted by Council and partner funding agencies.

E.1. City of San Mateo

City of San Mateo land use and transportation development are guided by a variety of plans with varying scopes. The General Plan guides future development and sets a foundation for master and Specific Plans to follow. Master Plans, such as this Citywide Bicycle Master Plan, emphasize a particular planning initiative that influences a large area of the city. San Mateo also has adopted several Specific Plans establishing land use and design standards for focused geographic areas of the city. Finally, San Mateo also has an existing adopted Capital Improvement Plan identifying capital projects for the City to construct within the next five years. The discussion below presents relevant goals policies, programs and standards from each of these documents that will effect implementation of the Bicycle Plan.

E.1.1. General Plan (2010)

The purpose of the General Plan is to guide future development through 2030. Pursuant to California law, the General Plan must address seven elements.[E-1] The most applicable element to bikeways is the Circulation Element, which plans the movement of goods and people in the city including the use of bicycles. The General Plan (Draft) is supportive of improving bicycling and the Circulation Element identifies the over reliance of arterial roadways for bicycle access and calls for a comprehensive Bikeways Master Plan with a prioritized capital improvement program and identified connections to the countywide system. This draft element(Goal 6) includes many of the recommendations developed in the City of San Mateo Sustainable Initiatives Plan such as increasing the City's bicycle mode share for trips one-mile or less from three percent (in 2005) to 30 percent by 2020. The following goals and policies are from the Circulation and Conservation/Open Space Elements.

- Goal 2: Maintain a street and highway system which accommodates future growth while maintaining acceptable levels of service.
    - Policy C2.4: Transportation Fee Ordinance. Require new developments to pay for on-site improvements to meet the needs of development and their proportionate share of the costs for mitigating cumulative traffic impacts within the City of San Mateo. Utilize a Transportation Fee Ordinance to finance necessary off-site improvements equitably. The off-site improvements will include intersection and street improvements to maintain

[E-1] California requires General Plans to address the following "elements": Land Use, Open Space, Conservation, Housing, Circulation, Noise, and Safety.

intersection levels of service, traffic safety improvements and improvements to reduce single occupant vehicle trips such as bicycle system enhancements, pedestrian improvements, and trip reduction measures.

- Policy C2.11: Transportation Demand Management (TDM) in Rail Corridor Transit Oriented Development Plan (Corridor Plan). Establish and implement a TDM program consistent with the Corridor Plan policy and program requirements for development in Transit Oriented Development (TOD) areas.
- Policy C2.12: Transportation Demand Management (TDM) Downtown. Establish and implement a TDM program, a Transportation Management Association (TMA), and other measures to reduce vehicle trips and encourage transit use and promote bicycle and pedestrian accessibility for development within the Downtown Core.

- Goal 4: Develop and maintain a comprehensive bicycle and pedestrian circulation network which provides safe recreation opportunities and an alternative to automobile travel.
  - Policy C4.1: Bicycle Master Plan. Develop a bicycle master plan with a prioritized capital improvement program that creates and maintains a safe and logical bikeways system; supports the City's Sustainable Transportation Actions; and is coordinated with the countywide system.
  - Policy C4.2: Bicycle Facilities on Transit. Encourage additional bicycle capacity on Caltrain and SamTrans (especially to the College of San Mateo). Provide an adequate supply of secure covered bicycle parking at the Caltrain stations.
  - Policy C4.3: Dedication of Needed Right-of-Way for Bikeways. Require dedication of necessary rights-of-way for bike lanes and paths, which are deficient in land area. Dedication shall be required where the development of dedication is not so disproportionate to the size of the project to make it unreasonable.
  - Policy C4.8: Pedestrian and Bicycle Mobility Needs. Balance pedestrian mobility and bicycle accessibility and safety with vehicular congestion when considering intersection improvements to address level of service degradation.
  - Policy C4.9: Pedestrian and Bicycle Connections. Implement an area-wide pedestrian and bicycle circulation plan which will result in convenient and direct connections throughout the Rail Corridor Transit-Oriented Development Plan (Corridor Plan) area and into adjacent neighborhoods and districts.
  - Policy C4.10: Bikeway Systems. Review the City's planned bikeways systems for adequacy, consistency and connectivity throughout the City to facilitate ease of use and safety for the users including adequate parking for bicycles.
  - Policy C4.11: Citywide Bikeways and Pedestrian Master Plan. Develop a Citywide Bikeways and Pedestrian master Plan to outline strategies for improving bicycling and walking conditions in San Mateo, while raising the profile of bicycling and walking as modes of transportation.

  - Policy C4.12: Hillsdale Bicycle and Pedestrian Over Crossing. Construct a bicycle and pedestrian over crossing in the vicinity of Hillsdale Boulevard over US 101.

- Goal 6: Implement the transportation objectives of the Sustainable Initiatives Plan (SIP) adopted by the City Council and developed by the Sustainable Advisory Committee.
  - Policy C6.1: Modal Share. Increase mode share from pedestrian and bicycle travel, for trips of one mile or less, from three percent in 2005 to 30 percent by 2020 by introducing paid parking in other commercial areas outside of the downtown, improving pedestrian walkways and amenities within commercial areas and residential neighborhoods and by providing adequate, secure, covered parking for bicycles in city garages for new multifamily and commercial development. Additional potential supportive actions to increase mode share are detailed in the SIP, Appendix T of the General Plan.
  - Policy C6.3: Travel to Schools. Reduce private automobile school trips by 50 percent before 2020 by working with private and public schools to increase the number of students walking or bicycling to school, implementing "walking pools" to schools, increasing carpooling for students, and making flexible local transit available for student travel.
- Policy C/OS9.3: Crystal Springs Road Access. Pursue safe pedestrian/bicycle access to San Francisco Water District lands via Crystal Springs Road through coordination with the Town of Hillsborough and with State and County assistance.
- Policy C/OS 9.4: Interjurisdiction Coordination. Support the coordination of adjacent jurisdictions in the development of bicycle and pedestrian trails, the connection of trails in San Francisco watershed lands, the development of the Bay Trail and Ridge Trail systems, and potential connections into the City of Belmont in the development of a trail system with Sugarloaf Mountain.
- Policy C/OS 14.3: Active Use Facilities. Provide sufficient active use facilities to support current needs and future trends including at least three new multi-use athletic turf areas; an evaluation of existing turf fields for possible conversion to synthetic turf; a tennis complex that optimizes revenue generation; and a system of pedestrian and bike trails that will provide interconnectivity between parks.
- H 2.13: Transportation Oriented Development (TOD). Encourage well-planned compact development with a range of land uses, including housing, commercial, recreation and open space, in proximity to train stations and other transit nodes. Encourage the maximization of housing density where possible.

Figure C/OS-4 of the General Plan identifies scenic roadways and existing and potential pedestrian trails and paths. The identification of scenic roadways is intended to require adjacent new development to preserve view corridors and ensure signs, screening and land uses do not diminish the scenic character of the roadway, as set forth in Policy C/OS 9.1. With respect to bikeways, this policy should be considered if bikeway signs are installed on scenic roadways.

The General Plan does not define pedestrian trail and path design, making it challenging to determine trail and path applicability for bicycle use. As such, the potential trails and paths are not included in this Bicycle

Master Plan's recommendations. However, the City should consider designing the potential pedestrian trails and paths to accommodate multiple users, i.e. designed to meet Caltrans Class I multi-use path standards.

E.1.2. Sustainable Initiatives Plan (2007)

The City's Sustainable Initiatives Committee developed the Sustainable Initiatives Plan (SIP), adopted by City Council in 2007, to identify strategies to reduce CO_2 emissions within the city.

- T1: Increase mode share for pedestrian and bicycle travel to 30% for trips of one mile or less by 2020. Bicycle and pedestrian travel currently represents about 3% of all travel.
- T3: Reduce single purpose school trips by private automobile by 50% by 2020.

The SIP sets a bicycle mode share goal of 30 percent of one mile or less trips by 2020. The SIP presents the following "potential supportive actions" to meet this goal:

- Complete the implementation of the bicycle network as described in the General Plan and expand as appropriate to ensure a complete and convenient network of bicycle facilities
- Work with private and public schools to increase the number of students walking or bicycling to school
- In advance of demand, and to help promote demand, provide adequate, secure, covered parking for bicycles in city garages and as a condition for new multifamily and commercial development

The SIP also recommends "immediate actions" upon its approval by City Council, including the establishment of baseline information for pedestrian and bicycle travel within San Mateo using a transportation survey developed and implemented by the Alliance.

E.1.3. Green Building Ordinance (2010)

On January 1, 2010 the City of San Mateo Green Building Ordinance went into effect, requiring new construction and remodel projects to meet the Leadership in Energy and Environmental Design (LEED) standards. LEED defines levels of compliance by awarding credits. Bicycle facilities, including parking and showers, are one source of credits in new construction and existing buildings. To obtain this credit, the project must "*provide suitable means for securing bicycles, with convenient changing/shower facilities for use by cyclists, for 5% or more of building occupants.*"

E.1.4. Capital Improvement Plan (2008)

The City's Capital Improvement Plan (CIP) identifies capital projects to be constructed by 2013. The CIP allocates $424,462 for citywide bike and pedestrian path improvements.

- Line Item: Citywide Bicycle and Pedestrian Path Improvements

E.1.5. Bay Meadows Specific Plan (2009)

The 1997 Bay Meadows Specific Plan, amended in 2005 and 2009, outlines a vision for the redevelopment of two primary areas: a 75-acre Phase I Redevelopment Area and the 83.3-acre main track area of Bay Meadows, which abuts the northwest corner of the Hillsdale Boulevard and Highway 101 interchange. The Specific Plan describes the distribution, location and extent of land uses, presenting a "transit village" scheme with 900,000 square feet of office space, 734 residential units, 150,000 square feet of retail space, and 2.8 acres of parks and

open space. The plan's amendment discusses the project goals, including the goal to reduce reliance on the automobile by enhancing opportunities for transit ridership, walking and biking. The Specific Plan calls for an extension of the Class I path along Franklin Boulevard westward to Pacific Boulevard and is described below.

- Urban Design Guidelines 7: Enhance Pedestrian and Bicycle Connectivity: Extend the class one bicycle and pedestrian route along the southern edge of the Specific Plan across Saratoga Drive along Franklin Parkway to connect with Hillsdale Boulevard.

E.1.6. Bay Meadows Phase II Specific Plan Amendment (2005)

Bay Meadows Phase II includes a mix of residential, commercial, and office uses. Phase II capitalizes on the proximity to Caltrain to create a transit-oriented plan with greater density of uses. The base program approved under the Plan allows a maximum of 1,250 residential units, 1,250,000 square feet of office/commercial space, and 150,000 square feet of retail space. However, in 2008, the City of San Mateo approved three Site Plan and Architectural Review (SPAR) planning applications for 17 of the 18 developable blocks at the Phase II project site that include only 1,066 housing units, 750,000 square feet of office space, and 93,000 square feet of retail/restaurant space. The one developable block remaining that does not have approved an approved SPAR will be developed with residential and possibly office uses.

E.1.7. Bicycle Parking Plan (2008)

In 2007, the City submitted an application to C/CAG to use Transportation Development Act (TDA) Article 3 (bicycle and pedestrian facilities) funding for 12 bicycle parking facilities at identified locations and signage directing bicyclists to those locations. The locations are near businesses and pedestrian destinations in the Downtown area. As of the development of this Plan, the City has not installed the new bicycle parking.

E.1.8. Hayward Station Bicycle Access Administrative Report (2009)

The City presented the Hayward Station Bicycle Access Administrative Report to the Public Works Commission for their input in preparation to integrate bike facility projects into future developments and this City of San Mateo Bicycle Plan. The Hayward Station is within the City's Rail Corridor Plan, which has three developments in the entitlement phase and in which the City seeks to integrate bike facilities. The Bicycle Access Administrative Report examines the opportunities and constraints of constructing different bikeway types on the following roadways:

- Grant Street north of SR 92: Class II bike lanes are recommended and require additional roadway width on the western side of the Concar development in order to maintain standard 12 foot travel lane widths.
- Concar Drive between Grant Street and Delaware Street: Class II bike lanes is one option that requires widening the southern side of the roadway by 10 feet. The second option is shifting the roadway 10 feet south and increasing the roadway width 10 feet on the Concar Development side to accommodate a Class I path.
- Concar Drive between Delaware Street and SR 92 ramps: Class II bike lanes is one option that requires widening the street by 10 feet and right-of-way (ROW) by 15 feet. The second option is a

Class I bike path on the north side of Concar Drive, which would require 15 feet additional ROW width but no roadway widening.

- Concar Drive between SR92 ramps and Pacific Boulevard: Class II bike lanes is one option that requires widening the street and subsequently the ROW by 10 feet, five feet on each side. The second option is a Class I bike path on the north side of Concar Drive requiring an additional 10 feet of ROW on the north side.
- Delaware Street between Bermuda Drive and SR 92: Class III bicycle route is recommended due to existing constraints inhibiting Class II bicycle lanes.
- Delaware Street between SR 92 and Concar Drive: Class II bike lanes should be considered and would require 15 feet additional roadway width and acquisition of 10 feet ROW, taken equally from each side.
- Delaware Street between Concar Drive and 16th Street: Class II bike lanes are recommended and require 10 feet additional roadway width. Other streetscape improvements are also recommended, including street trees and sidewalk widening.
- Delaware Street between 16th Street and Sunnybrae: Class III bicycle route is recommended.
- Pacific Boulevard south of Concar Drive: Class III bicycle route is recommended until opportunities for Class II bike lanes arise from redevelopment in the area.

E.1.9. Rail Corridor Transit-Oriented Delopment Plan (2005)

The Rail Corridor Transit-Oriented Development Plan (TOD) is intended to guide the development around the Hillsdale and Hayward Park Caltrain Stations to be compact with a mix of land uses and increase station accessibility by all travel modes, including bicycles. Among the provisions set forth by the Rail Corridor TOD Plan are improved bicycle parking at Caltrain Stations, ensure that new street intersections are safe for bicyclists, create a transportation demand management (TDM) program that encourages bicycle use and develop a block and grid street pattern. Relevant policies are listed below.

- Policy 4.6: Establish new street intersections that are efficient and safe for pedestrians, bicycles, and automobiles.
- Policy 4.9: Develop an area-wide pedestrian and bicycle circulation network which will result in convenient and direct connections throughout the plan area and into adjacent neighborhoods and districts.
- Policy 4.10: Establish safe and convenient pedestrian and bicycle routes where existing barriers currently prohibit connections.
- Policy 4.12: Provide a balanced street system in the plan area that safely connects Hillsdale and Hayward Park stations to the adjacent and greater community by providing for convenient access by a mix of modes of travel including pedestrians, bicycles, buses, and automobiles both on and off-site.

E.1.10. Grand Boulevard Initiative Multi-Modal Access Strategy Progress Report (2007)

The Grand Boulevard Initiative Multi-Modal Access Strategy is the collaborative effort of 19 Cities, San Mateo and Santa Clara Counties, and local jurisdictions to improve El Camino Real as a street that connects communities north and south of each other and integrate communities located on either side of the street. Among the Initiative's guiding principles is strengthening bicycle connections to the corridor. The Initiative's Design Guidelines recommend bicycle boulevards on streets parallel to El Camino Real and bicycle improvements on streets connecting the bicycle boulevards to nodes along El Camino Real, specific streets are not identified.

- Guiding Principle 9: Strengthen bicycle and pedestrian connections within the corridor.

E.1.11. Grand Boulevard Initiative Multi-Modal Access Strategy & Contect-Sensitive Design Guidelines (2010)

The Multimodal Access Strategy and Context Sensitive Design Guidelines is an element of the Grand Boulevard Multimodal Transportation Corridor Plan. The Access Strategy and Design Guidelines address objectives three and four of the Multimodal Transportation Corridor Plan's five objectives:

- Objective 3. Outline a strategy for multimodal access that encourages transit use, bicycling and walking.
- Objective 4. Facilitate corridor-wide coordination of design and operations.

The Access Strategy and Design Guidelines include street design prototypes that illustrate different combinations of frontage improvements, transit facilities and roadway design elements, including Class II bicycle lanes and bike parking.

E.1.12. El Camino Real Master Plan (2001)

The El Camino Real (ECR) Master Plan is a vision for the future of El Camino Real between Hwy 92 and the Belmont City boundary. The main features recommended by the ECR Master Plan include a landscaped median and "themed intersections," which provide pedestrian enhancements at intersections with the highest pedestrian volumes. While the ECR Master Plan does not specifically address bicycle access, its recommendation for landscaped medians and street trees, along with other pedestrian enhancements, also make El Camino Real more inviting to bicyclists.

E.1.13. Laurelwood Park and Sugarloaf Mountain Open Space Management Plan and Mitigated Negative Declaration (2006)

The Laurelwood Park and Sugarloaf Management Plan provides management policies for the 37-acre Laurelwood Park and the adjoining 188-acre Sugarloaf Mountain Open Space, located south of Hillsdale Boulevard between Arthur Younger Freeway (State Route 92) and Alameda De Las Pulgas in San Mateo. The Management Plan includes the site plans that identify site improvements and management zones, estimated implementation costs, and costs for operations and maintenance activities over a fifteen year period.

The parks include a hierarchy of trails from single-tracks to trails that double as maintenance/fire access roads. City of San Mateo policies currently discourage biking within Sugarloaf Mountain Open Space. During the planning process, the public and City staff members identified opportunities for making regional trail

connections for both pedestrians and bicyclists. Connecting new trails at Sugarloaf Mountain with other neighborhoods, City parks, and open spaces is a goal of the Parks and Recreation Department's Green Scheme Strategic Initiative. Nearly ten percent of participants in Discovery Day reported that they traveled to Laurelwood Park via bicycle. The Management Plan encourages increased recreational biking to and through Sugarloaf Mountain Open Space. Two trails within the project site will be designated as multiuse trails.

The Management Plan also includes park and trail accessibility design guidelines applicable to trails, trailheads, overlooks, signage, and other amenities and utilities. The Accessibility Design Guidelines state that trailheads may include bicycle parking (racks or lockers) to facilitate alternative means of transportation to park areas.

E.1.14. Shoreline Parks Master Plan and Mitigated Negative Declaration (2000)

The Shoreline Parks Master Plan describes existing pedestrian and bicycle improvements within the Shoreline Parks and provides an overview of the resource enhancement, public use, facility development, and management programs for the Shoreline Parks. The Parks comprise approximately 177.3 acres adjacent to the San Francisco Bay and a portion of San Mateo Creek. Except for Harborview Park and Ryder Park, trail-related activities account for the majority of recreational opportunities within the Shoreline Parks. Additional pedestrian amenities, such as benches, trash cans and drinking fountains, are available at Harborview Park, Ryder Park, and Seal Point Park/Bay Trail. Planned improvements include restrooms, new trails, trail/roadway crossing improvements, bicycle parking, public telephones, interpretive signage, and lighting. Improvements to bicycle and pedestrian access connections are discussed generally on pages 2-4 and 2-5 and throughout the Specific Park Area and Facilities section. Bicycle racks are to be located at or near all vehicular parking areas and outdoor classrooms. Trail and vehicular gateway locations are identified in Figure 5, including gateways along J. Hart Clinton Drive and the Bay Trail.

Most trail use involves individuals who either walk or bike to the Shoreline Parks from San Mateo and enter the Shoreline Parks from Coyote Park Recreation Area, or who park elsewhere along the Bay Trail and walk or ride to the Shoreline Parks. The Master Plan includes a bicycle and pedestrian bridge over San Mateo Creek at the end of Rand Street and the following goal related to bicycle access:

Goal #7: Access. Development of the Shoreline Parks should be carried out such that through a comprehensive bicycle and pedestrian circulation network, residents are encouraged to use alternatives to automobile travel as a means of accessing the shoreline.

E.2. County

San Mateo County has a similar set of plans to the City, including a General Plan and Bike Routes Plan. These plans should be considered in order for this Citywide Bikeways Master Plan to be coordinated with County plan recommendations.

E.2.1. General Plan (1986)

The San Mateo County General Plan (GP) includes policies that support bicycling throughout the County and cities in the County. The GP encourages coordination with local and regional agencies in completing a connected bikeways network.

- Policy 12.13: Encourage the cities and CalTrans to develop an adequate circulation system, including bikeways, to serve new development east of Highway 101 and which, to the maximum extent feasible, does not adversely affect baylands or wetlands.
- Policy 12.34: Encourage the cities to develop local bikeway plans, obtain funding, and construct and maintain a system of local bikeways that is consistent with the County Bikeways Plan.
- Policy 12.35: Support the development of bicycle trails in rural and coastal areas.
- Policy 12.38: Encourage large employers to provide shower and locker facilities for their employees who bike to work as part of a commute alternative program.
- Policy 12.46: Work with the cities of San Mateo County and with adjacent cities and counties on transportation issues of countywide concern, including east-west arterial roads, implementation of the Bikeways Plan, development of truck routes through adjoining jurisdictions, pavement maintenance of bike routes.
- Policy 12.52: The County staff Bikeways Coordinator shall: (1) plan and develop bikeway facilities in the unincorporated areas; (2) develop requirements for bike facilities in new developments in unincorporated areas; (3) provide staff services to the County Bikeways Advisory Committee; (4) work with the cities and monitor progress toward implementation of the County Bikeways Plan; (5) assist cities without active bikeways programs to develop and implement programs for their cities; and (6) coordinate with bicycle organizations.

E.2.2. Countywide Transportation Plan (2001)

The Countywide Transportation Plan presents policies that promote a transportation system with all modes working in synergy. The CTP's overarching goal is to reduce traffic congestion in all jurisdictions of San Mateo County by increasing transit and non-motorized facility capacity, performance and demand and increasing the performance of existing roadways. To increase bicycle demand, the CTP sets key policies of developing a bikeway system that is fully integrated into the transit system and provide more incentives for integrating bikeways and transit modes.

E.2.3. Comprehensive Bike Route Plan (2000)

The Comprehensive Bike Route Plan presents a strategic guide to implementing bike routes in the entire county of San Mateo, including City jurisdictions. The plan recommends numerous bikeways in the City of San Mateo, some of which have since been implemented including Alameda De las Pulgas, Crystal Springs Road and Laurelwood Drive. The plan also recommends striping bike lanes on El Camino Real, which is within Caltrans jurisdiction. A survey was conducted as part of the plan and found that the top priority improvement was bike lanes on El Camino Real.

- Policy Action 1.5: Maximize coordination between Cities in the County and neighboring jurisdictions by establishing points of contact within each agency (which may be a bicycle coordinator) for bicycle projects and protocol for reviewing plans.
- Policy Action 2.1: Discuss the need, role, responsibility, cost, and funding of local bicycle coordinators whose responsibility would be to (a) provide support to the public, (b) act as a liaison to the other agencies, (c) act as a liaison to local bicyclists, the media, and the community in general, (d) review

and/or complete funding applications, (e) provide inter-departmental coordination, and (f) develop proposals and programs.

- Policy Action 4.6: In order to encourage cycling throughout the county, the cities should consider developing criteria for installing traffic calming devices. These devices may include; traffic roundabouts, channelization, neck-downs, T-intersections, modified designs for travel lanes, and reduction in street widths where significant through traffic impacts low density residential areas. These devices should only be installed where desired by residents, impacted businesses, and where a demonstrated need exists and where they are compatible with the access needs of emergency vehicles. Installation design and priority should consider equity between different neighborhoods.
- Policy Action 9.2: Encourage multi-jurisdictional funding applications.

E.3. Regional

Regional planning and policy documents are far-reaching, presenting policies for all jurisdictions in a region or specific recommendations for jurisdictions running through or adjacent to the City of San Mateo, e.g. Metropolitan Transportation Commission (MTC) and Caltrain. MTC acts as the regional transportation planning, coordinating and financing agency for the region. The Association of Bay Area Governments (ABAG), made up of the nine counties surrounding the Bay, is the comprehensive planning agency for the region.

E.3.1. Regional Bicycle Plan (2009)

The Regional Bicycle Plan, produced by MTC, identifies regional bikeway connections in the San Francisco Bay Area and strategies to fill gaps in the regional bikeway network (RBN). The RBP's principle goal is "to ensure that bicycling is a safe, convenient, and practical means of transportation and healthy recreation throughout the Bay Area, including in Priority Development Areas (PDAs); to reduce traffic congestion and risk of climate change; and to increase opportunities for physical activity to improve public health." The policies of the plan include directing local jurisdictions to collaborate with transit agencies to ensure bicyclists are accommodated within one mile of transit stations, adopt ordinances requiring new developments to include sheltered bicycle parking and end-of-trip accommodations, maintain Bicycle Advisory Committees and conduct bicycle surveys using the National Bicycle and Pedestrian Documentation Project. The most relevant policies are listed below.

- Policy 1.1: Ensure that all transportation projects funded by MTC consider enhancement of bicycle transportation, consistent with MTC Resolution 3765, Caltrans Deputy Directive 64 R1, Assembly Concurrent Resolution 211 and the Complete Streets Act of 2008.
- Policy 2.1: Develop a cohesive system of regional bikeways that provide access to and among major activity centers, public transportation and recreation facilities.
- Policy 2.2: Ensure that the RBN serves bicyclists with diverse ability levels who are bicycling for a range of transportation and recreational purposes.
- Policy 2.5: Encourage coordination of cross jurisdictional bicycle way-finding signage.
- Policy 3.2: Support local government efforts to improve bicyclist safety by encouraging enforcement of the California Vehicle Code for motorists and cyclists alike. Examples include diversion training

programs and reduced fines for errant cyclists so police officers will be more willing to cite them. (Diversion training allows motorists and cyclists who break traffic laws to avoid having citations documented in exchange for attending traffic safety classes.)

- Policy 3.3: Encourage local jurisdictions and other agencies and organizations to utilize MTC's online Safety Toolbox.
- Policy 5.3: Foster collaboration between local jurisdictions and regional transit agencies to improve bicycle access to transit stations in the last mile surrounding each station. Improvements to ease, speed, convenience and safety of bicycle access, including by means of signage and bikeways, should be considered.
- Policy 6.2: Encourage local jurisdictions to adopt ordinances requiring bicycle parking and storage and to offer incentives to employers that provide enclosed, sheltered bicycle parking for their employees and, when feasible, their customers.
- Policy 6.3: Encourage local jurisdictions to provide shower and locker facilities, or to make arrangements for access to local health clubs, for all new developments and major redevelopments.
- Policy 6.4: Continue to require cities and counties to form and maintain bicycle advisory committees, and to develop and update comprehensive bicycle plans, as a condition for receiving Transportation Development Act (TDA) funds.
- Policy 8.7: Encourage jurisdictions to consider adopting California Environmental Quality Act (CEQA) standards that rigorously analyze project impacts to bicyclists and pedestrians.
- Policy 9.4: Encourage local jurisdictions to work with the National Bicycle and Pedestrian Documentation Project to standardize bicycle and pedestrian data collection throughout the region.

The plan identifies the following unbuilt regional bikeway connections in the City of San Mateo:

- "North-South Bikeway" Old County Road (Pacific Boulevard in San Mateo) from Bay Meadow Race Track Entrance to Jefferson Avenue (Redwood City) (Class III and II bikeways now exist on Pacific Boulevard from the Bay Meadow Race Track to the south city limit.)
- 3rd and 4th Avenues from El Camino Real to Hwy 101

E.3.2. San Francisco Bay Trail Gap Analysis (2005)

The San Francisco Bay Trail Gap Analysis Study is a continuation of the Bay Trail Plan (1989), which seeks to complete a continuous 500 mile trail around the San Francisco Bay. The City of San Mateo has completed the segment of the Bay Trail within its jurisdiction, in Coyote Point Park. The following policies are from the Bay Trail Plan, which the Gap Analysis supports.

- Trail alignment policies reflect the goals of the Bay Trail program—to develop a continuous trail which highlights the wide variety of recreational and interpretive experiences offered by the diverse bay environment and is situated as close as feasible to the shoreline, within the constraints defined by other policies of the plan.
- Trail design policies underscore the importance of creating a trail which is accessible to the widest possible range of trail users and which is designed to respect the natural or built environments

through which it passes. Minimum design guidelines for trail development are recommended for application by implementing agencies.

- Transportation access policies reflect the need for bicycle and pedestrian access on Bay Area toll bridges, in order to create a continuous trail and to permit cross-bay connections as alternative trail routes.
- Implementation policies define a structure for successful implementation of the Bay Trail, including mechanisms for continuing trail advocacy, oversight and management.

E.3.3. Caltrain Bicycle Access and Parking Plan (2008)

The Caltrain Bicycle Access and Parking Plan proposes improvements to Caltrain's top 10 accessed stations with the intent to increase the number of people that arrive at the stations by bicycle. The San Mateo and Hillsdale stations are included in the stations assessed by the plan, which provide 30 and 34 bike parking spaces, respectively. The plan recommends nine more spaces at the San Mateo station and 15 more spaces at the Hillsdale station but notes that bicycle parking administration is not a priority of the City of San Mateo. The plan identifies the lack of a direct bicycle connection from Railroad Avenue to the northbound platform San Mateo station and that bicyclists are forced to weave between parked cars due to the location of the Bay Meadow fence. Recommendations include installing bicycle parking on the east side of the Hillsdale Station and striping bicycle lanes on Delaware Street, Pacific Avenue and El Camino Real.

E.4. State

State planning and policy documents are the most far-reaching, presenting policies and goals for RTPs and MPOs.

E.4.1. State Assembly Bill 32: Global Warming Solutions (2006)

Signed into law in 2006, the Global Warming Solutions Act sets discrete actions for California to reduce greenhouse gas emissions. The discrete actions focus on reducing emissions by increasing motor vehicle and ship yard efficiency and other strategies involving refrigerants, landfills and consumer products. While encouraging bicycling is a means for California to reach 1990 greenhouse gas emission levels in 2020, AB 32 does not identify it as a strategy.

E.4.2. State Assembly Bill 1358: Complete Streets (2008)

AB 1358 requires the legislative body of any City or County to, upon revision of a general plan or circulation element, ensure that streets accommodate all user types, e.g. pedestrians, bicyclists, transit riders, motorists, children, persons with disabilities and elderly persons. Beginning January 1, 2011, Cities and Counties must include accommodation of all street users in Circulation Element revisions.

E.4.3. State Senate Bill 375: Sustainable Communities (2009)

Signed into law in 2008, SB 375 links land use planning with greenhouse gas emissions, first requiring the State Air Resources Board to set emission reduction goals for metropolitan planning organizations (MPO) (ABAG is the MPO for the Bay Area) and then requiring ABAG to develop a land use plan to meet that goal. ABAG must make transportation funding decisions consistent with their new plan, namely by developing a required Sustainable Communities Strategy (SCS) in the Regional Transportation Plan. The SCS must also be

consistent with the Regional Housing Needs Assessment (RHNA) allocation. ABAG has already implemented a similar strategy with its Priority Development Areas (PDA), which works with local jurisdictions to concentrate housing around transit stations. The City of San Mateo compliance with ABAG's SCS and consequently SB 375 is setting minimum density and development standards when rezoning an area. Aspects relevant to this Citywide Bikeways Master Plan are listed below.

- Air Resources Board (ARB) creation of regional targets for greenhouse gas emissions reduction tied to land use.
- Regional planning agencies must create a plan, including a Sustainable Communities Strategy, to meet those targets.
- Regional transportation funding decisions must be consistent with this new plan.
- RHNA guiding local housing efforts that are informed by efficient use of the transportation system.

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Appendix F. Survey

This appendix includes the full text of the survey available to the public between May 1, 2010 and June 30, 2010. In addition to informing the recommendations of the Bicycle Master Plan, the survey includes questions about pedestrian activity to help the City to develop its Pedestrian Master Plan.

City of San Mateo Bikeway and Pedestrian Survey

Help us plan for San Mateo's future! The City of San Mateo and Alta Planning + Design are working together to understand bicyclist and pedestrian needs in the City. Your responses to this survey will help us plan for the community. Once you have completed the survey, please return it by June 30, 2010. Please submit only one survey per person.

1. Where do you live? Street and cross street or zip code

Street _____

Cross street _____

Zip Code _____

2. What is your work zip code?

_____

3. Age group? (check only one)

- ○ 18-24
- ○ 25-34
- ○ 35-44
- ○ 45-54
- ○ 55-64
- ○ 65 and over

4. Gender

- ○ Female
- ○ Male

5. When you make trips less than one mile, how do you typically travel? (check only one)

- ○ Walk
- ○ Bicycle
- ○ Transit
- ○ Drive alone
- ○ Carpool

6. When you make trips less than five miles, how do you typically travel? (check only one)

- ○ Walk
- ○ Bicycle
- ○ Transit
- ○ Drive alone
- ○ Carpool

7. When you take a child to school, how do you typically travel? (check only one)

- ○ Walk
- ○ Bicycle
- ○ Transit
- ○ Drive to school then home
- ○ Drive to school then another location
- ○ I don't take a child to school

8. Do you own a bicycle?

- ○ Yes
- ○ No

(b) If yes, is it in good working order?

- ○ Yes
- ○ No

9. Why do you bike? (check all that apply)

- ○ I don't bike
- ○ To get to work
- ○ To get to school
- ○ To get to transit
- ○ Personal business (visiting friends, etc)
- ○ For pleasure
- ○ For shopping/errands
- ○ Exercise/health

10. In the past month, how often have you ridden your bicycle?

- ○ I don't bike
- ○ 1-5 times
- ○ 6-7 times
- ○ 11-20 times
- ○ Daily

11. (a) What is the average distance of your bicycle rides?

- ○ I don't bike
- ○ 0-1 miles
- ○ 1-2 miles
- ○ 3-5 miles
- ○ 6-10 miles
- ○ 11 miles or more

(b) What is the average time of your bicycle rides?

_____minutes

12. What prevents you from biking more often? (check all that apply)

- ○ Destinations are too far away
- ○ Too many cars/ cars drive too fast
- ○ I have to carry things
- ○ I travel with small children
- ○ Health reasons
- ○ No bikeways
- ○ In sufficient lighting
- ○ Poor road conditions
- ○ No bike parking
- ○ Other: _____

13. Please tell us about specific problem areas or places you avoid when bicycling. Indicate the location (intersection or street block) and type of problem:

14. Where would you ride if you felt comfortable doing so? Please identify specific streets or location(s).

15. Where are your favorite places or routes to bike? Please name specific streets or destinations.

16. Please describe your preference for bicycle facilities.

	Desirable	Somewhat Desirable	Somewhat Undesirable	Undesirable
Off-street paved bike paths	○	○	○	○
On-street striped bike lanes	○	○	○	○
Unstriped bike routes	○	○	○	○
Bicycle Boulevards	○	○	○	○

17. (a) Please indicate what changes to city streets are acceptable to create space for bicyclists.

	Acceptable	Somewhat Acceptable	Somewhat Unacceptable	Unacceptable
Travel lane removal	○	○	○	○
Travel lane narrowing	○	○	○	○
Car parking removal	○	○	○	○
Car parking relocation	○	○	○	○
Street widening	○	○	○	○
Through traffic diverters (local traffic only)	○	○	○	○
Replace diagonal parking with parallel parking	○	○	○	○

(b) If you support any of the above-mentioned changes in a specific location, please identify it below:

18. What can be done to encourage you to bicycle more in San Mateo? (check all that apply)

- ○ More bike paths
- ○ More on-street bike lanes
- ○ More bike routes
- ○ More bikeway destination/route signage
- ○ Education and outreach programs
- ○ Improved safety from cars
- ○ Improved personal safety (e.g. lighting)
- ○ Improved bicycle storage security/ parking
- ○ Other: _____

City of San Mateo Bikeway and Pedestrian Survey

19. Please rank your interest in bicycle resources and programs.

	Interested	Somewhat Interested	Somewhat Uninterested	Uninterested
Bicycle safety classes (adult)	○	○	○	○
Bicycle safety classes (youth)	○	○	○	○
Employer based biking programs (e.g. incentives for biking to work)	○	○	○	○
Media campaigns about bicycle safety	○	○	○	○
Community bicycling events	○	○	○	○
Bicycling information (websites, maps, brochures, hotlines)	○	○	○	○
Targeted enforcement of traffic laws	○	○	○	○
Bicycle Parking	○	○	○	○

20. What short driving trips could you do by bike if there were safer and convenient bicycle facilities? (check all that apply)

- ○ Commuting to and from work
- ○ Travel to city parks, community centers and libraries
- ○ Downtown shopping
- ○ Caltrain Station access
- ○ School drop-offs
- ○ Grocery shopping
- ○ Other errands
- ○ Other: _____

21. Why do you walk? (check all that apply)

- ○ I don't walk
- ○ To get to work
- ○ To get to school
- ○ To get to transit
- ○ Personal business (visiting friends, etc)
- ○ For pleasure
- ○ For shopping/errands
- ○ Exercise/health

22. In the past month, how often have you taken walks?

- ○ I don't walk
- ○ 1-5 times
- ○ 6-7 times
- ○ 11-20 times
- ○ Daily

23. When you walk, how far to you typical travel (round-trip)?

- ○ I don't walk
- ○ 0-1 mile
- ○ 1-2 miles
- ○ More than 3 miles

OR

_____minutes

24. What prevents you from walking more often? (check all that apply)

- ○ Concerns about safety
- ○ Sidewalks in poor condition
- ○ Lack of sidewalks
- ○ Obstructions on sidewalks
- ○ Lack of curb ramps
- ○ Not enough time
- ○ Insufficient lighting
- ○ Destinations are too far

25. Please tell us about your walking experiences in San Mateo.

	Strongly Agree	Agree	Disagree	Strongly Disagree
I can make walking trips where I want	○	○	○	○
I feel safe from cars	○	○	○	○
It is easy to cross the streets	○	○	○	○

26. Please tell us about specific problem areas you avoid as a pedestrian in San Mateo. Indicate the location (intersection or street block) and type of problem:

27. Where are your favorite places or routes to walk? Please name specific streets or destinations.

28. Please rank your preference the following facility improvements.

	Desirable	Somewhat Desirable	Somewhat Undesirable	Undesirable
Sidewalk installation	○	○	○	○
Sidewalk separation from car traffic	○	○	○	○
Roadway crossing improvements	○	○	○	○
Connections to transit	○	○	○	○
Wider sidewalks	○	○	○	○

(b) If you support any of the above-mentioned changes in a specific location, please identify it below:

29. What can be done to encourage you to walk more in San Mateo? (check all that apply)

- ○ More crosswalks
- ○ More pedestrian countdown signals
- ○ More street furniture (i.e. benches, plants)
- ○ More pedestrian scaled lighting
- ○ More pedestrian destination/route signage
- ○ Education and outreach programs
- ○ Other: _____

30. Please rank your interest in pedestrian resources and programs.

	Interested	Somewhat Interested	Somewhat Uninterested	Uninterested
Media campaigns about walking safety	○	○	○	○
Community walking events	○	○	○	○
Walking information (websites, maps, brochures, hotlines)	○	○	○	○
Targeted enforcement of traffic laws (e.g. crosswalk stings)	○	○	○	○

31. The City intends to make improvements to enhance and encourage increased bicycle and pedestrian trips. May we email you for follow-up surveys to evaluate if the improvements have indeed increased your bicycle and/or pedestrian trips?

- ○ No
- ○ Yes

Email address:_____

Encuesta sobre carriles para bicicletas y peatones en la ciudad de San Mateo

¡Ayúdenos a planificar el futuro de San Mateo! La ciudad de San Mateo y Alta Planning + Design están trabajando en conjunto para entender las necesidades del ciclista y los peatones de la ciudad. Sus respuestas a esta encuesta nos ayudará a planificar para la comunidad. Una vez haya completado la encuestas, devuélvalas por favor hasta el 30 de junio, 2010. Favor de someter una encuesta por persona.

1. ¿Dónde vive? Calle y calle que cruza o código postal

Calle _____

Calle que cruza_____

Código postal_____

2. ¿Cuál es el código postal del lugar dónde trabaja?

_____

3. ¿Grupo de edad? (marque solamente una casilla)

- ○ 18-24
- ○ 25-34
- ○ 35-44
- ○ 45-54
- ○ 55-64
- ○ más de 65

4. Género

- ○ Masculino
- ○ Femenino

5. Cuando viaja menos de una milla, ¿cómo lo hace generalmente? (marque solamente una casilla)

- ○ Caminando
- ○ En bicicleta
- ○ Transporte público
- ○ Manejo solo(a)
- ○ Viaje en coche compartido

6. Cuando viaja menos de cinco millas, ¿cómo lo hace generalmente? (marque solo una casilla)

- ○ Caminando
- ○ En bicicleta
- ○ Transporte público
- ○ Manejo solo(a)
- ○ Viaje en coche compartido

7. Cuando lleva al niño a la escuela, ¿cómo lo hace generalmente? (marque solo una casilla)

- ○ Caminando
- ○ En bicicleta
- ○ Transporte público
- ○ Manejo a la escuela y de vuelta a la casa
- ○ Manejo a la escuela y luego a otro lugar
- ○ No llevo a un niño a la escuela

8. ¿Tiene usted una bicicleta?

- ○ Sí
- ○ No

(b) Si es así, ¿trabaja bien?

- ○ Sí
- ○ No

9. ¿Porqué anda en bicicleta? (marque todas las que correspondan)

- ○ No ando en bicicleta
- ○ Para ir al trabajo
- ○ Para ir a la escuela
- ○ Para tomar un transporte
- ○ Asuntos personales (visitar amigos, etc.)
- ○ Por placer
- ○ Ir de compras/recados
- ○ Ejercicio/salud

10. Durante el mes pasado,¿cuántas veces ha montado en bicicleta?

- ○ No ando en bicicleta
- ○ 1-5 veces
- ○ 6-7 veces
- ○ 11-20 veces
- ○ Diariamente

11. (a) Qué promedio de distancia anda en bicicleta?

- ○ No ando en bicicleta
- ○ 0-1 millas
- ○ 1-2 millas
- ○ 3-5 millas
- ○ 6-10 millas
- ○ más de 11 millas

(b) ¿Qué promedio de tiempo anda en bicicleta?

_____minutos

12. ¿Qué le impide andar con más frecuencia en bicicleta? (marque todas las que correspondan)

- ○ Las destinaciones están demasiado lejos
- ○ Demasiado coches/ van muy rápido
- ○ Tengo que cargar cosas
- ○ Viajo con niños pequeños
- ○ Razones de salud
- ○ No hay senderos para bicicletas
- ○ No hay suficiente iluminación
- ○ Los caminos están en mala condición
- ○ No hay estacionamiento para bicicletas
- ○ Otro: _____

13. Indique áreas y lugares específicos con problemas que Ud.evita cuando anda en bicicleta. Indique la ubicación (intersección o cuadra de la calle) y problema:

14. ¿Por dónde iría si se sentiría cómodo(a)? Identifica las calles o lugares específicos.

15. ¿Dónde están sus lugares o rutas favoritas para ir en bicicleta? Nombre calles o lugares específicos.

16. Indique su preferencia para los lugares dónde se anda en bicicleta.

	Atrayente	Poco atrayente	Poco indeseable	Indeseable
Sendas pavimentadas fuera de la calle	○	○	○	○
Carriles mar- cados con rayas en la calle	○	○	○	○
Rutas no marcadas	○	○	○	○
Alamedas para bicicletas	○	○	○	○

17. (a) Indique los cambios aceptables en la ciudad para crear espacio para los ciclistas.

	Aceptable	Algo aceptable	Un tanto inaceptable	Inaceptable
Eliminar el carril de viaje	○	○	○	○
Angostar el carril de viaje	○	○	○	○
Eliminar el estacionamiento	○	○	○	○
Cambio del estacionamiento de coches	○	○	○	○
Ensanchar la calle	○	○	○	○
Desviador de tráfico (sólo tráfico local)	○	○	○	○
Reemplazo del estacionamiento diagonal con el paralelo	○	○	○	○

(b) Si usted apoya cualquiera de los cambios mencionados en una ubicación especifica, indíquelo a continuación:

18. ¿Qué se puede hacer para alentarle a montar más en bicicleta en San Mateo? (marque todas las que correspondan)

- ○ Más senderos para bicicletas
- ○ Más carriles en la calle para bicicletas
- ○ Más rutas para bicicletas
- ○ Más senderos con destinaciones /señales de rutas
- ○ Programas educativos y de difusión
- ○ Mejora en la seguridad por parte de los coches
- ○ Mejora en la seguridad personal (ejemplo, iluminación)
- ○ Mejora en la seguridad para guardar/estacionar bicicletas
- ○ Otro: _____

City of San Mateo Bikeway and Pedestrian Survey

19. Clasifique su interés en los recursos y programas para bicicletas

	Interesado	Algo de interés	Un tanto desinteresado	Sin interés
Clases de seguridad (para adultos)	○	○	○	○
Clases de seguridad (para la juventud)	○	○	○	○
Programas del empleador para andar en bicicleta (incentivos para ir en bicicleta)	○	○	○	○
Campañas publicitarias sobre la seguridad de la bicicleta	○	○	○	○
Eventos publicitarios para andar en bicicleta	○	○	○	○
Información sobre andar en bicicleta (sitios de la web, mapas, folletos, líneas de emergencia)	○	○	○	○
Cumplimiento de las leyes de tráfico	○	○	○	○
Estacionamiento para bicicletas	○	○	○	○

20. Qué tipo de viajes cortos podría hacerlos en bicicleta si hubiesen lugares más seguros y convenientes? (marque todas las que correspondan)

- ○ Ir y venir regularmente al trabajo
- ○ Parques de la ciudad, centros comunitarios y bibliotecas
- ○ Compras en el centro de la ciudad
- ○ Acceso a la estación de Caltrain
- ○ Lugar especial para dejar a los niños en la escuela
- ○ Ir para comprar comestibles
- ○ Otros recados
- ○ Otros: _____

21. ¿Porqué camina? (marque todos los que correspondan)

- ○ No camino
- ○ Para ir a trabajar
- ○ Ir a la escuela
- ○ Tomar transporte público
- ○ Asuntos personales (visitar amigos, etc.)
- ○ Por placer
- ○ Ir de compras/recados
- ○ Ejercicio/salud

22. Durante el mes pasado, ¿cuántas veces ha caminado?

- ○ No camino
- ○ 1-5 veces
- ○ 6-7 veces
- ○ 11-20 veces
- ○ Diario

23. Cuando camina, ¿cuán lejos va generalmente, (ida y vuelta)?

- ○ No camino
- ○ 0-1 milla
- ○ 1-2 millas
- ○ Más de 3 millas

O

_____minutos

24. ¿Qué le impide caminar con más frecuencia? (marque todas las que correspondan)

- ○ Me preocupa la seguridad
- ○ Las aceras están en mala condición
- ○ Falta de aceras
- ○ Obstrucciones en las aceras
- ○ Falta de rampas de aceras
- ○ No hay bastante tiempo
- ○ No hay suficiente iluminación
- ○ Las destinaciones están muy lejos

25. Favor de indicar su experiencia al caminar en San Mateo

	Estoy muy de acuerdo	Estoy de acuerdo	No estoy de acuerdo	No estoy muy de acuerdo
Puedo caminar donde quiera	○	○	○	○
Me siento seguro con los coches	○	○	○	○
Es fácil cruzar las calles	○	○	○	○

26. Indique áreas específicas con problemas que evita Ud. como peatón en San Mateo. Indique la ubicación (intersección o cuadra de la calle) y tipo de problema:

27. ¿Dónde están sus lugares o rutas favoritas para caminar? Nombre calles o destinaciones especiales.

28. Clasifique sus preferencias para la mejora de los siguientes lugares

	Deseable	Algo deseable	Un tanto indeseable	Indeseable
Instalación de aceras	○	○	○	○
Separación de las aceras del tránsito de vehículos	○	○	○	○
Mejora en los cruces de carreteras	○	○	○	○
Conexión con el tránsito	○	○	○	○
Aceras más anchas	○	○	○	○

(b) Si usted apoya cualquiera de estos cambios en un lugar específico, indíquelo a continuación:

29. ¿Qué se puede hacer para alentarle a caminar más en San Mateo? (marque todas las que correspondan)

- ○ Más paso de peatones (cruce)
- ○ Más señales regresivas para peatones
- ○ Más mobiliario urbano (i.e. bancos, plantas)
- ○ Más iluminación a escala para peatones
- ○ Más destinaciones/señales de ruta para peatones
- ○ Programas educativos y de difusión
- ○ Otro: _____

30. Clasifique su interés en recursos y programas para peatones.

	Interesado	Algo interesado	Un tanto desinteresado	Desinteresado
Campañas publicitarias sobre la seguridad al caminar	○	○	○	○
Eventos comunitarios para caminar	○	○	○	○
Información de caminatas (sitios de la web, mapas, folletos, líneas de emergencia)	○	○	○	○
Cumplimiento de las leyes de tráfico (como operación policial en el cruce de calles)	○	○	○	○

31. La ciudad tiene la intención de mejorar y alentar el aumento de viajes por bicicleta y caminando. Podemos enviarle un correo electrónico con seguimientos de las encuestas para evaluar si las mejoras han aumentado en realidad sus viajes por bicicleta o caminando?

- ○ Sí
- ○ No

Correo electrónico:_____

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Appendix G. Project Sheets

This appendix presents the project description sheets for the following projects:

1. Downtown Bike Parking
2. Hillsdale Overcrossing
3. Bay to Transit Feasibility Study
4. Wayfinding Signage Program
5. San Mateo Drive Bicycle Lane Outreach and Implementation
6. Humboldt Street at Fourth Avenue Bike Box and Green Bike Lane
7. Laurelwood / Sugarloaf Park Path
8. On-Street Bicycle Facilities
9. 25th Avenue at S Delaware Street Bike Box and Green Bike Lane
10. Delaware Street at Pacific Boulevard Bicycle Left-Turn Pocket Feasibility Study

G.1. Downtown Bike Parking

G.1.1. Project Purpose

a. The Downtown Bike Parking project proposes installation of 54 bicycle racks throughout Downtown San Mateo and 36 electronic lockers at the San Mateo Caltrain Station, which is located in Downtown San Mateo. Two-thirds of bicycle racks are proposed within the public right-of-way in the sidewalk furnishing zone. One-quarter of all new racks are proposed to be installed in bicycle parking corrals within the roadway.

b. Bicycle parking is an essential element of any bikeway network. Bicycle parking Downtown is especially important to San Mateo for a number of reasons. Downtown San Mateo is a community destination with many visitors, including bicyclists, but it has limited right-of-way available for bicycle parking. There are currently ten bicycle parking racks Downtown. When there are no bicycle racks, bicyclists will park or lock their bikes at inappropriate locations, using street signs, trees near bus stops, or parking meters. Use of these street fixtures is problematic for a variety of reasons including pedestrian accessibility and stability of the locked bicycle. As San Mateo continues to build its bikeway network and more residents bicycle, bicycle parking will become increasingly important issue. Installation of bicycle parking will not only prevent bicyclists from locking to street fixtures, attractive and well placed bicycle parking can encourage bicycling activity.

G.1.2. Project Background

a. In 2008, the Peninsula Corridor Joint Powers Board adopted the *Caltrain Bicycle Access and Parking Plan*, which proposes to increase the number of passengers who bicycle to Caltrain stations by making improvements to access and bike parking at the top 10 stations which account for 75 percent of the systems cyclist-passenger volumes, including the San Mateo Station.

b. Community members identified the need for bicycle parking at the community workshop for the *Bicycle Master Plan* (2011) by marking specific locations for proposed racks on workshop maps of Downtown.

c. The City of San Mateo *Bicycle Master Plan* identifies Downtown bicycle parking as a high priority project.

d. The Downtown Bicycle Parking Plan (**Appendix B**) was identified as high priority by the Bicycle Plan Steering Committee, community-at-large and numerous important stakeholders involved with preparation of the *Bicycle Master Plan*.

e. The City's Downtown Bike Parking Plan identifies key locations citywide for bicycle parking installation, a bike parking plan for Downtown, and a recommended bicycle parking ordinance. The recommended locations and layouts were chosen based on available right-of-way, proximity to businesses that attract bicyclists, and impacts to pedestrian activity and automobile parking.

f. The project is supported by numerous adopted goals, policies and implementation strategies included in the *City of San Mateo General Plan* (2010), *Sustainable Initiatives Plan* (2010), *Bicycle Master Plan* (2011), and the *Caltrain Bicycle Access and Parking Plan* (2008). A complete summary of these policies is included in this project sheet.

G.1.3. Project Scope

a. **Complete Public Outreach.** The City will continue with its outreach efforts to adjacent property owners and the Downtown San Mateo Association.

b. **Complete Final Design.** The Downtown Bike Parking project proposes to install 54 bicycle racks throughout the Downtown Area. The racks will be round tubing. The racks will be powder coat black (preferably with a primer layer) in order to be consistent with the downtown aesthetic and existing street furniture. Of the 54 racks, 36 will be installed in the public right-of-way in the sidewalk furnishing zone. Three (3) of these racks will be installed in Central Park. The remaining 18 racks will be installed in bicycle parking corrals within the roadway, outside the travel area. Installation of the bicycle parking corrals will include:

   i. Conversion of four auto parking stalls to bicycle parking corrals

   ii. Repurposing of one red zone adjacent to a curb extension to a bicycle parking corral

   iii. Installation of bollards, wheel stops, and striping to delineate the corrals

   In addition to the bicycle racks, 36 electronic lockers will be installed at the Downtown Caltrain Station.

   Final design will involve coordination with the Peninsula Corridor Joint Powers Board and utility and public service providers potentially impacted by the proposed bike parking.

c. **Issue Work Order.** The City will explore the use of City crews to install new bicycle parking facilities in the Downtown.

G.1.4. Project Costs

a. Costs to complete the Downtown Bicycle Parking project are estimated at $147,495.

Table G-1: Downtown Bike Parking Cost Estimate

	Quantity	Cost Per Unit	Installation	Equipment Costs	Labor Costs	Total Costs
Racks	52	$180	$150	9720	$8,100	$17,160
Electronic Lockers at Caltrain	44	$2,700	$0	$118,800	$0	$118,800
Bollards	13	$450	$150	$5,850	$1,950	$7,800
Wheel Stops	15	$35	$150	$525	$2,250	$2,775
Striping	100	$3	--	$300	$0	$300
			Project Total	$111,929	$12,750	**$146,835**

G.1.5. Project Outcomes

a. The Downtown Bicycle Parking project will include community consensus building, final design, and installation of bicycle parking in Downtown San Mateo, including at the San Mateo Caltrain Station.

G.1.6. Supporting Adopted Policies

a. *Caltrain Bicycle Access and Parking Plan* San Mateo Station bicycle parking recommendations.

b. City of San Mateo *Vision 2030 General Plan* Policies:

C4.10: Bikeway Systems. Review the City's planned bikeways systems for adequacy, consistency and connectivity throughout the City to facilitate ease of use and safety for the users including adequate parking for bicycles.

C6.1: Modal Share. Increase mode share from pedestrian and bicycle travel, for trips of one mile or less, from three percent in 2005 to 30 percent by 2020 by introducing paid parking in other commercial areas outside of the downtown, improving pedestrian walkways and amenities within commercial areas and residential neighborhoods and by providing adequate, secure, covered parking for bicycles in city garages for new multifamily and commercial development. Additional potential supportive actions to increase mode share are detailed in the SIP, Appendix T of the General Plan.

c. City of San Mateo *Sustainable Initiatives Plan* Strategies:

T1: Increase mode share for pedestrian and bicycle travel to 30% for trips of one mile or less by 2020.

d. City of San Mateo *Bicycle Master Plan* Goals and Objectives:

Goal 1: Develop and maintain a comprehensive bicycle and pedestrian circulation network which provides safe recreation opportunities and an alternative to automobile travel. (GP Goal C4)

Goal 2: Increase mode share for pedestrian and bicycle travel to 30% for trips of one mile or less by 2020. Bicycle and pedestrian travel currently represents about 3% of all travel (SIP Recommendation T.1).

Goal 4: Ensure plentiful, high quality support facilities to complement the bicycle network.

Objective 4.2: Develop and adopt a Downtown Bicycle Parking Plan.

e. City of San Mateo *Bicycle Master Plan* High Priority project: Downtown Bicycle Parking.

f. Community identified need for bicycle parking.

G.1.7. Project Graphic

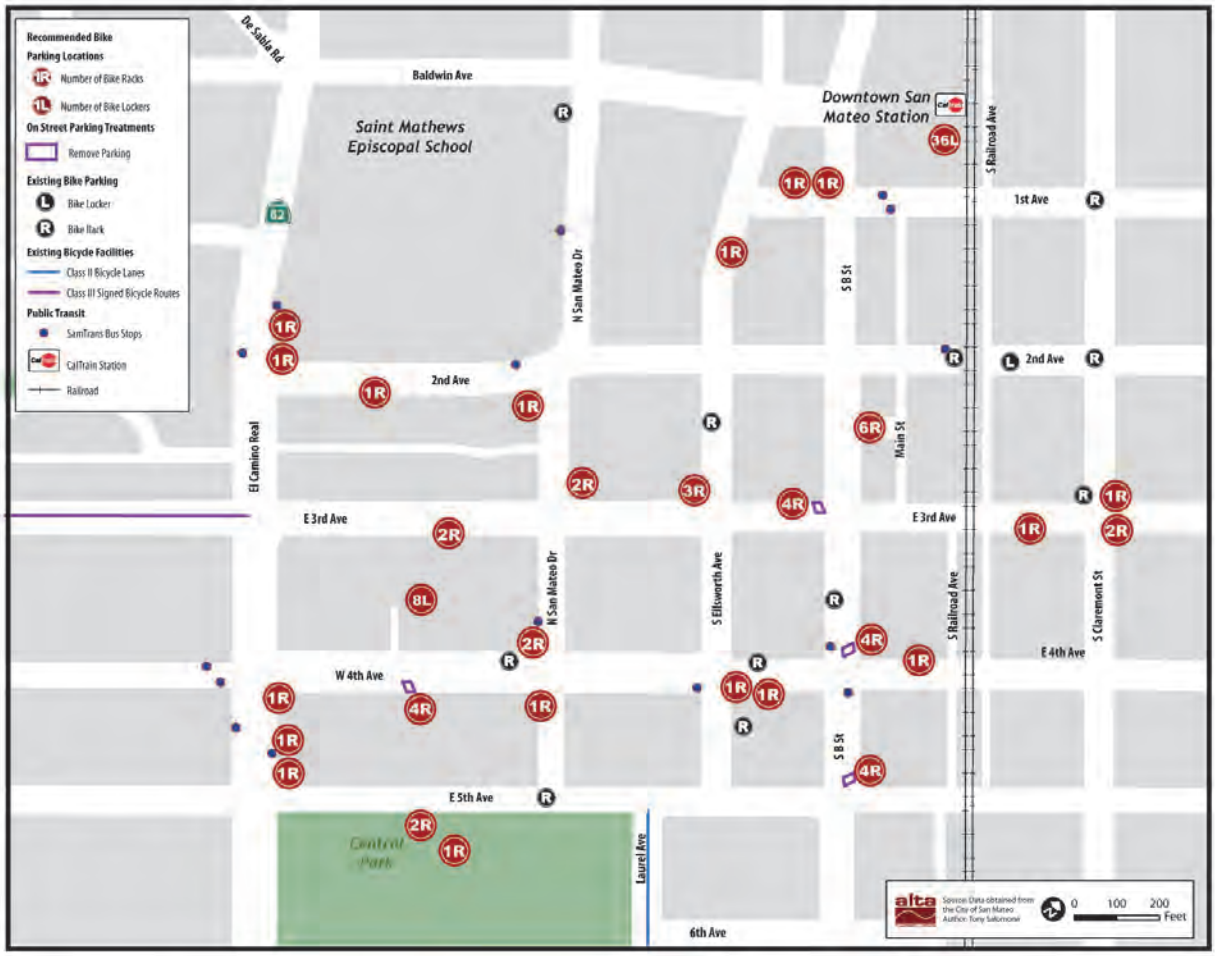


Figure G-1: Recommended Downtown Bicycle Parking Locations

G.2. Hillsdale Overcrossing

G.2.1. Project Purpose

a. The Hillsdale Overcrossing project envisions development of a grade-separated bicycle and pedestrian crossing of US Highway 101 (US 101) at Hillsdale Boulevard in southeastern San Mateo.

b. The *Hillsdale Boulevard US 101 Bicycle and Pedestrian Over Crossing Final Study* (2007) identifies the need for improved bicyclist and pedestrian access across US 101. The Hillsdale Highway 101 overcrossing would allow pedestrians and bicyclists coming from eastern San Mateo and Foster City to access the Hillsdale Caltrain Station, schools, shopping opportunities, and employment west of US 101. The project would also improve access between the neighborhoods of San Mateo and recreational destinations such as the San Francisco Bay Trail via bicycle and on foot.

c. Bicyclists and pedestrians in San Mateo have consistently indicated that US 101 is one of the major barriers for walking and bicycling in southeastern San Mateo. A gap closure project, the Hillsdale Overcrossing would connect with:

   i. Existing sidewalks along East Hillsdale Court that connect with the other pedestrian facilities along Hillsdale Boulevard, Saratoga Drive, points further west, Norfolk Street, and points further east. The City of San Mateo generally requires five-foot sidewalks, and the sidewalk network in the vicinity of the Hillsdale Boulevard US 101 Interchange is generally in good repair.

   ii. An existing Bike Route along Hillsdale Boulevard, existing Multi-Use path along the inner curve of Franklin Parkway at Highway 101, existing and proposed bikeways along South Norfolk Street, and proposed bike lanes along Hillsdale Boulevard (east of South Norfolk Street) connecting Hillsdale Boulevard to Foster City and the Bay Trail over Marina Lagoon.

d. Good bicycle and pedestrian access to the Hillsdale Caltrain Station would reduce parking demand and reduce vehicle trips on Hillsdale Boulevard, which has an existing vehicle Level of Service of "C" at the intersection of Hillsdale Boulevard and Saratoga Drive.

e. The project will include Caltrans coordination, Project Study Report/Project Report (PSR/PR) preparation, environmental review, easement acquisition, design, and permitting.

G.2.2. Project Background

a. Caltrans has jurisdiction over the US 101 right-of-way and the Hillsdale Boulevard on- and off-ramps. Caltrans' right-of-way extends to the intersection approaches of Norfolk Street and Saratoga Drive along Hillsdale Boulevard. At the time of the reconfiguration of the Hillsdale Boulevard 101 Interchange, Caltrans designed the overcrossing to accommodate pedestrians with 5-foot sidewalks and unprotected crosswalks at each ramp. Hillsdale Boulevard is the only pedestrian accessible crossing of US 101 between 19th Avenue in San Mateo and Ralston Avenue in Belmont. Hillsdale Boulevard is designated a bicycle route at this location, and no additional accommodations for bicyclists were implemented as part of the reconfiguration. Caltrans does not currently have any roadway improvement projects in the vicinity of the project area.

b. The history of the project began shortly after the reconstruction of the Hillsdale Boulevard US 101 interchange in 2001 as a mitigation measure for the Bay Meadows Redevelopment project. The San Mateo Bicycle and Pedestrian Advisory Committee identify the project as a high priority for the 2005-2006 TDA Article III grant cycle and received a grant of $100,000 for the alignment study and preliminary design.

c. The *Hillsdale Boulevard US 101 Bicycle and Pedestrian Over Crossing Final Study* established a preferred option for a bicycle and pedestrian bridge alignment and identified potential environmental, engineering, operational and permit issues. The proposed Hillsdale Overcrossing alignment is located south of the existing Hillsdale Boulevard US 101 overcrossing and consists of an independent structure that connects with East Hillsdale Court and South Norfolk Street. In order to provide the best access for bicyclists and pedestrians to the new overcrossing, improvements are necessary to two of the neighboring intersections: the Hillsdale Boulevard/Saratoga Drive intersection and the Franklin Parkway/Saratoga Drive intersection. Improvements at these intersections are identified in the San Mateo Bicycle Master Plan and will be implemented separately from the Hillsdale Overcrossing project.

d. The project is supported by numerous adopted goals, policies, and implementation strategies included in the *Draft San Mateo County Comprehensive Bicycle and Pedestrian Master Plan* (2011), *San Mateo Countywide General Plan* (1986), City of San Mateo *Vision 2030 General Plan* (2010), *Sustainable Initiatives Plan* (2010), and San Mateo *Bicycle Master Plan* (2011). A complete summary of these policies is included in this project sheet.

G.2.3. Project Scope

a. **Caltrans Coordination.** The project is within Caltrans right-of-way, therefore reviewing the preferred alternative and conducting field review is necessary before continuing. To date, the project has been presented to Caltrans and the agency supports proceeding with the next steps.

b. **Project Study Report/Project Report (PSR/PR) Preparation.** The project is within Caltrans right-of-way, making a PSR/PR necessary for state approval.

c. **Environmental Review.** An environmental analysis will be conducted per NEPA and CEQA requirements. The public will have several opportunities to review and comment on the potential impacts associated with project implementation and operation in this process.

d. **Easement Acquisition.** The easement acquisition process with Green Valley Enterprises will be initiated for 0.2 acres providing for the west touchdown.

e. **Design.** The design process will proceed at the same time the environmental work is being completed. Next steps include title searches, surveying, review of "as-built" drawings, and soil borings. A contract for full design and engineering services will be let out once the environmental process indicates there are no fatal environmental flaws.

f. **Permitting.** An encroachment permit from Caltrans will be completed.

g. **Project Construction.** Following completion of the above items, construction of bicycle/pedestrian overcrossing south of the Hillsdale Boulevard/US 101 interchange will commence.

G.2.4. Project Costs

a. The estimated cost for the project is $10.7 million.

Table G-2: Hillsdale Overcrossing Cost Estimate

Item	Costs
Soft Costs (Project Approval/Environmental, PS&E, R/W Engineering, Management)	$3,000,000
Estimated Easement Acquisition	$571,000
Construction	$7,100,000
Project Total	**$10,671,000**

Source: Hillsdale Boulevard US 101 Bicycle and Pedestrian Over Crossing Final Study, 2007
** 8.8% inflation applied to 2007 estimate of $10.7 M*

G.2.5. Project Outcomes

a. Approval of the *Hillsdale Boulevard US 101 Bicycle and Pedestrian Over Crossing Final Study* established the preferred alternative overcrossing alignment. The Hillsdale Overcrossing project will result in Caltrans coordination, PSR/PR preparation and review, CEQA compliance, detailed design, easement acquisition, permitting, and construction of a pedestrian and bicycle overcrossing of US 101 at Hillsdale Boulevard.

G.2.6. Supporting Adopted Policies

a. Draft San Mateo County Comprehensive Bicycle and Pedestrian Master Plan Tier 1 project.

b. San Mateo Countywide General Plan policies:

12.3 Provide for a balanced and integrated transportation system in the County which allows for transportation by various modes and easy transfer between modes.

12.34 Bicycle Routes: Encourage the cities to develop local bikeway plans, obtain funding and construct and maintain a system of local bikeways that is consistent with the County Bikeways Plan.

12.39 Pedestrian Paths: Encourage the provision of safe and adequate pedestrian paths in new development connecting to activity centers, schools, transit stops and shopping centers.

12.40 Pedestrian Bridges: Encourage Caltrans to provide pedestrian bridges and connections in areas where State highways have divided communities.

c. City of San Mateo *Vision 2030 General Plan* Policies:

C4.9 Pedestrian and Bikeway Connections. Implement an area-wide pedestrian and bicycle circulation plan which will result in convenient and direct connections throughout San Mateo. Implementing connections in the Rail Corridor Transit-Oriented Development Plan (Corridor Plan) area and into adjacent neighborhoods and districts is a priority.

C4.12 Hillsdale Bicycle and Pedestrian Overcrossing. Construct a bicycle and pedestrian overcrossing in the vicinity of Hillsdale Boulevard over US 101.

C6.1: Modal Share. Increase mode share from pedestrian and bicycle travel, for trips of one mile or less, from three percent in 2005 to 30 percent by 2020 by introducing paid parking in other commercial areas outside of the downtown, improving pedestrian walkways and amenities within commercial areas and residential neighborhoods and by providing adequate, secure, covered parking for bicycles in city garages for new multifamily and commercial development. Additional potential supportive actions to increase mode share are detailed in the SIP, Appendix T of the General Plan.

C6.3 Travel to Schools. Reduce private automobile school trips by 50% before 2020 by working with private and public schools to increase the number of students walking or bicycling to school, implementing "walking pools" to schools, increasing carpooling for students, and making flexible local transit available for student travel.

d. City of San Mateo *Sustainable Initiatives Plan* Strategies:

T1: Increase mode share for pedestrian and bicycle travel to 30% for trips of one mile or less by 2020.

e. City of San Mateo Bay Meadows Specific Plan Amendment (3. Transportation):

The Specific Plan Amendment includes discussion of the project goals, including the goal to "reduce reliance on the private automobile by enhancing opportunities for transit ridership, walking and biking."

f. Rail Corridor Transit-Oriented Development Plan Policies:

4.10: Establish safe and convenient pedestrian and bicycle routes where existing barriers currently prohibit connections.

g. City of San Mateo *Bicycle Master Plan* Goals and Objectives:

Goal 1: Develop and maintain a comprehensive bicycle and pedestrian circulation network which provides safe recreation opportunities and an alternative to automobile travel. (GP Goal C4)

Objective 1.5: Pedestrian and Bicycle Mobility Needs. Balance pedestrian mobility and bicycle accessibility and safety with vehicular congestion when considering intersection improvements to address level of service degradation. (GP Policy 4.8)

Objective 1.6: construct a bicycle and pedestrian overcrossing in the vicinity of Hillsdale Boulevard over US 101.

Goal 2: Increase mode share for pedestrian and bicycle travel to 30% for trips of one mile or less by 2020. Bicycle and pedestrian travel currently represents about 3% of all travel (SIP Recommendation T.1).

Goal 3: Increase mode share of bicycle travel to schools.

h. City of San Mateo *Bicycle Master Plan* High Priority project: Hillsdale Overcrossing.

i. Community identified need for a bicycle crossing over US 101 near Hillsdale Boulevard.

G.2.7. Project Graphic

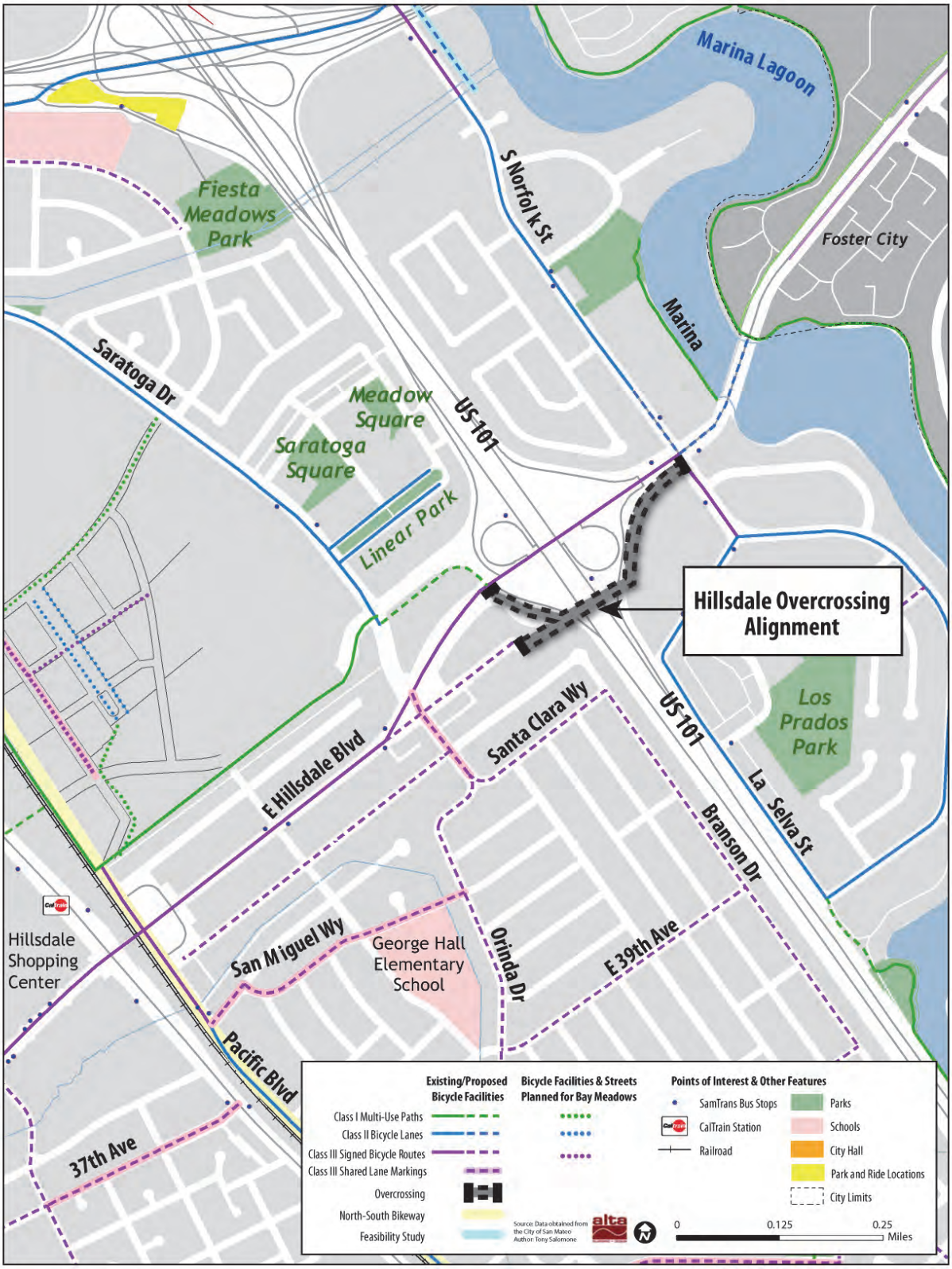


Figure G-2: Proposed Hillsdale Overcrossing Alignment

G.3. Bay to Transit Trail Feasibility Study

G.3.1. Project Purpose

a. The Bay to Transit Trail project envisions development of a paved two-mile pedestrian and bicycle pathway along the existing city-owned creek drainage channel from the Hayward Park Caltrain Station to the regional San Francisco Bay Trail.

b. The Bicycle Master Plan (2011) identifies the need for a feasibility study for this project in order to address right-of-way, site engineering, safety, security, privacy, delivery of emergency services, maintenance and operations, community interests and needs, and other unknowns associated with the development of a trail in this location.

c. This project will include multi-use pathway feasibility analysis, preliminary design analysis of design options for a Highway 101 pedestrian-bicycle grade-separated crossing, and community consensus building for the proposed Bay to Transit Trail.

G.3.2. Project Background

a. The Bay to Transit Trail is identified as a priority project (Tier 1) in the City of San Mateo Bicycle Master Plan; 16th Avenue Channel Multi-Use Path.

b. The project is supported by numerous adopted goals, policies and implementation strategies included in the City of San Mateo General Plan (2010), Sustainable Initiatives Plan (2010), Rail Corridor Transit-Oriented Development Plan (2005), and Bicycle Master Plan (2011). A complete summary of these policies is included in this project sheet.

G.3.3. Project Scope

a. **Right-of-Way.** The feasibility study will identify right-of-way availability and ownership, investigate need to development of additional access points, and identify requirements for property acquisition and/or modification to any existing easements.

b. **Conceptual Design Development and Feasibility.** The conceptual design development component of this study will identify requirements for pathway cross sections, setbacks, roadway crossing treatments, fencing and barrier requirements, and potential for compliance with applicable local, state, and federal pathway design standards. The conceptual design will further identify pathway features including fencing, lighting, landscape, entry control, mile markers, emergency call boxes, and other standard pathway elements.

c. **Safety, Security, Management, and Maintenance.** This feasibility study will involve public works engineering and all emergency services agencies with jurisdiction over the project site in identification of trail user safety, general public safety, and adjacent property security considerations. The study will include identification and evaluation of safety, security, management, and maintenance of the project. A plan will be developed to address emergency access, paving, public access, backyard privacy and maintenance concerns identified during the feasibility analysis.

d. **Environmental Scoping.** The environmental scoping component of this study will include identification of environmental issues influencing design and environmental clearance of the facility

including but not limited to biological habitat impacts (including identification of Sensitive and Endangered Species); air and noise impacts, hydrologic and drainage impacts (with a preliminary assessment of flood control impacts), visual and aesthetic impacts to adjacent properties, and traffic and circulation impacts.

G.3.4. Project Costs

a. Costs to complete the Bay to Transit Trail Feasibility Study are estimated at $150,000.

G.3.5. Project Outcomes

a. The Feasibility Study will identify right-of-way; conceptual design and feasibility; safety, security, management and maintenance; and environmental issues related to project implementation. Should issues identified in this study arise that cannot be reasonably addressed or a reasonable solution cannot be found, the project will not be considered for construction.

G.3.6. Supporting Adopted Policies

a. City of San Mateo General Plan Policies:

C4.9: Pedestrian and Bicycle Connections. Implement an area-wide pedestrian and bicycle circulation plan which will result in convenient and direct connections throughout the Rail Corridor Transit-Oriented Development Plan (Corridor Plan) area and into adjacent neighborhoods and districts.

C6.1: Modal Share. Increase mode share from pedestrian and bicycle travel, for trips of one mile or less, from three percent in 2005 to 30 percent by 2020 by introducing paid parking in other commercial areas outside of the downtown, improving pedestrian walkways and amenities within commercial areas and residential neighborhoods and by providing adequate, secure, covered parking for bicycles in city garages for new multifamily and commercial development. Additional potential supportive actions to increase mode share are detailed in the SIP, Appendix T of the General Plan.

C6.3: Travel to Schools. Reduce private automobile school trips by 50 percent before 2020 by working with private and public schools to increase the number of students walking or bicycling to school, implementing "walking pools" to schools, increasing carpooling for students, and making flexible local transit available for student travel.

C/OS 14.3: Active Use Facilities. Provide sufficient active use facilities to support current needs and future trends including at least three new multi-use athletic turf areas; an evaluation of existing turf fields for possible conversion to synthetic turf; a tennis complex that optimizes revenue generation; and a system of pedestrian and bike trails that will provide interconnectivity between parks.

b. City of San Mateo Sustainable Initiatives Plan Strategies:

T1: Increase mode share for pedestrian and bicycle travel to 30% for trips of one mile or less by 2020.

T3: Reduce single purpose school trips by private automobile by 50% by 2020.

c. Rail Corridor Transit-Oriented Development Plan Policies:

   4.9: Develop an area-wide pedestrian and bicycle circulation network which will result in convenient and direct connections throughout the plan area and into adjacent neighborhoods and districts.

   4.10: Establish safe and convenient pedestrian and bicycle routes where existing barriers currently prohibit connections.

d. City of San Mateo Bicycle Master Plan Goals and Objectives:

   Goal 1: Develop and maintain a comprehensive bicycle and pedestrian circulation network which provides safe recreation opportunities and an alternative to automobile travel. (GP Goal C4)

   Objective 1.5: Pedestrian and Bicycle Mobility Needs. Balance pedestrian mobility and bicycle accessibility and safety with vehicular congestion when considering intersection improvements to address level of service degradation. (GP Policy 4.8)

   Goal 2: Increase mode share for pedestrian and bicycle travel to 30% for trips of one mile or less by 2020. Bicycle and pedestrian travel currently represents about 3% of all travel (SIP Recommendation T.1).

   Goal 3: Increase mode share of bicycle travel to schools.

e. City of San Mateo Bicycle Master Plan Tier 1 project: 16th Avenue Channel Multi-Use Path (MUP) (1.41 miles).

f. Community identified need for improved crossings over Highway 101, improved connections to the Bay Trail and schools, and a bike path along the 16th Avenue Channel.

G.3.7. Project Graphic

Figure G-3: Bay to Transit Path Alignment Feasibility Study

G.4. Wayfinding Signage Program

G.4.1. Project Purpose

a. The City of Mateo proposes a citywide wayfinding signage program for bicyclists to direct them to Caltrain stations, City and County parks and trails, and Downtown San Mateo. Improving the legibility of Mateo's non-motorized transportation network will reduce vehicle trips and congestion and catalyze increased use of bikeways by commuters and recreational riders.

b. The Citywide Wayfinding Program will develop an informative and visible signage system on existing and planned bicycle routes that will provide destination, direction and distance information to local and regional nodes. The program will be comprehensive. It will begin with a design phase that includes community participation to identify optimal sign locations and signage protocol and layout. Signs will then be developed, ordered, installed and field checked.

c. Wayfinding is an important tool in a vehicle demand reduction strategy. Wayfinding signage programs orient and guide bicyclists along their journey to help them efficiently reach their destinations. Signs improve the convenience of biking and walking to regional transit hubs, reducing the number of regional automobile trips. One reason people choose not to use a non-motorized form of transportation is due to a lack of information about how to use the network and where it leads. Providing destination, direction and distance information to Caltrain stations and regional trip generators through signs will greatly improve the clarity of the network, empowering residents to have trust in an alternative transportation system.

d. In 2011, the City of San Mateo adopted its Bicycle Master Plan, which identifies the need for a wayfinding system for the City's bicycle network. An extensive public outreach program was conducted for the Bicycle Master Plan. The community identified wayfinding signage as a priority. As San Mateo's bikeway network is developed, a distinctive wayfinding signage program will help bicyclists travel on bicycle priority streets. San Mateo's Citywide Wayfinding Signage Program for bicyclists will be a vehicle for influencing travel behavior and increasing the number of people who ride to transit, Downtown, and recreational facilities. Investment in wayfinding can greatly increase the transparency and visibility of the existing bicycle network as demonstrated by many Bay Area cities.

G.4.2. Project Background

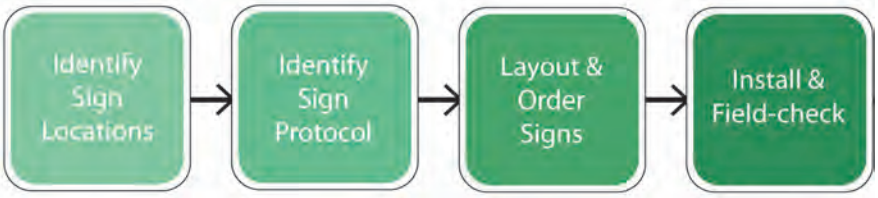
a. Community members identified the need for wayfinding signage during preparation of the City Bicycle Master Plan.

b. The project is supported by numerous adopted goals, policies and implementation strategies included in the City of San Mateo General Plan (2010), Sustainable Initiatives Plan (2010), Bicycle Master Plan (2011), and the Metropolitan Transportation Commission Regional Bicycle Plan (2009). A complete summary of these policies is included in this project sheet.

G.4.3. Project Scope

The Wayfinding Signage Program will design and install signs that will provide destination, direction and distance information along existing and planned bicycle facilities within in the City of San Mateo. The Program includes the following steps:

1. **Identify Sign Locations.** The program's approach is to work with the community to identify the specific appropriate locations to place the signs in order to direct residents to regional transit and trip generators. Public input identifying the sign locations and signage protocol is an important element of a successful signage plan and will be emphasized in the San Mateo Wayfinding Program.
2. **Identify Signing Protocol.** A comprehensive signing protocol will be developed. It will establish standard types of signs for bicyclists, the frequency of sign placement, and sign layout principles. The signs will build upon readily recognizable standard highway guide signs and meet the requirements of the Manual on Uniform Traffic Control Devices (MUTCD) and the California MUTCD.
3. **Layout and Order Signs.** The City will lay out the individual signs based on the signage protocol and purchase signs.
4. **Install and Field-Check.** The signs will subsequently be installed and field-checked to ensure the accuracy of each directional and distance sign.



G.4.4. Project Costs

a. Costs to complete the Wayfinding Signage Program are estimated at $50,000.

G.4.5. Project Outcomes

a. The citywide wayfinding signage program will direct bicyclists to Caltrain stations, City and County parks and trails, and Downtown San Mateo using the City's bikeway network. Improving the legibility of San Mateo's non-motorized transportation network will reduce vehicle trips and congestion and catalyze increased use of bikeways by commuters and recreational riders.

b. People desire predictability when commuting to work or making regionally-based trips. They want to know how far and how long it is going to take to get to a destination. In order to modify people's travel choices, encouraging them to bike to public transit instead of driving, travel details must be clear and abundant. Commuters need to be able to assess the feasibility of making it to their destinations in a specific amount of time. Wayfinding removes the unpredictability of traveling by bike. The signage adds the confidence necessary for cyclists to shift their mode choice and reduce vehicle trips.

G.4.6. Supporting Adopted Policies

a. City of San Mateo General Plan Policies:

C2.12: Transportation Demand Management (TDM) Downtown. Establish and implement a TDM program, a Transportation Management Association (TMA), and other measures to reduce vehicle trips and encourage transit use and promote bicycle and pedestrian accessibility for development within the Downtown Core.

C4.9: Pedestrian and Bicycle Connections. Implement an area-wide pedestrian and bicycle circulation plan which will result in convenient and direct connections throughout the Rail Corridor Transit-Oriented Development Plan (Corridor Plan) area and into adjacent neighborhoods and districts.

C6.1: Modal Share. Increase mode share from pedestrian and bicycle travel, for trips of one mile or less, from three percent in 2005 to 30 percent by 2020 by introducing paid parking in other commercial areas outside of the downtown, improving pedestrian walkways and amenities within commercial areas and residential neighborhoods and by providing adequate, secure, covered parking for bicycles in city garages for new multifamily and commercial development. Additional potential supportive actions to increase mode share are detailed in the SIP, Appendix T of the General Plan.

b. City of San Mateo Sustainable Initiatives Plan Strategies:

T1: Increase mode share for pedestrian and bicycle travel to 30% for trips of one mile or less by 2020.

c. City of San Mateo Bicycle Master Plan Goals and Objectives:

Goal 1: Develop and maintain a comprehensive bicycle and pedestrian circulation network which provides safe recreation opportunities and an alternative to automobile travel. (GP Goal C4)

Goal 2: Increase mode share for pedestrian and bicycle travel to 30% for trips of one mile or less by 2020. Bicycle and pedestrian travel currently represents about 3% of all travel (SIP Recommendation T.1).

Objective 4.3: Develop and implement an informative bicycle wayfinding signage program.

d. City of San Mateo Bicycle Master Plan project.

e. Community-identified need for wayfinding signage.

f. Providing wayfinding signage to all City parks would help to implement the Parks and Recreation Strategic Planning policy of designing pedestrian and bicycle trails that connect parks and recreational facilities.

g. Metropolitan Transportation Commission Regional Bicycle Plan Policies:

2.5: Encourage coordination of cross jurisdictional bicycle way-finding signage.

5.3: Foster collaboration between local jurisdictions and regional transit agencies to improve bicycle access to transit stations in the last mile surrounding each station. Improvements to ease, speed, convenience and safety of bicycle access, including by means of signage and bikeways, should be considered.

G.4.7. Project Graphic

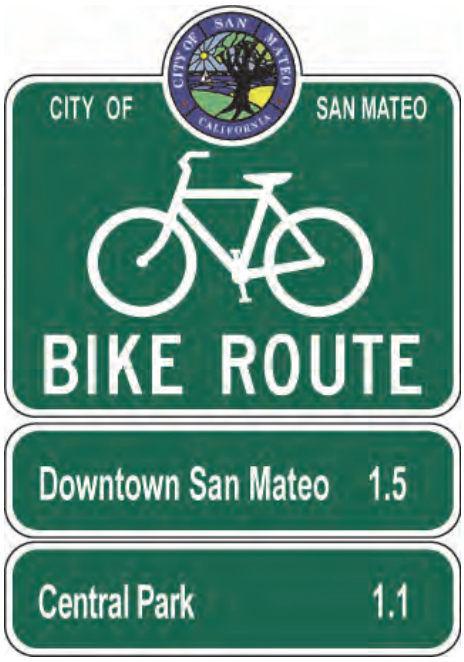


Figure G-4: Wayfinding Distance Sign

Figure G-5: Wayfinding Direction Sign

G.5. San Mateo Drive Bicycle Lane Outreach and Implementation

G.5.1. Project Purpose

a. The San Mateo Drive Bicycle Lane Outreach and Implementation project includes proposed Class II bicycle lanes on San Mateo Drive between Peninsula Avenue and West Poplar Avenue. The outreach and implementation project will include outreach to stakeholders regarding travel lane reduction and bicycle lane implementation.

b. The project will include coordination and collaboration with the City of Burlingame.

G.5.2. Project Background

a. San Mateo Drive is an important north-south connecting bikeway. It is one of the few direct streets that provide connectivity between the City of San Mateo and the City of Burlingame.

b. It is part of the County North-South Bike Route.

c. Community members identified a need for bicycle lanes on this roadways segment.

d. The proposed project will connect to existing bike lanes on San Mateo Drive in Burlingame.

e. Traffic analysis of travel lane reduction found impacts to be less than significant. This segment of San Mateo Drive has two lanes in each direction, no center turn lane, and on-street parking. Bike lanes could be added by reducing the number of through lanes to one in each direction and adding a center turn lane. On-street parking would remain. The traffic capacity would be somewhat reduced by the elimination of through lanes, but that would be partially restored by provision of the center turn lane. Under existing conditions, left turn vehicles can block the through lanes. It should be noted that south of Poplar Avenue, San Mateo Drive has only one lane in each direction plus turn lanes at intersections. The traffic volume on San Mateo Drive is about 12,000 vehicles per day, which is within the capacity of a two-lane street. Therefore, a reduction in through lanes from four to two would result in a less-than-significant traffic impact. At the intersection of San Mateo Drive and Peninsula Avenue, bike lanes could be added by removing the northbound right-turn lane. The space currently taken by the right turn lane could be reallocated to two bike lanes. The intersection would need to be restriped on San Mateo Drive to get the through lanes to line up. The level of service would remain at LOS B with removal of the right turn lane.

f. A landscaped median and pedestrian improvements may be considered as part of the project.

G.5.3. Project Scope

a. **Public Outreach.** The proposed project will affect a diverse group of stakeholders and the City anticipates active stakeholder and community participation. Stakeholder outreach will seek to fulfill the following objectives: increased and improved access to Downtown San Mateo and Burlingame. The City will seek input from residents, business owners, and other stakeholders directly affected in the project area.

b. **Implementation.** Project implementation will include:

   i. Travel lane reduction from four to two travel lanes and one center turn lane. On-street parking will remain.

   ii. At the intersection of San Mateo Drive and Peninsula Avenue, bike lanes could be added by removing the northbound right-turn lane. The space currently taken by the right turn lane could be reallocated to two bike lanes. The intersection would be restriped on San Mateo Drive to get the through lanes to line up.

   iii. Installation of bike lanes in both the north and south direction.

G.5.4. Project Costs

a. Costs to complete the San Mateo Drive Outreach and Implementation Project is estimated at $42,000.

Table G-3: San Mateo Drive Bicycle Lane Outreach and Implementation Cost Estimate

Item	Costs
Outreach	$20,000
Implementation	$22,000
Project Total	**$42,000**

G.5.5. Project Outcomes

a. The San Mateo Drive Outreach and Implementation Project will result in community outreach with identified stakeholders to gather input on the proposed project.

b. The project includes removal of two travel lanes and implementation of bicycle lanes between Peninsula Avenue and West Poplar Avenue.

G.5.6. Supporting Adopted Policies

a. City of San Mateo General Plan Policies:

   C4.8: Pedestrian and Bicycle Mobility Needs. Balance pedestrian mobility and bicycle accessibility and safety with vehicular congestion when considering intersection improvements to address level of service degradation.

   C6.1: Modal Share. Increase mode share from pedestrian and bicycle travel, for trips of one mile or less, from three percent in 2005 to 30 percent by 2020 by introducing paid parking in other commercial areas outside of the downtown, improving pedestrian walkways and amenities within commercial areas and residential neighborhoods and by providing adequate, secure, covered parking for bicycles in city garages for new multifamily and commercial development. Additional potential supportive actions to increase mode share are detailed in the SIP, Appendix T of the General Plan.

b. City of San Mateo Sustainable Initiatives Plan Strategies:

T1: Increase mode share for pedestrian and bicycle travel to 30% for trips of one mile or less by 2020.

c. City of San Mateo Bicycle Master Plan Goals and Objectives:

Goal 1: Develop and maintain a comprehensive bicycle and pedestrian circulation network which provides safe recreation opportunities and an alternative to automobile travel. (GP Goal C4)

Objective 1.5: Pedestrian and Bicycle Mobility Needs. Balance pedestrian mobility and bicycle accessibility and safety with vehicular congestion when considering intersection improvements to address level of service degradation. (GP Policy 4.8)

Goal 2: Increase mode share for pedestrian and bicycle travel to 30% for trips of one mile or less by 2020. Bicycle and pedestrian travel currently represents about 3% of all travel (SIP Recommendation T.1).

G.5.7. Project Graphic

Figure G-6: San Mateo Drive Project Area

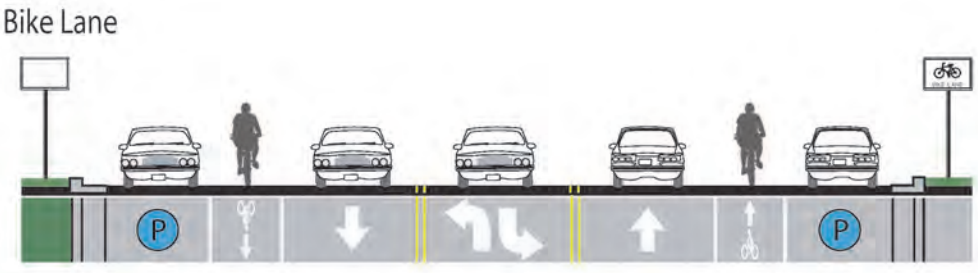


Figure G-7: San Mateo Drive Project Typical Roadway Section

G.6. Humboldt Street and 4th Avenue Bike Box and Green Bike Lane

G.6.1. Project Purpose

a. The Humboldt Bike Box and Green Bike Lane project envisions development of a bike box at the southeast corner of the Humboldt Street/4th Avenue intersection and a green bike lane to guide bicyclists through the intersection and along 4th Avenue, connecting with the 3rd Avenue Median Path, which crosses Highway 101.

b. The Humboldt Street/4th Avenue intersection geometry is problematic for the following reasons:

   i. Northbound Humboldt Street at 4th Avenue has double right turn lanes where bicyclist positioning is not clear.

   ii. Access to the 3rd Avenue Median Path from 4th Avenue east of Humboldt Street requires bicyclists to travel on the left side of the roadway.

   iii. Vehicle speeds along 4th Avenue are high and motorists do not expect bicyclists to be on the left side of the roadway and nor do bicyclists expect that left side positioning is required.

c. The Bicycle Master Plan (2011) identifies the need for intersection improvements at 4th Avenue and Humboldt Street.

G.6.2. Project Background

a. The Humboldt Bike Box and Green Bike Lane project is identified as a high priority project in the City of San Mateo Bicycle Master Plan: 4th Avenue and Humboldt Street Intersection Improvements.

b. The project is supported by numerous adopted goals, policies and implementation strategies included in the City of San Mateo General Plan (2010), Sustainable Initiatives Plan (2010), and Bicycle Master Plan (2011). A complete summary of these policies is included in this project sheet.

G.6.3. Project Scope

a. **Construction.** Project construction will include:

   a. Installation of a bike box at the intersection to direct bicyclists to the proper positioning for travel on the left side of 4th Avenue.

   b. Installation of a green bike lane through the intersection directing bicyclists to the recommended path of travel to the left side of 4th Avenue.

   c. Installation of a green bike lane on 4th Avenue between Humboldt Street and the 3rd Avenue Median Path entrance.

   d. Installation of an angled ramp from 4th Avenue to the 3rd Avenue Median Path to facilitate bicyclist access to the path.

   e. Installation of signage in advance and at the colored bike lane to direct motorists.

b. **Study Prohibition of Right Turns on Red Along Northbound Humboldt Avenue.** The City may consider a study to prohibit right turns on red to further protect bicyclists.

G.6.4. Project Costs

a. Costs to complete the Humboldt Bike Box and Green Bike Lane project are estimated at $15,000.

G.6.5. Project Outcomes

a. The Humboldt Bike Box and Green Bike Lane project will result in development of a bike box at the southeast corner of the Humboldt Street/4th Avenue intersection and a green bike lane through the intersection and along 4th Avenue, connecting with the 3rd Avenue Median Path. This project will direct bicycle travel through the intersection and onto the path, improve motorist awareness of bicyclists traveling through the intersection, and facilitate bicycle travel over Highway 101.

G.6.6. Supporting Adopted Policies

b. City of San Mateo General Plan Policies:

C4.8: Pedestrian and Bicycle Mobility Needs. Balance pedestrian mobility and bicycle accessibility and safety with vehicular congestion when considering intersection improvements to address level of service degradation.

C6.1: Modal Share. Increase mode share from pedestrian and bicycle travel, for trips of one mile or less, from three percent in 2005 to 30 percent by 2020 by introducing paid parking in other commercial areas outside of the downtown, improving pedestrian walkways and amenities within commercial areas and residential neighborhoods and by providing adequate, secure, covered parking for bicycles in city garages for new multifamily and commercial development. Additional potential supportive actions to increase mode share are detailed in the SIP, Appendix T of the General Plan.

c. City of San Mateo Sustainable Initiatives Plan Strategies:

T1: Increase mode share for pedestrian and bicycle travel to 30% for trips of one mile or less by 2020.

d. City of San Mateo Bicycle Master Plan Goals and Objectives:

Goal 1: Develop and maintain a comprehensive bicycle and pedestrian circulation network which provides safe recreation opportunities and an alternative to automobile travel. (GP Goal C4)

Objective 1.5: Pedestrian and Bicycle Mobility Needs. Balance pedestrian mobility and bicycle accessibility and safety with vehicular congestion when considering intersection improvements to address level of service degradation. (GP Policy 4.8)

Goal 2: Increase mode share for pedestrian and bicycle travel to 30% for trips of one mile or less by 2020. Bicycle and pedestrian travel currently represents about 3% of all travel (SIP Recommendation T.1).

e. City of San Mateo Bicycle Master Plan high priority project: 4th Avenue and Humboldt Street Intersection Improvements.

G.6.7. Project Graphic

Figure G-8: Proposed Humboldt Street and 4th Avenue Bike Box and Green Bike Lane

G.7. Laurelwood / Sugarloaf Park Path Project

G.7.1. Project Purpose

a. The Laurelwood / Sugarloaf Park Path project is a proposed Class I multiuse path that serves as an important connector between the Cities of Belmont and San Mateo. The Path passes through the Sugarloaf Mountain Open Space and will provide recreational opportunities from both cities

G.7.2. Project Background

a. The Laurelwood Park and Sugarloaf Management Plan provides management policies for the 37-acre Laurelwood Park and the adjoining 188-acre Sugarloaf Mountain Open Space, located south of Hillsdale Boulevard between Arthur Younger Freeway (State Route 92) and Alameda De Las Pulgas in San Mateo. The Management Plan includes the site plans that identify site improvements and management zones, estimated implementation costs, and costs for operations and maintenance activities over a fifteen year period.

   The parks include a hierarchy of trails from single-tracks to trails that double as maintenance/fire access roads. City of San Mateo policies currently discourage biking within Sugarloaf Mountain Open Space. During the planning process, the public and City staff members identified opportunities for making regional trail connections for both pedestrians and bicyclists. Connecting new trails at Sugarloaf Mountain with other neighborhoods, City parks, and open spaces is a goal of the Parks and Recreation Department's Green Scheme Strategic Initiative. Nearly ten percent of participants in Discovery Day reported that they traveled to Laurelwood Park via bicycle. The Management Plan encourages increased recreational biking to and through Sugarloaf Mountain Open Space. The Laurelwood / Sugarloaf Park Path project is one of two trails within the project site designated as a multiuse trail.

b. The project is supported by numerous adopted goals, policies and implementation strategies included in the City of San Mateo General Plan (2010), Sustainable Initiatives Plan (2010), Rail Corridor Transit-Oriented Development Plan (2005), and Bicycle Master Plan (2011). A complete summary of these policies is included in this project sheet.

G.7.3. Project Scope

a. **Conceptual Design Development and Feasibility.** The conceptual design and development component of this project will identify requirements for pathway cross sections, setbacks, roadway crossing treatments, fencing and barrier requirements, and potential for compliance with applicable local, state, and federal pathway design standards. The conceptual design will further identify pathway features including fencing, lighting, landscape, entry control, mile markers, emergency call boxes, and other standard pathway elements.

b. **Safety, Security, Management, and Maintenance.** This feasibility study component of the project will involve public works engineering and all emergency services agencies with jurisdiction over the project site in identification of trail user safety, general public safety, and adjacent property security considerations. The study will include identification and evaluation of safety, security, management,

and maintenance of the project. A plan will be developed to address emergency access, paving, public access, backyard privacy and maintenance concerns identified during the feasibility analysis.

c. **Environmental Scoping.** The environmental scoping component of the project will include identification of environmental issues influencing design and environmental clearance of the facility including but not limited to biological habitat impacts (including identification of Sensitive and Endangered Species); air and noise impacts, hydrologic and drainage impacts (with a preliminary assessment of flood control impacts), visual and aesthetic impacts to adjacent properties, and traffic and circulation impacts.

d. **Project Implementation.** The project will comprise of a 0.88-mile long multiuse path passing through Sugarloaf Mountain Park. The project will require coordination between the Cities of Belmont and San Mateo.

G.7.4. Project Costs

a. Costs to complete the Laurelwood / Sugarloaf Park Path are estimated at $567,900.

G.7.5. Project Outcomes

a. The project will construct a Class I multiuse path that is accessible for both pedestrians and bicyclists. The path will pass through the Sugarloaf Mountain Open Space and connect the Cities of Belmont and San Mateo.

G.7.6. Supporting Adopted Policies

a. City of San Mateo General Plan Policies:

C4.9: Pedestrian and Bicycle Connections. Implement an area-wide pedestrian and bicycle circulation plan which will result in convenient and direct connections throughout the Rail Corridor Transit-Oriented Development Plan (Corridor Plan) area and into adjacent neighborhoods and districts.

C6.1: Modal Share. Increase mode share from pedestrian and bicycle travel, for trips of one mile or less, from three percent in 2005 to 30 percent by 2020 by introducing paid parking in other commercial areas outside of the downtown, improving pedestrian walkways and amenities within commercial areas and residential neighborhoods and by providing adequate, secure, covered parking for bicycles in city garages for new multifamily and commercial development. Additional potential supportive actions to increase mode share are detailed in the SIP, Appendix T of the General Plan.

C6.3: Travel to Schools. Reduce private automobile school trips by 50 percent before 2020 by working with private and public schools to increase the number of students walking or bicycling to school, implementing "walking pools" to schools, increasing carpooling for students, and making flexible local transit available for student travel.

C/OS 14.3: Active Use Facilities. Provide sufficient active use facilities to support current needs and future trends including at least three new multi-use athletic turf areas; an evaluation of existing turf fields for possible conversion to synthetic turf; a tennis complex that optimizes

revenue generation; and a system of pedestrian and bike trails that will provide interconnectivity between parks.

a. City of San Mateo Sustainable Initiatives Plan Strategies:

   T1: Increase mode share for pedestrian and bicycle travel to 30% for trips of one mile or less by 2020.

   T3: Reduce single purpose school trips by private automobile by 50% by 2020.

b. Rail Corridor Transit-Oriented Development Plan Policies:

   4.9: Develop an area-wide pedestrian and bicycle circulation network which will result in convenient and direct connections throughout the plan area and into adjacent neighborhoods and districts.

   4.10: Establish safe and convenient pedestrian and bicycle routes where existing barriers currently prohibit connections.

c. City of San Mateo Bicycle Master Plan Goals and Objectives:

   Goal 1: Develop and maintain a comprehensive bicycle and pedestrian circulation network which provides safe recreation opportunities and an alternative to automobile travel. (GP Goal C4)

   Objective 1.5: Pedestrian and Bicycle Mobility Needs. Balance pedestrian mobility and bicycle accessibility and safety with vehicular congestion when considering intersection improvements to address level of service degradation. (GP Policy 4.8)

   Goal 2: Increase mode share for pedestrian and bicycle travel to 30% for trips of one mile or less by 2020. Bicycle and pedestrian travel currently represents about 3% of all travel (SIP Recommendation T.1).

   Goal 3: Increase mode share of bicycle travel to schools.

   Policy C/OS 9.4: Interjurisdiction Coordination. Support the coordination of adjacent jurisdictions in the development of bicycle and pedestrian trails, the connection of trails in San Francisco watershed lands, the development of the Bay Trail and Ridge Trail systems, and potential connections into the City of Belmont in the development of a trail system with Sugarloaf Mountain.

d. Community identified need for improved crossings over Highway 101, improved connections to the Bay Trail and schools, and a bike path along the 16th Avenue Channel.

G.7.7. Project Graphic

Figure G-9: Proposed Laurelwood Path Improvements

G.8. On-Street Bicycle Facilities Project

G.8.1. Project Purpose

The On-Street Bicycle Facilities project encompasses all proposed on-street bicycle facilities contained in the City of San Mateo Bicycle Master Plan, i.e. Class II, Class III and Class III facilities, without and with shared lane bicycle markings (also referred to as "sharrows").

The project purpose is to implement adopted policies and objectives regarding Citywide bicycle access in the City of San Mateo, particularly for fulfilling community identified needs through on-street facilities.

G.8.2. Project Background

a. The On-Street Bicycle Facilities project includes all on-street projects in Tier 1, 2, and 3 of the City of San Mateo Bicycle Master Plan.

b. The project is supported by numerous adopted goals, policies and implementation strategies included in the City of San Mateo General Plan (2010), Sustainable Initiatives Plan (2010), and Bicycle Master Plan (2011). A complete summary of these policies is included in this project sheet.

G.8.3. Project Scope

The On-Street Bicycle Facilities project will include the following elements:

- Class II Bike Lanes will include
  - Bike lane signs and wayfinding signs
  - Automobile lane striping removal for lane narrowing, where needed
  - Bike lane striping and stenciling
- Class III Bike Routes will include
  - Bike route signs and wayfinding signs
  - Shared Lane Bicycle Markings ("sharrow" markings), where specified

G.8.4. Project Costs

Table G-4: On-Street Facilities Cost Estimate

Facility type	Mileage	Total Costs
Class II Bike Lanes	3.03	$129,000
Class III Bike Routes	22.17	$66,400
Class III Bike Routes + Shared Lane Markings	10.25	$82,000
Project Total	**37.45**	**$277,400**

G.8.5. Project Outcomes

a. The On-Street Bicycle Facilities project will double the total mileage of the City's on-street bicycle network to over 60 miles. It will in-fill network gaps, provide important connections to community destinations, and improve bicyclists safety.

G.8.6. Supporting Adopted Policies

a. City of San Mateo General Plan Policies:

C4.9: Pedestrian and Bicycle Connections. Implement an area-wide pedestrian and bicycle circulation plan which will result in convenient and direct connections throughout the Rail Corridor Transit-Oriented Development Plan (Corridor Plan) area and into adjacent neighborhoods and districts.

C6.1: Modal Share. Increase mode share from pedestrian and bicycle travel, for trips of one mile or less, from three percent in 2005 to 30 percent by 2020 by introducing paid parking in other commercial areas outside of the downtown, improving pedestrian walkways and amenities within commercial areas and residential neighborhoods and by providing adequate, secure, covered parking for bicycles in city garages for new multifamily and commercial development. Additional potential supportive actions to increase mode share are detailed in the SIP, Appendix T of the General Plan.

C6.3: Travel to Schools. Reduce private automobile school trips by 50 percent before 2020 by working with private and public schools to increase the number of students walking or bicycling to school, implementing "walking pools" to schools, increasing carpooling for students, and making flexible local transit available for student travel.

C/OS 14.3: Active Use Facilities. Provide sufficient active use facilities to support current needs and future trends including at least three new multi-use athletic turf areas; an evaluation of existing turf fields for possible conversion to synthetic turf; a tennis complex that optimizes revenue generation; and a system of pedestrian and bike trails that will provide interconnectivity between parks.

b. City of San Mateo Sustainable Initiatives Plan Strategies:

T1: Increase mode share for pedestrian and bicycle travel to 30% for trips of one mile or less by 2020.

T3: Reduce single purpose school trips by private automobile by 50% by 2020.

c. City of San Mateo Bicycle Master Plan Goals and Objectives:

Goal 1: Develop and maintain a comprehensive bicycle and pedestrian circulation network which provides safe recreation opportunities and an alternative to automobile travel. (GP Goal C4)

Objective 1.5: Pedestrian and Bicycle Mobility Needs. Balance pedestrian mobility and bicycle accessibility and safety with vehicular congestion when considering intersection improvements to address level of service degradation. (GP Policy 4.8)

Goal 2: Increase mode share for pedestrian and bicycle travel to 30% for trips of one mile or less by 2020. Bicycle and pedestrian travel currently represents about 3% of all travel (SIP Recommendation T.1).

Goal 3: Increase mode share of bicycle travel to schools.

d. Community identified need for improved crossings over Highway 101, improved connections to the Bay Trail and schools, and a bike path along the 16th Avenue Channel.

G.8.7. Project Graphic

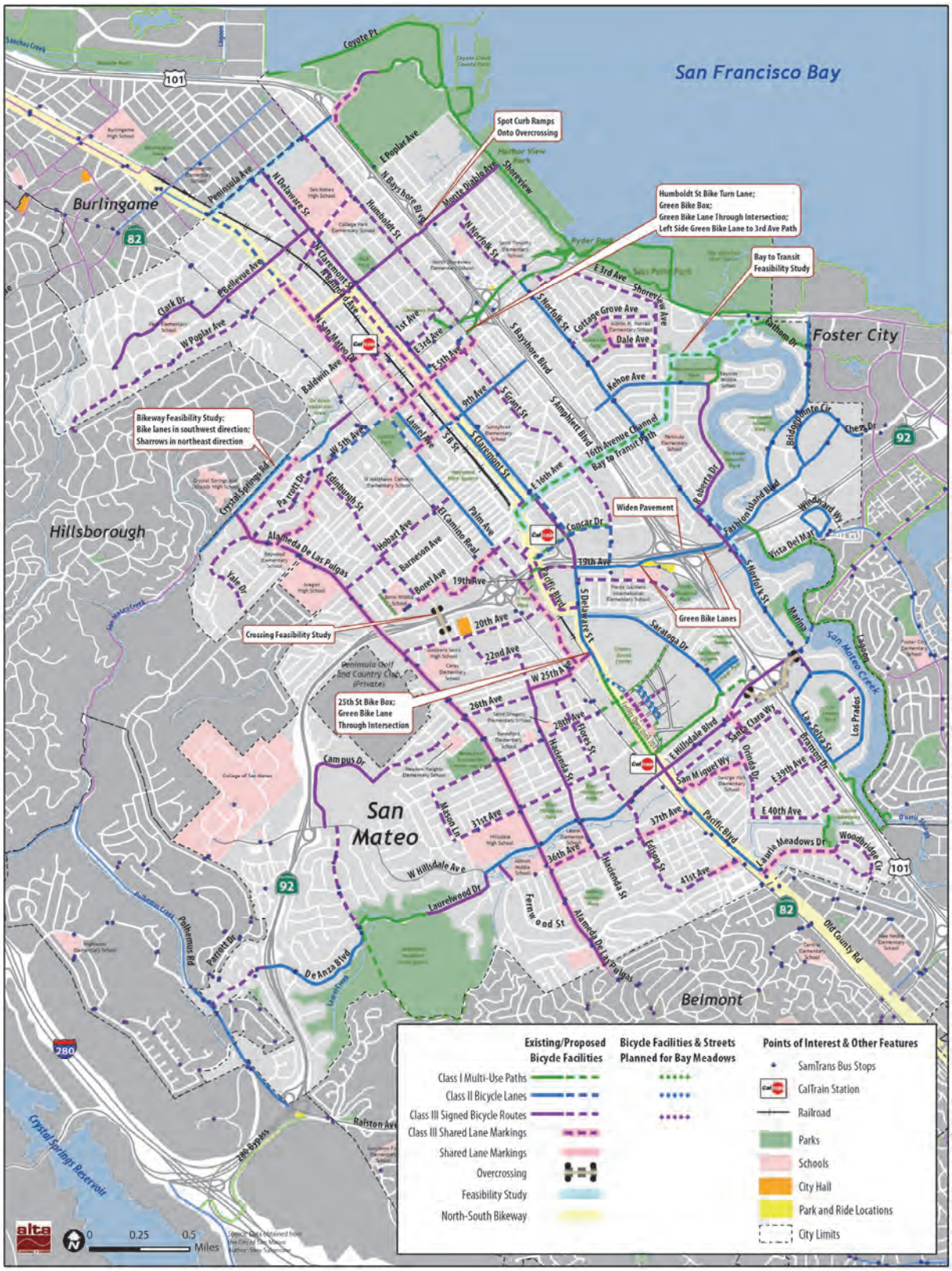


Figure G-10: Proposed On-Street Bicycle Facility Improvements

G.9. 25th Avenue at S Delaware Street Bike Box and Green Bike Lane Project

G.9.1. Project Purpose

a. The 25th Avenue / S Delaware Street Bike Box project envisions development of a bike box at the southwest corner of the 25th Avenue / S Delaware Street intersection and a dashed green bike lane to guide bicyclists through the intersection toward northbound Delaware Street.

b. The 25th Avenue / S Delaware Street intersection geometry is problematic for the following reasons:

   i. Eastbound access to S. Delaware Street from 25th Avenue is problematic because 25th Avenue has a dedicated right turn lane, an optional right/left turn lane and a left turn lane. This configuration does not direct bicyclists to proper lane positioning and does not inform drivers to expect bicyclists in the optional right/left turn lane.

   ii. Access to northbound Delaware Street from northbound East 25th Avenue requires bicyclists to position themselves in the center shared left-right turn lane.

   iii. Southbound access to 25th Avenue to Delaware Street is problematic because Delaware Street has two dedicated right turn lanes and through lane separated by a bike lane. This configuration does not direct southbound bicyclists turning right onto 25th Avenue to proper lane positioning. Drivers do not expect bicyclists to leave the bicycle lane and merge through the right turn lanes to turn right onto 25th Avenue.

c. The Bicycle Master Plan (2011) identifies the need for intersection improvements at 25th Avenue at S Delaware Street.

G.9.2. Project Background

a. The 25th Avenue / S Delaware Street Bike Box and Green Bike Lane project is identified as a high priority project in the City of San Mateo Bicycle Master Plan: Delaware Street/ East 25th Avenue Intersection Improvements.

b. The project is supported by numerous adopted goals, policies and implementation strategies included in the City of San Mateo General Plan (2010), Sustainable Initiatives Plan (2010), and Bicycle Master Plan (2011). A complete summary of these policies is included in this project sheet.

G.9.3. Project Scope

Construction. Project construction will include:

a. Installation of a bike box at the intersection to direct bicyclists to the proper positioning for a left-turn onto northbound S Delaware Street from northbound 25th Avenue.

b. Installation of a green bike lane through the intersection directing bicyclists to the recommended path of travel to the right side of northbound S Delaware Street.

c. Installation of signage in advance and at the colored bike lane to direct motorists.

d. Installation of a bike box on the southbound approach of Delaware Street to direct bicyclists to the proper positioning for a right-turn onto westbound 25th Avenue.

G.9.4. Project Costs

a. Costs to complete the 25th Avenue / S Delaware Street Bike Boxes and Green Bike Lane project are estimated at $20,000.

G.9.5. Project Outcomes

b. The 25th Avenue / S Delaware Street project will result in development of a bike box at the southwest corner of the 25th Avenue / S Delaware Street intersection and a green bike lane through the intersection onto northbound S Delaware Street. This project will direct bicycle travel through the intersection and improve motorist awareness of bicyclists traveling through the intersection.

G.9.6. Supporting Adopted Policies

a. City of San Mateo General Plan Policies:

C4.8: Pedestrian and Bicycle Mobility Needs. Balance pedestrian mobility and bicycle accessibility and safety with vehicular congestion when considering intersection improvements to address level of service degradation.

C6.1: Modal Share. Increase mode share from pedestrian and bicycle travel, for trips of one mile or less, from three percent in 2005 to 30 percent by 2020 by introducing paid parking in other commercial areas outside of the downtown, improving pedestrian walkways and amenities within commercial areas and residential neighborhoods and by providing adequate, secure, covered parking for bicycles in city garages for new multifamily and commercial development. Additional potential supportive actions to increase mode share are detailed in the SIP, Appendix T of the General Plan.

b. City of San Mateo Sustainable Initiatives Plan Strategies:

T1: Increase mode share for pedestrian and bicycle travel to 30% for trips of one mile or less by 2020.

c. City of San Mateo Bicycle Master Plan Goals and Objectives:

Goal 1: Develop and maintain a comprehensive bicycle and pedestrian circulation network which provides safe recreation opportunities and an alternative to automobile travel. (GP Goal C4)

Objective 1.5: Pedestrian and Bicycle Mobility Needs. Balance pedestrian mobility and bicycle accessibility and safety with vehicular congestion when considering intersection improvements to address level of service degradation. (GP Policy 4.8)

Goal 2: Increase mode share for pedestrian and bicycle travel to 30% for trips of one mile or less by 2020. Bicycle and pedestrian travel currently represents about 3% of all travel (SIP Recommendation T.1).

d. City of San Mateo Bicycle Master Plan high priority project: 25th Avenue / S Delaware Street Intersection Improvements.

G.9.7. Project Graphic

Figure G-11: Proposed 25th Avenue / S Delaware Street Improvements

G.10. Delaware Street at Pacific Boulevard Bicycle Left-Turn Pocket Feasibility Study

G.10.1. Project Purpose

a. The Delaware Street / Pacific Boulevard Bicycle Left-Turn Pocket project envisions development of a bicycle left-turn pocket on northbound Delaware Street at its intersection with Pacific Boulevard.

b. The Delaware Street / Pacific Boulevard intersection geometry is problematic for the following reasons:

   i. Northbound Delaware Street does not provide a left-turn pocket for bicyclists turning onto Pacific Boulevard. Delaware Street uses the entire center turn lane to provide a southbound left-turn lane for automobiles turning onto Saratoga Drive.

   ii. Northbound Delaware Street bicyclists waiting for a gap in oncoming southbound traffic have nowhere to queue, and must wait either in the number one northbound Delaware Street lane or in the southbound Delaware Street left-turn lane, which is against the legal flow of traffic.

   iii. Northbound Delaware Street motorists do not expect bicyclists to be on the left side of the roadway and left-turning bicyclists may be reluctant to position on the left side of the roadway without a protected area to queue when waiting for a gap in southbound traffic.

G.10.2. Project Background

a. The project is supported by numerous adopted goals, policies and implementation strategies included in the City of San Mateo General Plan (2010), Sustainable Initiatives Plan (2010), and Bicycle Master Plan (2011). A complete summary of these policies is included in this project sheet.

G.10.3. Project Scope

Study and Construction.

Study will include:

a. Feasibility of shortening of southbound Delaware Street left-turn lane at Saratoga Drive intersection.

b. Feasibility of including northbound Delaware Street left-turn lane on to Pacific Boulevard.

Project construction will include:

c. Shortening the southbound Delaware Street / Saratoga Drive left-turn pocket

d. Installation of a bike box and left-turn pocket at the Delaware Street / Pacific Boulevard intersection to providing a queuing area for left-turning bicyclists. Additional analysis and study needed to determine facility design.

e. Installation of signage in advance to direct bicyclists to queue for left-turns in the bicycle left-turn pocket.

G.10.4. Project Costs

a. Costs to complete the Delaware Street / Pacific Boulevard Bicycle Left-Turn Pocket project are estimated at $30,000.

G.10.5. Project Outcomes

a. The Delaware Street / Pacific Boulevard Bicycle Left-Turn Pocket project will result a shortened southbound left-turn pocket at the Delaware Street / Saratoga Drive intersection.

b. The Delaware Street / Pacific Boulevard Bicycle Left-Turn Pocket project will result in development of a bicycle left-turn pocket at the northbound approach of Delaware Street at Pacific Boulevard. This project will direct bicyclists where to queue when waiting for gaps in southbound Delaware Street traffic and improve motorist awareness of bicyclists traveling through the intersection.

G.10.6. Supporting Adopted Policies

a. City of San Mateo General Plan Policies:

   C4.8: Pedestrian and Bicycle Mobility Needs. Balance pedestrian mobility and bicycle accessibility and safety with vehicular congestion when considering intersection improvements to address level of service degradation.

   C6.1: Modal Share. Increase mode share from pedestrian and bicycle travel, for trips of one mile or less, from three percent in 2005 to 30 percent by 2020 by introducing paid parking in other commercial areas outside of the downtown, improving pedestrian walkways and amenities within commercial areas and residential neighborhoods and by providing adequate, secure, covered parking for bicycles in city garages for new multifamily and commercial development. Additional potential supportive actions to increase mode share are detailed in the SIP, Appendix T of the General Plan.

b. City of San Mateo Sustainable Initiatives Plan Strategies:

   T1: Increase mode share for pedestrian and bicycle travel to 30% for trips of one mile or less by 2020.

c. City of San Mateo Bicycle Master Plan Goals and Objectives:

   Goal 1: Develop and maintain a comprehensive bicycle and pedestrian circulation network which provides safe recreation opportunities and an alternative to automobile travel. (GP Goal C4)

   Objective 1.5: Pedestrian and Bicycle Mobility Needs. Balance pedestrian mobility and bicycle accessibility and safety with vehicular congestion when considering intersection improvements to address level of service degradation. (GP Policy 4.8)

   Goal 2: Increase mode share for pedestrian and bicycle travel to 30% for trips of one mile or less by 2020. Bicycle and pedestrian travel currently represents about 3% of all travel (SIP Recommendation T.1).

d. City of San Mateo Bicycle Master Plan high priority project: 4th Avenue and Humboldt Street Intersection Improvements.

G.10.7. Project Graphic

Figure G-12: Proposed Delaware Street / Pacific Boulevard Improvements

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Appendix H. Summary of Recommendations

This appendix includes a summary of all the engineering, policy and code revisions, and study recommendations in the Plan. They are in one place to allow for quick reference.

A summary project description as well as a section and page reference to the full project description is provided for each recommendation.

Appendix H Table of Contents

H.1. Bikeway Network

Plan Reference: Section 5.1, page 5-1

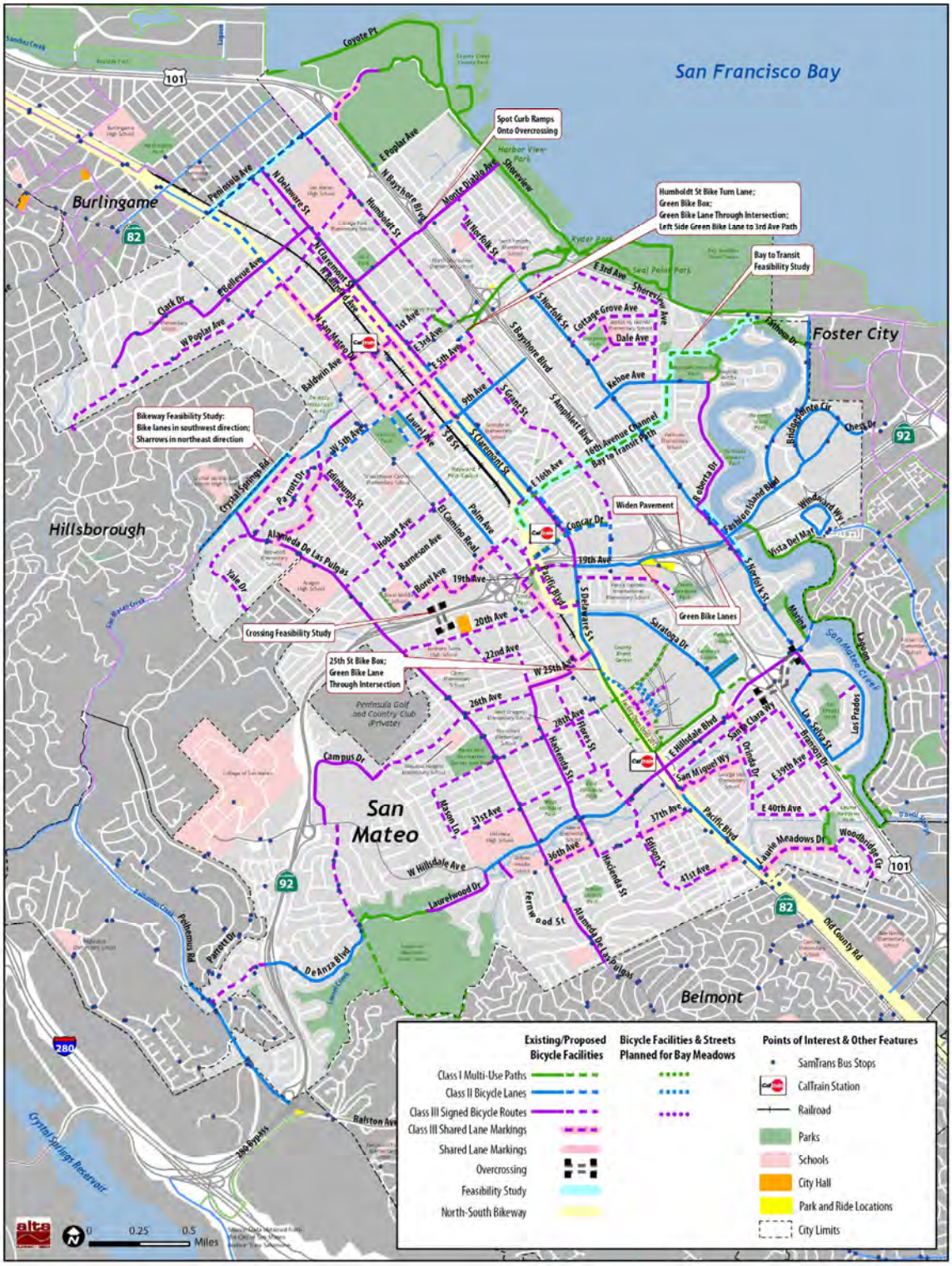

Figure H-1: San Mateo Existing and Proposed Bikeway Network

Table H-1: Bikeway Improvements and Estimated Costs by Tier

Rank	Location	From	To	Class	Length	Cost
Tier 1						
1	28th Ave	Mason Ln	El Camino Real	III	0.94	$2,800
2	Alameda de las Pulgas	Crystal Springs Rd	La Casa Ave (City Limit)	III	2.99	$24,000
3	1st Ave	B Street	Claremont Street	III + SLM	0.12	$900
4	31st Ave Extension	El Camino Real	Caltrain	I	0.22	$139,600
5	W Poplar Ave	City Limits (Glendale Dr)	Humboldt St	III	1.92	$5,800
6	Baldwin Ave	S B St	N San Mateo Dr	III + SLM	0.11	$900
7	E 5th Ave	San Mateo Dr	S Humboldt St	III + SLM	0.57	$4,500
8	S Grant St	19th Ave	Concar Dr	II	0.20	$8,400
9	Concar Dr	Hayward Park Caltrain	Grant Street	II	0.43	$18,200
10	Bay to Transit Path	17th Ave	Anchor Rd	Feasibility Study	1.82	TBD
11	Peninsula Ave	Humboldt St	N San Mateo Dr	II	0.62	$26,200
12	S B St	Baldwin Ave	9th AVE	III + SLM	0.54	$4,300
13	W 5th Ave	Maple Street	El Camino Real	II	0.22	$9,200
14	N San Mateo Dr	W Poplar Ave	W 5th Ave	III + SLM	0.84	$6,700
15	9th Ave	Palm Ave	S B St	III + SLM	0.14	$1,200
16	28th Ave Extension	El Camino Real	New Delaware St	I	0.09	$60,200
17	37th Ave	Edison Street	El Camino Real	III + SLM	0.27	$2,100
18	17th Avenue/Caltrain Access	Palm Avenue	19th Avenue	III	0.39	$1,200
					Total Tier 1	**$316,200**
Tier 2						
19	W 25th Ave	Hacienda St	S Delaware St	III + SLM	0.35	$2,800
20	Hobart Ave - 12th Ave Rt	Alameda de las Pulgas	Palm Ave	III	0.71	$2,100
21	Humboldt St	Peninsula Ave	E 3rd Ave	III	1.22	$3,600
22	Edison St	31st Ave	41st Ave	III	0.76	$2,300
23	31st Ave	Mason Ln	Edison St	III	0.86	$2,600
24	W 20th Ave	Alameda de las Pulgas	Palm Ave	III	0.74	$2,200
25	26th Ave	Campus Dr	Hacienda St	III	0.92	$2,800
26	N Claremont St	1st Ave	9th Ave	III + SLM	0.50	$4,000
27	Saratoga Dr	Hillsdale Blvd	Santa Clara Way	III + SLM	0.12	$1,000
28	41st Ave	Beresford St	El Camino Real	III + SLM	0.15	$1,200

Rank	Location	From	To	Class	Length	Cost
29	N Claremont St	Peninsula Ave	1st Ave	III	1.08	$3,200
30	Hillsdale Overcrossing	Hillsdale Blvd	S Norfolk St	Crossing	0.33	$10,700,000
31	Ocean View Ave	Cottage Grove Ave	Dale Ave	III + SLM	0.14	$1,100
32	Palm Ave	South Blvd	19th Ave	III	0.26	$800
33	Hacienda St	22nd Ave	W 25th Ave	III	0.18	$500
34	Dale Ave	S Norfolk St	Shoreview Ave	III	0.36	$1,100
35	Shoreview Ave	S Norfolk St	Kehoe Ave	III	1.09	$3,300
36	Flores St	W 25th St	31st Ave	III	0.50	$1,500
37	Cottage Grove Ave	S Norfolk St	Shoreview Ave	III	0.46	$1,400
38	37th Ave	Hacienda St	Edison St	III	0.24	$700
39	N San Mateo Dr	Peninsula Ave	W Poplar Ave	II	0.52	$22,000
40	Edinburgh -Virginia St Rt	Borel Ave	W 3rd Ave	III	0.95	$2,800
41	Glendora Dr	De Anza Blvd	W Hillsdale Blvd	III	0.54	$1,600
42	E 5th Ave	El Camino Real	San Mateo Drive	II	0.13	$5,600
43	2nd Ave	S Fremont St	S Humboldt St	III	0.14	$400
44	19th Ave	Palm Ave	Pacific Ave	III	0.07	$200
45	S Norfolk St	520' NW of E Hillsdale Bvld	E Hillsdale Blvd	II	0.10	$4,200
46	S Humboldt St	E 5th Ave	E 4th Ave	III	0.06	$200
47	Franklin Path	Pacific Boulevard	Hillsdale Boulevard	I	0.17	$106,100
48	W 5th Ave	Virginia Ave	Maple St	III	0.08	$200
49	E Hillsdale Ct	E Hillsdale Blvd	Hillsdale Overcrossing	III	0.21	$600
50	Franklin St	Parrott Dr	Virginia Ave	III	0.06	$200
					Total Tier 2	**$10,882,300**
Tier 3						
51	S Delaware St	E 16th Ave	Concar Dr	III + SLM	0.27	$2,200
52	Concar Dr	S Grant St	S Delaware St	I	0.23	$144,800
53	Pacific Blvd	Concar Dr	S Delaware St	III	0.38	$1,100
54	Borel Ave	Bovet Rd	Edinburgh St	III + SLM	0.15	$1,200
55	Huron Ave - Norfolk St Rt	Monte Diablo Ave	E 3rd Ave	III	0.54	$1,600
56	Palm Ave	19th Ave	E 25th Ave	III + SLM	0.49	$3,900
57	S Norfolk St	Marina Lagoon	Roberta Dr	II	0.36	$15,200

Rank	Location	From	To	Class	Length	Cost
58	36th Ave	Hacienda St	Alameda De Las Pulgas	III + SLM	0.24	$1,900
59	Monterey St	31st Ave	28th Ave	III	0.26	$800
60	De Anza Blvd	State Hwy 92	Polhemus Rd	III	0.34	$1,000
61	Laguna Vista Path	Los Prados	Laguna Vista	I	0.10	$66,400
62	Rand Street Bridge	Rand Street	San Mateo Creek	Crossing	0.01	TBD
63	S Fremont St	2nd Ave	2nd Ave NW of Gateway Park	III	0.03	$100
64	Sugarloaf Mountain Path	Laurelwood Dr	Laurel Creek Rd	III	0.88	$567,900
65	E 4th Ave	S Grant St	S Humboldt St	II	0.07	$3,000
66	Central Park Bike Lane	9th Ave	E 5th Ave	II	0.23	$9,700
67	Rand St	Shoreview Avenue	San Mateo Creek	III	0.06	$200
68	2nd Ave	S Delaware St	S Fremont St	III	0.13	$400
69	19th Ave	Pacific Boulevard	19th Avenue	III	0.19	$600
70	41st Ave	Hacienda St	Beresford St	III	0.18	$500
71	San Miguel Wy	Otay Ave	Orinda Dr	III + SLM	0.31	$2,500
72	Bovet Rd	El Camino Real	Borel Ave	III + SLM	0.29	$2,300
73	S Grant St	Concar Dr	E 4th Ave	III	1.24	$3,700
74	Parrott Dr	Alameda de las Pulgas	Franklin St	III	0.47	$1,400
75	Hwy 92 Crossing	Borel Pl	Spuraway Dr	Crossing	0.14	TBD
76	Isabelle Ave	20th Ave	22nd Ave	III	0.18	$500
77	17th Ave	Palm Ave	El Camino Real	III + SLM	0.10	$800
78	Hillsdale Lagoon Bridge	S Norfolk St	City Limits	II	0.17	$7,300
79	Concar Dr	S Delaware St	Pacific Blvd	I	0.20	$129,800
80	Santa Clara Wy	Branson Dr	Orinda Dr	III	0.29	$900
81	Casanova Dr	E 40th Ave	Laurie Meadows Dr	III	0.03	$100
82	Virginia Ave	Harvard Rd	Edinburgh St	III + SLM	0.18	$1,500
83	Laurie Meadows Dr	Pacific Blvd	Woodbridge Cir	III + SLM	0.41	$3,300
84	Coyote Pt Dr	Bayshore Blvd	End of Coyote Point Dr	III + SLM	0.21	$1,700
85	Columbia -Yale Dr Rt	Alameda de las Pulgas	City Limits	III	0.56	$1,700

Rank	Location	From	To	Class	Length	Cost
86	Woodbridge Cir	Laurie Meadows Dr	Seagate Dr	III	0.53	$1,600
87	Otay Ave	Pacific Blvd	San Miguel Wy	III + SLM	0.06	$500
88	E 16th Ave	S Claremont Dr	S Railroad Ave	III	0.05	$200
89	Seagate Dr	Woodbridge Cir	Marine View Ave	III	0.02	$100
90	Orinda Dr	40th Ave	Santa Clara Way	III	0.38	$1,100
91	22nd Ave	Isabelle Ave	Hacienda St	III	0.17	$500
92	E 40th Ave	Branson Dr	Orinda Dr	III	0.47	$1,400
93	Harvard Rd	Nevada Ave	Virginia Ave	III + SLM	0.06	$500
94	Branson Dr	Santa Clara Wy	40th Ave	III	0.54	$1,600
95	Nevada Ave	Alameda De Las Pulgas	Harvard Rd	III + SLM	0.24	$1,900
96	Crystal Springs Rd	Alameda de las Pulgas	W 3rd Ave	III + SLM	0.39	$3,100
97	E 39th Ave	Orinda Dr	Branson Dr	III	0.36	$1,100
98	Marine View Ave	Seagate Dr	City Limit	III	0.02	$100
					Total Tier 3	**$1,617,700**

H.2. Caltrain Station Access Improvements

H.2.1. Downtown Caltrain Station

Plan Reference: Section 5.1.5, page 5-9

Recommendations:

1. Install Class III Bike Routes with Shared Lane Markings on B Street and N Claremont St.
2. Convert/replace 18 existing keyed bicycle lockers with 18 electronic lockers. (Caltrain)
3. Add 18 new electronic lockers. (Caltrain)
4. Relocate existing bicycle racks to the station plaza area for better convenience and visibility. (Caltrain)
5. Consider implementation of a Bike Station or similar facility. (Caltrain)

H.2.2. Hayward Park Caltrain Station

Plan Reference: Section 5.1.5, page 5-10

Recommendations:

1. Install Class I Multi-Use Path along the north side of Concar Drive between Grant Street and the Station.
2. Install Class I Multi-Use Path along 16th Avenue Channel from Pacific Boulevard to Marina Lagoon.

3. Install Class II Bike Lanes along the north side of Concar Drive between Grant Street and the Station.
4. Install Class III Bike Route on Pacific Boulevard between Delaware Street and the Station.
5. Install Class III Bike Route on 19th Avenue between Palm Avenue and Leslie Street.
6. Install Class III Bike Route on Leslie Street between 19th Avenue and 17th Avenue.
7. Install Class III Bike Route on 17th Avenue between Palm Avenue and Leslie Street.
8. Install Class III Bike Route on 20th Avenue between Alameda de las Puglas to Palm Avenue.
9. Install Class III Bike Route with Shared Lane Markings on Bovet Road between Borel Avenue and El Camino Real.
10. Convert/replace 12 existing keyed bicycle lockers with 18 electronic lockers.

H.2.3. Hillsdale Caltrain Station

Plan Reference: Section 5.1.5, page 5-11

Recommendations:

1. Implement proposed bikeway network presented in the Bay Meadows Transit Oriented Development Site Plan and Architectural Review documents.
2. Implement proposed bikeways in the Hillsdale Station Area Plan including:
    a. Class I Multi-Use Path on 31st Avenue between El Camino Real and Edison Street
    b. Class I Multi-Use Path on 28th Avenue between El Camino Real and proposed station to the east.
    c. Class III Bike Route on Edison Street between Hillsdale Boulevard and 31st Avenue
    d. Class III Bike Route on Flores Street between 31st Avenue and 25th Avenue
    e. Class III Bike Route on 28th Avenue between El Camino Real and Flores Street.
3. Install Class III Bike Route on 31st Avenue between Edison Street and Monterey Street.
4. Install Class III Bike Route on 28th Avenue between Flores Street and Hacienda Street.
5. Replace 6 existing keyed bicycle lockers with 35 electronic lockers in the west parking lot. (Caltrain)
6. Install 5 bicycle racks in each parking lot near the platform entrance stairways. (Caltrain)
7. Consider installation of bicycle wheel channels on stairways for easier access to and from platforms.(Caltrain)

H.3. Wayfinding Signage Project

Plan Reference: Section 5.1.57, page 5-12

This Plan recommends installation of CAMUTCD wayfinding signs at decision points and confirmation signs that display destinations and mileage.

H.4. Raised Pavement Markers

Plan Reference: Section 5.1.8, page 5-18

This Plan recommends the City consider a policy prohibiting raised pavement markers on Class III Bicycle Routes and Class III Bicycle Routes with Shared Lane Markings roadways with two travel lanes, where those travel lanes are less than 14-feet wide and are on roadways classified as local. This Plan also recommends the City consider removal of raised pavement markers on existing and proposed bikeways that meet the aforementioned criteria. **Table H-2** lists the existing and proposed bikeways where removal of raised pavement markers is recommended.

Table H-2: Recommended Bikeways with Raised Pavement Marker Removal

Name	Bikeway Class	From	To	Existing/Proposed
31St Ave	CL III	Monterey St	Flores St	Proposed Bike Route
Cottage Grove Ave	CL III	S Norfolk St	Ocean View Ave	Proposed Bike Route
E 5th Ave	CL III SLM	El Camino Real	S Delaware St	Proposed Bike Route with SLM
Edison St	CL III	31st Ave	39th Ave	Proposed Bike Route
N Claremont St	CL III SLM	2nd Ave	9th Ave	Proposed Bike Route with SLM
Roberta Dr	CL III	S Norfolk St	Kehoe Ave	Existing Bike Route
S Grant St	CL III	Concar Ave	Birch Ave	Proposed Bike Route
Shoreview Ave	CL III	S Norfolk St	Ocean View Ave	Proposed Bike Route

H.5. Bicycle Detection at Traffic Signals

Plan Reference: Section 5.1.9, page 5-19

This Plan recommends that the City install bicycle detection at all actuated intersections along existing and proposed bikeways. Additionally, the City should consider installing bicycle detection at all actuated intersections. Where loop detection is used (see Appendix A Design Guidelines for details) a pavement stencil of the bicycle detection marking should be used to show bicyclists where to position themselves.

H.6. Complete Streets Policy

This Plan recommends the City of San Mateo pursue a Complete Streets policy.

H.7. Maintenance Program for Existing Public Access Facilities and Private Property

This Plan recommends the City develop a maintenance program to ensure public access bicycle facilities on private property are maintained on a regular basis, when and if the need arises.

H.8. Bicycle Facility Maintenance

Plan Reference: Section 5.1.12, page 5-20

This Plan recommends the City include the presence of bikeways in the criteria used to determine repaving.

H.9. San Mateo Vehicles and Traffic Code 11.56.100 Revision

Plan Reference: Section 5.1.13, page 5-10

The Plan recommends the City revise this section to conform with California Vehicle Code Section 21202 as follows:

(a) Any person operating a bicycle upon a roadway at a speed less than the normal speed of traffic moving in the same direction at that time shall ride as close as practicable to the right-hand curb or edge of the roadway except under any of the following situations:

(1) When overtaking and passing a vehicle proceeding in the same direction.

(2) When preparing for a left turn at an intersection or into a private road or driveway.

(3) When reasonably necessary to avoid conditions (including, but not limited to, fixed or moving objects, vehicles, bicycles, pedestrians, animals, surface hazards, or substandard width lanes) that make it unsafe to continue along the right-hand curb or edge, subject to the provisions of Section 21656. For purposes of this section, a "substandard width lane" is a lane that is too narrow for a bicycle and a vehicle to travel safely side by side within the lane.

(4) When approaching a place where a right turn is authorized.

(b) Any person operating a bicycle upon a roadway of a highway, which highway carries traffic in one direction only and has two or more marked traffic lanes, may ride as near the left-hand curb or edge of that roadway as practicable.

(c) It is unlawful for any person to ride or operate a bicycle, motor driven cycle or motor scooter upon any sidewalk or upon any overhead pedestrian crossing over any street, roadway, state highway or state freeway that is signed for pedestrian use only within the city.

H.10. San Mateo Zoning Code 27.64.080 Revision

Plan Reference: Section 5.1.14, page 5-21

The Plan recommends the City revise this section as follows:

27.64.080 USE OF PARKING AND GARAGE FACILITIES. Off-street parking and garage facilities accessory to residential use and developed in any residential district in accordance with the requirements of Sections 27.64.080 through 27.64.150 shall be used solely for the storage of bicycles in assigned parking spaces and passenger automobiles owned by occupants of the dwelling structures to which such facilities are accessory or by guests of said occupants. Under no circumstances shall required parking and garage facilities accessory to residential structures be used for the storage of commercial vehicles or for the parking of automobiles belonging to the employees, owners, tenants, visitors or customers of business or manufacturing establishments.

H.11. 4th Avenue and Humboldt Street Improvements

Plan Reference: Section 5.2.1, page 5-22

Table H-3 below outlines the issues and recommended improvements for the 4th Avenue and Humboldt Street intersection..

Table H-3: 4th Avenue and Humboldt Streeet Improvements

Issue	Recommended Improvement
North bound Humboldt Street at 4th Avenue has double right turn lanes where bicyclist positioning is not clear	Install a bike box at the intersection to direct bicyclists to the proper positioning for travel on the left side of 4th Avenue. The City may consider a study to prohibit right turns on red to further protect bicyclists.
Access to the 3rd Avenue Median Path from 4th Avenue between Humboldt and the 3rd Avenue Median Path requires bicyclists to travel on the left side of the roadway. This requires explanation to bicyclists that travel through the intersection should be guided towards the left side of 4th Avenue.	Install a green bike lane through the intersection directing bicyclists to the recommended path of travel to the left side of 4th Avenue.
The 4th Avenue the roadway configuration requires bicyclists take the left travel lane. This positioning is challenging because vehicle speeds are high, motorists do not expect bicyclists to be on the left side of the roadway and nor do bicyclists expect that left side positioning is required.	Install a green bike lane on 4th Avenue east to the 3rd Avenue Median Path entrance direction bicyclists of roadway placement and informing motorists to expect bicyclists.
Bicyclists do not have a user friendly access to path.	Install angled ramp from 4th Avenue to the 3rd Avenue Median Path facilitating bicyclist access to the path.

Figure H-2: Proposed 4th Avenue and Humboldt Street Improvements

H.12. 25th Avenue at S Delaware Street Improvements

Plan Reference: Section 5.2.2, page 5-23

The recommended improvement is to install a bike box across the dedicated right turn and optional right/left turn lanes to direct bicyclists on 25th Avenue to the proper positioning for turning left. A green bike lane through the intersection directing bicyclists to the recommended path of travel is also recommended. This improvement is similar to the 4th Avenue and Humboldt Street improvement project. A bike box is also recommended on southbound S. Delaware Street to warn motorists of merging bicyclists turning right.

H.13. 19th Avenue and US 101 Undercrossing Improvements

Plan Reference: Section 5.2.3, page 5-23

The recommended improvement for this bikeway segment is to widen the bike lane at pinch spots, stencil and sign the bike lane at frequent intervals to clearly identify the lane for both bicyclists and motorists and to install green bike lanes through the freeway ramps. Green bike lanes as described in Section 5.1.6, alert roadway users to the presence of bicyclists and clearly assigns right-of-way. Motorists are expected to yield to cyclists in these areas. Similar treatments have been used in San Francisco, Portland, Cambridge, Austin and are currently under study in San José.

H.14. Monte Diablo and US 101 Overcrossing Improvements

Plan Reference: Section 5.2.4, page 5-23

The recommended improvement for this barrier is the installation of curb ramps at both overcrossing entrances. This will not only facilitate access for bicyclists, it will also improve pedestrian access.

H.15. Poinsettia Avenue and Pacific Boulevard Curb Cut Connection

Plan Reference: Section 5.2.5, page 5-23

This Plan recommends the City construct a curb cut so bicyclists can access Poinsettia Avenue as an alternate route to Hillsdale Boulevard.

H.16. 31st Avenue from El Camino Real to Edison 'Street Share the Road' Signs

Plan Reference: Section 5.2.6, page 5-24

If feasible, support the development of new bicycle facilities on 31st Avenue, in conjunction with redevelopment of that portion of the Hillsdale Shopping Center. The latter would only be considered feasible if a configuration can be developed that balances auto, bicycle, and pedestrian circulation on 31st Avenue.

H.17. 5th Avenue from El Camino Real to San Mateo Drive Road Diet

Plan Reference: Section 5.2.7, page 5-24

This Plan recommends the City conduct public outreach for the removal of one travel lane and the inclusion of bicycle lanes in both directions. The purpose of this project is to provide direct bicycle access across the City and to Central Park.

H.18. Bay to Transit Path Feasibility Study

Plan Reference: Section 5.3.1, page 5-24

This Plan recommends the City conduct a feasibility study in order to address right-of-way, site engineering, safety, security, privacy, delivery of emergency services, maintenance and operations, community interests and needs, and other unknowns associated with the development of a trail in this location.

H.19. 3rd Avenue Median Path Intersections Improvement Study

Plan Reference: Section 5.3.2, page 5-25

This Plan recommends the City initiate a study to improve access to the path entrances. Possible improvements may include signage and striping. Similar treatments are used where median paths end at an intersection including in Brooklyn, New York.

H.20. Franklin Parkway at Saratoga Drive Improvement Study

Plan Reference: Section 5.3.3, page 5-26

This Plan recommends a study to address two issues: First, to provide the bicycle network gap closure between the two existing Class I facilities by constructing a Class I Bicycle Path along the frontage of the San Mateo Police Station site, and secondly to study crossing improvements at Saratoga Drive.

H.21. Crystal Springs Road Bike Lane Feasibility Study

Plan Reference: Section 5.3.4, page 5-26

This Plan recommends the City work with the City of Hillsborough to conduct a study analyzing the feasibility of bikes lanes on the westbound, uphill direction of Crystal Springs Road Alameda De Las Pulgas and 3rd Avenue, and shared lane markings eastbound. The project may also include a bike box on Crystal Springs at Alameda de las Pulgas.

H.22. Norfolk Street Bike Lane Feasibility Study

Plan Reference: Section 5.3.5, page 5-26

This Plan recommends the City conduct a study to analyze the feasibility of installing bike lanes on this segment of Norfolk Street. Bike lanes will increase access to many restaurants and shopping outlets on Norfolk Street.

H.23. Peninsula Avenue Bike Lane Feasibility Study

Plan Reference: Section 5.3.6, page 5-26

This Plan recommends the City work with the City of Burlingame to complete a feasibility study of bike lanes on Peninsula Avenue.

H.24. Highway 92 Crossing Study

Plan Reference: Section 5.3.7, page 5-26

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

H.25. Bicycle Share Program

Plan Reference: Section 5.3.7, page 5-26

This Plan recommends the City consider investigating the feasibility of a bike share program.

H.26. Bicycle Parking

Plan Reference: Section 5.4 & Appendix B, page 5-26 & Appendix B

This Plan recommends the City and private developers only install bicycle parking that meets the following criteria. Short-term parking should support the bicycle at two points and have a design that is intuitive to use. A "U-rack" is an example of a standard and accepted bicycle rack and is the recommended standard for the City of San Mateo, while "wave racks" and "wheelbender" are not acceptable because they do not provide two points of contact among other issues. Long-term bike parking should provide some weather protection and greater security than provide by bicycle racks. Bicycle lockers (electronic) and bike cages are examples of acceptable types of long-term bicycle parking.

H.27. Citywide Bicycle Parking Recommendations

Plan Reference: Section 5.4.2 & Appendix B, page 5-27 & B-18

Through the public workshop and input from the Plan website, community members expressed desire for bicycle parking at community centers and additional parking at transit centers. Specific locations for recommended citywide bicycle racks are listed below in **Table H-4**. A detailed review of civic facilities and recommended bicycle parking is presented in Appendix B.

In addition to bicycle rack installation, this Plan recommends the City provide a map of bicycle parking locations on its bicycling resource website. The website currently provides bicycle parking locations in a list format however, a map will give the community a geographic reference, help identify parking near locations not listed, and will be a greater community resource.

The City is also encouraged to work with commercial property owners to install bicycle parking for patrons. Ideal locations for bicycle parking include grocery stores and retail shopping centers.

Table H-4: Recommended Citywide Bicycle Parking Locations

Category	Location	Details
Retail Districts	Hillsdale Shopping Center	Install bicycle racks (at minimum 4 racks)
	Bridgepointe Shopping Center	Install bicycle racks (at minimum 4 racks)
	Retail districts along 25th, 37th, and 41st Avenues as well as at Norfolk Street and Hillsdale Boulevard.	Install bicycle racks (at minimum 4 racks) in each district
Caltrain Stations	Downtown San Mateo	Replace 18 existing keyed bicycle lockers with 18 electronic lockers Add 18 new electronic lockers Relocated existing bicycle racks to the station plaza area for better convenience and visibility. Consider implementation of a Bike Station or similar facility
	Hayward Park	Install 18 electronic bicycle lockers
	Hillsdale	*West Parking Lot:* Replace 6 existing keyed bicycle lockers with 8 electronic lockers on a level concrete pad. Keep remaining 2 keyed lockers. *East Parking Lot*: Install 20 electronic and 2 keyed bicycle lockers. *Platform Entrances:* Install 4 bicycle racks in each parking lot near the platform entrance stairways

It is also recommended that the City replace, as funding allows, existing bicycle racks that do not meet City standards. These identified locations are presented in **Appendix B**.

H.28. Downtown Bicycle Parking Recommendations

Plan Reference: Section 5.4.3 & Appendix B, page 5-28 & B-3

Specific recommended bicycle parking locations for San Mateo's downtown are shown in **Figure H-3**. The locations were chosen with consideration for available space free of fixtures and utilities as well as anticipated demand. **Appendix B** of this Plan includes a detailed downtown bicycle parking plan

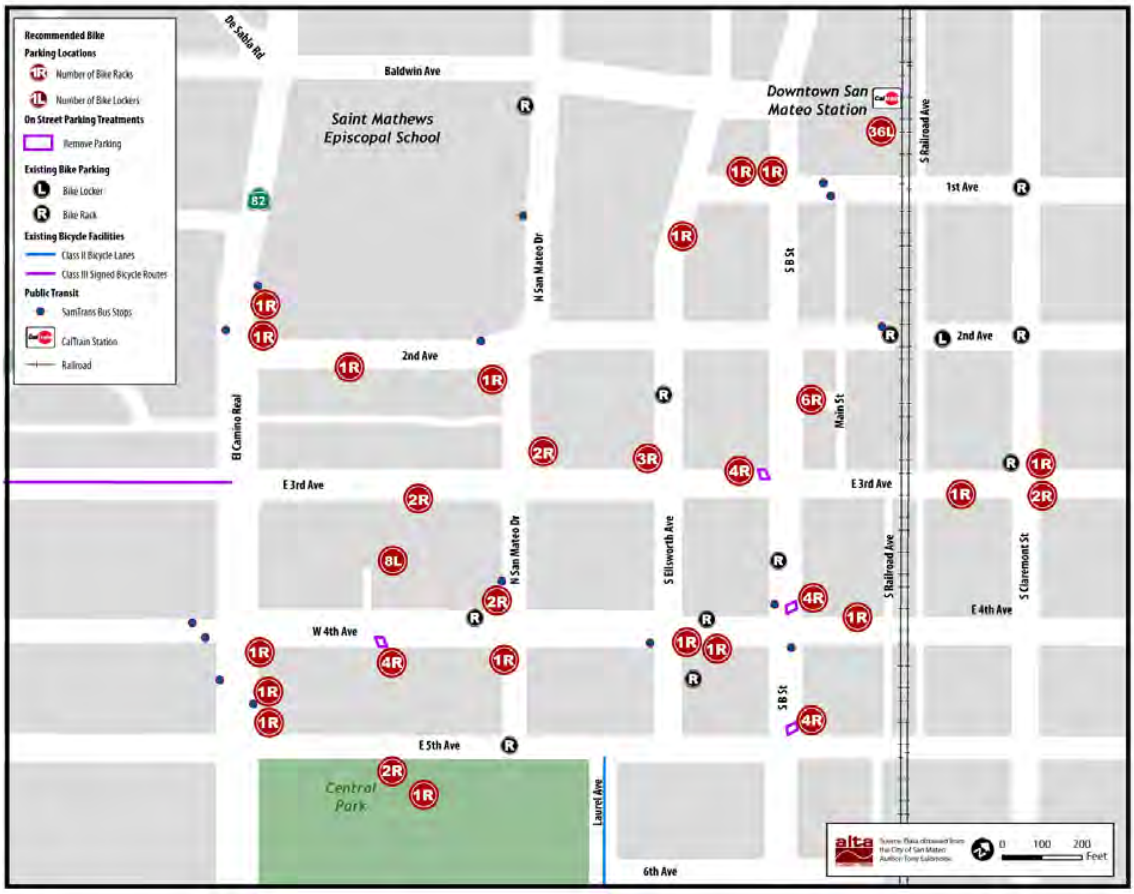

Figure H-3: Recommended Downtown Bicycle Parking Locations

H.29. Bicycle Parking Requirements for Development

Plan Reference: Section 5.4.3 & Appendix B, page 5-27 & B-50

Bicycle parking requirements for development ensures bicyclists have somewhere secure and convenient to park their bicycles at newly constructed buildings. **Appendix B** presents recommended rates of required bicycle parking. The recommended rates are based on the Association of Pedestrian and Bicycle Professional's "Bicycle Parking Guidelines" (2nd Edition), successful bicycle parking requirements in other Bay Area cities, and best practices.

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