City of Fremont
Bicycle Master Plan

Adopted By City Council January 17, 2012

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The City of Fremont

City of Fremont

Bicycle Master Plan

Attachment 1 to the Resolution No. 2012-03 adopted by the City Council of the City of Fremont on the 17th day of January, 2012.

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1. Introduction

The City of Fremont Bicycle Master Plan provides a blueprint for making bicycling an integral part of daily life in Fremont. This Plan will guide the future development of bicycle facilities and programs in the City. Its recommendations will facilitate bicycling for transportation and recreation and help the City attain goals identified in its General Plan.

The Bicycle Master Plan was developed with community input and seeks to meet community needs and desires for a pleasant, enjoyable, and safer place to bicycle. The diligent efforts of City of Fremont staff, the Fremont Bicycle and Pedestrian Technical Advisory Committee, the Fremont Bicycle Advisory Committee, and residents interested in improving the bicycling environment in the City have contributed to this document.

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 Fremont. It updates the 2005 Bicycle Master Plan which has been highly effective in the implementation of bicycle facilities throughout the City. This Plan builds upon these successes – to enhance and expand the existing network, fill network gaps, provide greater connectivity, educate, encourage and to maximize funding sources. A key purpose for this Plan is to satisfy requirements of the California Bicycle Transportation Account (BTA), and other state and federal funding programs that require the adoption of a bicycle master plan.

1.2. Bicycle Master Plan Process

The City of Fremont initiated the process to develop this plan in November 2010. To fully engage the residents and other community members, the City hosted six public meetings and administered a survey to keep Fremont community members informed and to incorporate their feedback.

1.3. Overview of the Plan

The Fremont Bicycle Plan is organized into 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 – Setting: Provides local context for the Plan including a description of land uses and key bicycle attractors and generators.

Chapter 4 – Existing Conditions: Provides a description of existing bicycle conditions in the City of Fremont. The chapter includes maps of existing bikeways and descriptions of existing bicycle programs.

Chapter 5 – Policy Review: This chapter reviews planning and policy documents relevant to the Bicycle Master Plan.

Chapter 6 – Needs Analysis: This chapter reviews the relationship between bicycle activity, commute patterns, demographics, land use and collisions. This chapter also includes a review of community input.

Chapter 7 – Proposed Network Improvements: Includes recommended network, signage and pavement marking, spot improvements and bicycle parking improvements.

Chapter 8 – Proposed Programmatic Improvements: Describes proposed bicycle encouragement, education, enforcement and evaluation programs.

Chapter 9 –Implementation: Outlines an implementation strategy, including the prioritization of the bicycle improvements.

Chapter 10 –Funding: Provides cost estimates for recommended bicycle facilities and identifies potential funding sources for implementing the Plan's projects and programs.

2. Vision, Goals, and Policies

2.1. Introduction

This chapter presents recommended updates to the City of Fremont Bicycle Master Plan goals and policies. Recommendations include the addition of a vision to serve as an inspiration guide for the Plan, and updates to the goals and policies based on the General Plan and related City of Fremont goals related to sustainability and mobility. The General Plan establishes a vision for the City and includes goals for sustainability, mobility, and recreation. The goals and policies of the Fremont Bicycle Master Plan (Plan) will guide the development and implementation of the City's bicycle network and programming for years to come. The goals and policies should support the City's vision and describe the most important aspects of the City's priorities.

Goals and policies guide public improvements, the allocation of resources, the operation of programs, and the determination of City priorities. This Plan will establish a framework to create and expand programs and improvements that increase bicycling in Fremont.

- Vision: A broad inspirational statement that presents a desired future state.
- Goals: Broad statements of what the City and its residents hope to achieve over time and that will ultimately add up to the stated vision.
- Policies: Specific guidelines or actions that guide the programs, activities and actions of local government agencies and their partners to achieve the goals.

The following vision, goals and policies are consistent with and support the City of Fremont's General Plan 2030 and other local, regional, and statewide planning and policy documents. The vision, goals, and policies address the bicycling environment on both public and private property.

2.2. Recommended Vision, Goals and Policies

2.2.1. Vision

A strong vision statement serves as an inspirational guide over the life of this Plan:

> *"The City of Fremont will be an active, healthy community where bicycling is a safe and convenient part of everyday life. Bicycle facilities and programs will support the City's goals for mobility, recreation, and sustainability. A comprehensive, safe, and logical bicycle network will enable residents and visitors of all ages and abilities to access jobs, recreation, school, shopping, and transit."*

2.2.2. Goals and Policies

The 2005 Fremont Bicycle Master Plan aimed to provide a blueprint for making bicycling an integral part of daily life in Fremont. The Bicycle Master Plan builds on the 2005 Bicycle Plan with the addition of goals and policies that reflect the goals and policies of the General Plan and other changes in the policy environment.

- **Goal 1: Expand and optimize Fremont's Bicycle Facilities.**
    - Policy 1.1: Provide bicyclists safe and accessible routes to all destinations within the City and outside the City, which are served by public roads, trails, transit, and rail.
    - Policy 1.2: Complete a comprehensive bikeway network by closing existing gaps and providing projects that improve intermodal connections.
    - Policy 1.3: Develop a Bicycle Parking Ordinance to be included in the City's Zoning Ordinance that requires the installation of specific numbers of bicycle parking spaces at employment centers, shopping centers, rail/transit stations, parks, recreational facilities, and City facilities. (General Plan Policy 3-7.4).
    - Policy 1.4: Install wayfinding signage to major destinations on all bikeways throughout the City of Fremont by 2015. (General Plan Policy 3-2.4.C)
    - Policy 1.5: Prioritize the construction and maintenance of bicycle facilities in Fremont's Priority Development Areas. (Bay Area FOCUS)
- **Goal 2: Plan and design for the needs of all bicyclists**
    - Policy 2.1: Ensure that all City transportation project include bicycle facilities where feasible and appropriate and that all projects accommodate pedestrians and transit riders pursuant to the Complete Streets Bill. (General Plan Goal 3-1)
    - Policy 2.2: Conform to the guidelines and standards of the City of Fremont, Alameda County, Metropolitan Transportation Commission, State and Federal Standards for the design and construction of bikeway facilities.
    - Policy 2.3: Monitor and evaluate information on collisions involving bicyclists and use this information to assist in remedying existing problem locations and behaviors.
    - Policy 2.4: Conduct regular bicycle counts so that trends and usage may be monitored and evaluated.
- **Goal 3: Promote bicycling safety and increased bicycling through education, encouragement, and enforcement activities.**
    - Policy 3.1: Continue existing and pursue new adult and youth bicycle education and safety programs in Fremont, such as Safe/Smartz Moves and the League of American Bicyclists courses.
    - Policy 3.2: Continue Fremont Police Department enforcement of bicycle-related violations by both motorists and bicyclists, and emphasize positive enforcement for safe bicycling behavior by children. Utilize League of American Bicyclists or other education programs as a bicycle traffic school for bicycle infractions.
    - Policy 3.3: Support Safe Routes to School efforts that include educational and incentive programs to encourage more students to bicycle or walk to school.
    - Policy 3.4: Encourage major Fremont employers to provide incentives and support facilities for existing and potential employees that commute by bicycle.

  - Policy 3.5: Identify ways to encourage bicycling to large civic events, such as by providing valet bicycle parking.
  - Policy 3.6: Maintain bicycle route maps and make these maps available to Fremont households, visitors, and businesses. (General Plan Implementation 3-2.4.A)
- **Goal 4: Provide for regular maintenance of the bicycle network.**
  - Policy 4.1: Develop a program for routine maintenance of bicycle network facilities including regular sweeping of bikeways and shared use pathways.
  - Policy 4.2: Include the costs of major maintenance needs of bicycle facilities when calculating the maintenance needs of streets and roadways generally.
  - Policy 4.3: Develop a program to ensure that all actuated signalized intersections detect bicycles and are tested regularly to ensure they remain functional.
  - Policy 4.4: Require that construction or repair activities, both on street and of adjacent buildings, ensure bicyclist safety at all times, minimize disruptions, and provide alternate routes if necessary.
- **Goal 5: Facilitate coordination and cooperation in the development of the bicycle network.**
  - Policy 5.1: Integrate Fremont's bikeway network with adjacent jurisdictions and Alameda County to ensure regional connectivity.
  - Policy 5.2: Develop north-south and east-west bicycle corridors within the City roadway network in keeping with the City's commute patterns.
  - Policy 5.3: Establish regular communication between adjacent cities, the East Bay Regional Park District, Caltrans, and other affected agencies regarding bicycle planning issues.
  - Policy 5.4: Develop linear trail parks along abandoned or underutilized transportation, utility, or other corridors to enhance recreational opportunities and alternative transportation routes. (General Plan Policy 8-1.5)
- **Goal 6: Implement the Bicycle Master Plan.**
  - Policy 6.1: Develop and update every two years a bicycle projects list in coordination with the City's Capital Improvement Program process which satisfies the City's bicycle goals and objectives.
  - Policy 6.2: Continue to identify and apply for public funding sources to finance bicycle facilities, education and safety programs.
  - Policy 6.3: Update the Bicycle Master Plan every five years as required by Caltrans to reflect new policies and/or requirements for bicycle funding.

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3. Setting

This chapter reviews Fremont's existing bicycling conditions including a review of setting including land uses and planning areas, as well as bicycle attractor and generators such as schools, major employers, transit and parks.

3.1. Location

The City of Fremont is the fourth largest city in the Bay Area with 218,128 residents[1]. Fremont is situated among several medium-sized cities between San José and Oakland on the eastern shore of San Francisco Bay. Fremont is bound to the north by Union City and to the south by Milpitas. It is located near the Dumbarton Bridge, the only east-west bridge traversing San Francisco Bay that allows bicycles. Fremont's proximity to Silicon Valley has resulted in a diverse economy of technology, manufacturing, retail, and professional services. Fremont has a mild year-round climate, with precipitation concentrated in the winter months, and its topography gently rises from marshland adjacent to San Francisco Bay to the Coastal Range foothills and Mission Peak in the east.

3.2. Land Use

At 92 square miles, Fremont is larger than any other Bay Area community except San José, but approximately 45 percent of its land is permanent open space and urban development is concentrated between I-880 and Mission Boulevard. Within this area, land use patterns and densities resemble other residential suburbs; single-family residential is by far the largest land use category, accounting for 17 percent of the City's area. About six (6) percent of the city's land consists of light and heavy industrial uses, with 40.5 million square feet developed as of 2009. Industrial uses are concentrated on the I-880 corridor in the southwestern part of the City, whose diverse industrial sector includes solar panels, electric vehicles, and other cutting-edge fields. As shown in the land use map in **Figure 3-1,** residential land uses are generally separated from commercial areas.

Fremont is a large city comprised largely of residential neighborhoods with the City Center, Town Centers and neighborhood shopping centers located throughout. Shopping, businesses, recreational destinations and employment areas are not centrally located but rather found within each of the City's Community Plan Areas. Bicycle facilities should therefore provide access to and from all areas of the City. Major roads like Interstates 680 and 880 present barriers to bicycle travel through the City because they are generally crossed only by busy arterial and collector streets. The following section discusses Fremont's planning areas, major community and business districts and recreational facilities to help identify some of the major destinations and attractors for bicycle trips.

[1] State of California, Department of Finance, E-1 Population Estimates for Cities, Counties and the State with Annual Percent Change — January 1, 2009 and 2010. Sacramento, California, May 2010.

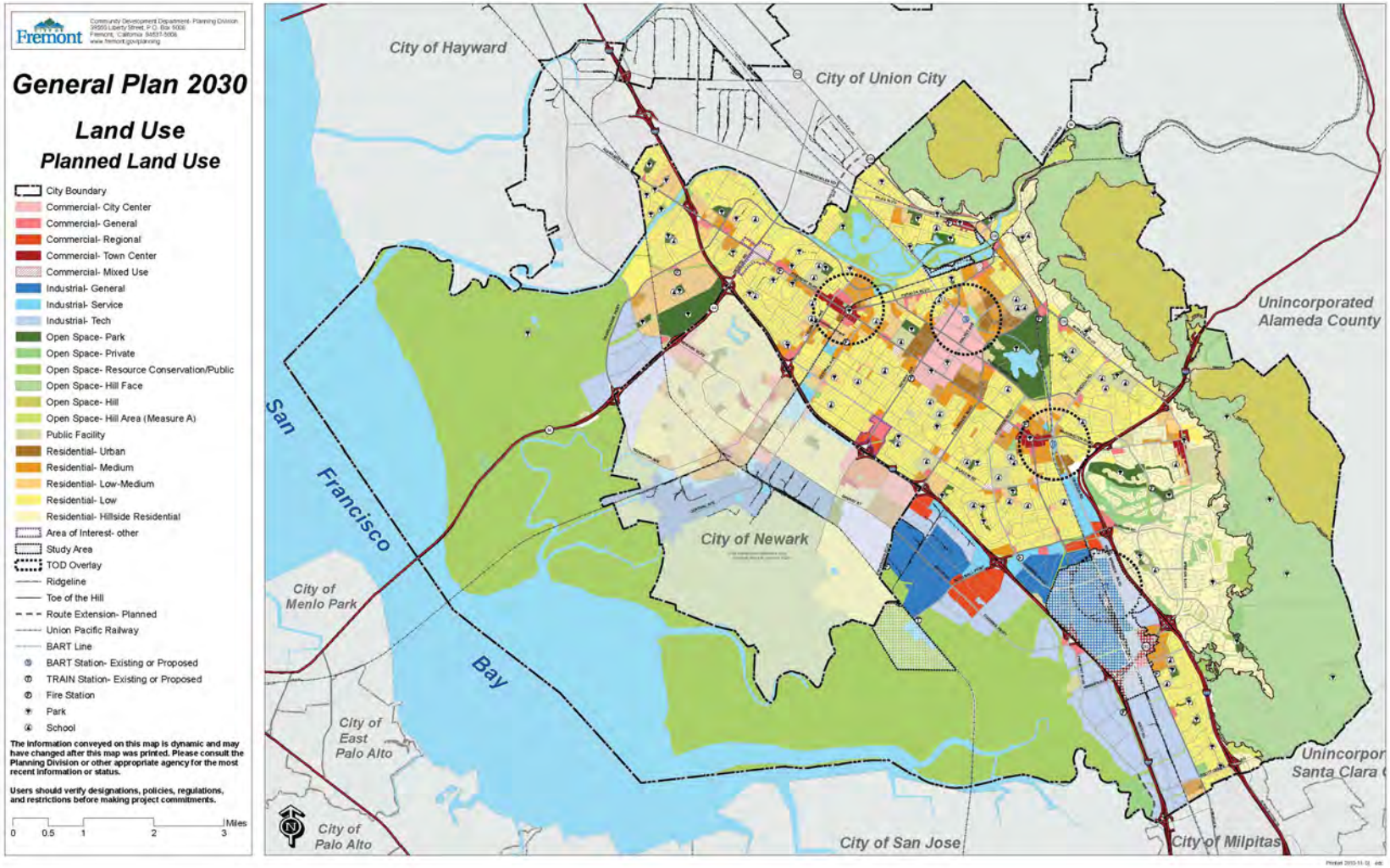

Figure 3-1: Fremont General Plan Land Use Map

3.3. Fremont's Community Plan Areas

The City of Fremont was formed from the coalescence of five independent towns in 1956: Centerville, Irvington, Niles, Warm Springs, and Mission San Jose. The areas in between those towns are also identified by several Community Plan Areas that complete the city, including Bayside Industrial, North Fremont, Central Fremont, and South Fremont. The Baylands and Hill Community Plan area comprise the City's open space frame. These areas are shown in **Figure 3-2** and described below.

3.3.1. Baylands

The Baylands Community Plan Area encompasses 31.5 square miles in the western part of the City, most of which is protected for habitat conservation. Development potential in the area is extremely limited due to its location near the Bay and because it is largely in public ownership. It includes wetland areas, sensitive habitat, salt harvesting, and will be susceptible to the effects of sea level rise. However, Policy 12-1.5 of the General Plan calls for continued recreational use, including the further development of the Bay Trail.

3.3.2. Bayside Industrial

The Bayside Industrial Area is located west of I-880 between Stevenson Boulevard and the City of Milpitas boundary. It hosts a variety of businesses, including Pacific Commons Shopping Center, an auto mall and hotels. It is also home to many of Fremont's high-tech firms and industry. This area is comprised of newer style developments with relatively large parking lots that can negatively affect bicycle circulation.

3.3.3. Centerville

Centerville is centrally located around the intersection of Fremont Boulevard and Peralta Boulevard. The district has a traditional downtown commercial area along Fremont Boulevard that supports a variety of retail shops and restaurants. The historic Centerville Depot train station serves the Amtrak Capital Corridor and Altamont Commuter Express trains, linking Fremont to San José to the south, Oakland and Sacramento to the north, and the tri-valley area and Stockton to the east. Bicycle connections to the west are hindered by crossings of Interstate 880.

3.3.4. Central Fremont

The Central Fremont Community Plan Area includes 430 acres centrally located between the five original towns. The area includes a variety of commercial and office uses, with smaller pockets of residential development. New residential development has occurred near the Fremont BART station. Major destinations in the City Center include the BART station, Washington Hospital, Kaiser Hospital, City offices, the County Courthouse Building, the Fremont Hub and Fremont Plaza shopping centers. The City Center has many large four-to six-lane arterial roadways including Fremont Boulevard, Mowry Avenue and Walnut Avenue. High vehicle speeds can present difficulties for cyclists.

3.3.5. Hill Area

The Hill Area encompasses 17 miles along the eastern edge of Fremont, extending from Union City to Santa Clara County. Along with the Baylands, the Hill Area defines the open space "frame" for the City. Fremont voters approved initiatives in 1981 and 2002 that limit the area's potential for future development.

Recreational destinations in the Hill Area, such as Mission Peak Regional Preserve, are attractive for bicyclists.

3.3.6. Irvington

Irvington is centered on the "Five Corners" area where Washington and Fremont Boulevards converge and is an important activity center for the City. This area is one of the larger, older, and more historic sections of Fremont. Although the Five Corners area of Irvington includes a number of pedestrian-scale building design features, much of the area stretching north along Fremont Boulevard is comprised of auto-oriented retail shopping centers. A BART station is planned at the intersection of Washington Boulevard and Osgood Road as part of the Warm Springs extension.

3.3.7. Mission San Jose

The Mission San Jose was established in 1797 in the Mission San Jose district, located in the foothills in southeastern Fremont below Mission Peak. The historic district includes Ohlone College, including the Gary Soren Smith Center for the Fine and Performing Arts, the Olive Hyde Art Gallery, the historic Mission San Jose and Museum, and a traditional business district.

3.3.8. Niles

Located in the northeastern corner of Fremont, Niles is a center for specialty retail, antique stores, and dining. The historic district is situated between Alameda Creek and the rolling hills, just off of Mission Boulevard and Niles Canyon Road. The area's large concentration of historic buildings, traditional pedestrian-oriented business district, old railroad lines, and relatively low traffic volumes give Niles a distinct identity and small town character. While the railroad contributes to the Plan Area's character, it can also present a barrier to pedestrians and bicyclists. The Community Plan Element of the General Plan calls for a multimodal transportation network that includes pedestrian and bicycle improvements and traffic calming. Niles Canyon Road is an important route for recreational bicycling.

3.3.9. North Fremont

North Fremont is located between Union City and Highway 84. Residential uses characterize much of the Area, but it includes many open space areas, parks, a small commercial area, and the Ardenwood Technology Park. The Technology Park is an evolving bio-tech and high-tech job center that hosts many newer office developments and some of Fremont's major employers. Policy 12-9.6 of the *Community Planning Element* seeks to make North Fremont's neighborhoods less auto-dependent, including pedestrian and bicycle connections.

3.3.10. South Fremont

South Fremont is located in the south central part of the City. This area will host a new South Fremont BART station at the intersection of Osgood Road and Grimmer Boulevard as part of the BART extension into Santa Clara County. It has historically been considered part of Fremont's Industrial Area but has potential for future change associated with the BART extension. Its current zoning is primarily industrial geared towards high-technology uses but it is also a Study Area in the General Plan. Its land use mix includes largely vacant land and some non-residential uses. The Community Plan Area also includes the site of the former New United Motors Manufacturing Inc. (NUMMI) plant, now occupied by Tesla Motors for the manufacturing of electric vehicles.

3.3.11. Warm Springs

Warm Springs, located in the southern part of Fremont, primarily east of Warm Springs Boulevard. This area includes a variety of auto-oriented shopping centers located at the heavily traveled intersection of Mission Boulevard and Warm Springs Boulevard, which is a constraint to bicycling. Beyond this intersection, the neighborhood is largely residential. It also includes a small commercial area, schools, parks, including Plomosa Park and Greenway and other public uses.

Figure 3-2: Fremont's Community Plan Areas as shown in General Plan Community Character Element

3.4. Schools

School related travel is a significant percent of daily trips, and schools can attract bicycle trips if appropriate facilities are provided. The Fremont Unified School District manages public elementary, junior high, and high schools within the City. The district includes 29 elementary schools, five junior high schools, and six high schools. Open enrollment is available at Fremont schools, subject to a lottery system. Students may therefore travel further than the school in their immediate neighborhood. There are also 21 private schools and seven schools of higher education. Over 35,000 students attend the public and private primary schools and nearly 20,000 attend Fremont's higher education school. **Figure 3-3** maps the schools.

3.5. Major Employers and Employment Centers

Employment centers are important attractors for bicycling activity. As shown in **Figure 3-3**, Fremont's largest employers are located throughout the City, and are not all concentrated in areas with well connected bicycle facilities.

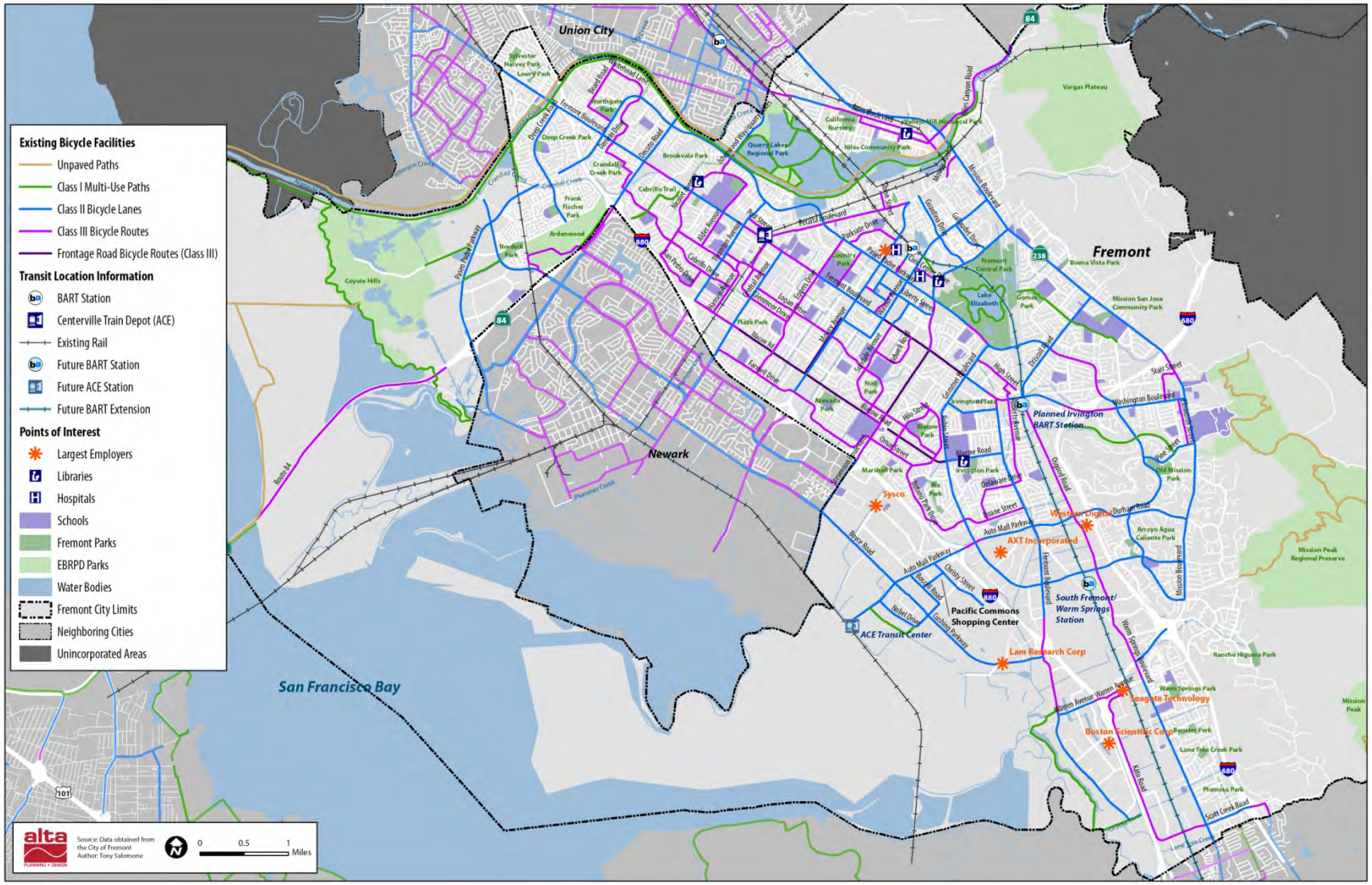

Figure 3-3: Bicycle Attractors and Generators

The New United Motor Manufacturing, Inc. plant was formerly the largest employer in Fremont but closed in 2010. Tesla Motors has occupied the site for electric vehicle production. The City's 2010 Comprehensive Annual Financial Report provides the City's largest employers; they are listed in **Table 3-1** below:

Table 3-1: Fremont's Largest Employers

Employer	Number of Employees	% of City Employment	Location(s)
Fremont Unified School District	3,000	3.02%	Citywide
Washington Hospital	1,800	1.81%	2000 Mowry Avenue
Boston Scientific/Target Therapeutics, Inc.	1,800	1.81%	47201 Lakeview Boulevard
Western Digital	1,800	1.81%	44200 Osgood Road
Seagate Magnetics	1,050	1.06%	47010 Kato Road
AXT Incorporated	950	0.96%	4281 Technology Drive
Lam Research Corporation	950	0.96%	4650 Cushing Parkway
Oplink Communications	900	0.91%	46335 Landing Parkway
Sysco Food Services	750	0.76%	5900 Stewart Avenue

Source: City of Fremont 2010 Comprehensive Annual Financial Report

3.6. Transit

Fremont is well-connected to the Bay Area and surrounding regions on multiple transit systems. Transit stations, especially regional-serving transit stations, are often major destinations for bicyclists. Safe, convenient, and logical connections to these stations can help the City to achieve the goals of the Bicycle Master Plan and the City's General Plan.

3.6.1. Bay Area Rapid Transit (BART)

BART is an intra-regional commuter rail system that connects Fremont to other destinations in Alameda County, San Francisco, and Contra Costa County. The Fremont BART station is located adjacent to Fremont's Central Business District between Mowry and Walnut Avenues. (Two new stations are planned within Fremont, in the Irvington and Warm Springs Districts.) Fremont is the existing terminus of two BART lines, providing direct service to Richmond and Daly City. The primary destinations for Fremont BART riders are Alameda County and San Francisco. Only a small number of passengers are destined for Contra Costa County.

The 2008 BART Station Profile Study[2] shows how 7,294 riders access the Fremont station on a typical weekday. Nearly three-quarters or 72 percent of these riders come from the City of Fremont and 13 percent from San José. Currently, 50 percent of riders access the station by driving alone, and 1 percent bicycle. As of the 2008 report, there were 155 bicycle parking spaces available at the station. There are 34 keyed bicycle lockers for longer-term bike parking available. The City of Fremont and BART are in the process of installing 36 electronic lockers at the BART station, scheduled for completion in 2011. Most BART stations experience high bicycle parking demand, though no occupancy survey has been completed for this station.

3.6.2. Alameda/Contra Costa Transit Authority (AC Transit)

AC Transit operates bus transit in Alameda and Contra Costa Counties. Most AC Transit buses are equipped with bicycle racks that accommodate two bicycles, with the exception of small bus vans. Fifteen AC Transit

[2] http://www.bart.gov/docs/StationProfileStudy/2008StationProfileReport_web.pdf, Page 85.

bus routes terminate at the Fremont BART station, mostly consisting of local routes with connections in Newark and Union City. The U Route connects Fremont to Stanford University.

3.6.3. Capitol Corridor

The Capitol Corridor provides passenger rail service along a 170-mile corridor between Sacramento and San José with stops in Hayward, Oakland, Richmond, and other cities. There is one stop in Fremont at the Centerville Depot. All Capitol Corridor trains allow bicycles on board.

3.6.4. Altamont Commuter Express (ACE)

The Altamont Commuter Express provides passenger rail service between Stockton and San José, stopping in Tracy, Livermore, Pleasanton, the Centerville Depot in Fremont, and Santa Clara. Bicycles are allowed on board ACE trains.

3.6.5. Santa Clara Valley Transit Authority (VTA)

The Santa Clara Valley Transit Authority (VTA) provides bus service from Fremont to Santa Clara County. All VTA routes within Fremont, including the 120, 140, 180, and 181, terminate at the Fremont BART station and connect to Milpitas, San José, Santa Clara, Sunnyvale, and Mountain View via I-680 or I-880. All VTA buses have front-mounted bike racks that hold two bicycles. Bikes may be permitted inside the bus at the driver's discretion.

3.6.6. Dumbarton Express

The Dumbarton Express Bus is operated by a consortium of transit agencies including AC Transit, VTA, Union City Transit, BART, and Caltrain. It operates between the Union City BART station and the Palo Alto Caltrain station. Front-mounted bike racks hold two bicycles.

3.7. Parks and Recreational Facilities

Figure 3-4 presents the many local and regional parks in Fremont. The Fremont Community Services Department operates Central Park, a 450-acre park located off Stevenson Boulevard and Paseo Padre Parkway that contains 83-acre Lake Elizabeth, the Fremont Main Library, Aqua Adventure Water Park and the Fremont Golf Course as well as all City parks. The department also oversees over 250 picnic areas, 36 tennis courts, and over 40 athletic fields throughout the city.

Within Fremont are several regional parks administered by the East Bay Regional Parks District. This includes Coyote Hills Regional Park, Ardenwood Regional Preserve and Historic Farm, the Quarry Lakes Regional Recreation Area, and Mission Peak Regional Preserve. In addition, the Don Edwards San Francisco Bay National Wildlife Refuge consists of 25,000 acres of marshland adjacent to the Bay in the western part of the City. The headquarters for the refuge is located in western Fremont near Thornton Avenue.

There are many recreational trails in Fremont. The Alameda Creek Regional Trail is a major multi-use trail extending from Niles Canyon west to San Francisco Bay. Coyote Creek Regional Park and the Don Edwards National Wildlife Refuge contain segments of the San Francisco Bay Trail. The Quarry Lakes Regional Recreation Area features many trails that loop between its lakes within the park, and also connects with the Alameda Creek Trail.

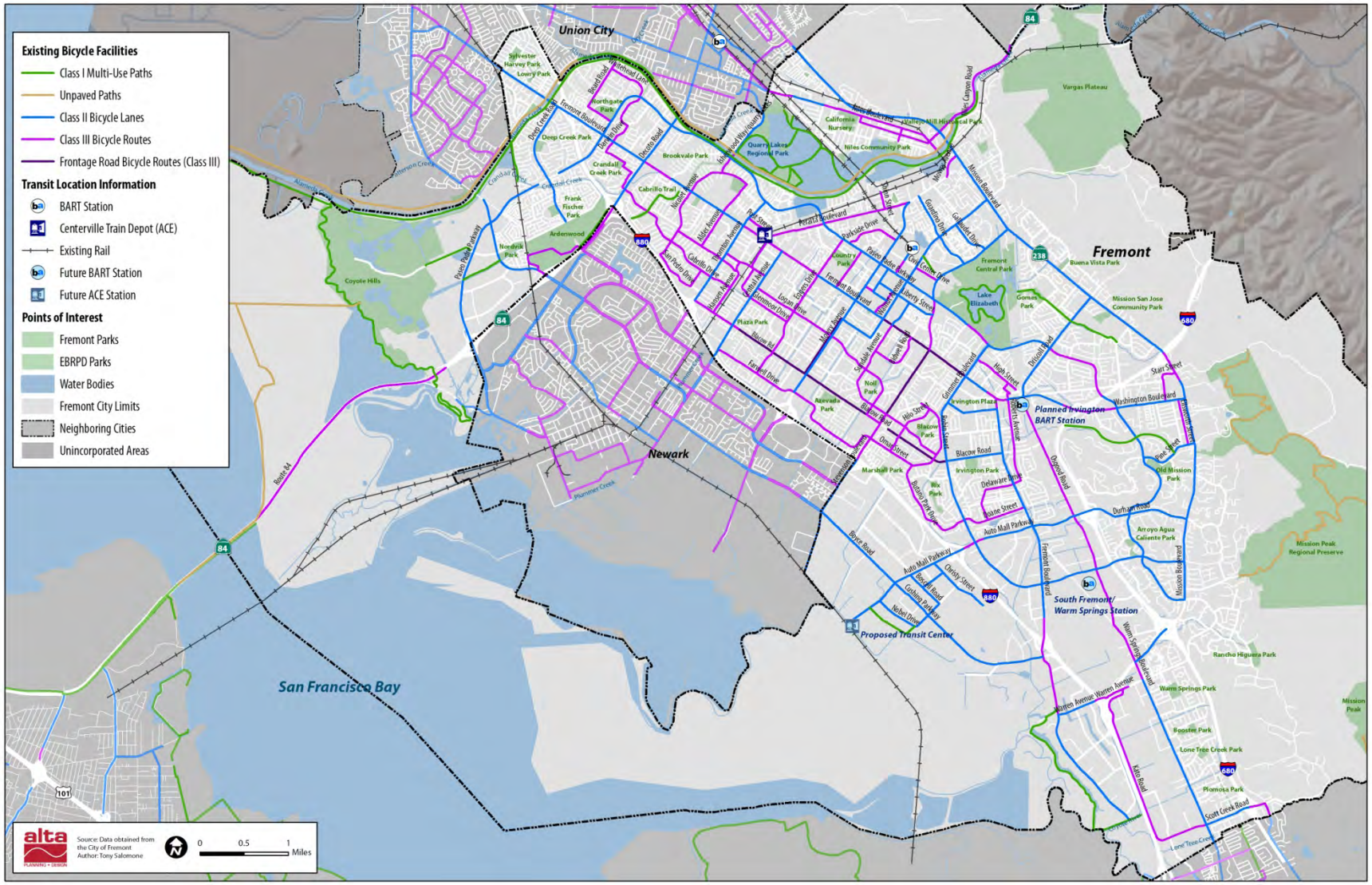

Figure 3-4: Fremont Parks

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4. Existing Bicycle Facilities and Programs

Class I bikeways are 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.

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. Bicycle 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.

The Five Es work together to enhance the bicycling experience in Fremont. The following is a review of Fremont's existing facilities and programs within the framework of the Five Es.

4.1. Engineering

The City of Fremont has a growing network of bicycle paths, lanes and routes throughout the City. Engineering strategies consist of the physical infrastructure of the bicycle network, as well as critical functions such as maintaining a clear, flat roadway surface amenable to bicycling. This section presents existing facilities and programs in order to identify where new facilities are needed and what programs will better support bicycling in Fremont.

This working paper refers to standard bikeway classifications identified by Caltrans in Chapter 1000 of the Highway Design Manual. **Figure 4-1** presents a description for these bikeway classifications and photographed examples appear at left.

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

Class II Bike Lane provides a striped and stenciled lane for one-way travel on a street or highway.

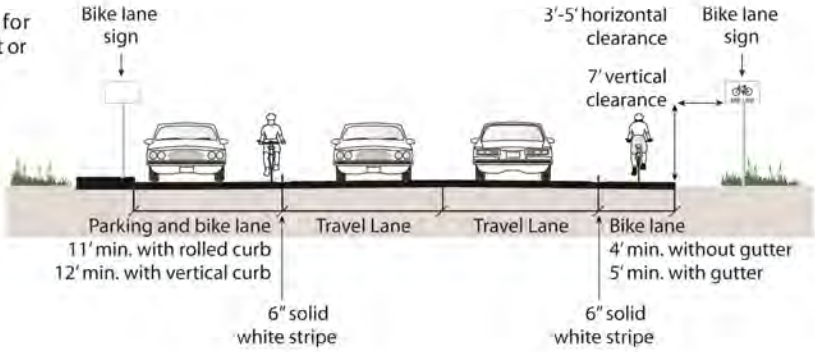
Class III Bike Route provides for shared use with pedestrian or motor vehicle traffic and is identified only by signing.

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 pedestrian or motor vehicle traffic, typically on lower volume roadways.

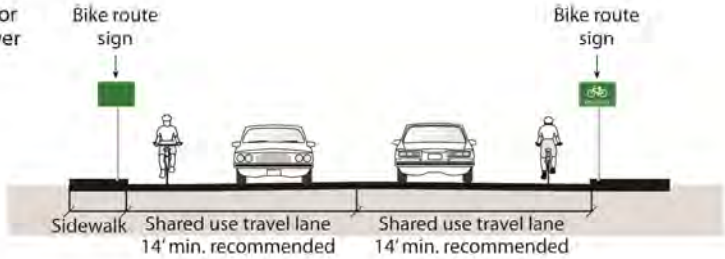


Figure 4-1: Caltrans Bikeway Classifications

4.1.1. Existing Bikeways

Fremont's existing bicycle network includes 159 miles of bikeways, which comprises over 32 miles of Class I multi-use paths, 70 miles of Class II bike lanes, and 56 miles of Class III bike routes. In the years of 2005-2010, the City of Fremont has invested approximately $1,057,000 in bicycle facilities. The investments include over six miles of bike paths, 25 miles of bike lanes, and 31 miles of bike routes.

The bicycle network consists mostly of on-street facilities, including Class II bike lanes throughout the City such as Paseo Padre Parkway and Fremont Boulevard, as well as Class III facilities providing connections on local streets. Off-street Class I facilities are concentrated around recreational amenities like Alameda Creek, Quarry Lakes, and Fremont Central Park. Despite a high density of bicycle facilities in central Fremont, there are relatively few connections across I-880 into Newark or across Alameda Creek into the Niles neighborhood and Union City. On-street facilities are sparse in the eastern area of the City where the street network is less consistently connected. **Figure 4-2** through **Figure 4-5** map existing bicycle facilities in Fremont.

Table 4-1 lists all existing Class I bicycle paths in the City of Fremont. The Alameda Creek Trail is the longest and most important facility in the City, traveling along the southern side of Alameda Creek from the Niles District to the San Francisco Bay.

Table 4-1: Existing Class I Multi-use Paths in Fremont

Name	Start	End	Mileage
Alameda Creek Trail	Niles Canyon Staging Area	San Francisco Bay	12.40
Albany Path	Walnut Ave	Civic Center Dr	0.22
Ardenwood Path	Ardenwood Historic Farm	I-880	0.53
Lake Elizabeth Trail	Lake Elizabeth/Central Park	Lake Elizabeth/Central Park	1.94
Bay Trail (Coyote Hills)	Alameda Creek	Marshlands Road	3.37
Bay Trail	Marshlands Road	Bay Trail Loop	0.37
Bay Trail	Warren Avenue	Coyote Creek	2.45
Bay Trail Loop	Marshlands Road	Marshlands Road	0.79
Cabrillo Trail	Cabrillo Dr	Fremont Blvd	0.69
California Trail (Quarry Lakes)	Isherwood Way	Wood Duck Trail	1.13
Crandall Creek Path	Alameda Creek Trail	Capulet Circle	0.46
Isla Los Rancheros (Quarry Lakes)	Center of Quarry Lakes	Western Pacific Trail	0.25
Mission Creek Path	Gomes Park	Palm Ave	1.33
Niles Canyon Trail	Niles Canyon Staging Area	Trail End	0.45
Nobel Dr	Auto Mall Parkway	Bunche Dr	0.64
Old Creek Trail (Quarry Lakes)	Isherwood Way	Western Pacific Trail	1.31
Patterson Ranch Road Trail	Paseo Padre Parkway	Coyote Hills Regional Park	0.55
Sabercat Creek Trail	Paseo Padre Parkway	Pine St	1.41
Western Pacific Trail (Quarry Lakes)	Quarry Lakes Recreation Area	Alameda Creek Trail	1.31
Wood Duck Trail (Quarry Lakes)	Old Creek Trail	Alameda Creek Trail	0.31
Class I Total			**31.91**

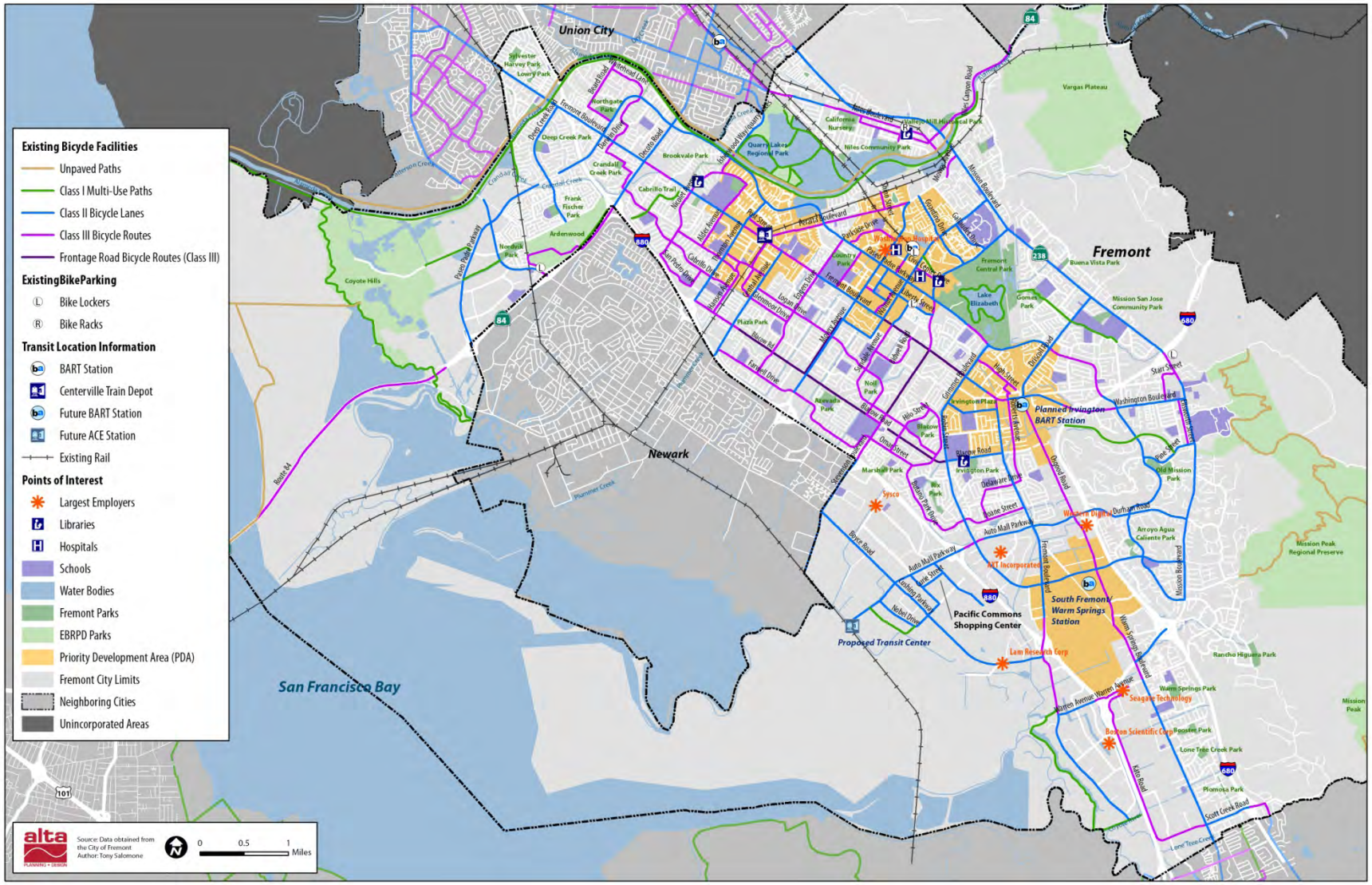


Figure 4-2: Existing Bicycle Facilities Overview

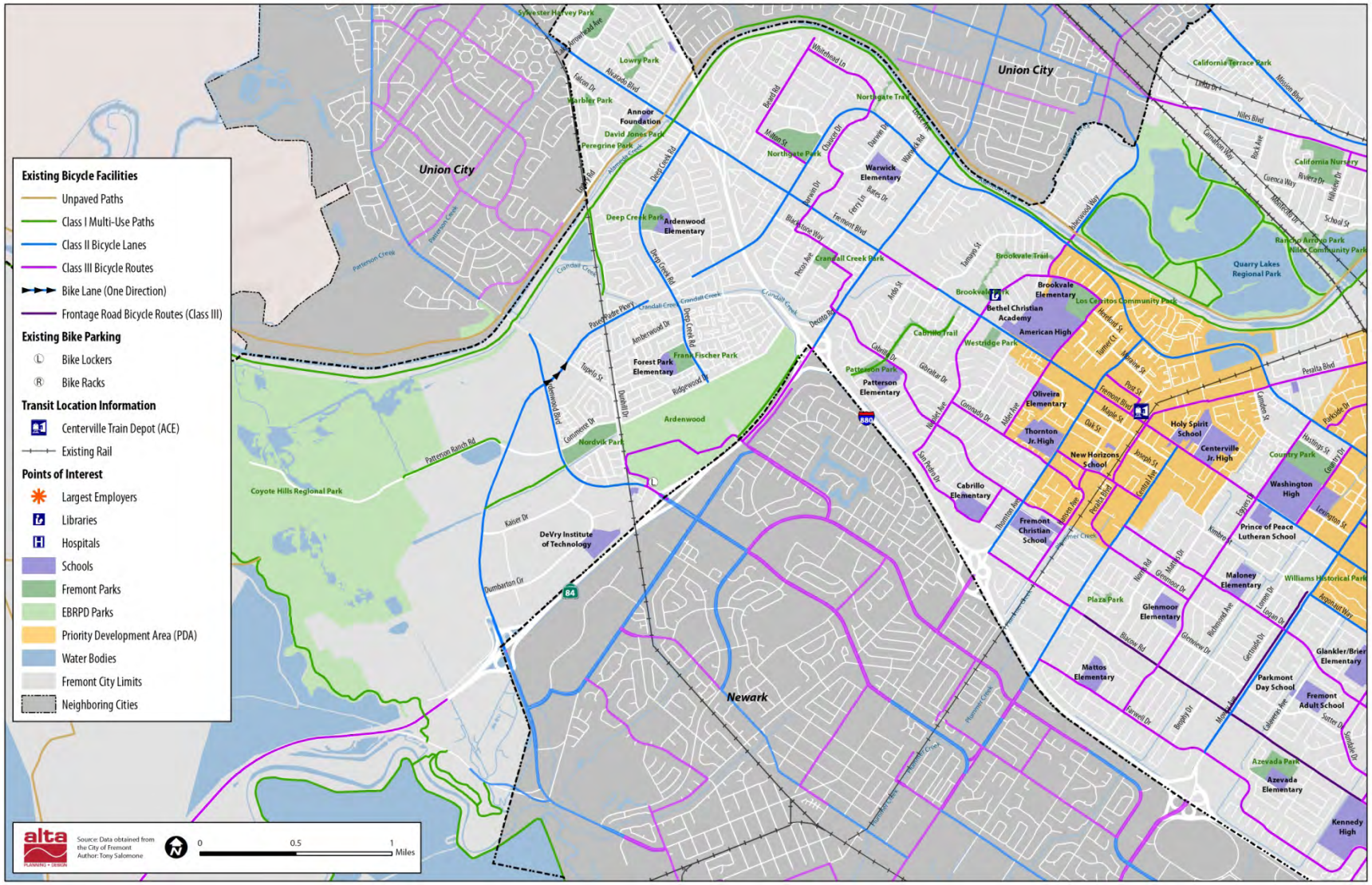


Figure 4-3: Existing Bicycle Facilities (Northwest)

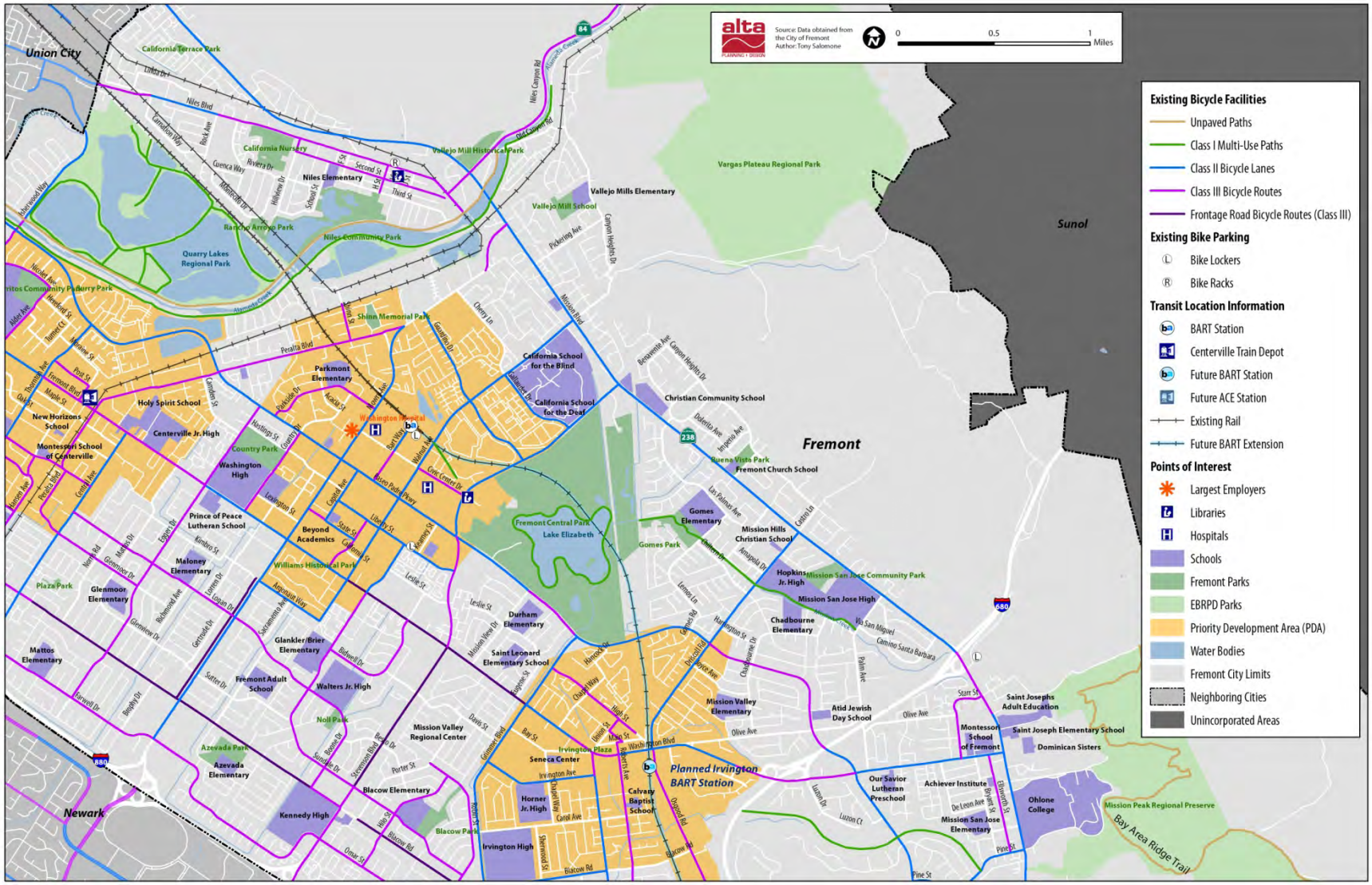


Figure 4-4: Existing Bicycle Facilities (Northeast)

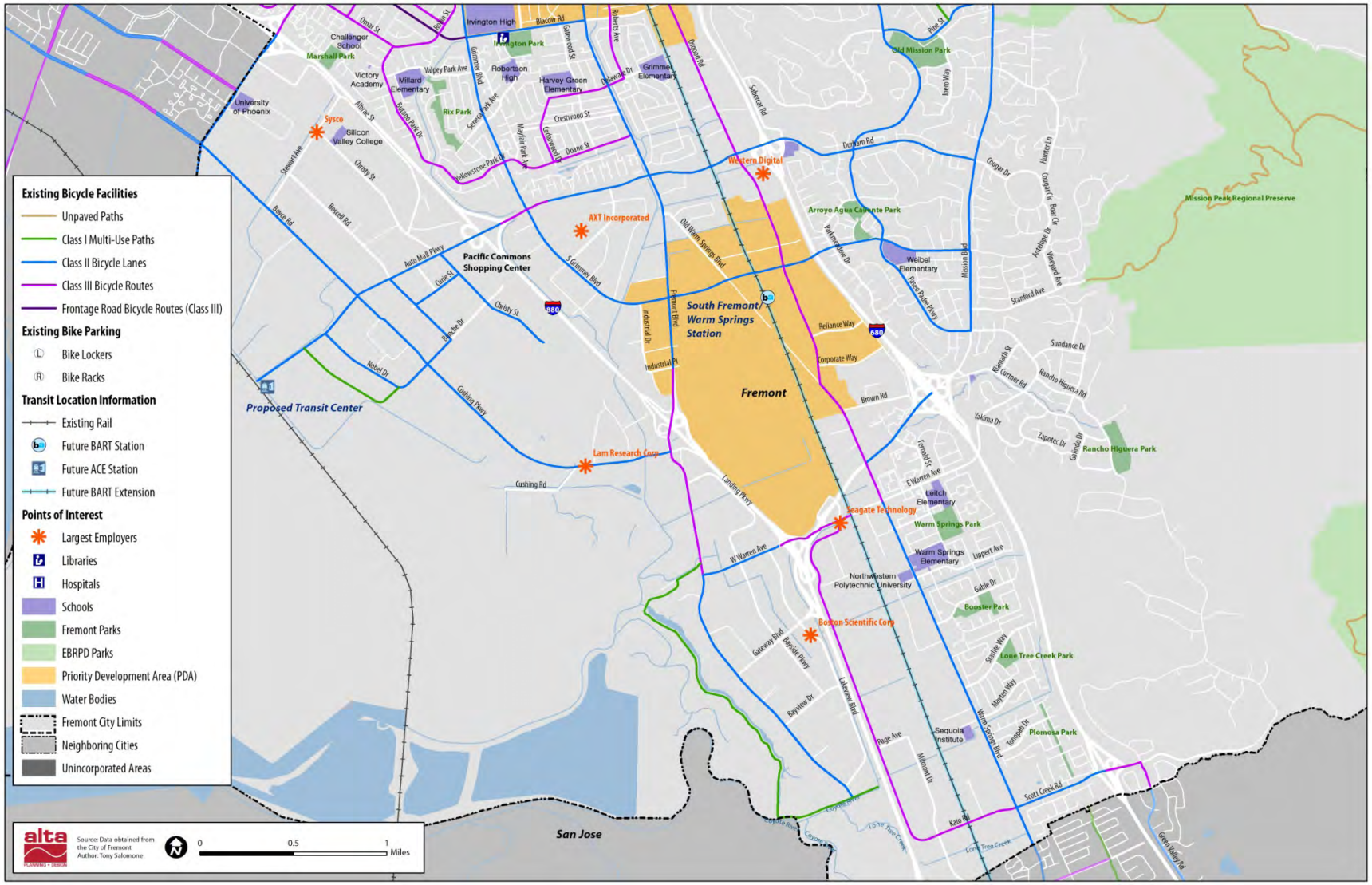


Figure 4-5: Existing Bicycle Facilities (South)

Table 4-2 lists all Class II bicycle lanes in the City of Fremont. Class II facilities are generally provided on busier arterial streets in the City like Fremont Boulevard, Warm Springs Boulevard, and Mission Boulevard, and in more recently developed parts of the City such as the streets in Pacific Commons Shopping Center. They are also the primary facility type provided east of the BART railroad tracks.

Table 4-2: Existing Class II Bicycle Lanes in Fremont

Name	Start	End	Class	Mileage
Ardenwood Boulevard	Alameda Creek	Route 84	2	1.17
Argonaut Way	Mowry Avenue	Parkhurst Drive	2	0.38
Auto Mall Parkway	I-880 Overpass	West End Of Street	2	1.57
Auto Mall Parkway	I-680 Overpass	South Grimmer Boulevard	2	1.22
Bart Way	Civic Center Drive	Fremont Bart	2	0.17
Blacow Road	Fremont Boulevard	Grimmer Boulevard	2	0.64
Boscell Road	Auto Mall Parkway	Brandin Court	2	0.46
Boyce Road	Stevenson Boulevard	Auto Mall Parkway	2	1.16
Bunche Drive	Cushing Parkway	Boscell Road	2	0.18
Capitol Avenue	Paseo Padre Parkway	State Street	2	0.31
Central Avenue	Fremont Boulevard	Newark City Limit	2	1.41
Christy Street	Auto Mall Parkway	Brandin Court	2	0.74
Curie Street	Boscell Road	Christy Street	2	0.29
Cushing Parkway	Auto Mall Parkway	Fremont Boulevard	2	2.04
Decoto Road	Union City Limit	I-880	2	1.29
Deep Creek Road	Alvarado Boulevard	Ridgewood Drive	2	1.46
Driscoll Road	Mission Boulevard	Washington Boulevard	2	1.39
Durham Road	Mission Boulevard	I-680 Overpass	2	1.17
Fremont Boulevard	Warren Avenue	Coyote Creek	2	1.50
Fremont Boulevard	Irvington Avenue	Industrial Place	2	2.45
Fremont Boulevard	Grimmer Boulevard	Papazian Way	2	0.29
Fremont Boulevard	Eggers Drive	Walnut Avenue	2	0.89
Fremont Boulevard	Tamayo Street	Thornton Avenue	2	0.97
Fremont Boulevard	I-880 Overpass	Decoto Road	2	1.92
Gallaudet Drive	Walnut Avenue	Stevenson Boulevard	2	0.45
Grimmer Boulevard	Paseo Padre Parkway	Mission Boulevard	2	5.12
Guardino Drive	Mowry Avenue	Stevenson Boulevard	2	0.95
Irvington Avenue	Grimmer Boulevard	Fremont Boulevard	2	0.59
Isherwood Way/Quarry Lakes	Union City Limit	Paseo Padre Parkway	2	0.57
Liberty Street	Stevenson Boulevard	Capitol Avenue	2	0.71
Mission Boulevard	Telles Lane	Paseo Padre Parkway	2	2.51
Mission Boulevard	Chesapeake Dr/Union City Limit	I-680	2	5.60
Mowry Avenue	Peralta Boulevard	Farwell Drive	2	2.55
Niles Boulevard	Carnation Way	Rock Avenue	2	0.35
Nobel Drive	Auto Mall Parkway	Cushing Pkwy	2	0.69

Name	Start	End	Class	Mileage
Paseo Padre Parkway	Ardenwood Blvd	State Highway 84	2	1.49
Paseo Padre Parkway	Tupelo Street	Ardenwood Blvd	2	0.17
Paseo Padre Parkway	Grimmer Boulevard	Driscoll Road	2	0.76
Paseo Padre Parkway	Sailway Drive	Tupelo Street	2	6.86
Paseo Padre Parkway	I-680	Mission Boulevard	2	3.69
Pine Street	Paseo Padre Parkway	Mission Boulevard	2	0.67
Scott Creek Road	I-680 Overpass	Warm Springs Road	2	0.52
State Street	Capitol Avenue	Beacon Avenue	2	0.18
Stevenson Boulevard	Mission Boulevard	Paseo Padre Parkway	2	1.22
Stevenson Boulevard	I-880	Railroad Tracks	2	1.40
Sundale Avenue	Liberty Street	Fremont Boulevard	2	0.32
Thornton Avenue	Paseo Padre Parkway	Blacow Road	2	1.38
Walnut Avenue	Mission Boulevard	Argonaut Way	2	2.08
Warm Springs Boulevard	Warren Avenue	Milpitas City Limit	2	2.01
Warren Avenue	Fremont Boulevard	I-880 Overpass	2	0.44
Washington Boulevard	Meredith Drive	Roberts Avenue	2	0.64
Washington Boulevard	Paseo Padre Parkway	Mission Boulevard	2	0.78
Class II Total				**69.77**

Table 4-3 lists the Class III bicycle routes in the City. Class III bike routes are generally provided on local streets in Central Fremont, usually connecting to local destinations such as schools and parks, rather than connecting to regional destinations in surrounding cities, with the notable exception of Highway 84, which connects bicyclists in Fremont to Sunol and San Mateo County.

Table 4-3: Existing Class III Bicycle Routes in Fremont

Name	Start	End	Class	Mileage
Alder Avenue	Nicolet Avenue	Coronado Avenue	3	0.87
Ardenwood Regional Preserve	Ardenwood Boulevard	Decoto Road	3	0.91
Auto Mall Parkway	South Grimmer Boulevard	I-880 Overpass	3	0.27
Balboa Way	Cabrillo Drive	San Pedro Drive	3	0.22
Bart Way	Paseo Padre Parkway	Civic Center Drive	3	0.19
Beacon Avenue	Liberty Street	Fremont Boulevard	3	0.32
Beard Road	Beard Common	Milton Street	3	0.57
Bidwell Road	Sundale Avenue	Fremont Boulevard	3	0.63
Blackstone Way	Mohawk River Street	Darwin Drive	3	0.25
Blacow Road	Boone Drive	Stevenson Boulevard	3	0.18
Blacow Road	Thornton Avenue	Dowling Avenue	3	0.59
Bonde Way	Post Street	Fremont Boulevard	3	0.09
Boone Drive	Wheeler Drive	Blacow Road	3	0.39
Butano Park Drive	Omar St	Yellowstone Park Drive	3	0.70

Name	Start	End	Class	Mileage
Cabrillo Drive	Decoto Road	Hansen Avenue	3	1.71
Canal - Calypso - Tiburon Rte	Decoto Road	Ozark River Way	3	0.24
Cedarwood Drive	Delaware Drive	Diane Street	3	0.36
Chaucer Drive	Darwin Drive	Paseo Padre Pkwy	3	0.46
Civic Center Drive	Walnut Avenue	Stevenson Boulevard	3	0.28
Contra Costa Avenue	Coronado Drive	Hansen Avenue	3	0.21
Coronado Drive	Nicolet Avenue	Thornton Avenue	3	0.60
Country Drive	Paseo Padre Parkway	Fremont Boulevard	3	0.51
Darwin Drive	Blackstone Way	Chaucer Drive	3	0.40
Decoto Road	I-880	Ardenwood Regional Preserve	3	0.61
Delaware Drive	Roberts Avenue	Cedarwood Drive	3	0.42
Doane Street	Fremont Boulevard	Grimmer Boulevard	3	0.72
Dusterberry Way	Thornton Avenue	Central Avenue	3	0.51
Eggers Drive	Paseo Padre Parkway	Granville Avenue	3	1.83
Ellsworth Street	Washington Boulevard	Pine Street	3	0.52
Farwell Drive	Central Avenue	Stevenson Boulevard	3	2.27
Fremont Boulevard	Industrial Place	Warren Avenue	3	1.15
Fremont Boulevard	Decoto Road	Tamayo Street	3	0.37
Fremont Boulevard	Papazian Way	Irvington Avenue	3	0.26
Fremont Boulevard	Thornton Avenue	Eggers Road	3	1.02
Glenmoor Drive	Peralta Boulevard	Eggers Drive	3	0.64
Green Valley Road	Scott Creek Road	San Benito Drive	3	0.14
H Street	Niles Boulevard	Third Street	3	0.15
Hansen Avenue	Dusterberry Way	Blacow Road	3	0.68
High Street	Grimmer Boulevard	Main Street	3	0.55
Hilo Street	Robin Street	Omar Street	3	0.68
Isherwood Way	Quarry Lakes	Nicolet Avenue	3	0.29
Kato Road	Warm Springs Road	Warren Avenue	3	2.47
Logan Drive	Central Avenue	Boone Drive	3	1.83
Main Street	High Street	Roberts Avenue	3	0.20
Milton Street	Beard Road	Paseo Padre Pkwy	3	0.31
Mission Boulevard	Grimmer Boulevard	Paseo Padre Parkway	3	0.43
Mission Boulevard	I-680	Telles Lane	3	0.39
Mohawk River Street	Ozark River Way	Blackstone Way	3	0.05
Mowry Avenue	Mission Boulevard	Mowry Avenue	3	0.28
Newark Boulevard	Ardenwood Boulevard	Newark City Limit	3	0.14
Nicolet Avenue	Alder Avenue	San Pedro Drive	3	1.59
Niles Boulevard	Niles Boulevard	Niles Canyon Road	3	0.16
Niles Boulevard	Rock Avenue	End Of Street	3	1.40
Niles Boulevard	Union City Line	Linda Drive	3	0.29

Name	Start	End	Class	Mileage
Niles Canyon Road	Union City Line	Mission Boulevard	3	1.38
Omar Street	Stevenson Boulevard	Blacow Road	3	0.83
Osgood Road	Washington Boulevard	Grimmer Boulevard	3	2.13
Ozark River Way	Tiburon Drive	Mohawk River Street	3	0.12
Parkside Drive	Paseo Padre Parkway	Mowry Avenue	3	0.62
Paseo Padre Parkway	Driscoll Road	I-680	3	0.92
Paseo Padre Parkway	Mission View Drive	Grimmer Boulevard	3	0.33
Peralta Boulevard	Glenmoor Drive	Mowry Avenue	3	2.29
Post Street	Thornton Avenue	Bonde Way	3	0.22
Roberts Avenue	Main Street	Delaware Drive	3	1.00
Robin Street	Porter Street	Blacow Road	3	0.75
Route 84	San Francisco Bay	Bay Trail Segment	3	2.89
San Pedro Drive	Nicolet Avenue	Balboa Way	3	0.52
Scott Creek Road	Green Valley Road	I-680 Overpass	3	0.19
Second Street	Niles Boulevard	End Of Street	3	0.88
Shinn Street	Von Euw Common	Peralta Boulevard	3	0.28
Starr Street	Mission Boulevard	Washington Boulevard	3	0.44
State Street	Mowry Avenue	Capitol Avenue	3	0.11
Stevenson Boulevard	Sundale Avenue	I-880	3	0.62
Stevenson Boulevard	Paseo Padre Parkway	Fremont Boulevard	3	0.59
Sundale Avenue	Fremont Boulevard	Robin Street	3	2.03
Von Euw Common	End Of Street	Shinn Street	3	0.12
Warm Springs Boulevard	Grimmer Boulevard	Warren Avenue	3	1.38
Warren Avenue	Bart Tracks	I-880 Overpass	3	0.42
Washington Boulevard	Union Street	Roberts Avenue	3	0.14
Washington Boulevard	Paseo Padre Parkway	Meredith Drive	3	0.64
Whitehead Lane	Paseo Padre Parkway	Beard Road	3	0.52
Yellowstone Park Drive	Butano Park Drive	Grimmer Boulevard	3	0.48
Class III Total				**56.14**

4.1.2. Connections to Adjacent Communities

Alameda Creek roughly defines the boundary between Union City and Fremont. Bicycle facilities that connect the two cities are Mission Boulevard and Niles Boulevard.

The boundary separating the Cities of Fremont and Newark follow Interstate 880 and State Highway 84. Freeways often present barriers to bicyclists, and working with both cities and Caltrans to improve conditions at freeway crossings can be particularly challenging. Existing bicycle facilities that connect the two cities are located on Thornton Avenue, Central Avenue, Mowry Avenue, Stevenson Boulevard, Cherry Street-Boyce Road, Ardenwood Boulevard-Newark Boulevard, Paseo Padre Parkway-Thornton Avenue, and the Ardenwood Historic Farm to Route 84 to the Lake Boulevard overpass.

Bicycle facilities that connect Fremont with Union City are Union City Boulevard-Ardenwood Boulevard, Isherwood Way-Quarry Lakes Drive, Alvarado Boulevard-Fremont Boulevard, Alvarado Niles Boulevard-Niles Boulevard, Mission Boulevard, and Decoto Road.

R81(CA)

D11-1

Caltrans Bikeway Signs

4.1.3. 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. These signs are shown at right. Multi-use paths require additional standardized signs to help manage different user groups. The City has installed CA MUTCD standard signs along its bikeways.

4.1.4. Bicycle Parking

The City has significantly expanded its bicycle parking program since the 2005 Bicycle Master Plan and **Figure 4-3** through **Figure 4-5** show bike parking locations. The City installed 81 new inverted-U bicycle racks and 16 electronic bike lockers at three locations for the Citywide Bicycle Parking Facilities Project. In addition, four new electronic bike lockers were installed at the Development Services Center at 39550 Liberty Street and four new electronic bicycle lockers were also installed at the Ardenwood Boulevard and Mission San Jose Community Park Park-and-Ride lot. Eight new inverted-U bike racks are planned for installation at Niles Plaza. The existing bike lockers at the Fremont BART station are planned for replacement with 36 electronic lockers in 2011.

Retail and commercial businesses can benefit from well-designed bicycle parking. Developers have voluntarily provided bicycle parking facilities at many new development sites. The City does not currently have an ordinance requiring bike parking installation but the City regularly requests the installation of bicycle parking for medium to large developments in the City. Also, in recent years, approval of major tenant improvements has often been conditional on the provision of bicycle parking.

4.1.5. Bicycle Detection

The City of Fremont maintains 161 signalized intersections; all are traffic actuated. Traffic signals are inspected every other month under a preventative signal maintenance program. All pavement resurfacing projects within the City where applicable include the replacement of bicycle detector loops and bike stencils. All intersections whose signals were constructed or modified since the 2005 Bicycle Master Plan include bicycle loop detectors with stencils indicating proper positioning to request a green light. **Table 4-4** lists intersections with traffic signals that have installed or upgraded since 2001 and detect bicycles:

Table 4-4: Existing Signalized Intersections that Detect Bicycles

Intersections	Intersections
Ardenwood Boulevard at Kaiser Drive	Grimmer Boulevard at Technology Rd
Argonaut Way at Sacramento Avenue	Mission Boulevard at Gurdwara Road
Auto Mall at Boscell Road	Mowry Avenue at Argonaut Way
Auto Mall Parkway at Christy Street	Mowry Avenue at Civic Center Drive
Auto Mall Parkway at Pacific Commons Road	Mowry Avenue at Glenview Drive
Blacow Road at Eggers Drive	Mowry Avenue at Logan Drive
Blacow Road at Greenpark Drive	Mowry Avenue at State Street
Blacow Road at Grimmer Boulevard	Nicolet Avenue at Fremont Boulevard
Boscell at Driveway No. 1	Osgood Road at Auto Mall Parkway
Boscell Road at Curie Street	Osgood Road at Wal*Mart
Cabrillo Avenue at Decoto Road	Paseo Padre Parkway at Grimmer Boulevard
Central Avenue at Blacow Road	Paseo Padre Parkway at Highway 84
Christy Street at Curie Street	Paseo Padre Parkway at Mission Boulevard
Cushing Parkway at Auto Mall Circle	Paseo Padre Parkway at Mowry Avenue
Cushing Parkway at Auto Mall Parkway	Paseo Padre Parkway at Sailway Drive
Cushing Parkway at Bunche Drive	Paseo Padre Parkway at Siward Road
Cushing Parkway at Northport Loop	Paseo Padre Parkway at Tupelo Street
Cushing Parkway at Northport Loop East	S. Grimmer Boulevard at Mission Boulevard
E. Warren Avenue at Fernald Street	S. Grimmer Boulevard at Old Warm Springs Road
Fremont Boulevard at Carol Drive	Stevenson Boulevard at Besco Road
Fremont Boulevard at Central Avenue	Stevenson Boulevard at Blacow Road
Fremont Boulevard at Country Drive	Stevenson Boulevard at Boyce Road
Fremont Boulevard at Delaware Drive	Stevenson Boulevard at Civic Center Drive
Fremont Boulevard at Ferry Lane	Stevenson Boulevard at Davis Street
Fremont Boulevard at Irvington Avenue	Stevenson Boulevard at Farwell Drive
Fremont Boulevard at North Grimmer Boulevard	Stevenson Boulevard at Mission Boulevard
Fremont Boulevard at Walnut Avenue	Stevenson Boulevard at Sundale Avenue
Gateway at Bayside	Warm Springs Boulevard at Fulton Avenue
Glenmoore Drive at Central Avenue	Warren Avenue at Warm Springs Boulevard
Grimmer Boulevard at Irvington Avenue	Washington Boulevard at Meredith Road

4.1.6. Maintenance

The maintenance of Fremont's bicycle facilities consists of restriping, replacement of missing or damaged signs, trimming of plants, pavement repair, debris removal, and traffic signal repair of bicycle devices. Bicycle facility maintenance is incorporated into the City's existing roadway and traffic signal maintenance budget. Sign replacement is generally performed on a request and as-needed basis. Current roadway maintenance programs include bikeways, but public workshop participants noted that debris often materializes in bike lanes.

The public may report traffic signal malfunctions by calling (510) 494-4745. Missing or damaged street signs can be reported to the City's Maintenance division by calling (510) 979-5700 during normal business hours. Urgent issues may be referred to the City's Police Department after hours.

4.1.7. Wayfinding

Implementing a well-designed, attractive, and functional system of network signage greatly enhances bikeway facilities by promoting their presence to both potential and existing users. Wayfinding signage is especially important for bicyclists because recommended bicycle routes may not always be direct or intuitive. Bicyclists also may not be able to access maps or other navigational resources as easily as motorists.

Fremont has some directional signage along a number bikeways, however, most local street connections and continuous bikeway routes are not identified. There is also some directional signage for major destinations, such as the BART station. However, for other destinations, the lack of directional signage presents a constraint on bicycling in Fremont.

4.2. Existing Bicycle Programs

4.2.1. Encouragement

Bicycle User Map

The City of Fremont publishes a bicycle user map with safety tips in both paper and electronic form. Freely downloadable from the City's website, the map provides a detailed picture of the existing bikeway network. The safety tips outline behaviors that can increase safety for bicyclists, describing both compliance with applicable traffic laws and insights to safer bicycling.

Bike to Work Day

Bike to Work Day is a nationwide event held in May of each year where commuters are encouraged to bike to work. The Fremont City Council annually issues a proclamation declaring Bike to Work Day. In 2011 the City had four "Energizer Stations" that furnish bike maps, refreshments, water bottles, and prizes. The four locations were:

- Fremont BART
- Paseo Padre at Stevenson
- Paseo Padre at Driscoll Rd
- Mission Ct at Warm Springs Blvd

4.2.2. Education

Youth Education

The City of Fremont offers traffic safety and education through the Public Works Department Transportation Engineering Division. Their work involves providing traffic safety workshops, school rodeo events, and community traffic safety rodeo events. Safe Moves/ Smart Moves, a national nonprofit traffic safety education organization, hosts up to four community bike rodeo events per year. A bike rodeo is a public event combining group activities with education and entertainment aimed at educating parents and students about good riding

behaviors. Children use this realistic training environment to practice bicycle handling skills, pedestrian safety, and their ability to recognize and react to traffic hazards.

Safe Moves / Smart Movez educational programs are geared towards increasing the awareness of bicycle and pedestrian safety among elementary school children and parents in Fremont schools. Instructors discuss bicycle, pedestrian and general traffic safety at school workshops during school hours. They conduct school workshops annually at the elementary schools in Fremont. Some of the topics covered during these workshops include:

- Places to ride
- Traffic signs and signals
- Rights and responsibilities of bicyclists
- Helmet use (proper fit and maintenance)
- Choosing the right size bike and model
- Proper bicycling clothing recognition and avoidance of common bicycle accidents
- Bicycle maintenance and repair
- Rules, regulations and ordinances that govern bicyclists
- Suggested routes to and from school
- Locations and uses of bicycle facilities
- School bicycle policies

Junior Safety Patrol

The Junior Safety Patrol has been in existence for almost 30 years and is the result of a partnership between the Police Department, Transportation Engineering, the Fremont Unified School District, and the California State Automobile Association (CSAA). Each school provides either a staff member or parent volunteer who organizes and supervises the Patrol. Fifth and sixth grade students are selected for the Patrol based upon merit, attendance, and good citizenship. Members of the Patrol take a post at school crossings and work to ensure the safety of fellow students.

The Police Department provides training, safety lectures, and an ongoing enforcement effort in areas surrounding schools on request. School staff and/or parent volunteers provide direct supervision and support, while equipment for the Safety Patrol is provided CSAA, at either a reduced cost, or not cost at all.

4.2.3. Enforcement

The City of Fremont actively enforces bicycle and motorist traffic violations through its traffic unit. Currently there are 10 sworn officers in the traffic unit and two community service officers. In addition, each of Fremont's six major high schools has a School Resource Officer.

Adult Crossing Guards

The City of Fremont's Police Department contracts with ACM, a management firm, to employ 24 professionally trained crossing guards to work at 17 of Fremont's 32 schools during the school year. The necessity for a crossing guard is determined by a specific set of warrants established by the City. These warrants address traffic volume, number of students crossing, and availability of alternative routes and nearby

signalized intersections. Although crossing guards are focused on pedestrian crossings, they are important to mention in the context of children bicycling to school, particularly younger children who may ride on the sidewalk and cross in the crosswalk.

4.2.4. 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 a way to measure progress towards increasing bicycling activity.

The City of Fremont has some bicycle related evaluation programs, such as conducting bicycle and pedestrian turning movement counts at some major intersections, sometimes as part of traffic impact studies. The City also monitors traffic accidents. Bicycle-related evaluation programs are not conducted regularly but the City will work to improve its consistency and to consider implementing additional effective evaluation programs.

5. Planning and Policy Review

This section reviews planning and policy initiatives relevant to the Bicycle Master Plan. The Bicycle Master Plan is supported by several local, regional, and state-level initiatives that encourage bicycling and further the vision, goals, and objectives of the Plan.

5.1. Local

5.1.1. City of Fremont General Plan (2011)

The Mobility Element of the General Plan reflects a strong commitment to improving conditions for alternative modes of transportation, including many policies and implementation measures that specifically address the needs of cyclists in the City. The Bicycle Master Plan will help to implement the General Plan's bicycle-related policies.

The goals and policies listed in **Table 5-1** provide support for the recommendations of the Bicycle Master Plan and identify further needs to address.

Table 5-1: Relevant General Plan Goals and Policies

Goal or Policy	Description
Goal 3-1	Complete Streets: City streets that serve multiple modes of transportation while enhancing Fremont's appearance and character. The goal will be achieved by retrofitting the existing network, since most of Fremont's streets are already in place.
Policy 3-1.1	Design streets to balance the needs of automobiles with the needs of pedestrians, bicyclists, and transit users. Over time, Fremont's thoroughfares should evolve into multi-modal streets that offer safe and attractive choices among different travel modes.
Policy 3-1.4	Walking, Bicycling, and Public Health: Recognize the importance of a walkable, bicycle- and pedestrian-friendly city to overall public health and wellness.
Policy 3-1.5	Improving Pedestrian and Bicycle Circulation: Incorporate provisions for pedestrians and bicycles on city streets to facilitate and encourage safe walking and cycling throughout the city.
Policy 3-1.6	Pedestrian and Bicycle Safety: Improve the safety of pedestrians and bicyclists throughout Fremont through design, signage, capital projects, pavement maintenance, street sweeping and public education.
Goal 3-2	Reducing Vehicle Miles Traveled: Improve mobility in Fremont while reducing the total number of vehicle miles traveled. The City is making significant efforts to concentrate development around major transit stations. This policy informs the Bicycle Master Plan by targeting investments in bicycle infrastructure at locations that will encourage walking and bicycling.
Policy 3-2.4	Improving Bicycle Circulation: Enhance bicycle circulation, access, and safety throughout Fremont, particularly in the City Center, the Town Centers, around existing and planned BART stations, and near schools and other public facilities
Implementation 3-2.4.A	Bicycle Route Maps: Maintain bicycle route maps and make these maps available to Fremont households, visitors, and businesses.
Implementation 3-2.4.B	Connecting the Trail System: Connect recreational trails in City and regional parks, access trails along creeks and flood control channels, and sidewalks and bike lanes on local streets to fill the gaps and improve the continuity of the city's bike and pedestrian trail system.

Goal or Policy	Description
Implementation 3-2.4.C	Implement a bicycle signage and wayfinding program, with directional signs along bike routes indicating major destinations.
Policy 3-2.5	Pedestrian and Bicycle Master Plans: Maintain and implement City master plans for pedestrian and bicycle travel, and use these plans as the basis for network development
Implementation 3-2.5.A	Bicycle and Pedestrian Capital Projects: Develop and periodically update a priority list for planned pedestrian and bicycle improvements, consistent with the route networks in the Pedestrian and Bicycle Master Plans
Goal 3-3	Accessibility, Efficiency, and Connectivity
Implementation 3-3.1.B	Narrower Streets: Where aesthetic, safety and emergency access considerations can be addressed, design streets only as wide as required to provide all necessary functions in new development to create a less auto-oriented, more pedestrian friendly street environment. .
Policy 3-3.2	Street connectivity: Promote connectivity in the street network. Except where necessitated by topography, the use of dead-ends and cul-de-sacs shall be minimized, and the extension or preservation of a grid street pattern shall be encouraged.
Policy 3-3.7	Traffic Safety Monitoring: Bicycle and Pedestrian Accident Data: Monitor bicycle and pedestrian accidents and recommend safety improvements where needed.
Policy 3-4.5	Traffic Calming: Incorporate measures to slow down or "calm" traffic on residential streets that experience cut-through traffic, hazardous conditions for bicycles or pedestrians, or a high incidence of vehicles traveling at excessive speeds.
Goal 3-5	Connecting to the region
Policy 3-7.4	Bicycle Parking and Storage: Require the provision of secured bicycle parking at (or near) all new or substantially modified commercial or industrial development projects, education and recreational facilities, and transit centers. In commercial areas, bicycle parking may be consolidated in racks serving multiple businesses to create a cleaner and more attractive street appearance. At larger employment centers, lockers and showers should be encouraged to facilitate bicycle use.
Policy 8-1.5	Linear Parks: Acquire and develop linear trail parks that serve many functions including recreational opportunities, alternative transportation routes, aesthetic enhancements and the re-use of abandoned or underutilized transportation, utility, or other corridors.

5.1.2. Union Pacific Railroad Corridor Trail Feasibility Study (2009)

The Union Pacific Railroad Corridor Trail Feasibility Study examines the feasibility and preliminary design of a Class I multi-use path adjacent to an existing railroad right-of-way from Clarke Drive in the Niles area to the Milpitas city limits. The trail has been included in the Fremont General Plan since 1991. A recommended alignment with connecting routes are discussed in the study with the City currently seeking outside funding sources for the project. The Feasibility Study describes potential environmental issues, design opportunities and constraints associated with the construction of a Class I trail.

5.1.3. Central Business District Concept Plan (2001 – Amended 2009)

The Fremont Central Business District (CBD) Concept Plan defines a vision for transportation, land use, and design in Fremont's CBD for the next 20 years. One of the goals of the Concept Plan focuses on streetscape design. The plan identifies a street typology and recommends the installation of new streets and pedestrian walkways to create a finer-grained network. New pedestrian walkways provide room for bicycle parking and

street furniture. The addition of bicycle lanes to Fremont Boulevard will improve bicycle circulation within the CBD. *Note: This Concept Plan has been incorporated into the Fremont General Plan, Community Plan Element.*

5.1.4. Irvington Concept Plan (2006)

Irvington is one of the five original towns that formed Fremont. The Irvington Concept Plan provides a vision and design guidelines for the development of the District for the next 20 years. The sixth goal of the Concept Plan is to "provide an integrated, safe, and well-designed pedestrian and bicycle network, including access to Laguna Creek, Central Park, and other recreational amenities." To achieve this goal, the Plan includes a multi-use path extending from a potential new BART Station at Osgood Road and Washington Boulevard to Central Park, crossing Paseo Padre Parkway at a pedestrian/bicycle bridge. *Note: This Concept Plan has been incorporated into the Fremont General Plan, Community Plan Element.*

5.1.5. Niles Concept Plan (2001)

The Niles Concept Plan sets forth a vision and action plan to revitalize the Niles District as an attractive and lively destination for residents and visitors. Improving pedestrian and bicycle connections to nearby parks and open spaces is a high priority in the Concept Plan. Also, connections to other parts of Fremont require travel on high volume arterials. Policy T-9 calls for a safe pedestrian and bicycle crossing of Mission Boulevard and Policy T-10 recommends bike lanes on Niles Boulevard and Second Street. *Note: This Concept Plan has been incorporated into the Fremont General Plan, Community Plan Element.*

5.1.6. Warm Springs BART Area Existing Conditions Report/Analysis (2004)

Bay Area Rapid Transit (BART) is planning the extension of the system south from the existing Fremont station to a proposed new station in Warm Springs. With funding from Alameda County Measure A, the City is considering transit-oriented, mixed-use land use patterns to replace the existing primarily industrial and undeveloped lands. New bicycle lanes are planned on Warm Springs Boulevard frontage and in the vicinity of the future Warm Springs BART station.

5.1.7. Centerville Specific Plan (1993)

The Centerville Specific Plan establishes objectives and policies for land use and community design, intended to revitalize the Centerville neighborhood. Among its objectives is to improve pedestrian and bicycle circulation between neighborhoods and community districts. In addition to bicycle facilities identified in the General Plan, the Centerville Specific Plan calls for on-street facilities on Maple Street and Post Street will provide bicycle access to the Fremont Amtrak Station. These improvements are intended for bicyclists to be able to bypass Fremont Boulevard. The Plan also calls for bike racks in the commercial area and at the Centerville Train Depot. Eight electronic bicycle lockers and some bicycle racks were recently installed. *Note: This Specific Plan has been incorporated into the Fremont General Plan, Community Plan Element.*

5.1.8. Washington Boulevard/Paseo Padre Parkway Grade Separation (2010)

The Washington Boulevard/Paseo Padre Parkway Grade Separation Project was completed in 2010. The City constructed an overpass on Washington Boulevard between Bruce Drive and Roberts Avenue and an underpass on Paseo Padre Parkway between Shadowbrooke Common Road and Hancock Drive, separating roadway users from railroad crossings. A pedestrian/bicycle bridge was also constructed. It is expected to

improve safety and reduce traffic delays and facilitate the extension of BART from downtown Fremont to Warm Springs.

5.1.9. East-West Connector Project (2009)

The East-West connector project seeks to improve connections for motorists between I-880 and Route 238 in Fremont and Union City. The project will widen portions of Decoto Road and Paseo Padre Parkway and connect a new roadway, in portions of Fremont and Union City, from Paseo Padre Parkway to Mission Boulevard. Continuous pedestrian and bicycle facilities will be provided, including a Class I path parallel to the proposed east-west connector roadway alignment. The Final Environmental Impact Report has been completed and is available to the public.

5.1.10. Mission Boulevard/I-880 Project (2010)

The Mission Boulevard/I-880 project is intended to improve safety and traffic efficiency near the interchange of Mission Boulevard and I-880. The project, completed in 2010, provides direct connectors in each direction to and from I-880 and Mission Boulevard. I-880 was widened from three lanes in each direction to four lanes in each direction north of the interchange and six lanes in each direction south of the interchange. The project completed a new Warren Avenue crossing over I-880 to offer local traffic a direct connection from Warm Springs Boulevard to Fremont Boulevard. Additional projects in the vicinity include road widening and a grade-separated crossing of the Union Pacific Railroad Tracks on Warren Avenue.

5.2. County and Region

The Alameda County Congestion Management Agency (ACCMA) and Alameda County Transportation Improvement Authority (ACTIA) merged in fall 2010 to become Alameda County Transportation Commission (ACTC). This new, combined agency develops strategies to improve mobility for bicyclists and pedestrians and relieve traffic congestion. The agency is presently updating its Countywide Bicycle and Pedestrian Plans.

The Metropolitan Transportation Commission is the regional transportation planning organization for the Bay Area. MTC sets the broad vision for the movement of goods and people throughout the region, including regional bicycle and pedestrian planning.

The Association of Bay Area Governments (ABAG), while not specifically a transportation agency, leads the development of the Bay Trail. In addition, ABAG sets housing needs allocations for the Bay Area, which affect housing density and the increased walking and biking associated with higher-density developments.

Relevant plans from these agencies are described below.

5.2.1. Alameda Countywide Bicycle Plan (2006)

The Alameda Countywide Bicycle Plan was adopted by ACCMA (now ACTC) in 2006. The plan summarizes existing bicycling conditions in the County, identifies a countywide network of connected bicycle facilities, describes proposed bicycle programs, and includes an implementation plan. The plan includes several countywide corridors that run through Fremont:

- Route 5: Part of the high priority network for Alameda County, Route 5 includes a Class I bike path along the eastern side of the city and existing Class II bike lanes on Paseo Padre Boulevard and Thornton Avenue.

- Route 25: Part of both the high priority network and the fiscally constrained network, Route 25 follows Fremont Boulevard north to Grimmer Boulevard, and moves northward through the City on Auto Mall Parkway, Boyce Road, and Cherry Street.
- Route 35: Follows Warm Springs Boulevard and continues northward on Osgood Road and Paseo Padre Parkway, exiting the city on Decoto Road.
- Route 65: Travels northeast on Grimmer Boulevard and Mission Boulevard.
- Route 80: Travels west to east through the City on the Alameda Creek Trail, then continues on Alvarado Niles Road and Niles Canyon Road.
- Route 120: Route 120 is a part of the fiscally constrained network and follows Central Avenue northeast through the City to the Fremont Amtrak station and continues on Peralta Boulevard and Mowry Avenue.

The countywide plan update is currently underway as of 2011, and is expected to be completed in 2012.

5.2.2. Metropolitan Transportation Commission Regional Bicycle Plan (2009)

MTC updated the Regional Bicycle Plan in 2009, identifying regional bikeway connections in the San Francisco Bay Area and strategies to fill gaps in the regional bikeway network. The Regional Bicycle Plan's principal 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 Regional Bicycle Plan's goals relevant to bicycle planning in Fremont include:

- Direct 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.
- Two projects in Fremont are listed among the unbuilt regional bikeway network links: 5.4 miles between the intersection of Niles Boulevard and Mission Boulevard and the intersection of Central Avenue at the Bay Trail, and 3.8 miles from Grimmer Boulevard to the Santa Clara County Line.

5.2.3. San Francisco Bay Trail Plan (1989)

In 1987, Senate Bill 100 enabled the Association of Bay Area Governments to develop and adopt a plan and implementation and funding program for a continuous recreational bicycle and pedestrian corridor that extends around San Francisco and San Pablo Bays. The Association of Bay Area Governments adopted the San Francisco Bay Trail Plan in 1989. Approximately 290 miles of the 500-mile trail have been constructed, either as pedestrian or bicycle paths or as on-street bicycle lanes or routes. The Bay Trail designates a "spine" for a continuous through-route around the Bay and "spurs" for shorter routes to Bay resources. The goals of the Plan include providing connections to existing park and recreation facilities, links to existing and proposed transportation facilities, and preserving the ecological integrity of the Bays and wetlands.

In Fremont, the Bay Trail includes the Dumbarton Bridge and several paths through recreational areas on the shoreline. Paseo Padre Parkway and Ardenwood Boulevard are on-streets segments of the Bay Trail that have bike lanes and sidewalks, and proposed bike lanes on Ardenwood Boulevard connect Fremont to the north.

The Bay Trail Gap Analysis was performed in 2005 and provides an inventory of gaps in the trail alignment. **Table 5-2** lists the gaps that were identified in Fremont. In addition, two Bay Trail feasibility studies are currently underway which evaluate potential trail alignments closer to the shoreline from the Dumbarton Bridge/ Route 84 Toll Plaza to Dixon Landing Road at the Fremont/Milpitas city limits. The study is scheduled to be completed in 2011.

Table 5-2: Bay Trail Gaps Identified in Fremont

Location	Length (ft)	Class	Term
Boyce from Stevenson to Auto Mall	6,118	1	Short
Connection to Newby Loop	481	1	Medium
Between Dixon Landing and Fremont Boulevard	3,631	1	Medium
Cushing Parkway and Fremont Boulevard to Landing Road	5,968	2	Medium
Pacific Common Development	14,166	1	Medium
Newark PG & E Substation	2,632	1	Medium
Railroad alignment between Cushing and Auto Mall Parkway	18,533	1	Long

5.3. State

Since 2006, three bills have been signed into law that directly and indirectly support bicycle facility development: the Global Warming Solutions Act, the Sustainable Communities Act, and the Complete Streets Act. Additionally, Caltrans adopted Deputy Directive 64-R-1, which directs Caltrans to provide for bicycle and pedestrian facilities in all roadway projects, and issued Policy Directive 09-06 that requires bicycle detection at new or modified actuated traffic signals.

5.3.1. Assembly Bill 32: Global Warming Solutions Act (2006)

Signed into law in 2006, the Global Warming Solutions Act sets discrete actions for California to reduce greenhouse gas emissions. These actions focus on reducing emissions by increasing motor vehicle and shipyard efficiency and other strategies that apply to refrigerants, landfills and consumer products. A 2007 court ruling held that local planning documents must address greenhouse gas emissions. AB 32 identifies bicycling as one of several strategies to employ for California to reach 1990 greenhouse gas emission levels by 2020 and the Bicycle Master Plan will help the City of Fremont to achieve this goal.

5.3.2. Senate Bill 375: Sustainable Communities (2008)

Signed into law in 2008, SB 375 links land use planning with greenhouse gas emissions. The law requires the California Air Resources Board to set emissions reduction goals for metropolitan planning organizations. The greenhouse gas reduction targets for the Bay Area (adopted in September 2010) are a 7 percent reduction in per capita emissions by 2020 and 15 percent by 2035. A Joint Policy Committee comprised of the Association of Bay Area Governments, the Metropolitan Transportation Commission, Bay Area Air Quality Management

District, and Bay Conservation and Development Commission is developing the Sustainable Communities Strategy (SCS), pursuant to SB 375.

The SCS for the Bay Area is named FOCUS and will include land use and transportation strategies that will allow the region to meet its greenhouse gas reduction targets. The Association of Bay Area Governments and the Metropolitan Transportation Commission has implemented the FOCUS program, which identifies Priority Development Areas and Priority Conservation Areas. Priority Development Areas are locally-identified opportunity areas for infill development near transit. Priority Conservation Areas are regionally significant open spaces for which there exists a broad consensus for long-term protection. There are three Priority Development Areas in Fremont: Centerville, the Central Business District, and Irvington. The South Fremont/Warm Springs District Planning area in the vicinity of the new Warm Springs BART station is expected to be approved as a fourth Priority Development Area.

Implementation of the FOCUS program will likely result in shorter transportation trips and more bicycling and pedestrian trips. Aspects that could indirectly benefit the Bicycle Master Plan are:

- The California Air Resources Board regional targets for greenhouse gas emissions reductions tied to land use.
- Regional planning agencies creation of a Sustainable Communities Strategy to meet greenhouse gas emission targets. The strategy will guide the Regional Housing Needs Allocation, the Regional Transportation Plan and the Regional Transportation Improvement Program.
- Regional transportation funding decisions must be consistent with this new plan.

5.3.3. Assembly Bill 1358: Complete Streets (2008)

The Complete Streets Act requires the legislative body of any City or County, upon revision of a general plan or circulation element, to ensure that streets accommodate all user types, including 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. The Fremont General Plan has written Complete Streets into its overarching goals and the Bicycle Master Plan will help to implement the Plan's provisions.

5.3.4. Caltrans Deputy Directive 64-R1: Complete Streets (2008)

Similar to AB 1358, the California Department of Transportation Complete Streets Directive provides guidance for transportation facilities under state jurisdiction. The Directive codifies the Department's intention to integrate motorized, transit, pedestrian and bicycle travel by creating complete streets that provide safe travel for all road users, beginning early in system planning and continuing through project delivery and maintenance and operations. There are many roads under state jurisdiction in Fremont, but this directive is particularly relevant to sections of State Highway 84, State Highway 238, and State Highway 262.

5.3.5. Assembly Bill 1581: Traffic-Actuated Signals: Bicycles: Motorcycles (2007)

The California Assembly Bill 1581 requires new and replacement actuated traffic signals to conform with professional engineering practices to detect bicycles and motorcycles. Caltrans Policy Directive 09-06 (2009) provides standards, specifications and guidelines for bicycle detection. This bill and policy directive apply to all actuated traffic signals in California.

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6. Needs Analysis

This chapter reviews the relationship between bicycle use, commute patterns, demographics, and land use in the City of Fremont. It identifies major activity centers and public facilities where bicyclists may be destined, along with the needs of recreational, casual and commuter bicyclists. A review of the needs of each bicycle user group will help guide the type and routing of the bikeway system.

One of the primary reasons for creating the Bicycle Master Plan is to maximize the number of bicycle commuters in order to help achieve transportation goals such as minimizing traffic congestion and air pollution. In order to set the framework for these benefits, local and national statistics are used as a basis for determining the benefits of an improved and expanded bikeway network for Fremont. The national and local statistics are based on the 2000 U.S. Census and the 2005-2009 American Communities Survey.

6.1. Land Use and Demand

The concept of "demand" for bicycle facilities can be difficult to comprehend. Unlike automobile use, where historical trip generation studies and traffic counts for different types of land uses permits an estimate of future "demand" for travel, bicycle trip generation methods are less advanced and standardized in the United States. Land use patterns can help predict demand and are important to bikeway planning because changes in land use (and particularly employment areas) will affect average commute distance, which in turn affects the attractiveness of bicycling as a commute mode. The Fremont bikeway network will connect the neighborhoods where people live to the places they work, shop, recreate, or go to school. An emphasis will be placed on improving bikeway connections from residential areas to major activity centers in Fremont, including:

- Major employment centers
- Civic buildings such as libraries
- Schools
- Town centers
- Fremont BART Station
- Centerville Amtrak/ACE Train Station
- City parks and regional recreational areas

6.2. Bicyclist Needs

A review of bicyclist needs is instrumental to plan a system that must serve multiple user groups; and can help to quantify future usage and benefits to justify expenditures of resources. The Bicycle Master Plan seeks to address the needs of all current and potential bicyclists. It is important to understand their diversity in order to develop a successful plan. During the planning process, the most outspoken bicyclists during the planning process are often the most experienced. The skill level of the bicyclist greatly influences expected speeds and behavior. Bicycle infrastructure should accommodate as many user types as possible and provide a comfortable experience for the greatest number of bicyclists.

The American Association of State Highway and Transportation Officials (AASHTO) categorizes bicyclists as "advanced bicyclists," "basic bicyclists" and "child bicyclists." Bicycle and pedestrian planners have developed alternative categories that not only describe existing and potential bicyclists, but also address Americans' varying attitudes towards bicycling. Survey data and anecdotal evidence support these four alternative categories:

'**Strong and Fearless**' bicyclists, consisting of less than two percent of Americans, will typically ride anywhere on any roadway regardless of roadway conditions or weather. They can ride faster than other user types, prefer direct routes and will typically choose roadway connections – even if shared with vehicles – over separate bicycle facilities such as bicycle paths.

'**Enthused & Confident**' bicyclists are mostly comfortable riding on all types of bicycle facilities but will usually prefer low traffic streets or multi-use pathways when available. Approximately 13 percent of Americans fall under this category. These bicyclists may deviate from a more direct route to travel on a preferred facility. This group includes all kinds of bicyclists including commuters, recreationalists, racers, and utilitarian bicyclists.

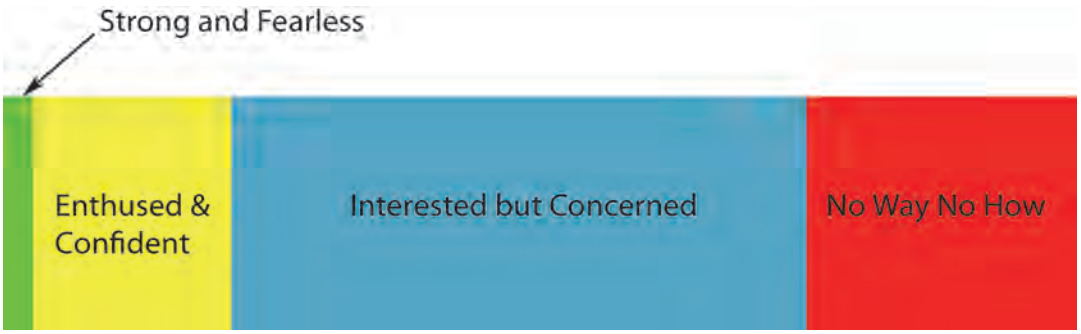

Figure 6-1: Bicyclist Types

The remainder of the American population does not ride a bicycle regularly. Approximately 60 percent of the population can be categorized as '**Interested in cycling but concerned about safety**' and represents casual bicyclists who typically only ride a bicycle on low traffic streets or bicycle paths under favorable conditions and weather. These infrequent or potential bicyclists perceive traffic and safety as significant barriers towards increased use of bicycling. These bicyclists may ride more regularly with encouragement, education and experience.

Approximately 25 percent of Americans are not bicyclists, and perceive severe safety issues with riding in traffic. Some people in this group may eventually consider bicycling and may progress to one of the user types above. A significant portion of these people will never ride a bicycle under any circumstances.

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 are seen in Fremont.

6.2.1. Recreational Bicyclist Needs

The term "recreational" cyclist covers a broad range of skill and fitness levels. Recreational bicyclists in Fremont can range from a "roadie" who joins 50-mile group rides on weekends, to a family with young children who occasionally want to ride a couple miles down a quiet bike path, and all levels in between. A cyclist's level of skill, fitness, and comfort on the road will determine what type of facility they are looking for. The needs of recreational bicyclists must be understood prior to developing a system or set of improvements. While it is not possible to serve every neighborhood and every need, a good plan will integrate recreational needs to the extent possible. The following points summarize recreational needs:

- Recreational users cover all age groups from children to adults to senior citizens. Each group has its own abilities, interests, and needs.
- Directness of route is typically less important than routes with less traffic conflicts, visual interest, shade, and protection from wind, moderate gradients, or other features.
- People exercising or touring often (though not always) prefer a loop route rather than having to backtrack.

In order to characterize the differences in recreational cyclists, this study breaks this category into two subcategories: "Road Bicyclists" and "Casual Bicyclists," acknowledging that these are generalizations and that many bicyclists have attributes of both user groups.

Road Bicyclists

Due to the relatively narrow width and thin casing of standard road bike tires, road bicyclists are often susceptible to flat tires. Glass, rocks, and other debris on the road or shoulder pose major concerns. In addition, loose material on the road such as sand or gravel can cause skinny road tires to lose traction and wash out on curves. Since most road debris tends to end up in the shoulder, road bicyclists will merge into the travel lane if debris in the shoulder may cause a flat tire or other hazard. This can sometimes lead to conflicts with motor vehicles, as motorists may not understand why a cyclist is riding in the lane if there is a seemingly good shoulder available.

Depending on the rider's fitness, topography may not affect road bicyclists; in fact, many road bicyclists seek out challenging and scenic terrain. In and around Fremont, such routes include Niles Canyon Road, Palomares Road, Morrison Canyon Road, or across the Dumbarton Bridge to destinations in the Santa Cruz Mountains.

Casual Bicyclists

Casual recreational bicyclists generally desire off-street bike paths, are seeking a more relaxed bicycling experience, and cover shorter trip distances at slower speeds. Their trips tend to be less than 10 miles, and they often ride more comfort-oriented hybrid or mountain bikes. Casual bicyclists may ride with children and other riders of varying skill and fitness levels, and therefore prefer flat topography. Casual bicyclists are typically not comfortable riding in traffic, and will avoid busy streets when possible and ride on the sidewalk if necessary. Bike routes on low-traffic residential streets are generally acceptable for casual bicyclists, even if they are not the most direct route between destinations. Fremont's flat topography offers many opportunities for casual and family bicyclists, including attractive recreational destinations including the Alameda Creek Trail and Coyote Hills Regional Park. Major barriers include crossings of I-680 and I-880, busy arterial roadways or highways, and major crossings or intersections that might intimidate casual bicyclists who are not comfortable negotiating heavy traffic, merging, or changing lanes, especially when accompanying young

children. Clearly signed bike routes that avoid busy streets and intersections are important to encourage casual bicyclists.

6.3. Commute Patterns

A central focus of presenting commute information is to identify the current "mode split" of people that live and work in Fremont. Mode split refers to the choice of transportation a person selects to move to destinations, be it walking, bicycling, taking a bus, or driving. One major objective of any bicycle facility improvement is to increase the "split" or percentage of people who choose to bike rather than drive or be driven. Every saved vehicle trip or vehicle mile represents quantifiable reductions in air pollution and can help lessen traffic congestion. Journey to work and travel time to work data were obtained from the US Census for Fremont, Alameda County, California, and the United States.

6.3.1. Census Journey to Work Data

US Census data provides useful information for understanding bicycling and walking rates, particularly when comparing jurisdictions. However, it only reports the mode that residents use when commuting to work and not for other purposes, like school trips and shopping. Thus, the Census frequently underestimates the true number of people walking and biking in a community. For the City of Fremont, the most recent available Census data come from the 2005-2009 American Community Survey.

Table 6-1 presents journey to work data for Fremont and compares it to Alameda County, California, and the United States. The 2005-2009 American Community Survey estimates that 339 Fremont residents bicycle to work, representing 0.5 percent of commuters. Fremont's bicycle commuting rate is significantly lower than the rates for Alameda County or the State of California but similar to the US average.

Table 6-1: Means of Transportation to Work by Place of Residence

	Drive Alone	Carpool	Transit	Bike	Walk	Work at home / Other
Fremont	76.1%	10.5%	5.1%	0.5%	2.9%	4.9%
Alameda County	73.4%	12.0%	5.2%	0.9%	2.8%	5.7%
California	66.9%	10.6%	11.4%	1.5%	3.6%	6.0%
United States	75.6%	10.9%	7.1%	0.4%	1.1%	4.9%

Source: American Community Survey, 2005-2009

Travel time to work is shown in **Table 6-2**. Travel time is important because it can give an indication of the number of potential new bicycle commuters.

Table 6-2: Travel Time to Work

Travel Time to Work	United States	California	Alameda County	Fremont
Less than 10 minutes	14.3%	11.6%	8.7%	8.4%
10 to 19 minutes	29.9%	29.1%	27.6%	23.9%
20 to 29 minutes	20.6%	20.2%	19.2%	18.3%
30 to 44 minutes	19.6%	21.1%	23.9%	27.5%
45 to 59 minutes	7.5%	7.9%	10.8%	12.2%
More than 60 minutes	8.0%	10.0%	9.7%	9.6%

Source: American Community Survey, 2005-2009

Assuming that travel occurs primarily on local roads during peak commute periods, a motor vehicle commute time of 10 minutes or less would be equivalent to about a 20 minute bicycle commute on flat terrain. In other words, converting an under-10 minute motor vehicle commute trip to a bicycle commute trip would still result in a reasonable 20-minute commute time. As shown in **Table 6-2**, about 8.4% of Fremont residents have a commute time of 10-minutes or less (most of these trips are drive alone, based on the city's mode split data). While some of these people may be taking transit or walking, based on the fact that 76% of all Fremont residents drive alone to work, it can be assumed that the majority of these short-distance commuters are driving alone to work. Given these findings, there is substantial opportunity to convert short distance motor vehicle commute trips to bicycle commute trips.

6.3.2. Census Transportation to Work by Workplace Data

Workers from other communities can be a significant source of biking trips for cities like Fremont with significant employment. The Census provides journey-to-work data by destination. Workers in Fremont are more likely to drive alone than workers in other communities, but biking levels are approximately equal to those in Newark, Oakland, and San José.

Table 6-3: Means of Transportation to Work by Workplace

	Drive Alone	Carpool	Transit	Bike	Walk	Other
Fremont	79.3%	12.8%	2.2%	0.7%	1.5%	3.5%
Newark	76.1%	16.1%	2.9%	0.8%	1.1%	2.9%
Oakland	64.1%	13.6%	13.4%	0.8%	3.2%	4.9%
San Jose	77.2%	13.2%	3.8%	0.6%	1.6%	3.5%

Source: Bureau of Transportation Statistics, 2000

6.3.3. Regional Transit Access

The 2008 BART Station Profile Study found that 7,294 riders enter Fremont Station on an average weekday, 5,431 traveling from home. Half of these passengers accessed the BART station by driving alone, and only one percent on bicycle. The overwhelming majority of these passengers' city of origin is Fremont rather than

nearby cities including Newark, Milpitas and San José. This suggests potential for more transit-access trips to be made on bicycle.

6.3.4. Commuter and Utilitarian Bicyclist Needs

As this is a plan for enhancing and developing bicycle facilities, and available state and federal bicycle funding is primarily focused on utilitarian and commuter bicyclists – those riding to work or school (commuting), or for shopping, errands, and other utilitarian trips – it is important to understand their specific needs.

Utilitarian bicyclists in Fremont include employees who ride to work, children who ride to school, and people accessing downtown businesses, neighborhood parks, or other destinations. Fremont has the potential to increase the number of utilitarian bicycle trips because of (a) concentrated local employment, (b) a relatively flat topography, (c) a moderate climate, and (d) a high percentage of work commute trips (17%) that are less than 15 minutes in length.

Commuter and student destinations in Fremont residents include major employers such as LAM Research Group; numerous high-tech office and industrial parks located in the city; colleges such as Ohlone College; the Fremont BART station and Amtrak/ACE station; and elementary, junior high and high schools. Targeting bikeway improvements to commuters is important because most roadway congestion and a significant portion of air contaminants occur during the AM and PM peak periods. Enhancing the safety and quality of Fremont bikeways will help to encourage even more residents to commute on bicycles.

Key commuter and utilitarian bicyclist needs are summarized below:

- Commuter and utilitarian walking or bicycling typically falls into one of two categories: Adult employees and younger students.
- Adult employee commuter and utilitarian bicyclists may be further broken down into "By Choice" and "By Necessity." "By Choice" bicyclists may own motor vehicles, but choose to bicycle to work for a variety of reasons such as avoiding traffic, health and exercise, or environmental reasons. "By Necessity" bicyclists are typically lower income residents who may not own a motor vehicle (or even have a drivers license) and use the bicycle as their primary transportation mode.
- Trips range from several blocks to one or more miles.
- Commuter and utilitarian bicyclists typically seek the most direct and fastest route available. Many experienced "By Choice" adult bicyclists are comfortable riding on-street, often preferring to ride on arterials rather than side streets. "By Necessity" bicyclists are often less experienced bicyclists who are not aware of the rules of the road and are more likely to ride on the sidewalk or ride in the wrong direction on-street.
- Unprotected intersections (no traffic control device such as a signal or stop sign) crossing locations are a major concern.
- Commute periods typically coincide with peak traffic flows and congestion, increasing the exposure to potential conflicts with vehicles.
- Places to securely store bicycles are of paramount importance to all commuter and utilitarian bicyclists.
- Many younger students use sidewalks for riding to schools or parks, which is acceptable in areas where pedestrian volumes are low, driveway visibility is high, and the bicyclists speed is relatively low. Where on street parking and/or landscaping obscures visibility, sidewalk riders may be exposed to collision risk. Older students who consistently ride at speeds over 10 mph should ride on-street wherever possible.

Commuters and students follow similar paths, which is typically the most direct possible route from origin to destination. Once they have arrived at their destinations, bicycle commuters often find no (or substandard) bicycle racks, and no showers or lockers. Rather than providing an incentive for bicyclists, most schools and employers inadvertently discourage bicyclists while continuing to subsidize parking for the automobile.

Bikeway network improvements that benefit commuting bicyclists include bike lanes along arterials and collectors, loop detectors at signalized intersections, new signals where school children need to cross busy arterials, adequate maintenance of the pavement, and adequate bicycle storage and showers at their destinations. Beyond the network development and "Engineering" aspects of the plan, commuter bicyclists can benefit greatly from educational programs that emphasize bicycling street skills and safe traffic behavior (for both bicyclists and motorists), enforcement of both motorist and bicyclist traffic violations, and encouragement efforts and campaigns such as Bike to Work Day or employer-based bike commute incentives.

6.4. Estimated Commuter and Utilitarian Bicyclists

A key goal of this Plan is to maximize the number of bicyclists in order to realize multiple benefits, including 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 does not consider bicycle use when riding to transit or school. Alta Planning + Design has developed a bicycle model that estimates usage based on available empirical data.

This model uses Fremont 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 number of students biking to school, derived from multiplying the K-8 student population by three percent, adjusted from the national bike to school average rate of two percent.
4. Number of those who bike to transit:
    a. Add the number of people who bicycle to BART, derived from an assumption that one percent of riders bike to transit.

As shown in **Table 6-4**, there are an estimated 5,131 daily bicycle commuters and utilitarian riders in Fremont. 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 6-4: Current Bicycle Trips in Fremont

Data		Source and Assumptions
Commute Statistics		
Study Area Population	200,932	2005-2009 U.S. Census American Community Survey
Employed Population	97,000	2005-2009 U.S. Census American Community Survey
Bike-to-work mode share	0.5%	Mode share percentage of Bicycle to Work Commuters 2005-2009 US Census American Communities Survey
Bike-to-work commuters	485	2005-2009 U.S. Census American Community Survey
Work-at-home mode share	4.90%	2005-2009 U.S. Census American Community Survey
Work-at-home bike commuters	475	Assumes 10% of population working at home makes at least one daily bicycle trip
Estimated number of people who use transit	6,858	2005-2009 U.S. Census American Community Survey
Bike-to-transit mode share	1%	Estimated 1% of boardings, BART Station Profile Report
Transit bicycle commuters	69	Estimated 1% of boardings, BART Station Profile Report
School children, ages 6-14 (grades K-8)	26,612	2005-2009 U.S. Census American Community Survey
School children bicycling mode share	3%	National Average 2%. National Safe Routes to School Survey (2003), adjusted for Fremont based on existing programs
School children bike commuters	798	School children population multiplied by children bike mode share
College students in study area	14,767	2005-2009 U.S. Census American Community Survey estimated percentage of college students (6.7%)
Estimated college bicycling mode share	5%	National Bicycling & Walking Study, FHWA, Case Study No. 1, 1995 [Review of bicycle commute share in seven university communities (5%)]
College bike commuters	738	College population multiplied by college bike mode share
Total number of bike commuters	2,566	Total of bike-to-work, transit, school, college and utilitarian bicycle commuters (Does not include recreation)
Total daily bicycling trips	5,131	Total bicycle commuters x 2 (for round trips)
Estimated Adjusted Mode Share	1.28%	Estimated bicycle commuters divided by population

6.5. Collision Analysis

This collision analysis identifies locations with reported bicycle-related collisions in Fremont and identifies the commonly violated traffic codes. This analysis will inform the Plan's engineering and programmatic recommendations. Per Caltrans requirements, this analysis uses the most currently available Statewide Integrated Traffic Records (SWITRS) data from 2004 through 2009, during which 295 bicycle-related collisions were reported in Fremont. While generally the best available data for analyzing collisions in California, SWITRS data only record collisions reported by police officers and exclude near-misses or collisions on private property and bicycle paths.

Figure 6-2 and **Table 6-5** present the number of collisions involving bicyclists between 2004 and 2009. There appears to have been a spike in bicycle-related collisions in 2008. This increase has been found in other Bay Area cities as well, and may result from Caltrans accounting procedures or other exogenous factors like an increase in bicycling due to high fuel prices. New bicyclists are less experienced and may benefit from safety education courses.

Table 6-5: Bicycle-Related Collisions

Year	Collisions	Fatalities	Injuries
2004	52	1	47
2005	45	1	40
2006	44	1	41
2007	47	0	46
2008	69	0	69
2009	38	0	37
Total	**295**	**3**	**280**

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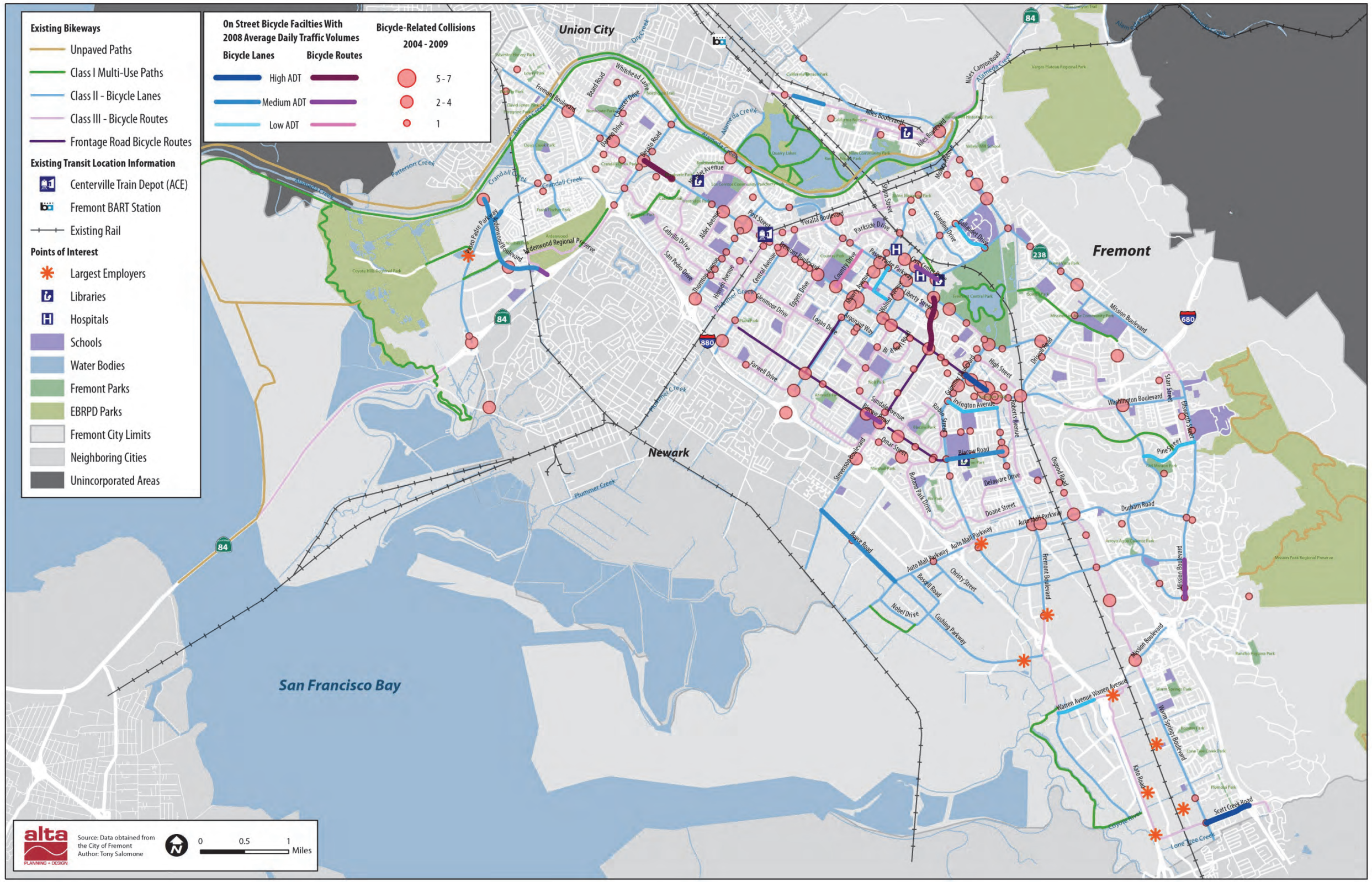

Figure 6-2: Bicycle Related Collision Map

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Figure 6-3 shows the distribution of bicycle-related collisions throughout the day from 2004 through 2009. Collisions are most common during afternoon hours, which is when both motor vehicle and bicycle volumes are typically highest.

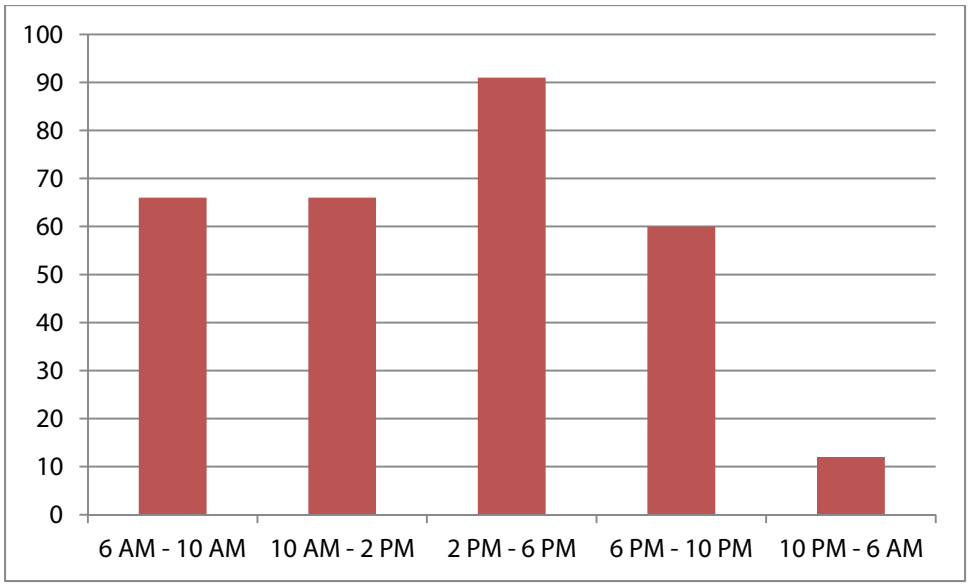

Figure 6-3: Collisions by Time of Day

Figure 6-4 shows collisions by day of the week. Similar to other California cities, more collisions occur on weekdays than on weekends. This suggests a need to improve conditions for commuter bicyclists.

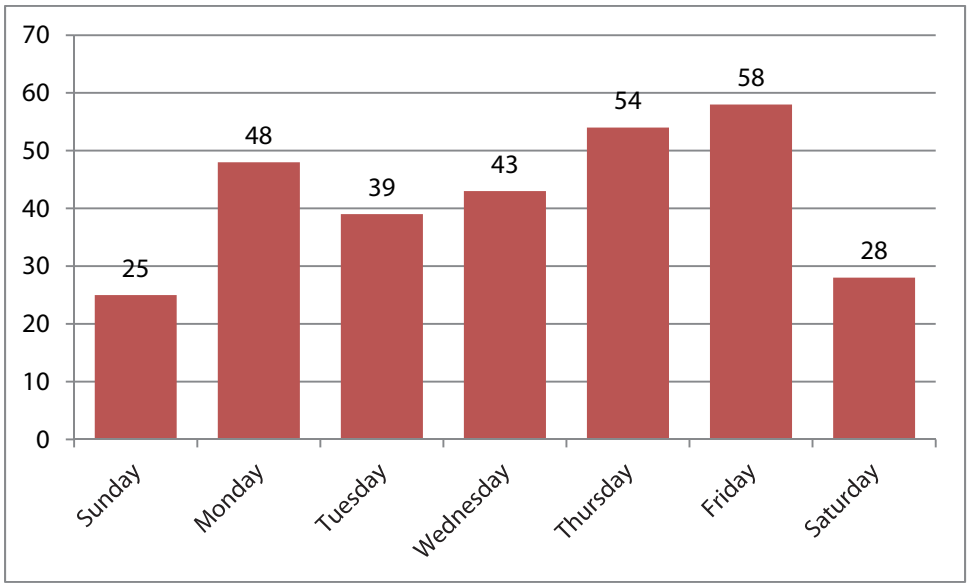

Figure 6-4: Collisions by Day of the Week

Figure 6-5 presents the distribution of bicycle-related collisions according to the month when they occurred. Collisions are most frequent between April and October, when weather is generally most inviting to bicyclists. Few collisions occurred in rainy weather.

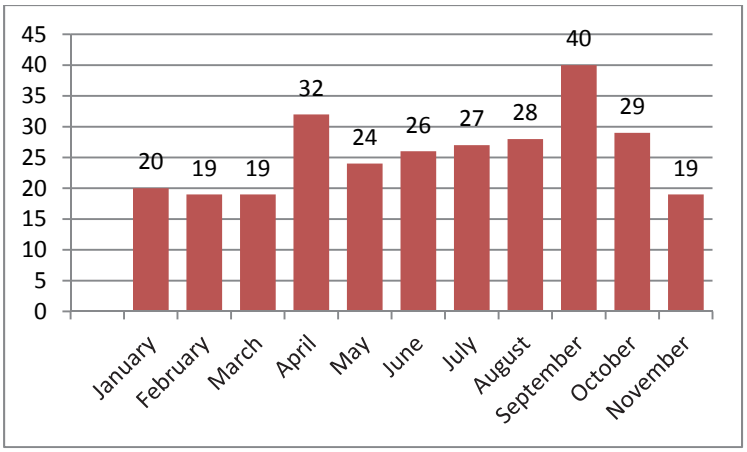

Figure 6-5: Collisions by Month

Table 6-6 lists the most common vehicle code violations associated with bicycle-related collisions. In 70 percent of crashes, the bicyclist was deemed to be at fault, with wrong-way riding accounting for 116 collisions. The frequency of wrong-way riding suggests that an education or enforcement campaign may be helpful to curb this unsafe behavior. Drivers were cited in 20 percent of incidents, most commonly for right-of-way violations. This violation category includes collisions caused by motorists crossing into bike lanes, suggesting that clearer demarcation of the bicyclist travel area may improve safety in the City.

Table 6-6: Primary Collision Factor Reported in Bicycle-Related Collisions

	Driver at Fault	Bicyclist at Fault	Not reported
Unsafe Speed	3	14	0
Wrong Side of Road	1	116	1
Improper Turning	7	20	3
Automobile Right-of-Way	25	19	3
Traffic Signals and Signs	5	18	1
Other Violations	17	21	21
Total	**58**	**208**	**29**
% of Violations at Fault	19.7%	70.5%	9.8%

Table 6-7 lists the intersections with the most bicycle-related collisions in Fremont. The top five are listed but many others are tied with three collisions. Crashes are dispersed throughout the city, although over 25 percent of bicycle-related collisions occurred on Fremont Boulevard. While bike lanes are provided on various stretches of Fremont Avenue, bicycle facilities are not provided at the intersections of Fremont and Papazian, Blacow and Stevenson, or Chapel Way and Fremont Boulevard. Facilities are provided near the intersection of

Fremont Boulevard and Mowry Avenue but are dropped at a significant distance from the intersection. The intersection of Fremont Boulevard and Walnut Avenue is a transition area where bike lanes are provided on one side of the intersection but not the other. Free right-turn lanes are located at several of the high-collision locations in Fremont.

Table 6-7: Intersections with the Most Collisions in Fremont

Intersection	Collisions
Fremont Boulevard And Mowry Avenue	7
Fremont Boulevard And Papazian Way	7
Blacow Road And Stevenson Avenue	4
Fremont Boulevard And Walnut Avenue	4
Chapel Way And Fremont Boulevard	4

This analysis will help the recommendations of the Bicycle Master Plan to account for specific problem locations and behaviors associated with crashes in Fremont. The incidence of wrong-way riding suggests that targeted education or citation diversion programs may be necessary to reach less-experienced riders and help them ride more safely.

6.6. Public Outreach

Public outreach is an important component of the Bicycle Master Plan. Outreach for this Plan included attending meetings and administering workshops with the Bicycle and Pedestrian Technical Advisory Committee (BPTAC), Recreation Commission (which acts as the Bicycle Advisory Committee), and distributing an online survey. Listening carefully to members of the community will ensure that the recommendations of the Bicycle Master Plan address those issues that are most important to bicyclists and potential bicyclists in the community.

6.6.1. Advisory Committee

A Bicycle and Pedestrian Technical Advisory Committee (BPTAC) meeting was held in January 2011. The broader Fremont community was notified and invited. Participants marked existing conditions maps to identify facilities that they especially liked or needed improvement. Many community members found crossings of freeways to be difficult, especially because some on-street bicycle facilities are suspended or terminated at the overpasses.

The meeting also sought generalized feedback about bicycling in Fremont. Participants expressed concern about the maintenance of bicycle facilities in Fremont. Debris often accumulates at the side of roads in bike lanes may discourage bicyclists from using bicycle facilities if it is not removed promptly. Other maintenance concerns include potholes and trimming bushes.

6.6.2. Survey

A survey administered to the public was active between February 18th and March 14th, 2011, garnering 250 responses. Approximately half of respondents were between the ages of 45 and 64, and 60 percent of respondents were male. Although many recreational bicyclists are also utilitarian bicyclists, the overwhelming

majority of respondents cited "Exercise/Health" and "Pleasure" as reasons for riding a bicycle, as shown in **Table 6-8**.

Table 6-8: Reason for Bicycling

Reason for Bicycling	Respondents Citing
Exercise/health	87%
For pleasure	83%
For shopping/errands	37%
Personal Business (visiting friends, etc.)	33%
To get to work	29%
To get to transit	18%
To get to school	7%
I don't bike	4%

The frequency of recreational riding suggests that there are many potential utilitarian bicyclists in the City of Fremont. They may be discouraged from biking by poor connections to important destinations or a lack of end-of-trip amenities such as secure bicycle parking, showers, and changing areas.

The survey identified the most significant reasons why respondents may choose not to bicycle in the City. As listed in **Table 6-9,** concerns about traffic volumes and speeds and a lack of bikeway facilities were cited by more than half of respondents. This may reflect anxieties about riding on busy arterials where most of Fremont's bike lanes are provided. The inclusion of "No bikeways" among the most popular responses is especially interesting because Fremont has an extensive bicycle network. This disconnect suggests that bikeways may not serve important destinations. Other significant barriers were poor road conditions, a lack of bicycle parking, the need to carry things and distance between destinations. The Bicycle Master Plan will include recommendations to address the most commonly cited issues; encouragement programs such as Bike to Work Day can help prospective bicycle commuters to be resourceful about carrying items and more confident about covering longer distances.

Table 6-9: Barriers to Bicycling

Barrier	Respondents Citing
Too many cars/ cars drive too fast	59%
No bikeways	56%
Poor road conditions	49%
No bike parking	36%
I have to carry things	35%
Destinations are too far away	32%
Other	16%
Insufficient lighting	16%
I travel with small children	15%
Health reasons	1%

Open-ended responses identified especially troublesome locations for bicyclists within the City. Mission Boulevard was commonly cited as a challenging road for bicyclists, both to travel along and to cross. Survey respondents also felt Fremont Boulevard presents problems for bicyclists, especially south of Thornton Avenue.

> *"In general, the main problem with Fremont's bicycle lanes is that they offer little protection for the bicyclist. Oftentimes, these lanes are right next to vehicle lanes, which have drivers speeding and cutting into bicycle lanes."*

Respondents were also asked about the relative desirability of various types of bicycle facilities. As shown in **Figure 6-6**, respondents clearly desire some degree of separation from fast-moving motor vehicle traffic, with 94 percent of respondents viewing separated bike paths as "desirable" or "somewhat desirable". Bicycle boulevards and on-street bike lanes are also generally desirable, but respondents are divided about Class III unstriped bike routes.

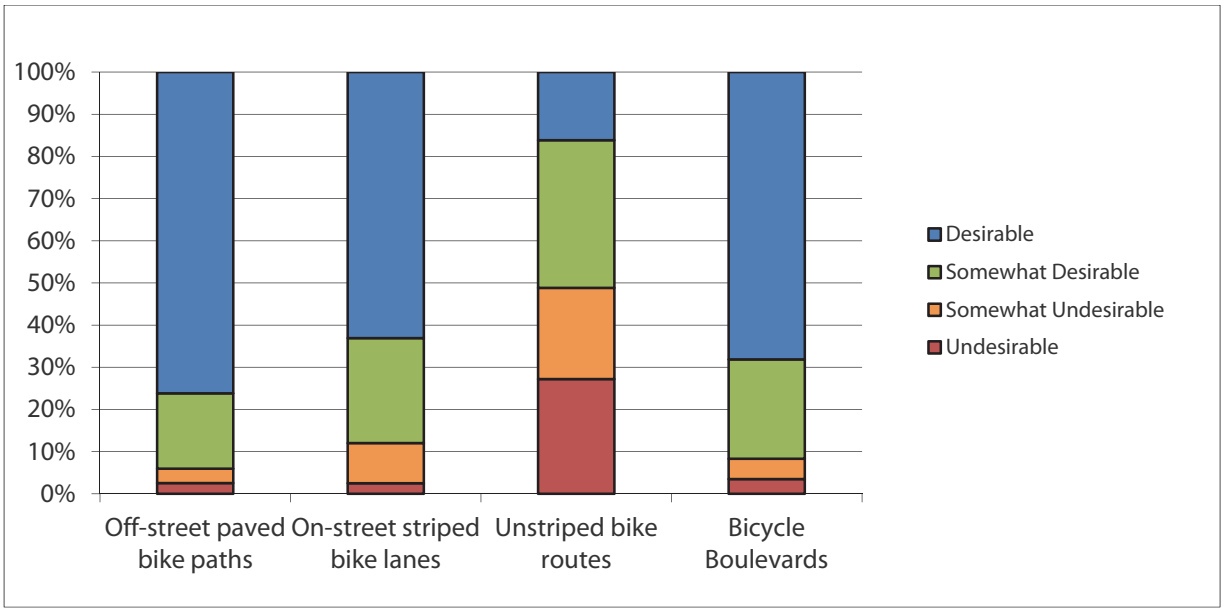

Figure 6-6: Desirability of Bicycle Facilities

Because many of the roadways identified as challenging for bicycling include bike lanes, the survey results suggest that additional treatments may be needed to ensure safe and comfortable conditions for bicycling.

Respondents also identified the types of interventions that would most encourage them to bicycle more. As shown in **Table 6-10**, 77 percent of respondents cited more bike paths as an effective strategy to increase bicycling in Fremont. Other improvements include improved safety from cars, more on-street bike lanes, and more bike routes. About half of respondents recommended improved bike parking and wayfinding signage.

Table 6-10: Improving Bicycling in Fremont

Intervention	Respondents Citing
More bike paths	77%
Improved safety from cars	71%
More on-street bike lanes	68%
More bike routes	62%
Improved bicycle storage security/parking	49%
More bikeway destinations/route signage	46%
Improved personal safety (e.g. lighting)	32%
Education and outreach programs	28%
Other	8%

6.7. Summary of Bicyclist Needs

Improvements to both bicycle infrastructure and programs are needed for the City to realize the goals of the Bicycle Master Plan and the General Plan. While the City has made significant progress since 2005, it should continue to improve infrastructure for bicyclists with a focus on providing continuous facilities through the City and enhancing challenging intersections.

Collision data is valuable to identify both programmatic needs, such as outreach to motorists and bicyclists about traffic rules and regulations, and infrastructure needs like clear demarcation of roadway space and improvements at intersections where bicycle facilities are suspended. Fremont Boulevard has an especially high number of collisions, especially at large intersections with free right turns, suggesting that intersection improvements along this corridor should be an important part of the Plan.

Survey results suggest bicyclists in Fremont desire alternatives to busy arterials, as well as the continuation of bicycle facilities even in situations where roadway width may be constrained. Bicycle Boulevard treatments and off-street paved bike paths are particularly desirable. Respondents also desire bike parking and wayfinding signage.

The following chapter presents recommendations informed by this needs analysis.

7. 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.
- **Cross-Town Routes** provide a continuous bicycle network connecting the City on lower volume and lower speed streets.
- **Spot Improvements** identify specific locations for focused improvement.
- **Signage and Stencil Improvements** identify standard and recommended signs for citywide and specific location implementation.
- **Bicycle Parking** identifies key locations citywide for bicycle parking installation, a bike parking plan for downtown and a recommended bicycle parking ordinance.
- **Design and Maintenance** provides recommendations for complete streets design standards and bicycle facility maintenance.

7.1. 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 60 miles of new facilities to increase Fremont's bikeway connectivity and to create a comprehensive, safe, and logical network. At full build out of the proposed bikeways, Fremont will have over 200 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.

Figure 7-1 through **Figure 7-4** show the existing and proposed bikeway network and **Table 7-1** through

Table 7-3 lists the bikeways by type and mileage. The proposed bikeways were developed with consideration for roadway widths, traffic volumes and speeds, and connections to destinations. This Plan proposes three bikeway types, listed below and described in **Sections 7.1.1** through **7.1.3**.

- Class I Multi-Use Paths
- Class II Bicycle Lanes
- Class III Bicycle Routes

In addition to these standard bikeway types, Fremont may consider the development of a cross-town route network. A recommended cross-town network is presented in **Section** 0. The cross-town network should include distinctive signing and stenciling. The network may be developed into a bicycle boulevard system to be designed and developed as this Plan is implemented.

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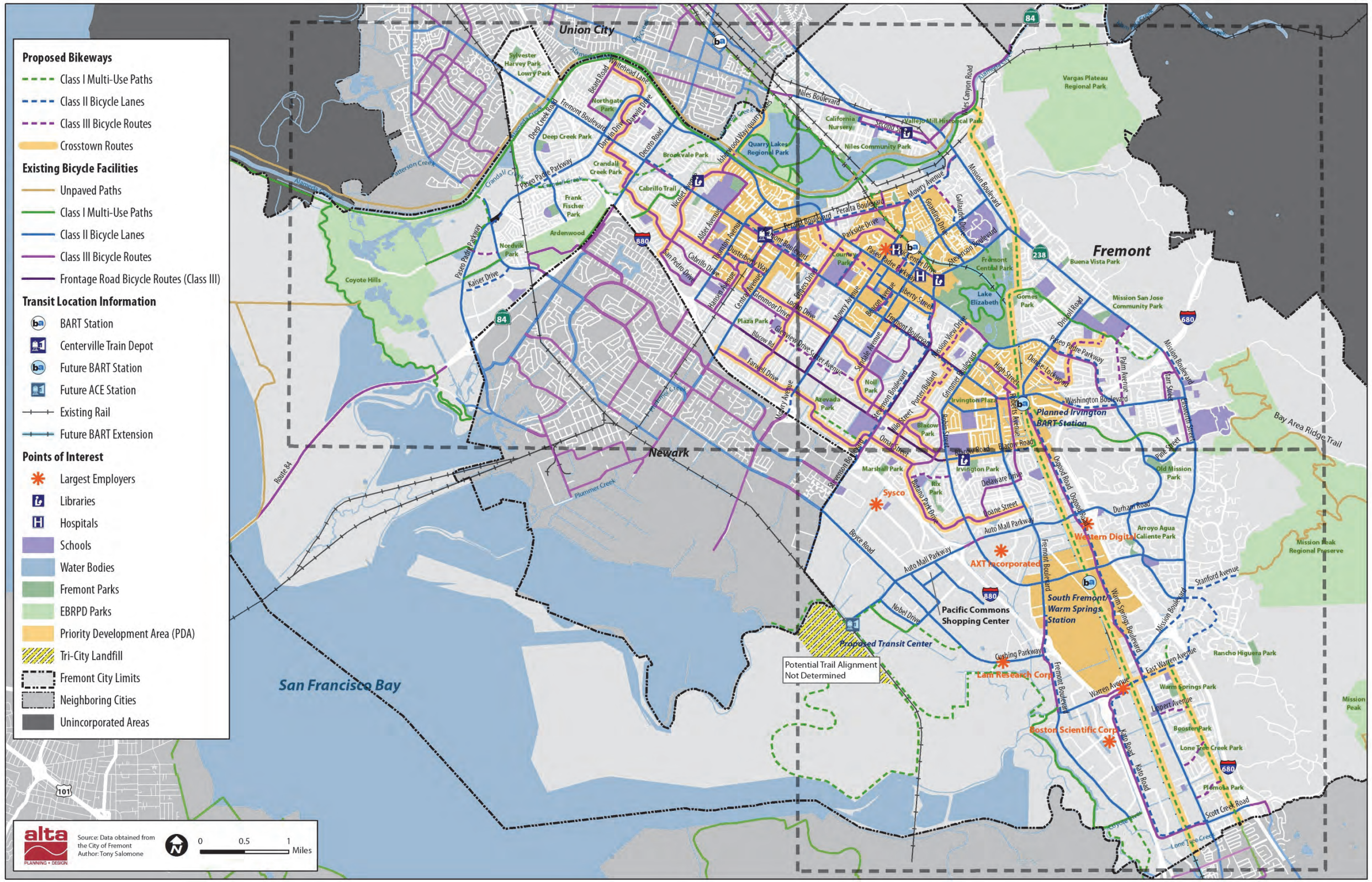

Figure 7-1: Fremont Existing and Proposed Bikeway Network Overview

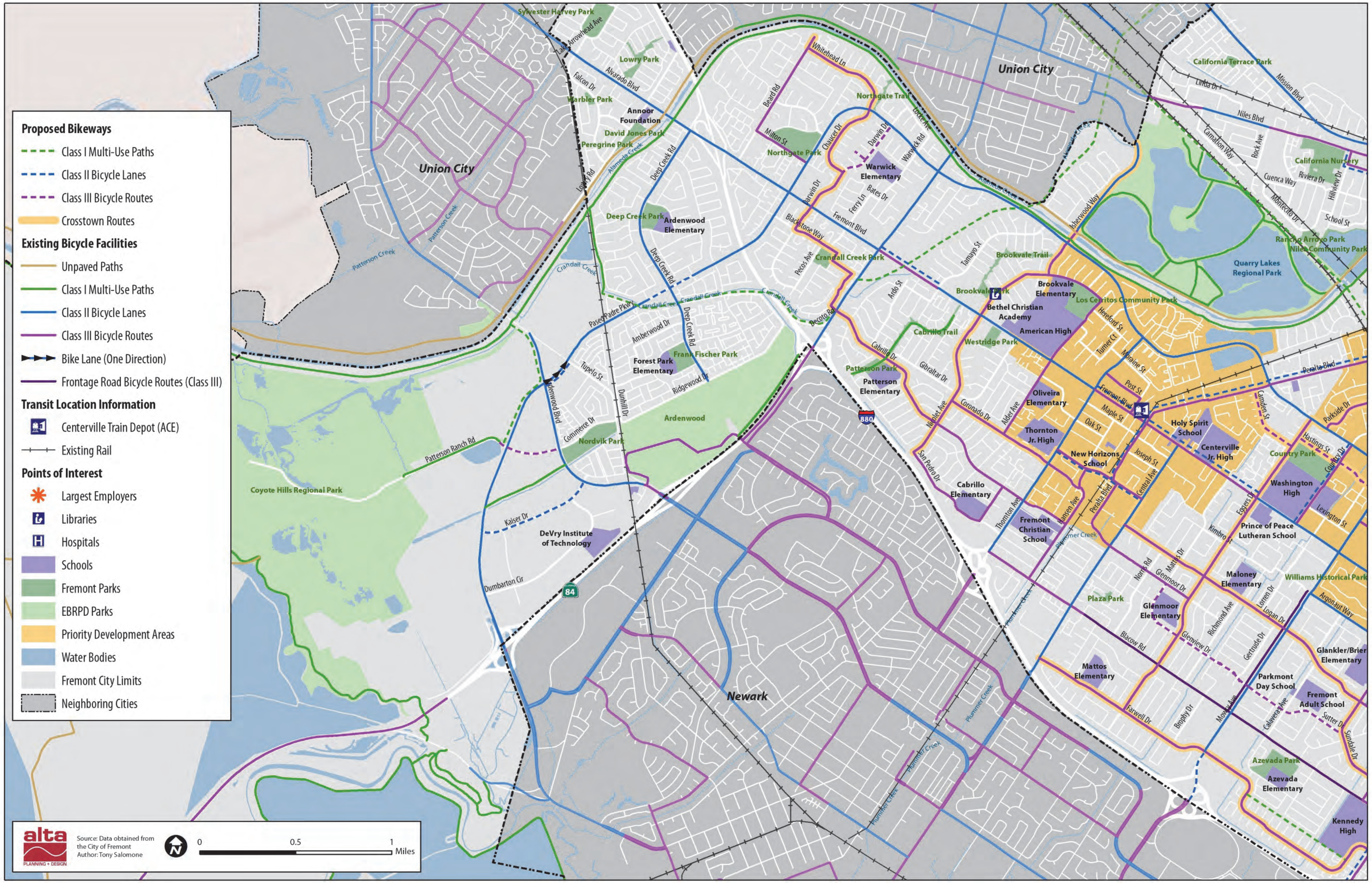

Figure 7-2: Fremont Existing and Proposed Bikeway Network (Northwest)

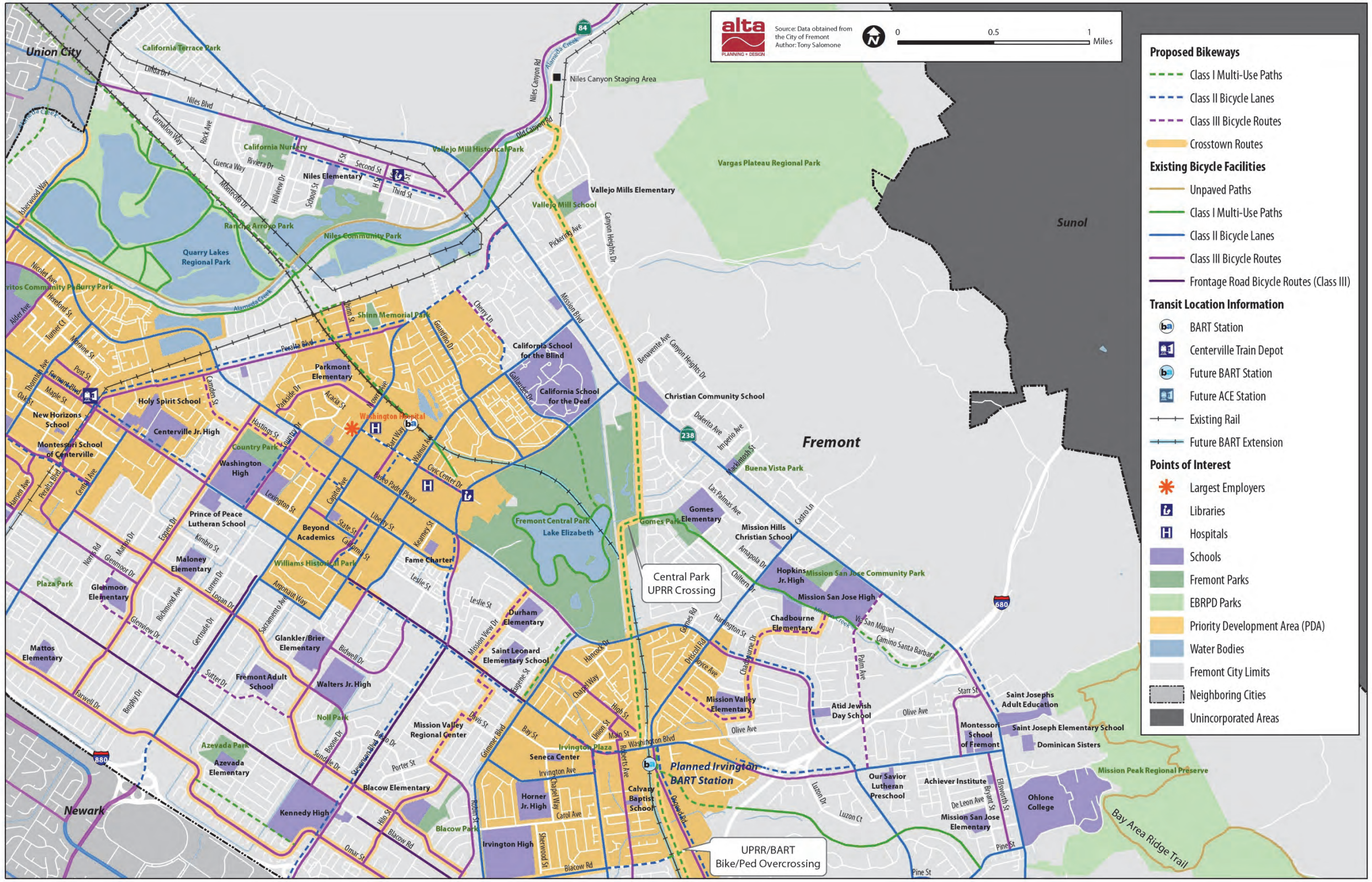

Figure 7-3: Fremont Existing and Proposed Bikeway Network (Northeast)

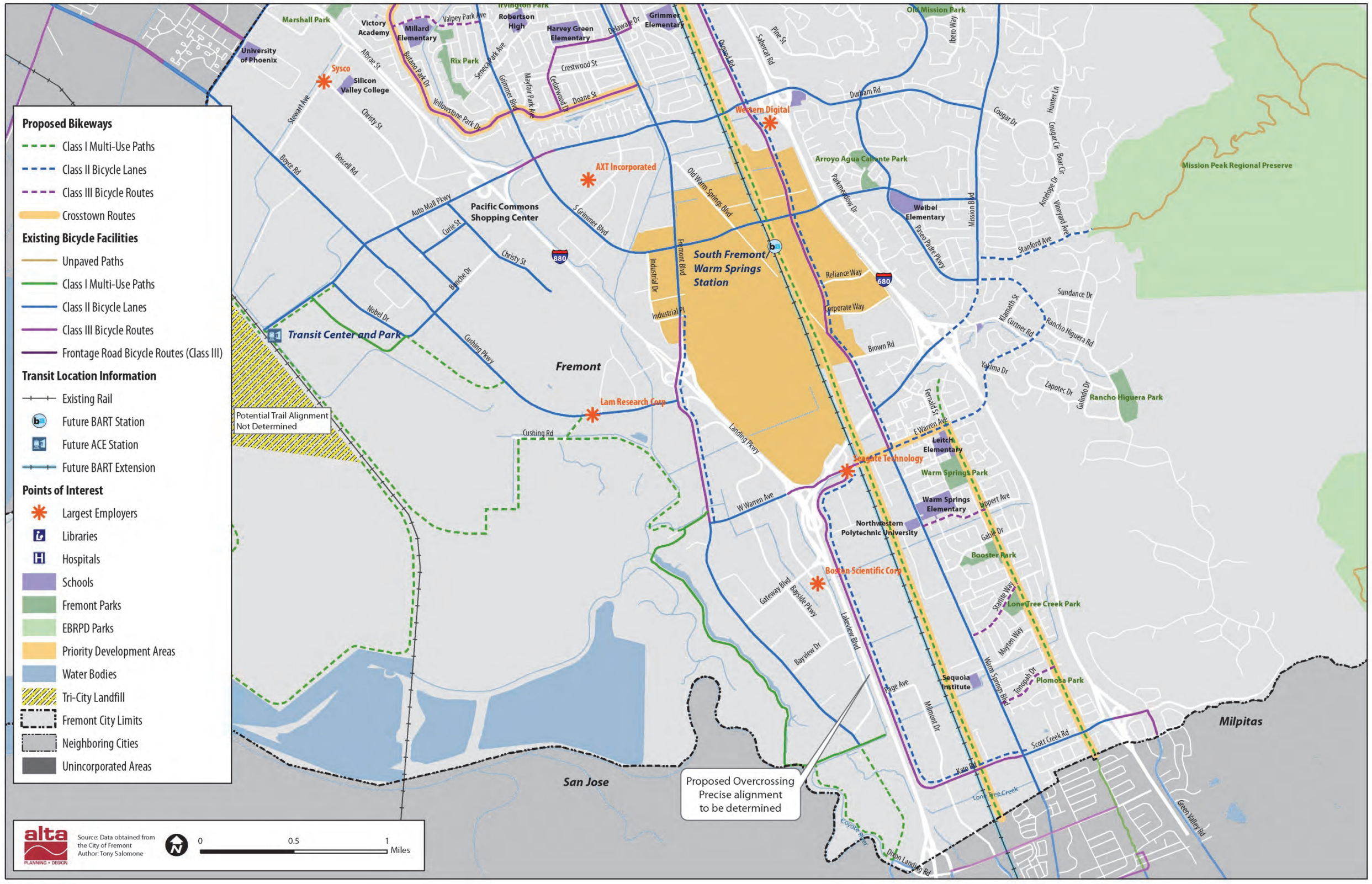

Figure 7-4: Fremont Existing and Proposed Bikeway Network (South)

7.1.1. Class I Bicycle Paths

A Class I Bicycle Path (shown in **Figure 7-5**) provides for bicycle and pedestrian travel on a paved right-of-way completely separated from streets or highways.

The recommended Class I Paths, shown in **Table 7-1**, include the proposed UPRR Rail Trail from Milpitas in the south to the Alameda Creek Trail in the north. This path will serve as an important recreational and transportation corridor in an area with a limited street network through the eastern part of the city.

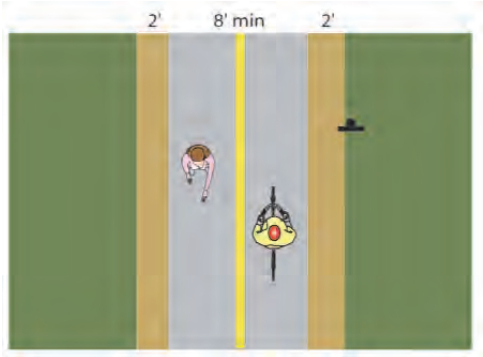

Figure 7-5: Class I Bicycle Path

Table 7-1: Recommended Class I Paths

Class	Location	Start	End	Length
1	Alameda Creek Spur	Alameda Creek Trail	Shinn Street	0.34
1	Auto Mall Parkway Path	Nobel Drive	Planned Transit Center	0.44
1	Bay Trail	Auto Mall Parkway	Newark City Limits	1.17
1	Bay Trail	Agua Caliente Stream	ACE Transit Center	3.81
1	Bay Trail Access Spur	Cushing Parkway	Bay Trail	0.16
1	Bay Trail Connector	Cushing Parkway	Nobel Drive	0.62
1	Bay Trail Loop	Tri-Cities Landfill	Coyote Creek	4.95
1	Central Park Trail	Stevenson Boulevard	Lake Elizabeth	0.46
1	Coyote Creek Levee	Dixon Landing Road	Bay Trail	0.75
1	Crandall Creek Path	Decoto Road	Alameda Creek Trail	1.33
1	East Bay Greenway	Union City Limits	Alameda Creek Trail	1.44
1	Farwell Trail	Farwell Drive	Kennedy High School	0.62
1	Fremont Blvd Extension	Fremont Boulevard	Dixon Landing Road	0.69
1	Grimmer Blvd Greenbelt	Paseo Padre Parkway	Fremont Boulevard	0.44
1	Hetch Hetchy/Plomosa Tr	Crawford Street	Milpitas City Limits	2.19
1	Mission Creek Trail	Palm Avenue	Mission Boulevard	0.6
1	Niles - BART Connector	Von Euw Common	Fremont BART	0.77
1	Patterson Ranch/Bay Trail	Alameda Creek	Patterson Ranch Road	0.74
1	Route 84 E-W Connector	Decoto Road	Union City Limit	1.58
1	Sabercat Creek Trail	Irvington BART	I-680	0.53
1	UPRR Rail Trail	Washington Boulevard	Milpitas City Limits	5.54
1	UPRR Rail Trail	Clarke Drive	Main Street	3.55
Total Miles				**32.72**

7.1.2. Class II Bicycle Lanes

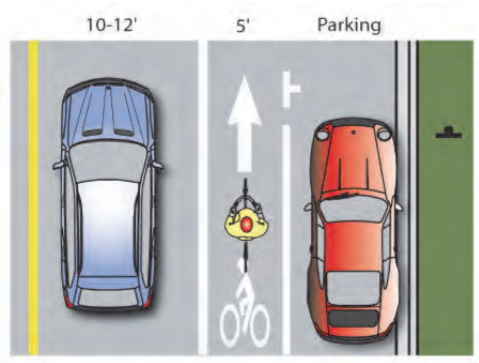

Figure 7-6: Class II Bike Lane

Bicycle lanes provide a signed, striped and stenciled lane for one-way travel on both sides of a roadway. Bicycle lanes are often recommended on roadways with moderate traffic volumes and speeds and where separation of users facilitates safer operation.

Table 7-2 presents recommended bike lanes. The majority of the recommended Class II bicycle lanes fill network gaps or segments between existing bike lanes on high or moderate volume and speed roadways. Many of these bike lanes upgrade existing arterial Class III bike routes to Class II bike lanes. These bike lanes will be an important step in completing the Fremont network.

This Plan also recommends the City revise its design standards for Class II bike lanes on collector and arterial roadways where there is no curbside parking. The City of Fremont typically uses an 18-inch gutter pan adjacent to the curb. The gutter pan is considered part of the bicycle lane but may pose challenges for bicyclists because of the seams and gutter debris. Caltrans standards allow for a 5-foot bike lane in this situation; however, this Plan, and many other guidelines, recommends the City stripe a 6-foot lane where a gutter pan is considered part of the bicycle lane (see **Appendix A** Design Guidelines for details).

Table 7-2: Recommended Class II Bike Lanes

Class	Location	From	To	Length
2	BART Way	BART Station	Paseo Padre Parkway	0.18
2	Beacon Avenue	Liberty Street	Fremont Boulevard	0.32
2	Blacow Road	Fremont Boulevard	UPRR Trail	0.33
2	Civic Center Drive	Mowry Avenue	Stevenson Boulevard	0.64
2	Country Way	Paseo Padre Parkway	Fremont Boulevard	0.51
2	Dusterberry Way	Thornton Avenue	Central Avenue	0.51
2	E. Warren Avenue	Fernald Street	Warm Springs Boulevard	0.22
2	East Warren Avenue	Curtner Road	Fernald Street	0.82
2	Fremont Boulevard	Decoto Road	Tamayo Street	0.37
2	Fremont Boulevard	Industrial Place	Warren Avenue	1.15
2	Fremont Boulevard	Papazian Way	Irvington AVenue	0.26
2	Fremont Boulevard	Sundale Drive	Grimmer Boulevard	1.14
2	Fremont Boulevard	Thornton Avenue	Eggers Drive	1.02
2	Gallaudet Drive	Spence Avenue	Walnut Avenue	0.19
2	Hastings Street	Capitol Avenue	Mowry Avenue	0.11
2	Kaiser Drive	Paseo Padre Parkway	Ardenwood Boulevard	0.62
2	Kato Road	Warren Avenue	Warm Springs Boulevard	2.42
2	Mission Boulevard	I-680	South of Telles Lane	0.39

Class	Location	From	To	Length
2	Mission Boulevard	Paseo Padre Parkway	I-680	0.41
2	Mowry Avenue	Peralta Boulevard	Thane Street	0.53
2	Mowry Avenue	Farwell Drive	I-880	0.27
2	Mowry Avenue Path	Thane Street	Mission Boulevard	0.26
2	Osgood Road	Washington Boulevard	South Grimmer Boulevard	2.13
2	Paseo Padre Parkway	DRISCOLL ROAD	I-680	0.92
2	Paseo Padre Parkway	Mission Boulevard	E. Warren Avenue	0.61
2	Paseo Padre Parkway	Tupelo Street	Ardenwood Boulevard	0.17
2	Paseo Padre Parkway	Phebe Road	Capulet Road	0.26
2	Peralta Boulevard	Fremont Boulevard	Mowry Avenue	1.71
2	Peralta Boulevard	Fremont Boulevard	Dusterberry Way	0.35
2	Second Street	Hillview Drive	End of Second Street	0.9
2	Stanford Avenue	Mission Street	Mission Peak Trail	0.65
2	Stevenson Boulevard	Paseo Padre Parkway	Boyce Road	2.08
2	Warm Springs Boulevard	Reliance Way	Warren Avenue	0.97
2	Warm Springs Boulevard	Grimmer Boulevard	Reliance Way	0.41
2	Warren Avenue	Warm Springs Boulevard	Kato Road	0.18
2	Washington Boulevard	Fremont Boulevard	Roberts Avenue	0.14
2	Washington Boulevard	Roberts Avenue	Luzon Drive	0.65
Total Miles				**24.80**

7.1.3. 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.

The recommended Bicycle Routes presented in

Table 7-3 provide connections through residential areas connecting residents to schools, parks, retail districts and other community destinations.

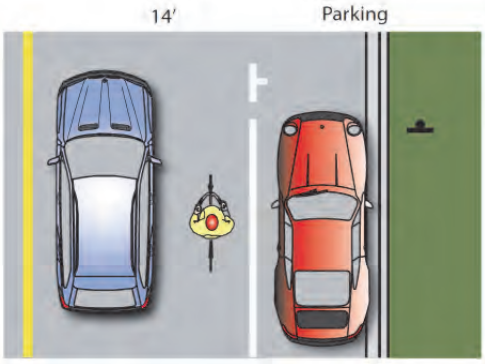

Figure 7-7: Class III Bicycle Route

Table 7-3: Recommended Class III Bike Routes

Class	Location	From	To	Length
3	Camden Street	Peralta Boulevard	Eggers Drive	0.38
3	Chadbourne Drive	Lockwood Avenue	Marigold Drive	0.74
3	Cherry Lane	Mowry Avenue	Spence Avenue	0.35
3	Darwin Drive	Chaucer Drive	Paseo Padre Parkway	0.43
3	Denise-Lockwood	Driscoll Road	Chadbourne Drive	0.45
3	Glenview Drive	Mattos Drive	Mowry Avenue	0.63
3	Hastings Street	Eggers Drive	Mowry Avenue	0.51
3	Lippert Avenue	Warm Springs Boulevard	Hetch Hetchy Trail	0.36
3	Marigold Avenue	Chadbourne Drive	Mission Creek Drive	0.11
3	Mattos Drive	Glenmoor Drive	Glenview Drive	0.18
3	Mission View Drive	Fremont Boulevard	Paseo Padre Parkway	0.49
3	Palm Avenue	Mission Boulevard	Washington Boulevard	0.97
3	Patterson Ranch/Commerce	West of Paseo Padre	Ardenwood Blvd	0.33
3	Porter/Bullard	Fremont Boulevard	Robin Street	0.69
3	Starlite Way	Warm Springs Boulevard	Lone Tree Creek Park	0.39
3	Sutter Avenue	Mowry Avenue	Sundale Avenue	0.56
3	Tonopah Drive	Warm Springs Boulevard	Plomosa Park	0.37
3	Valpey Park Avenue	Butano Park Drive	Grimmer Boulevard	0.5
Total Miles				**8.44**

7.2. Cross-Town Routes

Shared lane markings can also provide directional support for bicyclists.

Bicycle Boulevard marking in Berkeley, CA.

Figure 7-8: Examples of Cross-Town Route Stenciling

The City of Fremont's street network can be a barrier to bicycle travel. The majority of the most direct streets connecting residents from their homes to major destinations including transit, retail and commercial areas are arterial roadways. Many of these arterial streets have bicycle facilities but do not meet the needs of bicyclists who are not comfortable or do not wish to ride alongside heavy traffic, including less experienced bicyclists or those riding with small children.

In order to encourage these types of bicyclists to travel by bicycle this Plan includes a number of cross-town routes composed of existing and proposed bikeways. These routes connect across the city on streets with lower traffic volumes and speeds.

The cross-town route network includes nearly 20 miles of existing and 15 miles of proposed bikeways. The majority of cross-town routes are Class III bike routes, however there are a number of Class II bike lanes and Class I paths. The cross-town routes should include distinctive stenciling as shown in **Figure 7-8**.

Table 7-4 presents new and existing bicycle routes identified as part of the cross-town network. **Figure 7-1** through **Figure 7-4** show these routes with an orange highlight. The Route identifier as shown in the first column in **Table 7-4** groups the street segments as they connect across the City.

Table 7-4: Recommended Cross-Town Routes

Route	Location	From	To	Class	Status	Length (Miles)
A	UPRR Rail Trail	Alameda Creek	Milpitas City Limit	1	Proposed	9.09
B	Butano Park Drive	Omar Street	Everglades Park Drive	3	Existing	0.73
B	Doane Street	Grimmer Boulevard	Fremont Boulevard	3	Existing	0.72
B	Farwell Drive	Central Avenue	Stevenson Boulevard	3	Existing	2.27
B	Omar Street	Stevenson Boulevard	Butano Park Drive	3	Existing	0.56
B	Yellowstone Park Drive	Everglades Park Drive	Grimmer Boulevard	3	Existing	0.45
C	Blanchard Street	Margery Drive	Bullard Street	3	Proposed	0.09
C	Bullard Street	Blanchard Street	Davis Street	3	Proposed	0.19
C	Davis Street	Bullard Street	Porter Street	3	Proposed	0.06
C	Fremont Boulevard	Mission View Drive	Margery Drive	3	Existing	0.08
C	Hilo Street	Robin Street	Omar Street	3	Existing	0.68
C	Margery Drive	Fremont Boulevard	Blanchard Street	3	Proposed	0.06
C	Mission View Drive	Fremont Boulevard	Paseo Padre Parkway	3	Proposed	0.55
C	Porter Street	Davis Street	Robin Street	3	Proposed	0.30

Route	Location	From	To	Class	Status	Length (Miles)
C	Robin Street	Porter Street	Hilo Street	3	Proposed	0.11
D	Chadbourne Drive	Mission Creek Drive	Lockwood Avenue	3	Proposed	0.49
D	Driscoll Road	Lockwood Avenue	Washington Boulevard	2	Proposed	0.36
D	Lockwood Avenue	Chadbourne Drive	Driscoll Road	3	Proposed	0.45
D	Marigold Drive	Mission Creek Drive	Plymouth Avenue	3	Proposed	0.11
D	Mission Creek Drive	Marigold Drive	Chadbourne Drive	3	Proposed	0.25
E	Beard Road	Beard Common	Whitehead Lane	3	Existing	0.06
E	Blackstone Way	Darwin Drive	Mohawk River Street	3	Existing	0.25
E	Cabrillo Drive	Tiburon Drive	Nicolet Avenue	3	Existing	0.87
E	Central Avenue	Dusterberry Way	Logan Drive	2	Existing	0.16
E	Chaucer Drive	Paseo Padre Parkway	Darwin Drive	3	Existing	0.46
E	Coronado Drive	Nicolet Avenue	Thornton Avenue	3	Existing	0.60
E	Darwin Drive	Chaucer Drive	Blackstone Way	3	Existing	0.40
E	Dusterberry Way	Thornton Avenue	Central Avenue	3	Existing	0.51
E	Logan Drive	Central Avenue	Sundale Avenue	3	Existing	1.55
E	Mohawk River Street	Blackstone Way	Ozark River Way	3	Existing	0.05
E	Nicolet Avenue	Caballo Drive	Coronado Drive	3	Existing	0.14
E	Ozark River Way	Mohawk River Street	Tiburon Drive	3	Existing	0.12
E	Paseo Padre Parkway	Whitehead Lane	Chaucer Drive	2	Existing	0.00
E	Sundale Avenue	Logan Drive	Robin Street	3	Existing	1.44
E	Thornton Avenue	Coronado Drive	Dusterberry Way	2	Existing	0.09
E	Tiburon Drive	Ozark River Way	Caballo Drive	3	Existing	0.20
E	Whitehead Lane	Beard Road	Paseo Padre Parkway	3	Existing	0.52
F	Eggers Drive	Paseo Padre Parkway	Farwell Drive	3	Existing	1.83
F	Parkside Drive	Mowry Avenue	Paseo Padre Parkway	3	Existing	0.62
F	Paseo Padre Parkway	Parkside Drive	Eggers Drive	2	Existing	0.09
G	Isherwood Way	Quarry Lakes	Nicolet Avenue	3	Existing	0.29
G	Isherwood Way/Quarry Lakes	Union City Limit	Isherwood Way	2	Existing	0.57
G	Nicolet Avenue	Isherwood Way	San Pedro Drive	3	Existing	1.28
H	Hetch Hetchy Trail	Warren Avenue	Scott Creek Road	1	Proposed	1.94
H	Warren Avenue	Warm Springs Boulevard	Hetch Hetchy Trail	2	Existing	0.34
I	Camden Street	Peralta Boulevard	Eggers Drive	3	Proposed	0.38
I	Eggers Drive	Camden Street	Hastings Street	3	Existing	0.06
I	Hastings Street	Eggers Drive	Mowry Avenue	3	Proposed	0.51
I	Hastings Street	Capitol Avenue	Mowry Avenue	3	Proposed	0.10
I	Liberty Street	Capitol Avenue	Stevenson Boulevard	2	Existing	0.74
I	Mowry Avenue	Paseo Padre Parkway	Argonaut Way	2	Existing	0.04
J	Blacow Road	Grimmer Boulevard	Fremont Boulevard	2	Existing	0.64
J	Fremont Boulevard	Irvington Avenue	Blacow Road	2	Existing	0.50
					Cross Town Route Total Miles	**34.95**

7.3. 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, where improvements will facilitate a more bicycle friendly environment, or where gaps or pinch points exist in the bikeway network.

7.3.1. Green Bike Lanes Through Freeway Ramp Conflict Areas

Bicyclists are especially vulnerable at complex intersections that do not dedicate space or identify a recommended travel path. Freeway ramp areas typically account for a high number of reported bicycle-auto crashes. These areas often leave bicyclists unsure of proper positioning and drivers may not 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, and Austin however, this treatment is not part of the California or National MUTCD. It is, however, part of the National Association of City Transportation Officials Urban Bikeway Design Guide.

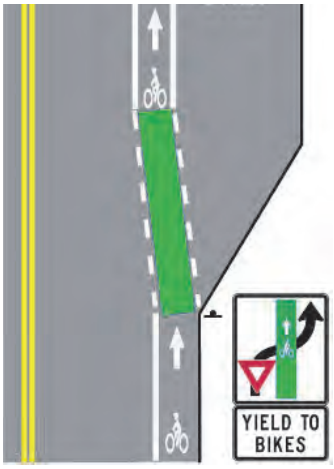

Figure 7-9: Example Green Bike Lane

Figure 7-9 presents an example treatment.

This Plan recommends the City consider or study, green bike lanes at the following freeway interchange ramp areas:

- I-880 at Alvarado Niles Rd
- I-880 at Fremont Blvd(North and South)
- I-880 at Decoto Rd
- I-880 at Thornton Ave
- I-880 at Mowry Ave
- I-880 at Stevenson Blvd
- I-880 at Auto Mall Pkwy
- I-880 at Mission Blvd
- I-680 at Mission Blvd
- I-680 at Washington Boulevard
- I-680 at Auto Mall Parkway
- SR 84 at Thornton Ave

7.3.2. Existing Bike Lane at Intersection Improvements

In addition to freeway ramp conflict areas, bicyclists are also vulnerable at intersections with right turn lanes that do not dedicate space or identify a recommended travel path. Free right turn intersection areas typically account for a high number of reported bicycle-auto crashes. Drivers may not expect bicyclists in these areas while bicyclists unsure of proper positioning.

This Plan recommends the City adopt bicycle lane through free right turn pocket standard designs or remove free right turn lanes. **Figure 7-10** presents an example design for a bike lane next to a right turn only lane.

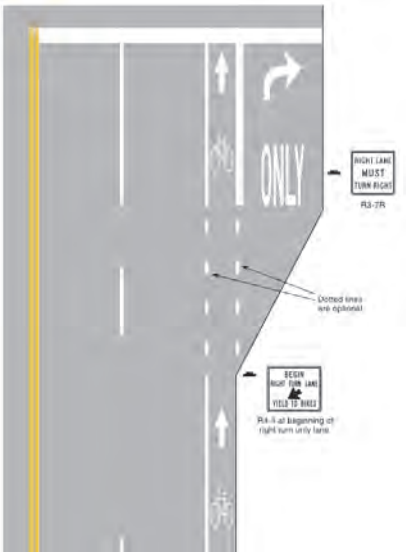

Figure 7-10: Example Bike Lane Next to a Right Turn Only Lane

The following intersections are some of the recommended locations for striping improvements or removal of right turn lanes. Other locations are at high bicycle and pedestrian activity areas such as near schools, parks, transit, shopping, and employment areas. At intersections where the level of service is unacceptable or near unacceptable, a traffic study or traffic evaluation would be required. A determination will then be made to proceed or not to proceed with the removal of the free right turn lane, balancing safety and traffic delay. Other locations not identified in this list will also be considered.

- Ardenwood Blvd at Ardenwood Ter
- Ardenwood Blvd at Commerce Dr
- Ardenwood Blvd at Kaiser Dr
- Fremont Blvd at Alder Ave
- Fremont Blvd at Beacon Ave
- Fremont Blvd at Country Dr
- Fremont Blvd at Darwin Drive
- Fremont Blvd at Decoto Rd
- Fremont Blvd at Eggers Rd
- Fremont Blvd at Mowry Ave
- Fremont Blvd at Paseo Padre Pkwy
- Fremont Blvd at Stevenson Blvd
- Fremont Blvd at Tamayo St
- Fremont Blvd at Thornton Ave
- Fremont Blvd at Walnut Ave
- Mission Blvd at Las Palmas Ave
- Mission Blvd at Walnut Ave
- Paseo Padre Pkwy at Ardenwood Blvd
- Paseo Padre Pkwy at Deep Creek Rd
- Paseo Padre Pkwy at Mowry Ave
- Paseo Padre Pkwy at Peralta Blvd
- Paseo Padre Pkwy at Stevenson Blvd
- Paseo Padre Pkwy at Tupelo Rd
- Paseo Padre Pkwy at Walnut Ave

7.3.3. Mission Boulevard Rail Undercrossing Near Central Park

Mission Boulevard crosses under a rail line near Central Park. Bike lanes on Mission Boulevard approach the undercrossing but are dropped because of limited available space under the bridge. The south side of Mission Boulevard has a pedestrian tunnel undercrossing but does not have curb cuts for bicycle access. The north side of Mission Boulevard has a sidewalk undercrossing and a substandard curb cut on the east and no curb cut on the west.

This plan recommends installation of curb ramp cuts on both entry and exit points on both the north and south side of Mission Boulevard. Installation of appropriate bikeway signage and traffic calming treatments will also be pursued. This will facilitate bicycle transition to and from the road to both walkways.

7.3.4. 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 in all travel lanes, including left turn lanes. Caltrans Policy Directive 09-06 clarifies the requirements and permits loop and video detection.

Many but not all of Fremont's actuated intersections detect bicyclists, and most do not detect bicyclists in left turn lanes. This plan recommends that the City prioritize installation of bicycle detection at all actuated intersections in both right through lanes and left turn lanes 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** for details) a pavement stencil of the bicycle detection marking should be used to show bicyclists where to position themselves.

7.3.5. Central Park Union Pacific Railroad Crossing

The City of Fremont is currently working with the California Public Utilities Commission, Union Pacific Railroad (UPRR) and the Alameda County Flood Control District (ACFCD) to develop a project to construct a public at-grade pedestrian/bicycle and service vehicle crossing of the Union Pacific Railroad tracks at the Mission Creek junction in the vicinity of Central Park and Gomes Park. The proposed path and crossing will provide the required improvements for pedestrians and bicyclists to travel between Gomes Park (Mission Valley Neighborhood) and Central Park. In order for the City to implement this project, the Public Utilities Code requires that an order be issued by the California Public Utilities Commission (CPUC) authorizing the construction of the proposed public at-grade crossing. The City is currently working with the CPUC and UPRR to move this project forward.

This Plan recommends the City continue the steps required to implement this at-grade crossing.

7.3.6. Blacow Road Road Union Pacific Railroad Overcrossing

The City of Fremont is currently investigating implementation of a bicycle and pedestrian overcrossing at Blacow Road over the Union Pacific Railroad (UPRR) and Bay Area Rapid Transit (BART) rail lines near Osgood Road. The proposed crossing will improve travel for pedestrians and bicyclists between to the Irvington BART Station from the neighboring communities.

In order for the City to implement this project, the Public Utilities Code requires that an order be issued by the California Public Utilities Commission (CPUC) authorizing the construction of the proposed public crossing. This Plan recommends that the City conduct the study as an initial step in determining the benefits, constructability, constraints, and opportunities in the construction of a grade-separated crossing.

7.3.7. Sequoia Road/UPRR Bicycle and Pedestrian Crossing Study

A proposed bicycle and pedestrian grade separated crossing over the UPRR tracks will connect Alameda Creek Trail users and Quarry Lakes Regional Park to the Centerville Train Depot via Paseo Padre Parkway, Sequoia Road and Alameda Creek Trail bridge crossing at Sequoia Creek Terrace. The Plan recommends the City conduct a study as an initial step in determining the benefits, constructability, constraints and opportunities in the construction of a grade separated crossing.

7.3.8. Interstate 880/South Fremont Bicycle and Pedestrian Overcrossing Study

An overcrossing of Interstate 880 would improve connections between the rapidly growing employment center in South Fremont and numerous off-street paths connected with the San Francisco Bay Trail. The Plan recommends a feasibility study to determine the best possible location between Dixon Landing Road and Warren Avenue for this long-term project.

7.4. Signage and Stencils

7.4.1. 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 (CA MUTCD). These documents provide specific guidance on the type and location of signing for bicycle facilities. Appendix A provides specific design guidelines.

7.4.2. Wayfinding Signage

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

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

Decision signs (**Figure 7-11**) 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 7-11: Example Decision Wayfinding Sign

Figure 7-12: Example Distance Wayfinding Sign

Confirmation signs (**Figure 7-12**) 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.

7.4.3. Shared Lane Markings

Shared Lane Marking (SLM) stencils, also known as sharrows, serve a number of purposes. The markings inform motorists about the presence of bicyclists and also inform bicyclists how to position themselves with respect to parked cars and the travel lane. The 2010 CA MUTCD identifies that SLMs shall only be used on roadways with parallel parking and placed a minimum of 11 feet from the curb face. Where provided, sharrows indicate that riding further to the right is not practicable and therefore not required under California Vehicle Code Section 21202.[3] The Draft 2011 CA MUTCD gives local engineers greater discretion with SLM placement on roadways without parking. The Draft 2011 CA MUTCD reflects the standard in the 2009 National MUTCD.

This Plan recommends SLMs be used on Class III Bicycle Routes located on collector and arterial roadways.

7.5. 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 Fremont's bicycle parking facilities are located at retail businesses and at the BART and Centerville Train Depot/Amtrak stations. Many bicyclists visiting community retail districts, places of employment and schools do not have available bicycle parking and instead may 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 attractive and well placed bicycle parking will prevent bicyclists from locking to street fixtures and encourage bicycling activity. Proper bicycle parking can also benefit local businesses and commercial establishments.

Bicycle parking is an essential element of any bikeway network and this section presents recommended types of bicycle parking, and citywide bicycle parking recommendations. Following the site specific bike parking recommendations are recommended rates of bicycle parking for new development projects.

7.5.1. 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, 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.

[3] http://dmv.ca.gov/pubs/vctop/d11/vc21202.htm

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 Fremont, 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 provided by bicycle racks. Bicycle lockers and bike cages are examples of acceptable types of long-term bicycle parking.

7.5.2. Citywide Bike Parking Recommendations

This Plan recommends the City ensure a minimum of two bike racks per block face in all historic retail districts including Centerville, Irvington, Mission San Jose, and Niles. Specific locations for recommended citywide bicycle racks are listed below in **Table 7-5**. In addition to bicycle rack installation, this Plan recommends the City provide a map of bicycle parking locations on its bicycling resource website and consider valet parking at special events such as the Festival of Arts.Special events can cause higher-than-usual demand for bicycle parking in the City. Valet bicycle parking can increase the visibility of bicycle organizations within the community and provide a convenient alternative for people to attend large events without searching for scarce motor vehicle parking spaces.

Table 7-5: Recommended Citywide Bicycle Parking Locations

Category	Location	Details
Libraries		
	Niles	Install covered bicycle racks (at minimum 4 racks)
Parks and Community Centers		
	Central Park	Install bicycle racks near soccer and Aqua Adventure Water Park (at minimum 4 racks near each activity center)
	Centerville Park	Install bicycle racks near tennis court, and playground (at minimum 4 racks near each activity center)
	Irvington Park	Install bicycle racks near soccer and softball fields, and basket ball court (at minimum 4 racks near each activity center)
	Los Cerritos Park	Install bicycle racks near softball fields (at minimum 4 racks)
	Warm Springs Park	Install bicycle racks near tennis courts, softball fields, and basket ball courts (at minimum 4 racks near each activity center)
Transit		
	BART Station	Install 36 electronic lockers

7.5.3. Recommended Bicycle Parking Rates for Development Projects

Bicycle parking requirements for development ensure bicyclists have somewhere secure and convenient to park their bicycles at newly constructed buildings. Though this Plan identifies a number of specific locations for bicycle parking, it does not address the need for bicycle parking generated by new buildings. The City's current code does not require bicycle parking and instead provides credit. Where eight bicycle parking spaces are provided, a developer may omit one required automobile parking space (Section 8-22010). The 2011 Green Building Code also provides mandatory and non-mandatory bike parking requirements.

Table 7-6 presents recommended rates of required bicycle parking for development projects.

Table 7-6: Recommended Rates of Required Bicycle Parking for Development Projects

Use	Minimum Long-Term Requirements	Minimum Short-Term Requirements
Residential Activity		
Multifamily Dwelling		
With private garage for each unit	No spaces required	0.05 spaces for each bedroom. Minimum is 2 spaces.
Without private garage for each unit	0.5 spaces for each bedroom Minimum is 2 spaces.	0.05 spaces for each bedroom. 0.05 spaces for each bedroom. Minimum is 2 spaces.
Senior housing	0.5 spaces for each bedroom Minimum is 2 spaces.	0.05 spaces for each bedroom. 0.05 spaces for each bedroom. Minimum is 2 spaces.
Civic/Cultural Activity		
Non-assembly cultural (library, government buildings, etc.)	1 space for each 10 employees. Minimum is 2 spaces.	1 space for each 10,000 s.f. of floor area. Minimum is 2 spaces.
Assembly (church, theaters, stadiums, etc.)	1 space for each 20 employees. Minimum is 2 spaces.	Spaces for 2% of maximum expected daily attendance. Minimum is 2 spaces.
Health care/hospitals	1 space for each 20 employees or one space for each 70,000 s.f. of floor areas, whichever is greater. Minimum is 2 spaces.	1 space for each 20,000 s.f. of floor area. Minimum is 2 spaces.
Education		
Public, Parochial, and Private Day-Care Centers for fifteen (15) or more children	1 space for each 20 employees. Minimum is 2 spaces.	1 space for each 20 students of planned capacity. Minimum is 2 spaces.
Public Parochial, and Private Nursery Schools, Kindergartens, and Elementary Schools (1-3)	1 space for each 10 employees. Minimum requirement is 2 spaces.	1 space for each 20 students of planned capacity. Minimum requirement is 2 spaces.
Public Parochial, and Elementary (4-6), Junior High and High Schools	1 space for each 10 employees plus 1 space for each 20 students of planned capacity. Minimum requirement is 2 spaces.	1 space for each 20 students of planned capacity. Minimum requirement is 2 spaces.
Colleges and Universities	1 space for each 10 employees plus 1 space for each 10 students of planned capacity; or 1 space for each 20,000 s.f. of floor area, whichever is greater.	1 space for each 10 students of planned capacity. Minimum requirement is 2 spaces.
Rail/Bus Terminals and Stations	Spaces for 5% of projected A.M. peak period daily ridership.	Spaces for 1.5% of A.M. peak period daily ridership.

Use	Minimum Long-Term Requirements	Minimum Short-Term Requirements
Commercial		
Retail		
General Food Sales/ Groceries	1 space for each 12,000 s.f. of floor area. Minimum requirement is 2 spaces.	1 space for each 2,000 s.f. of floor area. Minimum requirement is 2 spaces.
General retail	1 space for each 12,000 s.f. of floor area. Minimum requirement is 2 spaces.	1 space for each 5,000 s.f. of floor area. Minimum requirement is 2 spaces.
Office	1 space for each 10,000 s.f. of floor area. Minimum requirement is 2 spaces.	1 space for each 20,000 s.f. of floor area. Minimum requirement is 2 spaces.
Auto Related		
Off-Street Parking Lots and Garages available to the general public either without charge or on a fee basis	1 space for each 20 automobile spaces. Minimum requirement is 2 spaces. Unattended surface parking lots excepted.	Minimum of 6 spaces or 1 per 20 auto spaces. Unattended surface parking lots excepted.

7.6. Design and Maintenance

7.6.1. Complete Streets Design Standards

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 develop Complete Streets design standards in order to direct transportation planners and engineers to design roadways with all users in mind. The City's General Plan has a Complete Streets Goal and Policy in the Mobility Element, Goal 3-1 and accompanying policies.

Elements of a Good Complete Streets Design Standards:

- 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 within the context of the community.

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

This Plan recommends the City of Fremont pursue a Complete Streets Policy.

7.6.2. Bicycle Facility Maintenance

The Public Works Engineering Division prioritizes roadways for repaving, surfacing, and striping. Uneven pavement can present both physical hazards and distractions to cyclists. This Plan recommends the City perform regular maintenance per the schedule described in Chapter 4. The Public Works Department should emphasize maintaining flat roadway surfaces free of debris. To address bicyclists needs, the maintenance program could include bicycling counts and the presence of bikeways among the criteria used to determine repaving. Where current bicycle facilities do not meet Caltrans requirements or the more rigorous standards set forth in the Design Guidelines, they should be restriped.

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8. 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 Fremont 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 Fremont. 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.

8.1. 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 General Plan. Community recommended programs include car-free streets and employer based programs. Programs could partner with local bike shops, whose business will benefit from increased cycling in the City. The following outlines recommended encouragement programs.

8.1.1. Bicycle Resource Website

The City of Fremont hosts a bicycle and pedestrian program website. To visit the website, follow the links from the City's home page: Departments › Transportation Engineering › Bicycle and Pedestrian Program, or try the link below. This website provides a bicycle map of the City and the Bicycle Master Plan.

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 other languages, including Spanish, Mandarin, Hindi, Dari, Pashtu, and Punjabi.

http://www.fremont.gov/index.aspx?NID=534

8.1.2. Bicycle Safety Campaign

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 marketing campaign that highlights bicyclist and pedestrian safety is an important part of creating awareness of bicycling and walking in Fremont. 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.

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.

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

8.1.3. Bicycle User Map

The City of Fremont publishes a bicycle user map with safety tips in both paper and electronic form. The map includes the existing bikeway network. The safety tips outline behaviors that can increase safety for bicyclists, describing both compliance with applicable traffic laws and insights to safer bicycling.

This Plan recommends the City continue to update and publish a bicycle user map.

8.1.4. Bike to Work Day

Bike to Work Day is a nationwide event held in May of each year where commuters are encouraged to bike to work. The Fremont City Council annually issues a proclamation declaring Bike to Work day. In 2011 the City had four "Energizer Stations" that furnish bike maps, refreshments, water bottles, and prizes. The four locations were:

- Fremont BART
- Paseo Padre at Stevenson
- Paseo Padre at Driscoll Rd
- Mission Ct at Warm Springs Blvd

This Plan recommends the City consider sponsoring a Bike to Work Day event. The event can include a Bike to Work Day celebration at City Hall with Pedal Pools (group rides), raffles and prizes, and speeches from Council Members or the Mayor. The type of event(s) held can be developed through community input and the Bicycle and Pedestrian Technical Advisory Committee.

8.1.5. Employer Based Encouragment Programs

Employer based bicycle encouragement programs facilitate commuting to work by bicycle. 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 and participate in Bike to Work Day.

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

8.1.6. Bicycling Programs for Women and Families

Presently, adult males bicycle more often than women and children. While the needs of women and families may be very similar to those of men, some bicycle programs are designed to encourage these groups to bicycle confidently and safely.

For example, the San Francisco Bicycle Coalition annually holds Family Days, where families participate in many bicycle-related activities. The festival is also one of many opportunities for Freedom from Training Wheels courses that help children to develop bicycling skills. Women-only clinics, workshops, and rides, designed to be welcoming and supportive for participants at any stage of comfort, can lower the barrier to entry for women who want to give bicycle. Topics may include maintenance basics, bike cleaning, riding in the rain and dark, shopping by bike, or commute tips. These activities classes are highly successful, as instructors report high attendance and a greater willingness to ask questions than in mixed classes. The City of Fremont can support these programs in a non-sponsoring role.

Sample programs:

- Family Day: http://www.sfbike.org/?Family_Day
- Freedom from Training Wheels: http://www.sfbike.org/?freedom
- Kidical Mass: http://www.kidicalmass.org/

8.1.7. 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.

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

The community identified interest in a car-free street event. One example is the San Mateo County's Streets Alive event. This Plan recommends the City consider participation in Streets Alive. Specific locations for this

and other events can be developed through community outreach and support. The City Council and residents and businesses would need to approve of these events.

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

8.1.8. 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.

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.

8.2. 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.

8.2.1. Youth Education

The City of Fremont offers traffic safety and education through the Transportation Engineering Division of the Public Works Department. The Fremont Police Department notes the most common violation is a minor riding without a helmet. The City's goal is to reduce the number of injuries, fatalities, and to prevent traffic accidents by providing traffic safety workshops, school rodeo events, and community traffic safety rodeo events. Safe Moves/Smart Moves, a national nonprofit traffic safety education organization, hosts up to four community bike rodeo events per year. A bike rodeo is a public event combining group activities with education and entertainment aimed at educating parents and students about good riding behaviors. Children use this realistic training environment to practice bicycle handling skills, pedestrian safety, and their ability to recognize and react to traffic hazards.

Safe Moves/Smart Moves educational programs are geared towards increasing the awareness of bicycle and pedestrian safety among elementary school children and parents in Fremont. Instructors discuss bicycle, pedestrian and general traffic safety at school workshops during school hours. They conduct several school workshops a year at the elementary schools in Fremont. Some of the issues covered during these workshops include:

- Places to ride
- Traffic signs and signals
- Rights and responsibilities of bicyclists
- Helmet use (proper fit and maintenance)
- Choosing the right size bike and model
- Proper bicycling clothing recognition and avoidance of common bicycle accidents
- Bicycle maintenance and repair
- Rules, regulations and ordinances that govern bicyclists
- Suggested routes to and from school
- Locations and uses of bicycle facilities
- School bicycle policies

Other school-based programs could include after-school cycling clubs and facilities for bicycle repairs at schools, staffed with volunteers to help students learn about maintaining their bicycles. This Plan recommends the City aggressively pursue funding for youth bicycle education programs and continue to offer these youth education workshops.

8.2.2. 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 nearby cities, hosted by the East Bay Bicycle Coalition.

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

This Plan recommends Fremont invite the East Bay Bicycle Coalition or a similar group to host adult bicycling skills classes in the city on a bi-annual basis, at minimum. Additional adult bicycling skills programs could include a free or low-cost community bike shop to help prospective bicyclists to outfit their bikes. The City may also highlight local or nearby courses on its bicycling website.

Sample programs:

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

8.2.3. 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. For example, the Portland Parks and Recreation Department hosts a free senior tricycle program that provides tricycles to senior centers and takes folks on guided rides.

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

Sample Program:

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

8.2.4. School Programs

Youth can develop better bicycling skills and confidence during after-school programs such as student chapters of local bicycling clubs or maintenance and repair shops where students can learn basic bicycle repair and riding technique. The City should research funding sources for such programs and implement them in interested schools.

8.2.5. National Night Out

National Night Out is an annual nationwide event designed to strengthen neighborhood spirit and unity, raise crime prevention awareness, and develop partnerships between the City and the community on a street-, block-, and city-wide level. This program can improve bicycling conditions in Fremont by building relationships between Fremont residents and police and by encouraging active street life. Residents can learn more about hosting a National Night Out block party on the City website:

http://www.fremontpolice.org/nno/nno_info2011.html

8.2.6. Motorist Education

Improving driver awareness of bicyclists helps to make a safer and more comfortable road environment for bicycling. Outreach through Drivers Education classes is a good way to reach beginning drivers, while a diversion class can be offered to first-time offender violations that endanger bicyclists.

A diversion class can be provided to motorists. In lieu of a citation and/or fine, individuals can take a one-time, free or inexpensive class instead. In Marin County, interested citizens can take the class even if they did not receive a ticket. This program is a good way to educate road users about bicycle rights and responsibilities, and can also increase public acceptance of enforcement actions.

8.2.7. Police Education

Most law enforcement professionals do not receive training specific to bicycle laws, handling, or safety. Police education courses or training can help officers improve public safety and enforce existing laws more effectively by providing them with the training they need. These trainings should include comprehensive information about laws and statutes pertaining to bicycling; information about common crash types and causes, and how to prevent and enforce against the most serious offences; knowing options for enforcement and education (e.g. when a citation vs. warning should be issued, diversion class options, and safety materials

that can be handed out during a traffic stop or public event). In Fremont, Police bicycle education is conducted internally within the Department.

Sample program:

- Chicago Bicycle Program, Traffic Enforcement for Bicycle Safety Video http://www.chicagobikes.org/video/index.php?loadVideo=police_training_2009

8.2.8. Junior Safety Patrol

The Junior Safety Patrol has been in existence for almost 30 years and is the result of a partnership between the Police Department, the Fremont Unified School District, and the California State Automobile Association (CSAA). Each school provides either a staff member or parent volunteer who organizes and supervises the Patrol. Fifth and sixth grade students are selected for the Patrol based upon merit, attendance, and good citizenship. Members of the Patrol take a post at school crossings and work to ensure the safety of fellow students.

The Police Department provides training, safety lectures, and an ongoing enforcement effort in areas surrounding schools on request. School staff and/or parent volunteers provide direct supervision and support, while equipment for the Safety Patrol is provided by the CSAA, at either a reduced cost, or not cost at all.

This Plan recommends the City continue the junior safety patrol program.

8.2.9. 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 Police Department's radar speed feedback trailer signs are deployed weekly and are operational five days per week. It is recommended the City operate at least two mobile speed feedback signs for deployment in response to resident complaints about speeding. The City should also include information on how to request a speed feedback sign on its bicycling resource website.

8.3. 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.

8.3.1. Adult Crossing Guards

The City of Fremont's Police Department contracts with ACM, a management firm, to employ 24 professionally trained crossing guards to work at 17 of Fremont's 32 schools during the school year. The necessity for a crossing guard is determined by a specific set of warrants established by the City. These warrants address traffic volume, number of students crossing, and availability of alternative routes and nearby signalized intersections. Although crossing guards are focused on pedestrian crossings, they are important to mention in the context of children bicycling to school, particularly younger children who may ride on the sidewalk and cross in the crosswalk.

This Plan recommends the City continue to support and fund adult crossing guards at schools as identified by the established warrants.

8.3.2. Targeted Enforcement

Targeted enforcement is focused efforts of police officers. For example, a Police Department may conduct targeted pedestrian enforcement 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 this is not practiced in Fremont.

This Plan recommends identifying enforcement areas at locations known for noncompliance with traffic laws and at high conflict or high bicycle related collision areas. Possible locations include school zones during student arrival and dismissal and other locations developed in partnership with the Police Department and the community. The community can request traffic enforcement for specific locations by completing the traffic complaint form at the Fremont Police Department's website.

8.4. 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.

8.4.1. 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.

This Plan recommends, at minimum:

- Annual monitoring of all bicycle-related collisions
- Before and after bicycle, pedestrian and vehicle counts on all roadway projects.
- Annual bicycle counts conducted at minimum at the following locations:
    a. Alameda Creek Trail
    b. Fremont BART Station
    c. Fremont Amtrak Station
    d. Along all recommended Cross-Town Routes
- Regular community survey to evaluate bicycling activity, affects of bicycle programs and facilities and to measure the City's progress towards reaching its goals.

The National Bicycle and Pedestrian Documentation (NBPD) Project (www.bikepeddocumentation.org) recommends four count times per year, though encourages communities to conduct annual counts at minimum. The NBPD website provides count forms, training presentation and related information to support count efforts.

The City may consider the use of automatic count technologies for bicycle count efforts. In-pavement loop detectors accurately count bicycle activity on-street 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.

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9. 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.

Phased implementation of the recommended projects and programs presented in *Chapter 7: Proposed Network Improvements* and *Chapter 8: Proposed Programmatic Improvements* will take a significant amount of time, subject to a large number of variables; the most important of these variables including availability of funding for non-motorized transportation, City of Fremont 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 project. The high priority projects identified in this chapter represent roughly $5.3 million dollars in capital improvements and education programs. These cost estimates do not include right-of-way acquisition. The high priority projects are drawn directly from the results of the criteria-based ranking process presented in **Table 9-1** and supplemented with additional programmatic improvements.

These projects are intended for near-term implementation in the next one to five years. The city's commitment to implementing the goals of the General Plan, to implementing transit oriented development, 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.

9.1. Implementation Process

The steps between the network improvements and concepts identified in this Plan and the final completion of the improvements will vary from project to project, but typically include:

1. Adoption of the Fremont Bicycle Master Plan by the Fremont City Council
2. Preparation of a Feasibility Study (if needed) involving a conceptual design (with consideration of possible alternatives and environmental issues) and cost estimate for individual projects as needed
3. Secure, as necessary, outside funding and any applicable environmental approvals
4. Consider the parking needs of businesses and residents in the development of new bicycle lanes through a thorough community engagement process
5. Approval of the project by the Planning Commission (if needed) and the City Council, including the commitment by the latter to provide for any unfunded portions of project costs
6. Completion of final plans, specifications, and estimates, advertising for bids, receipt of bids, and award of contracts
7. Construction of Project

9.2. Bikeway Project Ranking Methodology

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 Fremont 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 Fremont and the Bicycle and Pedestrian Technical Advisory Committee. These criteria are described in **Table 9-1** and outlined on the following page.

The criteria include:

- Safety
- Access to Community Destinations
- 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 no score or a 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 (40).

Table 9-1: Project Ranking Criteria

Criteria	Description	Goal/Policy Reference	Max Score
Safety	This ranking is based on available collision data identifying corridors with high incidents of bicycle related collisions within a quarter mile buffer of the proposed improvement. • Projects were scored on a scaled ranking from zero to ten based on number of collisions per mile. Projects with the highest number of collisions were scored with a ten.	Policy 2.3: Monitor and evaluate information on collisions involving bicyclists and use this information to assist in remedying existing problem locations and behaviors.	10
Community Connections	Projects that connect to the community centers listed below scored higher. • Direct Connections: Projects that directly connect to a community center received a score of 10. • Indirect Connections: Projects that do not connect to a community center but connect to a bikeway that does received a score of 5. • No Connections: Projects that do not connect to a community center nor a bikeway that does received a score of zero. Community centers include: Centerville District, Irvington District, Niles District, Warm Springs District, Downtown Central Business District, Central Park, Ardenwood Park, Quarry Lakes Regional Park, Fremont existing and planned BART Stations , Fremont Amtrak Station	Policy 1.1: Provide bicyclists safe and accessible routes to all destinations within the City and outside the City, which are served by public roads, trails, transit and rail.	10
School Connections	Projects that connect to schools will receive higher scores. • Direct Connections: Projects that directly connect to a school will receive a score of 10. • Indirect Connections: Projects that do not connect with a school but connect with a bikeway that does will receive a score of 5. • No Connections: Projects that do not connect to a school nor one that does will receive a score of zero.	Policy 1.1: Provide bicyclists safe and accessible routes to all destinations within the City and outside the City, which are served by public roads, trails, transit and rail.	10
Network Connectivity	Projects that build network connectivity by extending an existing bikeway or complete a network gap. • Projects will be scored with either a zero or ten.	Policy 1.1: Provide bicyclists safe and accessible routes to all destinations within the City and outside the City, which are served by public roads, trails, transit and rail. Policy 1.2: Complete a comprehensive bikeway network by closing existing gaps and providing projects that improve intermodal connections.	10
		Maximum Total Score	**40**

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

- >25 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.
- >20-25 points: Tier 2 projects are intended for development within 6 to10 years.
- ≤20points: 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 9-3 lists the projects, their scores, and estimated costs, organized into the three Tiers.

9.3. Project Cost Estimate Methodology

This section presents typical planning level unit costs for constructing bikeways in the San Francisco Bay Area. Unit costs presented in **Table 9-2** 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 Fremont, 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 actual project costs may be significantly greater.

Table 9-2: Estimated Bikeway Basic Unit Costs

Item	Quantity	Units	Unit Cost	Total
Class 3 Bike Route - Urban - Per Mile				
Bike Route Sign/Wayfinding*	10	EA	$ 300	$ 3,000
Shared Lane Marking**	20	EA	$ 250	$ 5,000
Total Cost Per Mile				$ 8,000
Class 2 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				$ 43,000
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****	15,840	LF	$ 2.50	$ 39,600
Total Cost Per Mile				$ 643,000

*Assumes five signs per mile in each direction.
**Assumes shared lane marking are placed every 265 feet.
***Assumes two signs per mile in each direction
****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 lane width, 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.

The cost estimate used for the UPRR Trail was developed during the UPRR Trail Feasibility Study.

9.4. Bikeway Project Ranking

Table 9-3: Prioritized Projects by Tier

Tier	Rank	Location	From	To	Bikeway Class	Length	Safety	School Connections	Community Connections	Network Connectivity	Total Score	Cost Estimate
Tier 1												
1	1	BART Way	BART Station	Paseo Padre Parkway	2	0.18	8.18	5	10	10	33.18	$7,700
1	2	Fremont Boulevard	Thornton Avenue	Eggers Drive	2	1.02	2.84	10	10	10	32.84	$43,900
1	3	Mission View Drive	Fremont Boulevard	Paseo Padre Parkway	3	0.49	1.82	10	10	10	31.82	$3,900
1	4	Stevenson Boulevard	Paseo Padre Parkway	Boyce Road	2	2.08	1.48	10	10	10	31.48	$89,400
1	5	Hastings Street	Capitol Avenue	Mowry Avenue	2	0.11	6.25	5	10	10	31.25	$4,700
1	6	UPRR Rail Trail	Clarke Drive	Main Street	1	3.55	0.57	10	10	10	30.57	$3,579,700
1	7	Central Park Trail	Stevenson Boulevard	Lake Elizabeth	1	0.46	0.23	10	10	10	30.23	$295,800
1	8	Beacon Avenue	Liberty Street	Fremont Boulevard	2	0.32	3.86	5	10	10	28.86	$13,800
1	9	Civic Center Drive	Mowry Avenue	Stevenson Boulevard	2	0.64	3.07	5	10	10	28.07	$27,500
1	10	Peralta Boulevard	Fremont Boulevard	Dusterberry Way	2	0.35	2.95	5	10	10	27.95	$15,100
1	11	Fremont Boulevard	Sundale Drive	Grimmer Boulevard	2	1.14	2.73	5	10	10	27.73	$49,000
1	12	Country Way	Paseo Padre Parkway	Fremont Boulevard	2	0.51	1.82	10	5	10	26.82	$21,900
1	13	Hastings Street	Eggers Drive	Mowry Avenue	3	0.51	1.82	5	10	10	26.82	$4,100
1	14	E. Warren Avenue	Warm Springs Boulevard	Kato Road	2	0.18	1.25	5	10	10	26.25	$7,700
1	15	Gallaudet Drive	Spence Avenue	Walnut Avenue	2	0.19	1.25	10	5	10	26.25	$8,200
1	16	Dusterberry Way	Thornton Avenue	Central Avenue	2	0.51	1.14	10	5	10	26.14	$21,900

Tier	Rank	Location	From	To	Bikeway Class	Length	Safety	School Connections	Community Connections	Network Connectivity	Total Score	Cost Estimate
1	17	Peralta Boulevard	Fremont Boulevard	Mowry Avenue	2	1.71	1.14	5	10	10	26.14	$73,500
1	18	E. Warren Avenue	Fernald Street	Warm Springs Boulevard	2	0.22	1.02	5	10	10	26.02	$9,500
Tier 2												
2	19	Valpey Park Avenue	Butano Park Drive	Grimmer Boulevard	3	0.50	0.91	10	5	10	25.91	$1,500
2	20	Palm Avenue	Mission Boulevard	Washington Boulevard	3	0.97	0.70	10	5	10	25.70	$2,900
2	21	Sabercat Creek Trail	Irvington BART	I-680	1	0.53	0.68	5	10	10	25.68	$340,800
2	22	Mission Creek Trail	Palm Avenue	Mission Boulevard	1	0.60	0.57	10	5	10	25.57	$385,800
2	23	Osgood Road	Washington Boulevard	South Grimmer Boulevard	2	2.13	0.57	5	10	10	25.57	$91,600
2	24	Washington Boulevard	Roberts Avenue	Luzon Drive	2	0.65	0.57	5	10	10	25.57	$28,000
2	25	Second Street	Hillview Drive	End of Second Street	2	0.90	0.45	10	5	10	25.45	$38,700
2	26	Glenview Drive	Mattos Drive	Mowry Avenue	3	0.63	0.34	10	5	10	25.34	$1,900
2	27	UPRR Rail Trail	Washington Boulevard	Milpitas City Limits	1	5.54	0.34	5	10	10	25.34	$4,200,000
2	28	Grimmer Blvd Greenbelt	Paseo Padre Parkway	Fremont Boulevard	1	0.44	5.11	0	10	10	25.11	$282,900
2	29	Central Park UPRR Crossing	Central Park	Gomes Park	5	0.10	0.00	5	10	10	25.00	$600,000
2	30	East Warren Avenue	Curtner Road	Fernald Street	2	0.82	0.00	10	5	10	25.00	$35,300
2	31	Fremont Boulevard	Papazian Way	Irvington AVenue	2	0.26	0.00	5	10	10	25.00	$11,200
2	32	Hetch Hetchy/Plomosa Tr	Crawford Street	Milpitas City Limits	1	2.19	0.00	10	5	10	25.00	$1,408,200

Tier	Rank	Location	From	To	Bikeway Class	Length	Safety	School Connections	Community Connections	Network Connectivity	Total Score	Cost Estimate
2	33	Mowry Avenue	Farwell Drive	I-880	2	0.27	3.41	5	5	10	23.41	$11,600
2	34	Blacow Road	Fremont Boulevard	UPRR Trail	2	0.33	1.70	5	5	10	21.70	$14,200
2	35	Camden Street	Peralta Boulevard	Eggers Drive	3	0.38	1.48	5	5	10	21.48	$1,100
2	36	Mowry Avenue	Peralta Boulevard	Thane Street	2	0.53	1.25	5	5	10	21.25	$22,800
2	37	Paseo Padre Parkway	Phebe Road	Capulet Road	2	0.26	1.00	5	5	10	21.00	$11,200
2	38	Darwin Drive	Chaucer Drive	Paseo Padre Parkway	3	0.43	0.80	5	5	10	20.80	$1,300
2	39	Warm Springs Boulevard	Grimmer Boulevard	Reliance Way	2	0.41	0.80	0	10	10	20.80	$17,600
2	40	Patterson Ranch/Commerce	West of Paseo Padre	Ardenwood Blvd	3	0.33	0.68	5	5	10	20.68	$2,600
2	41	Mission Boulevard	Paseo Padre Parkway	I-680	2	0.41	0.57	5	5	10	20.57	$17,600
2	42	Route 84 E-W Connector	Decoto Road	Union City Limit	1	1.58	0.57	5	5	10	20.57	$1,015,900
2	43	Chadbourne Drive	Lockwood Avenue	Marigold Drive	3	0.74	0.45	10	0	10	20.45	$2,200
2	44	Warm Springs Boulevard	Reliance Way	Warren Avenue	2	0.97	0.45	0	10	10	20.45	$41,700
2	45	Mowry Avenue Path	Thane Street	Mission Boulevard	2	0.26	0.44	5	5	10	20.44	$11,200
2	46	Crandall Creek Path	Decoto Road	Alameda Creek Trail	1	1.33	0.34	5	5	10	20.34	$855,200
2	47	Kaiser Drive	Paseo Padre Parkway	Ardenwood Boulevard	2	0.62	0.34	5	5	10	20.34	$26,700
2	48	Tonopah Drive	Warm Springs Boulevard	Plomosa Park	3	0.37	0.34	5	5	10	20.34	$1,100
2	49	Denise-Lockwood	Driscoll Road	Chadbourne Drive	3	0.45	0.23	10	0	10	20.23	$1,300
2	50	Fremont Boulevard	Industrial Place	Warren Avenue	2	1.15	0.11	0	10	10	20.11	$49,500

Tier	Rank	Location	From	To	Bikeway Class	Length	Safety	School Connections	Community Connections	Network Connectivity	Total Score	Cost Estimate
2	51	East Bay Greenway	Union City Limits	Alameda Creek Trail	1	1.44	0.08	0	10	10	20.08	$925,900
Tier 3												
3	52	Alameda Creek Spur	Alameda Creek Trail	Shinn Sreet	1	0.34	0.00	0	10	10	20.00	$218,600
3	53	Bay Trail	Agua Caliente Stream	ACE Transit Center	1	3.81	0.00	0	10	10	20.00	$2,449,800
3	54	Kato Road	Warren Avenue	Warm Springs Boulevard	2	2.42	0.00	5	5	10	20.00	$104,100
3	55	Mattos Drive	Glenmoor Drive	Glenview Drive	3	0.18	0.00	10	0	10	20.00	$500
3	56	Niles - BART Connector	Von Euw Common	Fremont BART	1	0.77	0.00	0	10	10	20.00	$495,100
3	57	Paseo Padre Parkway	Tupelo Street	Ardenwood Boulevard	2	0.17	0.00	5	5	10	20.00	$7,300
3	58	Washington Boulevard	Fremont Boulevard	Roberts Avenue	2	0.14	0.00	0	10	10	20.00	$6,000
3	59	Fremont Boulevard	Decoto Road	Tamayo Street	2	0.37	1.82	0	5	10	16.82	$15,900
3	60	Sutter Avenue	Mowry Avenue	Sundale Avenue	3	0.56	1.02	0	5	10	16.02	$1,700
3	61	Paseo Padre Parkway	Mission Boulevard	E. Warren Avenue	2	0.61	0.37	5	0	10	15.37	$26,200
3	62	Patterson Ranch/Bay Trail	Alameda Creek	Patterson Ranch Road	1	0.74	0.34	0	5	10	15.34	$475,800
3	63	Bay Trail Access Spur	Cushing Parkway	Bay Trail	1	0.16	0.00	0	5	10	15.00	$102,900
3	64	Blacow Bike/Ped Bridge	Blacow Road	Osgood Road	5	0.13	0.00	0	5	10	15.00	$5,900,000
3	65	Fremont Blvd Extension	Fremont Boulevard	Dixon Landing Road	1	0.69	0.00	0	5	10	15.00	$443,700
3	66	Lippert Avenue	Warm Springs Boulevard	Hetch Hetchy Trail	3	0.36	0.00	10	5	0	15.00	$1,100

Tier	Rank	Location	From	To	Bikeway Class	Length	Safety	School Connections	Community Connections	Network Connectivity	Total Score	Cost Estimate
3	67	Marigold Avenue	Chadbourne Drive	Mission Creek Drive	3	0.11	3.07	10	0	0	13.07	$300
3	68	Paseo Padre Parkway	DRISCOLL ROAD	I-680	2	0.92	0.80	10	0	0	10.80	$39,600
3	69	Mission Boulevard	I-680	South of Telles Lane	2	0.39	0.34	10	0	0	10.34	$16,800
3	70	Stanford Avenue	Mission Street	Mission Peak Trail	2	0.65	0.34	5	5	0	10.34	$28,000
3	71	Bay Trail	Auto Mall Parkway	Newark City Limits	1	1.17	0.00	0	10	0	10.00	$752,300
3	72	Bay Trail Connector	Cushing Parkway	Nobel Drive	1	0.62	0.00	0	0	10	10.00	$398,700
3	73	Coyote Creek Levee	Dixon Landing Road	Bay Trail	1	0.75	0.00	0	0	10	10.00	$482,300
3	74	Farwell Trail	Farwell Drive	Kennedy High School	1	0.62	0.00	10	0	0	10.00	$398,700
3	75	Starlite Way	Warm Springs Boulevard	Lone Tree Creek Park	3	0.39	0.00	5	5	0	10.00	$1,200
3	76	Auto Mall Parkway Path	Nobel Drive	Planned Transit Center	1	0.44	0.00	0	10	0	10.00	$282,900
3	76	Porter/Bullard	Fremont Boulevard	Robin Street	3	0.69	1.93	0	5	0	6.93	$2,100
3	77	Cherry Lane	Mowry Avenue	Spence Avenue	3	0.35	1.02	0	0	0	1.02	$1,000
3	78	Bay Trail Loop	Tri-Cities Landfill	Coyote Creek	1	4.95	0.00	0	0	0	0.00	$3,182,900

9.5. Bikeway Costs By Class and Tier

Table 9-4 presents a summary of bikeway miles and cost estimates by bikeway classification. The total estimate for all the bikeway projects in this Plan is $30.6 million. A significant amount of this cost estimate is due to the 3 miles of recommended Class I bike paths and the two crossings. The recommended Class II and Class III projects total $1 million.

Table 9-4: Bikeway Project Summary By Classification

Bikeway Class	Miles	Total Cost Estimate
1	32.72	$22,974,100
2	24.80	$1,066,400
3	8.44	$31,800
Crossings	0.23	$6,500,000
Total	**65.94**	**$30,572,300**

Table 9-5 presents a summary of bikeway infrastructure projects by Tier. Tier 1, intended to be implemented in the next five years, is estimated to cost $4.3 million.

Table 9-5: Bikeway Project Summary by Tier

Tier	Miles	Total Cost Estimate
1	14.17	$4,277,300
2	28.52	$10,459,500
3	23.50	$15,835,500
Total	**65.94**	**$30,572,300**

Table 9-7 at the end of this chapter outlines the high priority projects that include the Tier 1 bikeway infrastructure projects as well as priority programs.

9.6. 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 9-6**.

Table 9-6: Bikeway Maintenance Frequency and Cost Estimates

Facility Type	Unit Cost	Description	Length (Miles)	Annual Cost	Notes
Class I	$8,500	Miles/Year	32.72	$278,100	Lighting and removal of debris and vegetation overgrowth
Class II	$2,000	Miles/Year	24.80	$49,600	Repainting lane stripes and stencils, sign replacement as needed
Class III	$1,000	Miles/Year	8.44	$8,400	Sign replacement as needed
Cross Town Route	$1,250	Miles/Year	34.92	$43,650	Sign and stencil replacement as needed
Annual Cost				**$379,750**	

9.7. High Priority Projects

The high priority project list (**Table 9-7**) is intended to 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 9-1** and priority program improvements. As discussed in Section 9.1, 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 Fremont. 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 the following projects and programs as also high priority and are recommended for near-term implementation:

- Cross-town routes
- Green bike lanes through Freeway ramp conflict areas
- Existing bike lanes at intersection improvements
- Bicycle resource website
- Bicycle education programs for youth, adults and seniors

Table 9-7 below presents the high priority projects and cost estimates.

Table 9-7: High Priority Projects

Location	From	To	Class	Miles	Cost
BART Way	BART Station	Paseo Padre Parkway	2	0.18	$7,700
Fremont Boulevard	Thornton Avenue	Eggers Drive	2	1.02	$43,900
Mission View Drive	Fremont Boulevard	Paseo Padre Parkway	3	0.49	$3,900
Stevenson Boulevard	Paseo Padre Parkway	Boyce Road	2	2.08	$89,400
Hastings Street	Capitol Avenue	Mowry Avenue	2	0.11	$4,700
UPRR Rail Trail	Clarke Drive	Main Street	1	3.55	$3,579,700
Central Park Trail	Stevenson Boulevard	Lake Elizabeth	1	0.46	$295,800
Beacon Avenue	Liberty Street	Fremont Boulevard	2	0.32	$13,800
Civic Center Drive	Mowry Avenue	Stevenson Boulevard	2	0.64	$27,500
Peralta Boulevard	Fremont Boulevard	Dusterberry Way	2	0.35	$15,100
Fremont Boulevard	Sundale Drive	Grimmer Boulevard	2	1.14	$49,000
Country Way	Paseo Padre Parkway	Fremont Boulevard	2	0.51	$21,900
Hastings Street	Eggers Drive	Mowry Avenue	3	0.51	$4,100
E. Warren Avenue	Warm Springs Boulevard	Kato Road	2	0.18	$7,700
Gallaudet Drive	Spence Avenue	Walnut Avenue	2	0.19	$8,200
Dusterberry Way	Thornton Avenue	Central Avenue	2	0.51	$21,900
Peralta Boulevard	Fremont Boulevard	Mowry Avenue	2	1.71	$73,500
E. Warren Avenue	Fernald Street	Warm Springs Blvd	2	0.22	$9,500
Cross-Town Route Project (Citywide)*			Varies	35.28	$268,700
Interstate 880/South Fremont Crossing Study					$75,000
Green Bike Lanes Through Freeway Ramp Conflict Areas (12 locations)**					$72,000
Existing Bike Lanes at Intersection Improvements (17 locations)***					$51,000
Central Park Union Pacific Railroad Crossing					$600,000
Bicycle Resource Website					N/A
Bicycle Education Programs- Youth, Adult and Senior					N/A
Total Estimated Cost of High Priority Projects					**$5,343,800**

** Assumes signage and distinctive stencil*
*** Assumes $10s.f. and 100 feet per improvement*
**** Assumes $3.75 per linear foot and 400 feet total per intersection*

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10. 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 10-1** lists the acronyms commonly used to describe funding resources and government agencies. **Table 10-2** lists the funding sources described in this chapter and summarizes important funding source components, such as funding amount available, application deadlines and eligible applicants.

10.1. Federally-Administered Funding

SAFETEA-LU, the Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users, is the primary federal funding source for bicycle projects. SAFETEA-LU is the fourth iteration of the transportation vision established by the Intermodal Surface Transportation Efficiency Act (1991). Also known as the federal transportation bill, Congress passed the $286.5 billion SAFETEA-LU bill in 2005. SAFETEA-LU expired in 2009, at which time Congress approved extending funds through 2010. When the next multi-year federal transportation bill is reauthorized, funding available for bicycle projects is likely to change. Historically, these modes have received larger allocations with each new multi-year transportation bill.

Caltrans, the State Resources Agency and regional planning agencies administer SAFETEA-LU funding. Most, but not all of these funding programs emphasize transportation modes and purposes that reduce auto trips and provide inter-modal connections. SAFETEA-LU programs require a local match of between zero percent and 20 percent. SAFETEA-LU funds primarily capital improvements and safety and education programs that relate to the surface transportation system.

To be eligible for Federal transportation funds, States are required to develop a State Transportation Improvement Program (STIP) and update it at least every four years. A STIP is a multi-year capital improvement program of transportation projects that coordinates transportation-related capital improvements planned by metropolitan planning organizations and the state.

To be included in the STIP, projects must be identified either in the Interregional Transportation Improvement Plan (ITIP), which is prepared by Caltrans, or in the Regional Transportation Improvement Plan (RTIP), which in the Bay Area is prepared by the Metropolitan Transportation Commission. Bicycle projects are eligible for inclusion. Caltrans updates the STIP every two years.

The following programs are administered by the Federal government.

10.1.1. Transportation, Community and System Preservation (TCSP) Program

The Transportation, Community and System Preservation (TCSP) Program provides federal funding for transit oriented development, traffic calming and other projects that improve the efficiency of the transportation system, reduce the impact on the environment, and provide efficient access to jobs, services and trade centers. The program provides communities with the resources to explore the integration of their transportation system with community preservation and environmental activities. TCSP Program funds require a 20 percent match. Congress appropriated $204 million to this program in Fiscal Year 2009. Funding has been extended under a continuing resolution for FY 2010.

Online resource: http://www.fhwa.dot.gov/tcsp/

10.1.2. Rivers, Trails and Conservation Assistance Program

The Rivers, Trails and Conservation Assistance Program (RTCA) is a National Parks Service program that provides technical assistance via direct staff involvement, to establish and restore greenways, rivers, trails, watersheds and open space. The RTCA program provides only for planning assistance—there are no implementation monies available. Projects are prioritized for assistance based upon criteria that include conserving significant community resources, fostering cooperation between agencies, serving a large number of users, encouraging public involvement in planning and implementation and focusing on lasting accomplishments.

Online resource: http://www.nps.gov/ncrc/programs/rtca/contactus/cu_apply.html

10.2. State-Administered Funding

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

10.2.1. 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 local Metropolitan Transportation Commission (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

10.2.2. 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 expires December 21, 2012, requires a 10 percent local match, 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 has been extended through December 31, 2010, and may be included in the future federal transportation bill. Cities, counties, school districts, non-profits, and tribal organizations are eligible for the 100 percent reimbursable funds that target children in grades K-8. Applicants may use funds for construction or for education, encouragement, enforcement, and evaluation activities. Construction must be within two miles of a grade school or middle school. Cycle 2 provided $46 million for FY 08/09 and 09/10.

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

10.2.3. 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.

10.2.4. 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/

10.2.5. 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

10.2.6. 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

10.2.7. 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

10.2.8. 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/

10.2.9. 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/

10.2.10. 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

10.2.11. 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

10.2.12. 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

10.2.13. 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

10.3. 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.

10.3.1. 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/

10.3.2. 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

10.3.3. 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

10.3.4. 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

10.3.5. 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

10.3.6. 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 $1.8 million in revenues to Alameda County for FY 2012. The Alameda County Transportation Commission (ACTC) develops a list of TDA Article 3 projects for Alameda 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/

10.3.7. 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 CMAs based on population, bikeway network capital cost, and unbuilt network miles. In Alameda County, ACTC administers this funding.

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

10.3.8. Measure B

In 2000, Alameda County voters approved Measure B, increasing local sales tax by one-half of one percent for transportation improvements designated in the Transportation Expenditure Plan. The reauthorization extended the program through 2022. The Alameda County Transportation Commission (ACTC) administers Measure B revenues to fund a wide variety of transportation-related projects and programs. For all Measure B projects, approximately 60 percent of revenues are allocated to local jurisdictions. Five percent of net revenues are dedicated to Bicycle and Pedestrian Safety, 75 percent of which is allocated to local jurisdictions. In Fremont, the Irvington Area Pedestrian Improvements Project was funded under this program.
Online resource: http://www.actia2022.com/Programs

10.3.9. 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 are described in the Development Impact Fee Annual Report

Resources: http://www.fremont.gov/DocumentView.aspx?DID=2814

10.3.10. 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.

10.3.11. 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.

10.3.12. 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

10.3.13. 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.

10.3.14. 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 bicycle project costs, when they are built as part of larger transportation projects, will be covered in project construction budgets.

10.4. Other Sources

10.4.1. 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/

10.4.2. 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

10.4.3. 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 10-1: Funding Acronyms, Online Resources and Government Jurisdictions

Acronyms
ABAG – Association of Bay Area Governments
ACTC – Alameda County Transportation Commission
BAAQMD – Bay Area Air Quality Management District
Caltrans - California Department of Transportation
CMAQ - Congestion Mitigation and Air Quality
CTC - California Transportation Commission

FHWA - Federal Highway Administration
MTC – Metropolitan Transportation Commission
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
ACTC – Alameda County Transportation Commission
Jurisdictions for Fremont, California:
Caltrans - Caltrans District 4
Congressional District 13

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Table 10-2: Funding Sources

Grant Source	Due Date	Administering Agency	Annual Total	Matching Requirement	Eligible Applicants	Planning	Construction	Other	Comments
Federally-Administered Funding									
Transportation, Community and System Preservation Program	Varies, generally January or February.	Federal Transit Administration	$204 m nationally in 2009	20%	States, MPOs, local governments and tribal agencies	X	X	X	May be used for research. Funds projects that increase the efficiency of the transportation system.
Rivers, Trails and Conservation Assistance Program	Aug 1 for the following fiscal year	NPS	Program staff time is awarded.	Not applicable	Governments, communities			X	RTCA staff provides technical assistance to communities so they can conserve rivers, preserve open space, and develop trails and greenways. Contact NPS at (202) 354-6900.
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.

Grant Source	Due Date	Administering Agency	Annual Total	Matching Requirement	Eligible Applicants	Planning	Construction	Other	Comments
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.
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.	ACTC	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 ACTC	varies	None	Not Applicable		X		MTC administers RBP funds to county CMAs based on population, bikeway network capital cost and unbuilt network miles.
Measure B	Not applicable	ACTC	Varies	Not Applicable	Not Applicable		X		In 2011, the TA will issue its first call for bicycle projects funded through Measure A.
New Construction	Not applicable	City	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 Fremont-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.

A.1. Bicycle Design Standards

The City of Fremont Bicycle Design Guidelines present standards and recommendations that specifically provide for consistency in the City of Fremont, 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 Fremont 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 Fremont 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 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
- NACTO Urban Bikeway Design Guide, National Association of City Transportation Officials. http://nacto.org/cities-for-cycling/design-guide/

This appendix is not intended to replace local, county, regional, 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 section s)

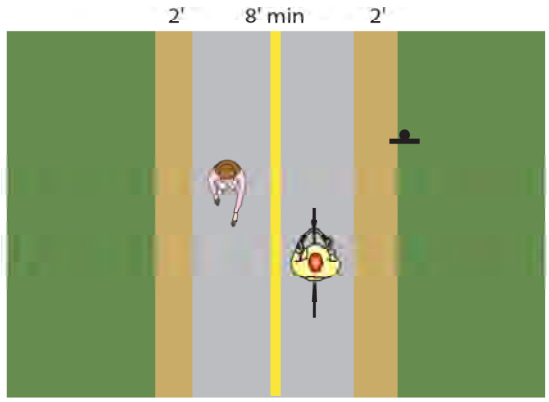
5 feet minimum when adjacent to curb and gutter (3' more than the gutter pan width if the gutter pan is greater than 2')

Recommended Width: 6-7 feet where right-of-way allows

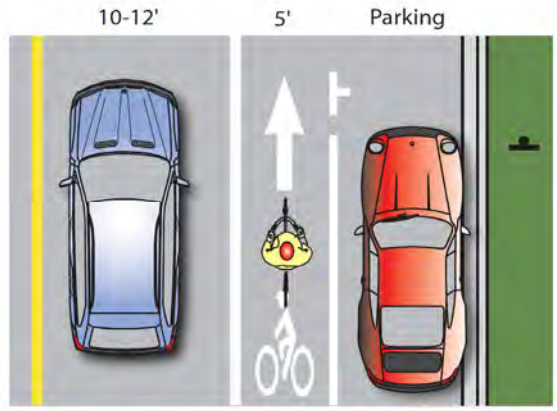
Lane Width for Bicycle Route With Wide Outside Lane:

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.

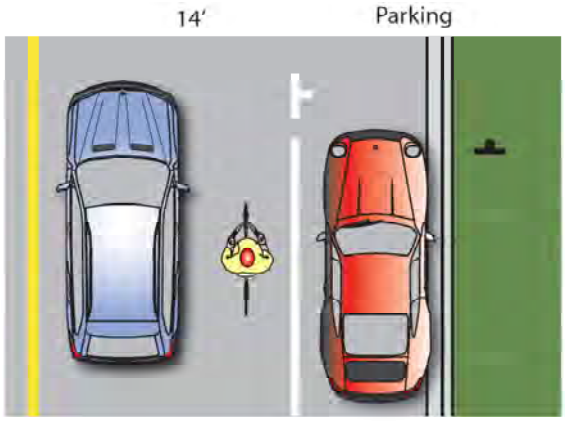
Design Example



Class I Shared Use Bike Path



Class II Bike Lane



Class III Bike Route

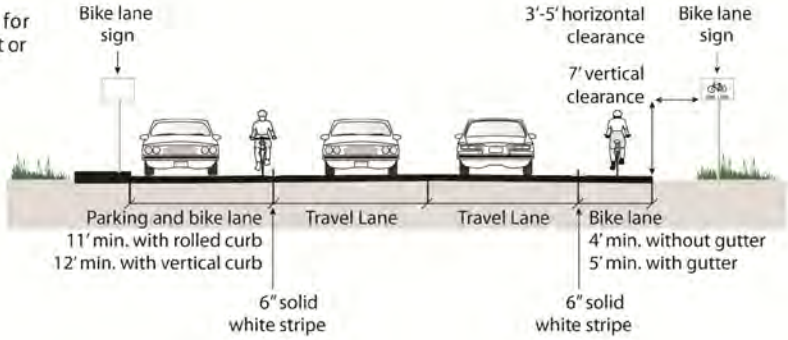
Recommended Design

CLASS I
Multi-Use Path

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

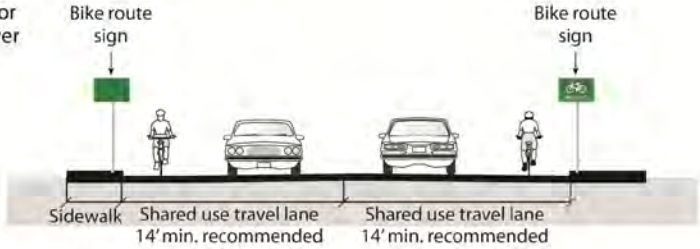
CLASS II
Bike Lane

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 pedestrian or 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:

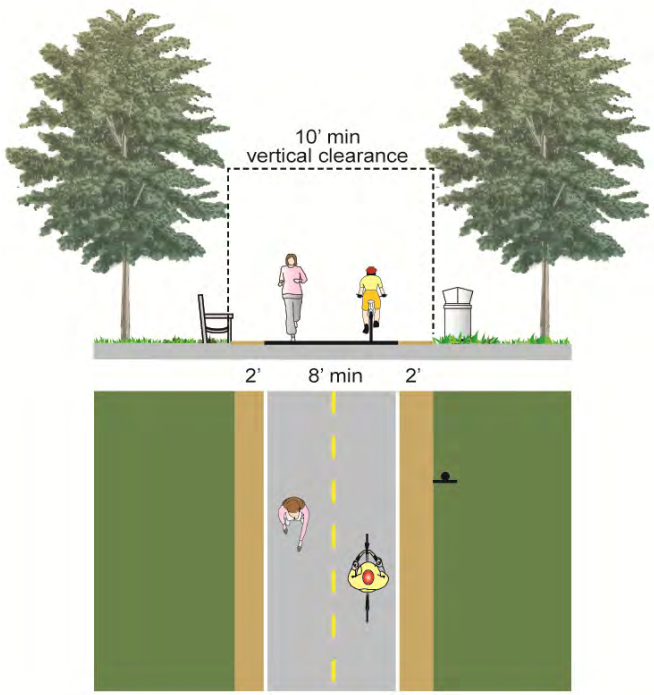
Both the California Highway Design Manual Chapter 1000 and the AASHTO Guide for the Development of Bicycle Facilities generally recommend against the development of shared use paths directly adjacent to roadways. Also known as "sidepaths," these facilities create a situation where a portion of the bicycle 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.
- The total cost of providing the proposed path is proportionate to the need.

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. **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

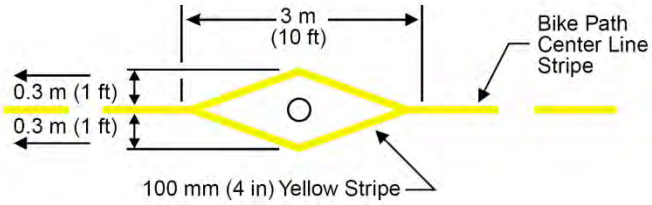
- MUTCD – California Supplement (Section 9C.101-CA)
- AASHTO Guide for the Development of Bicycle Facilities Chapter 2

Cost

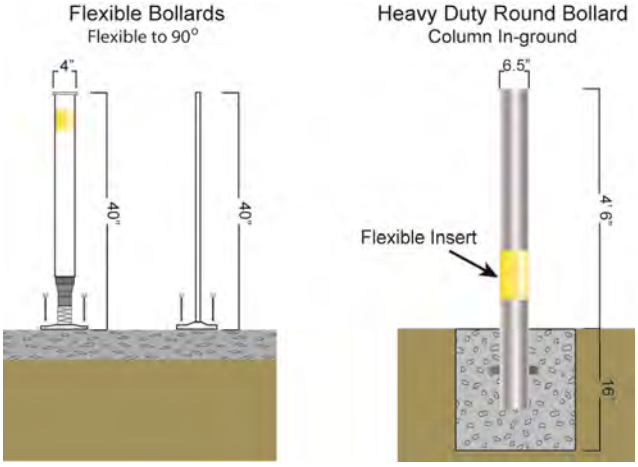
- Bollard, fixed: $220 - $800 each
- Bollard, removable: $680 - $940 each

Recommended Design

Barrier Post Striping



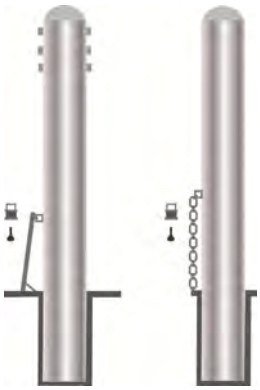
Flexible Bollards



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

R9-7

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.

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

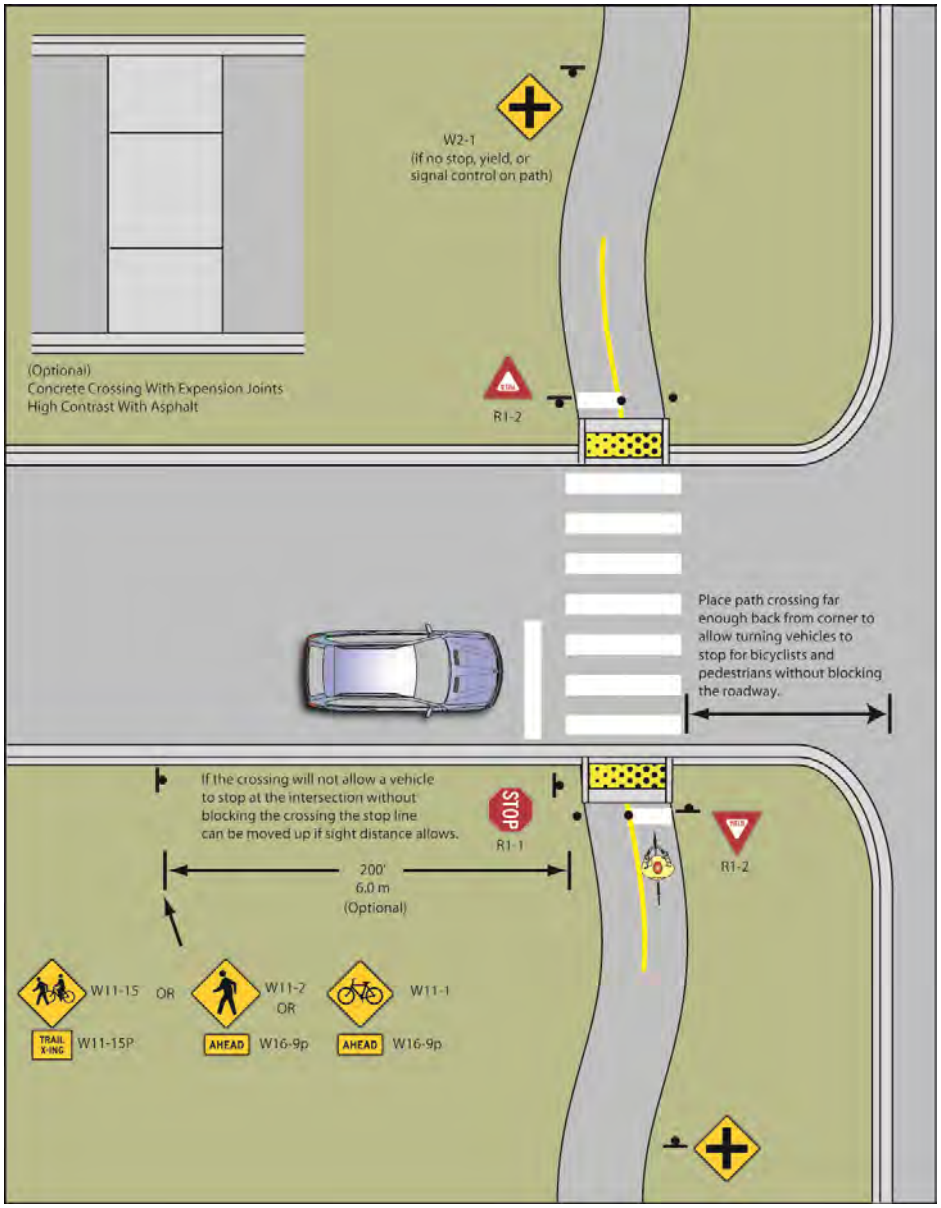
Option 4- Create a grade-separated undercrossing or overcrossing of the roadway where the pathway intersects the roadway.

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.

Path Crossing at Intersection Continued

Recommended Design



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

Path Crossing at Intersection Continued

Design Example

Typical "at grade" roadway crossing.

Source: PBIC Image Library

Photographer: Danny McCullough

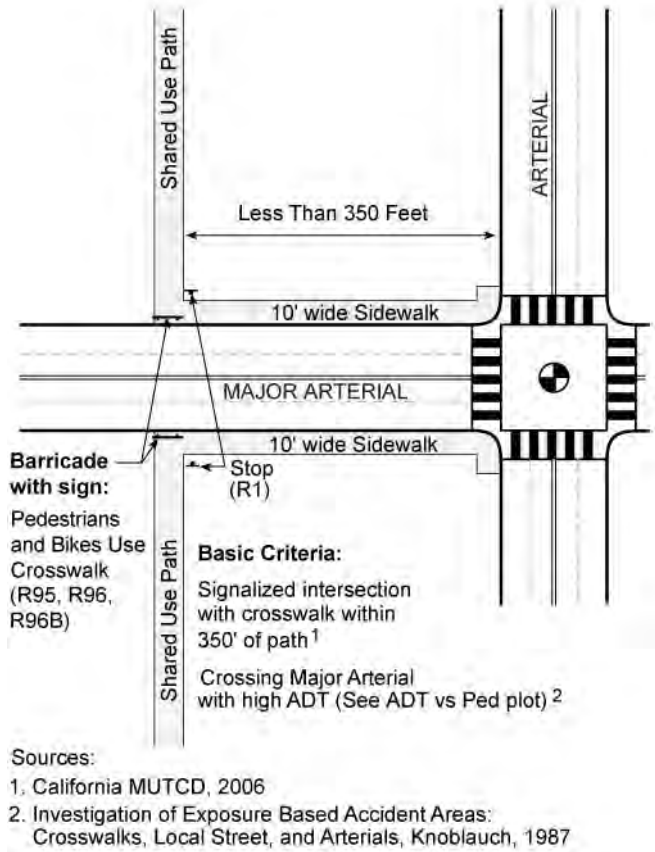
Guidance

- 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 Fremont. 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.

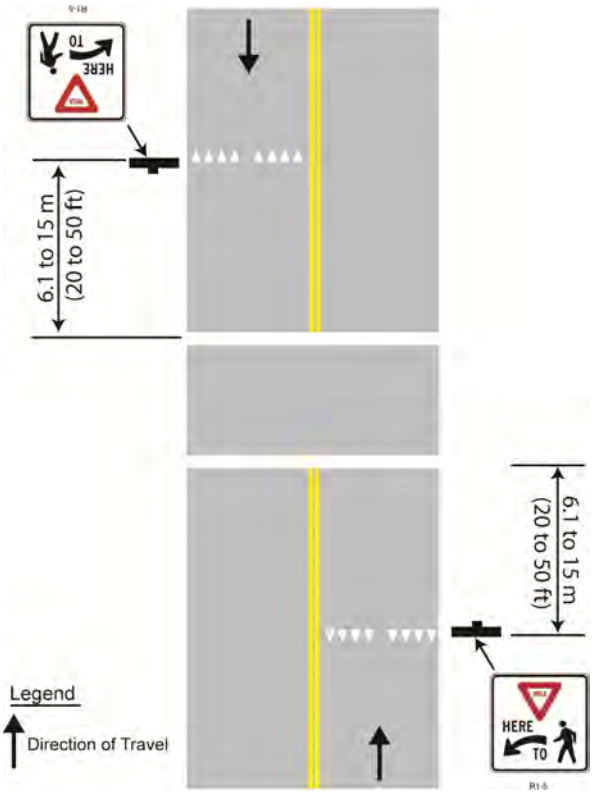
Pavement Markings
A ladder crosswalk should be used. Warning markings on the path and roadway should be installed.

Other Treatments

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

Beacons
See **Page A-16** of this document

Recommended Design



Source: California MUTCD, Figure 3B-15

Guidance

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

Recommended Design

CA MUTCD

Uncontrolled Mid-Block Crossing Continued												
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 enhance uncontrolled crosswalks by using devices that call attention to pedestrians. There are two types of crossing beacons recommended in this Plan: the pedestrian hybrid beacon and the rectangular rapid flash beacon.

- Pedestrian hybrid beacons, also known as a HAWK (High intensity Activated crossWalK) Signal. It includes three signal sections, two red circular indications above one yellow circular indication (see upper photo). The signal is dark until activated. When activated, the signal flashes yellow to inform drivers to stop. The signal then becomes solid yellow followed by a duel solid red. It then flashes alternating red flashing as a pedestrian signal head flashes DON'T WALK. HAWK signals are experimental in California. 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/).
- Rectangular rapid flashing beacons are also pedestrian actuated devices; however they are mounted adjacent to the roadway (see lower photo). The beacon lights are rectangular LED lights installed below a pedestrian crosswalk sign that flash in an alternating pattern when activated. The beacon is dark when not activated. Caltrans has received approval from the Federal Highway Administration (FHWA) for use of RRFBs on a blanket basis at uncontrolled pedestrian and school crosswalk locations in California, including State highways and all local jurisdictions' roadways.

Design Summary

- Crossing beacons should be installed at all uncontrolled arterial crossing locations.
- Crosswalk warning beacons should be actuated to maximize yield to pedestrian compliance.

Recommended Design

Pedestrian Hybrid Beacon (HAWK)

Rectangular Rapid Flashing Beacon

Image from: http://mutcd.fhwa.dot.gov/resources/interim_approval/ia11/stpetersburgrpt/intro.htm

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

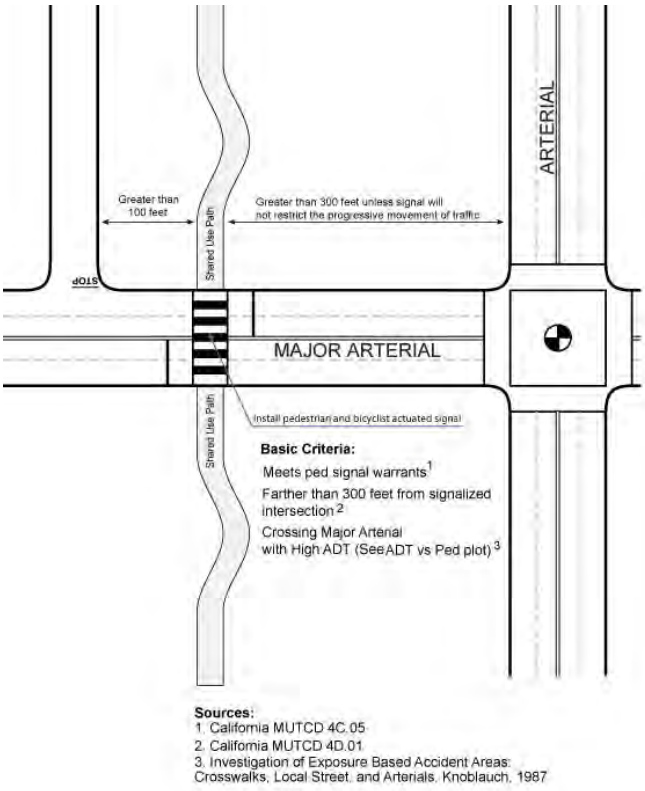
A Toucan crossing (derived from: "two can cross") is used in higher traffic areas where pedestrians and bicyclists are crossing together.

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:

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

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

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

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. 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:

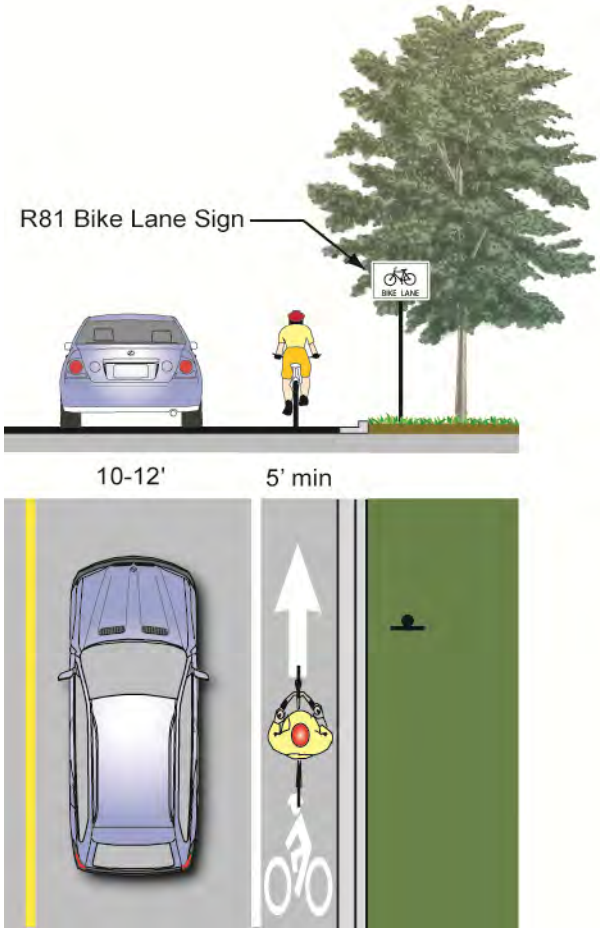
4 feet minimum when no gutter is present

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

Recommended Width:

6-7 feet where right-of-way allows

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 (Note: This does not include right-of-way acquisition).

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

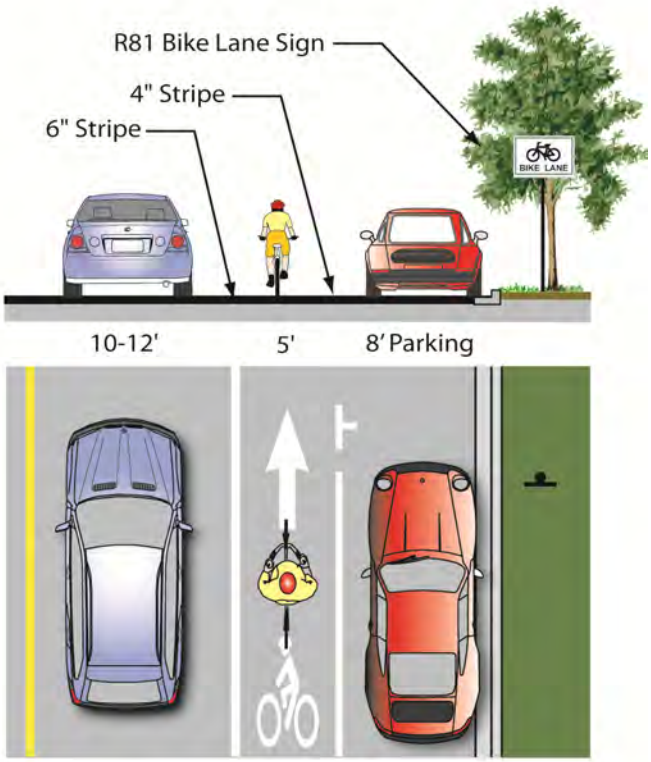
Bike Lane Width:

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 (Note: This does not include right-of-way acquisition).

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:

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

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 information.

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

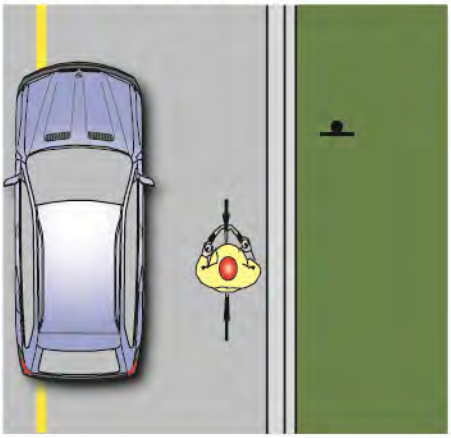
Guidance

- Caltrans Highway Design Manual (Chapter 1000)
- MUTCD – California Supplement
- AASHTO 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:

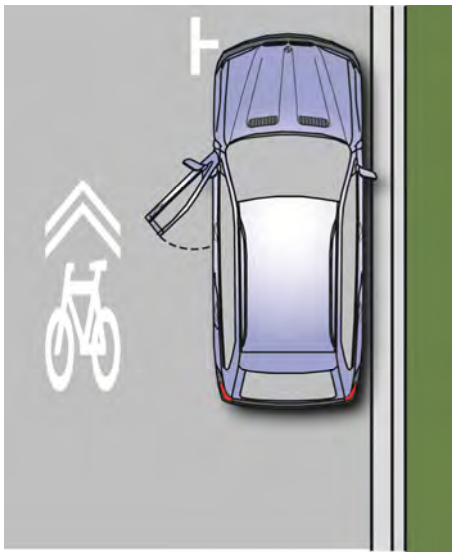
The width of the door zone is generally assumed to be 2.5 feet from the edge of the parking lane.

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

R4-11

Share The Road Signs (National MUTCD)

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 cut-through. 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

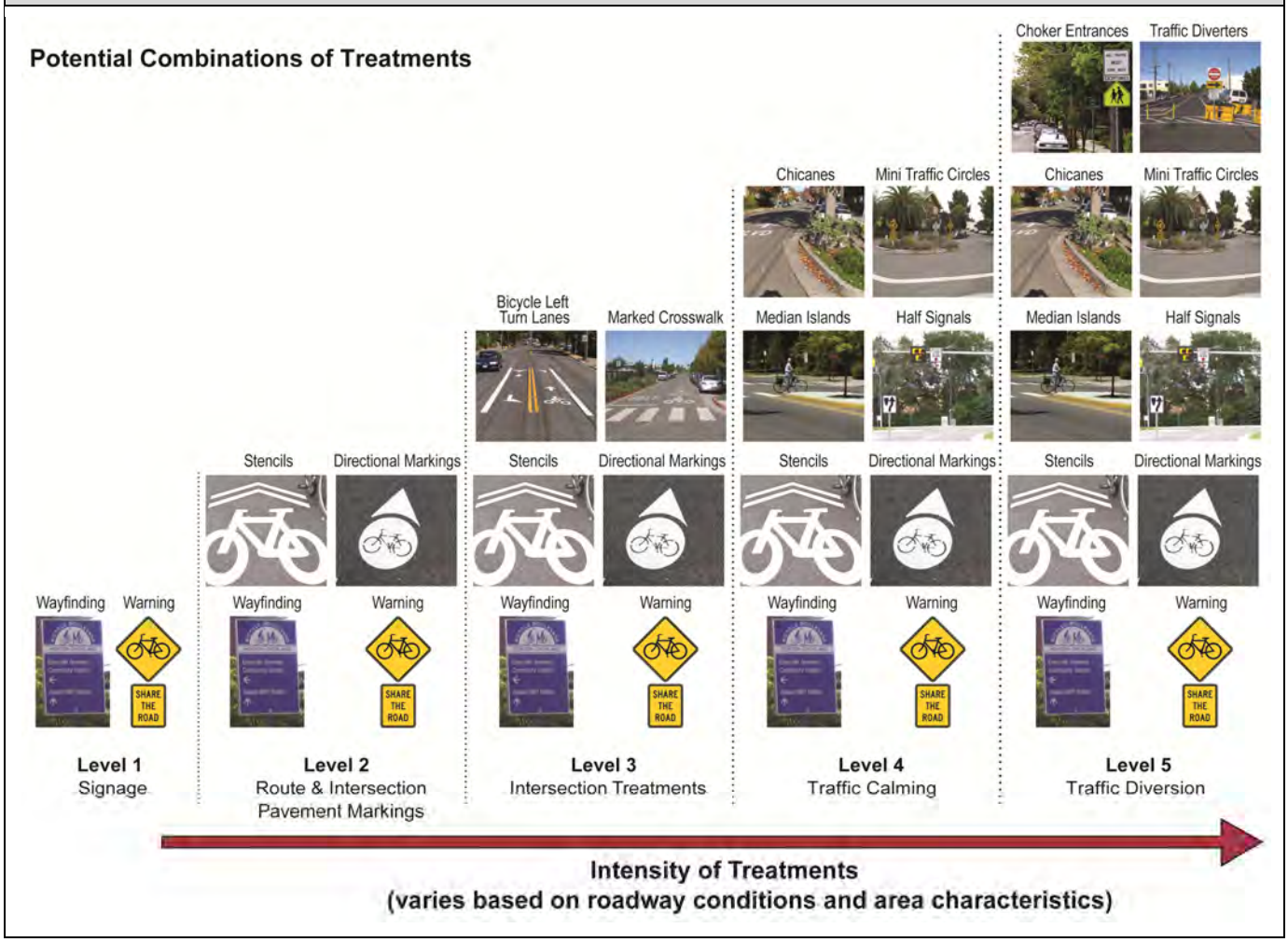
- $310,500 per mi (source: San Benito Bike Plan, 2008)

Design Example

See next page.

Bicycle Boulevards Continued

Potential Treatments



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 Botts' 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.

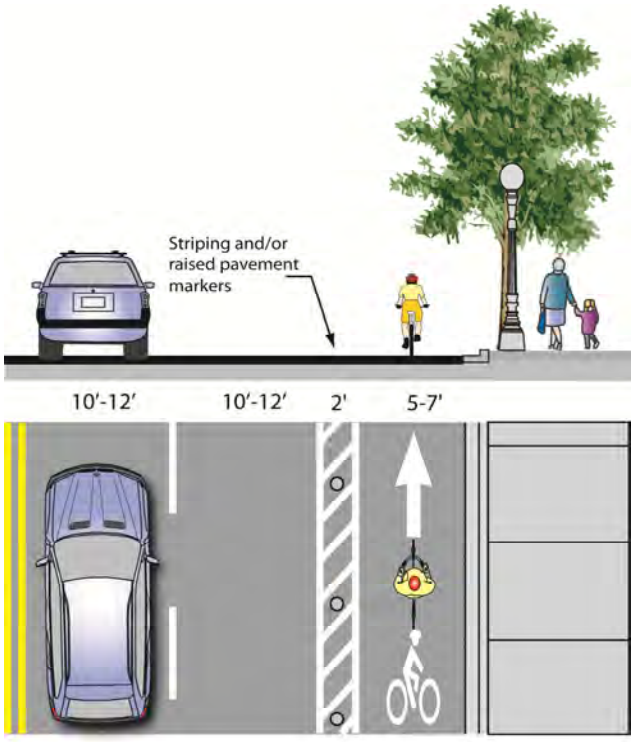
Design Example

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 Fremont.

Material Options:

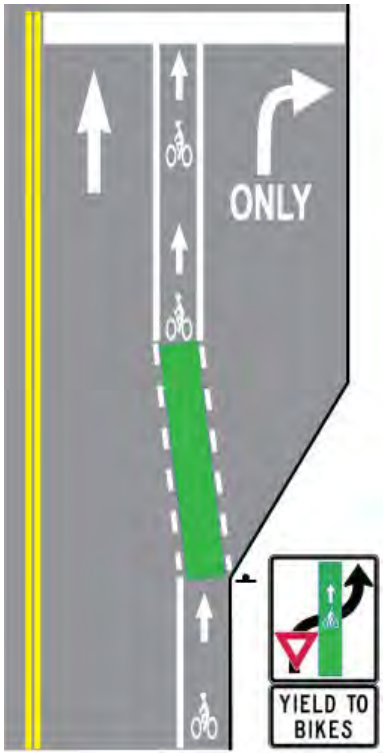
Colored bike lanes require additional cost to install and maintain. Techniques include:

- 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

- This treatment is not currently present in any State or Federal design standards
- Portland's Blue Bike Lanes

  http://www.portlandonline.com/shared/cfm/image.cfm?id=58842

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.

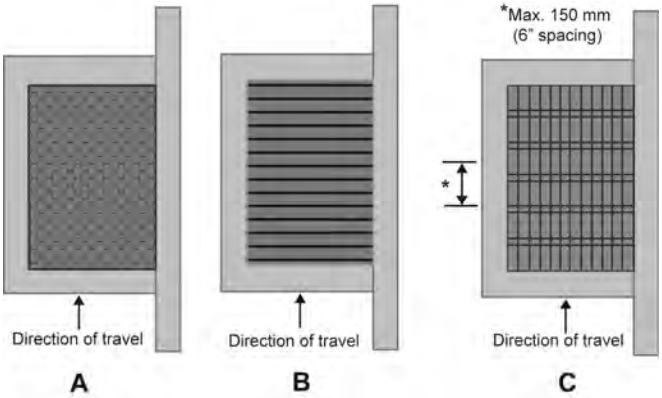
Guidance

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

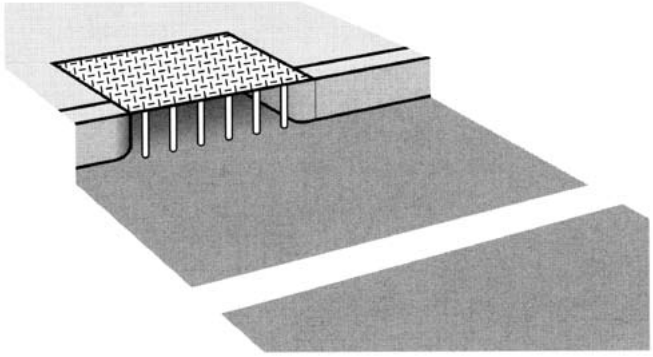
Cost

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

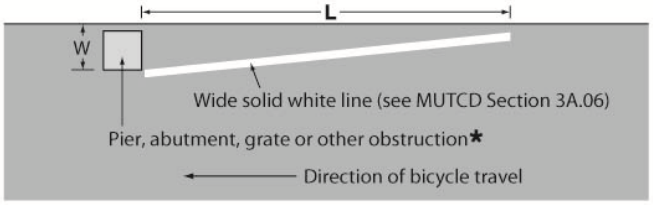
Recommended Design



Bicycle Compatible Drainage Grates



Drop-in inlet flush with in 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

CA MUTCD 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.

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

Guidance

- MUTCD (Section 6F.53)
- 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

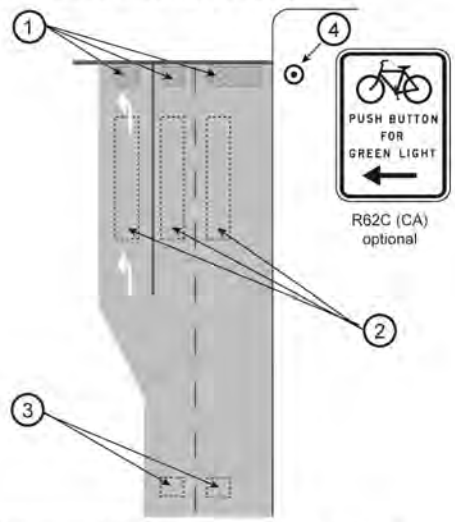
- In order to minimize delay to bicyclists, it is recommended to install one loop about 100 feet from the stop bar within the bike lane, with a second loop located at the stop bar.

Details of saw cuts and winding patterns for inductive detector loop types appear on 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.

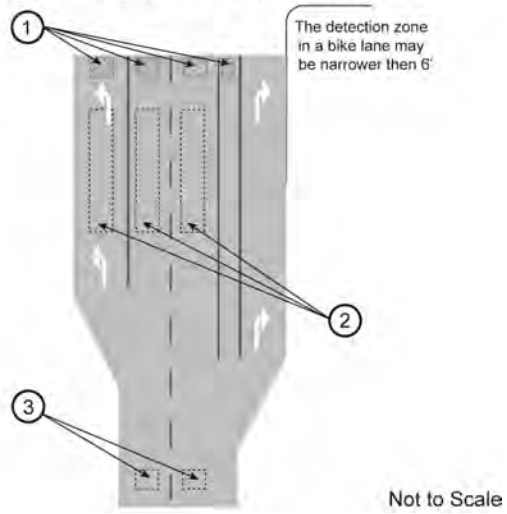
Recommended Design

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 pushbuttion 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

Guidance

- 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 quadruple 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

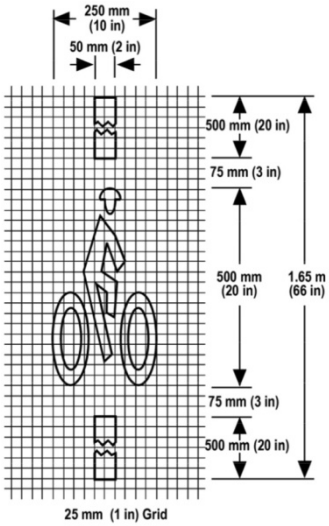


Figure 9C-7 – CAMUTCD

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

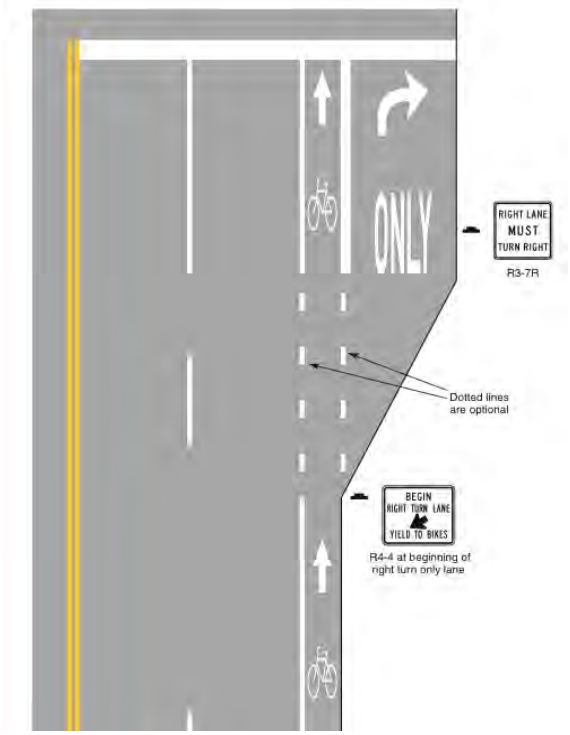
Bike Lane Placement
A through bicycle lane shall not be positioned to the right of a right turn only lane.

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

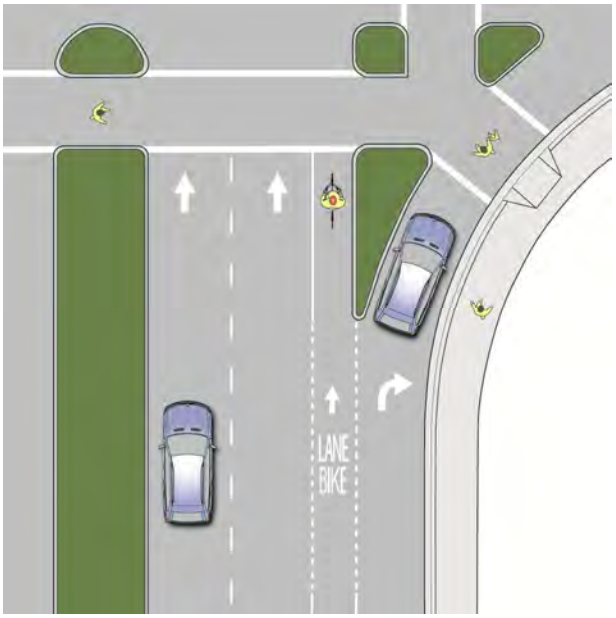
Bike Lane Striping
When the right through lane is dropped to become a right turn only lane, the bicycle lane markings should stop at least 100 feet before the beginning of the right turn lane. Through bicycle lane markings should resume to the left of the right turn only lane (MUTCD).

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

Bike Lane at Intersection with Right Turn Only Lane Continued	
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 14 feet deep to allow for bicycle positioning.

Signage

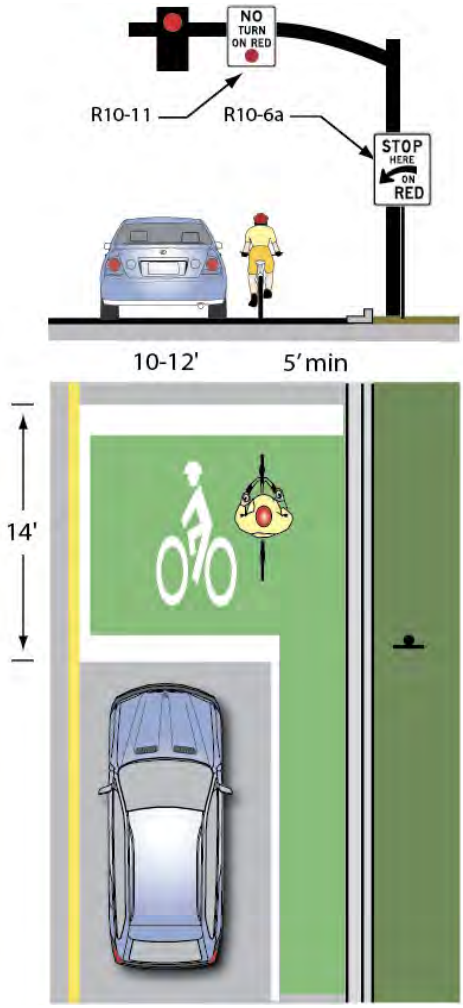
Appropriate signage as recommended by the MUTCD applies. Signage should be present to prevent 'right turn on red' and to indicate where the motorist must stop.

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.

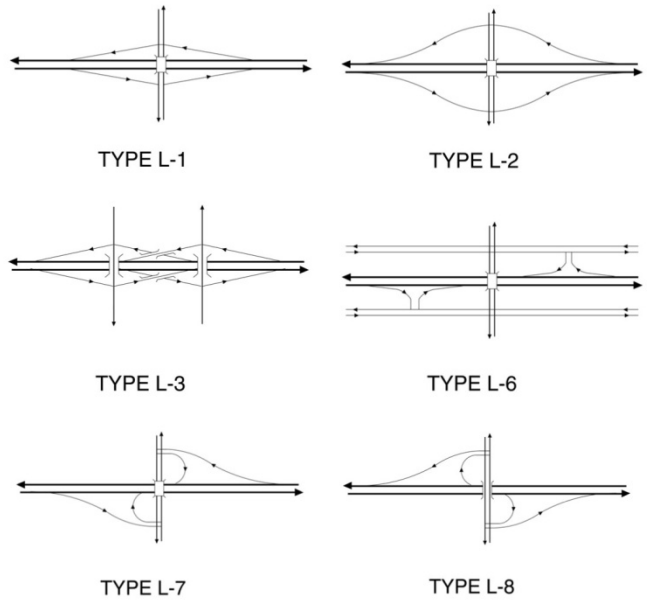
Bike lane/shared roadway width

- 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.

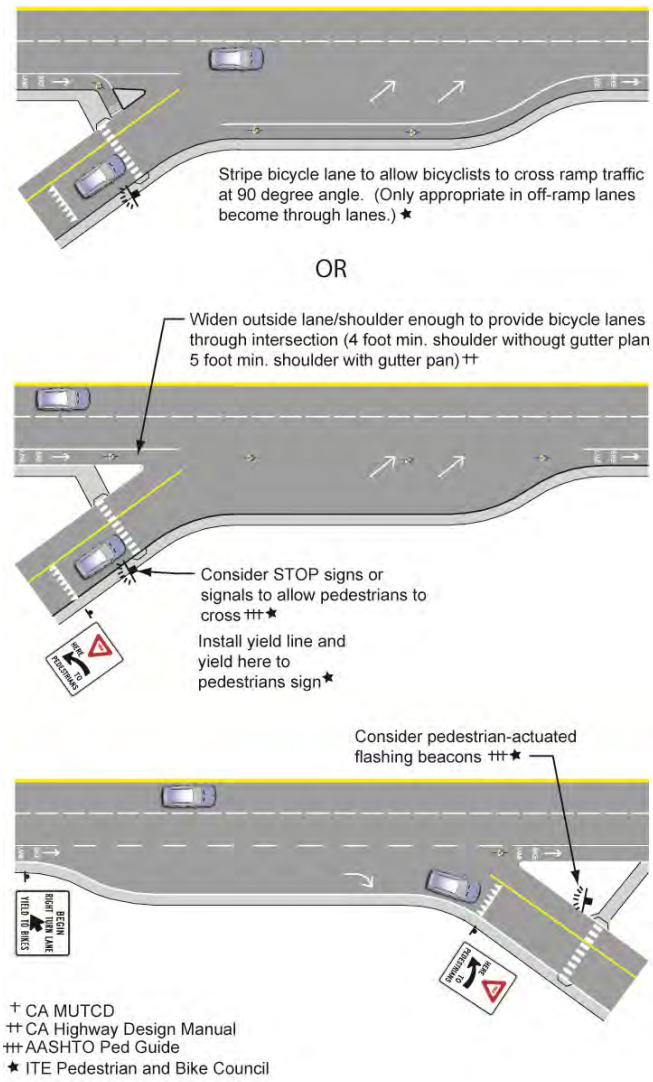
Striping

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.

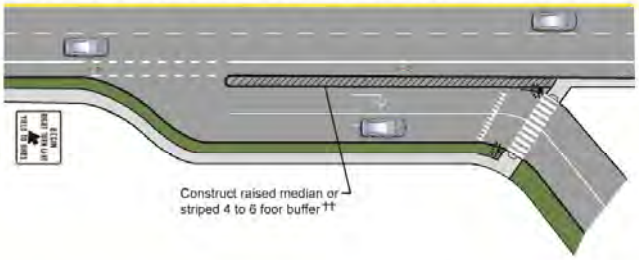
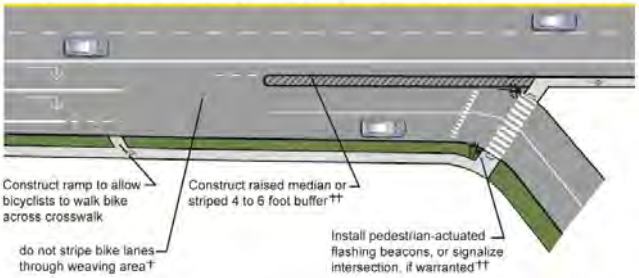
Beacons

Install pedestrian-actuated beacons at all uncontrolled crossings.

Recommended Design



Signage and Striping Treatments for Free-Flow Ramp

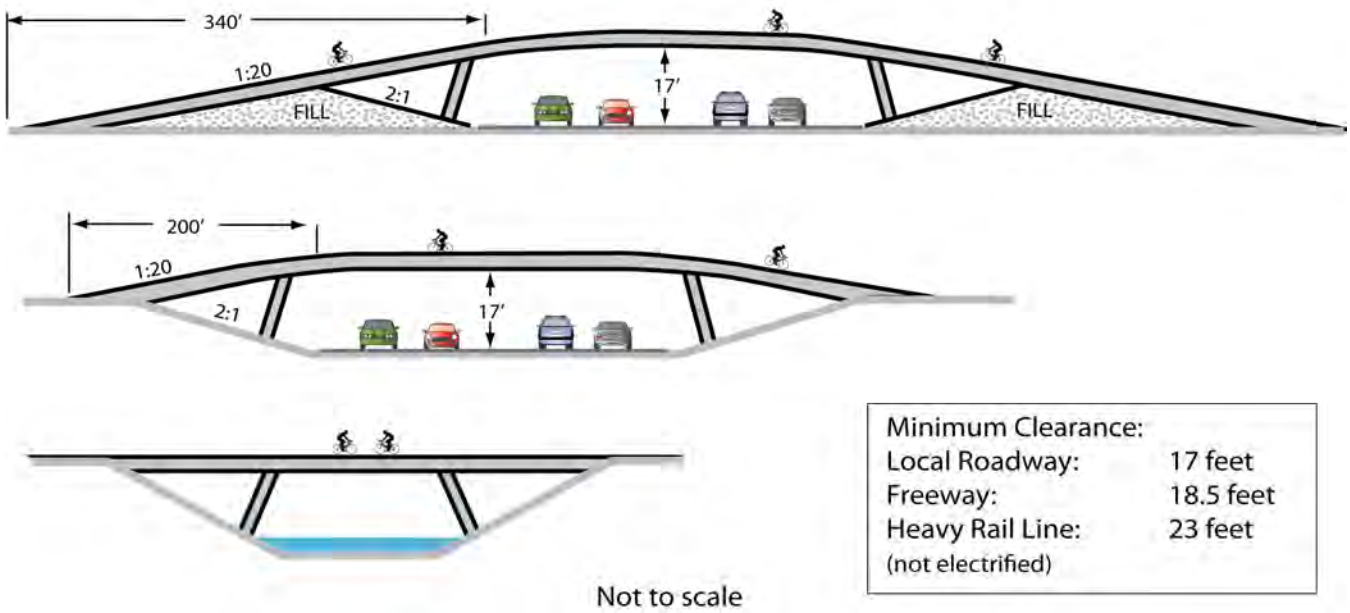
Accommodating Bicyclists at On and Off-Ramps Continued	
Guidance	**Recommended Design (continued)**
• Caltrans Highway Design Manual (Chapter 500) • MUTCD – California Supplement Section 9C.04 and Figure 9C-103 • AASHTO Guide for the Development of Bicycle Facilities, p. 62	**Short Dual Right Turn On-Ramp (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	
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.	
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.	• 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

Bicycle and Pedestrian Overcrossing Design Continued

Recommended Design (continued)



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

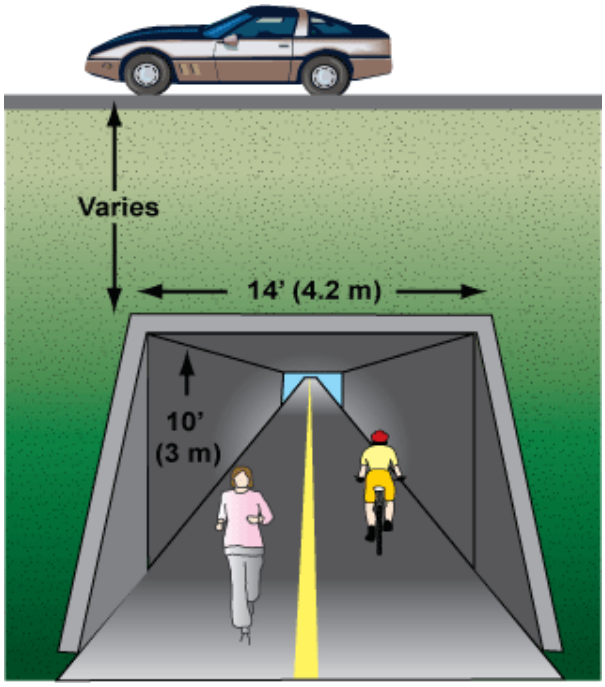
Signage & Striping

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)

Bicycle and Pedestrian Undercrossing Design Continued

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

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

Recommneded Fremont Distance Sign

Recommended Fremont Direction Sign

Guidance

- 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 is recommended for the City of Fremont.
- 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.

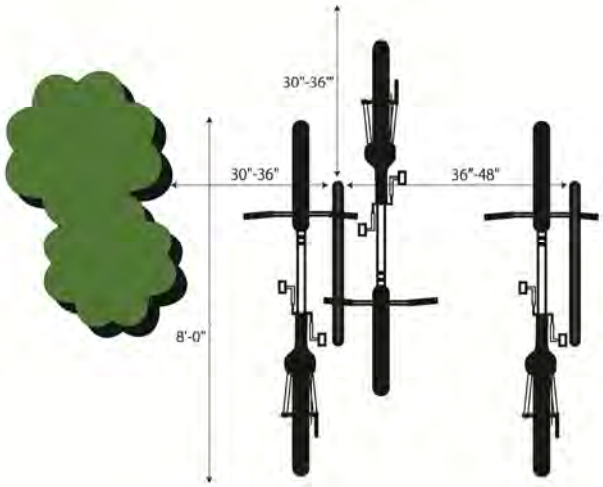
Discussion

Bicycle Parking Manufactures:

- Palmer: www.bikeparking.com
- Park-a-Bike: www.parkabike.com
- Dero: www.dero.com
- Creative Pipe: www.creativepipe.com
- Cycle Safe: www.cyclesafe.com

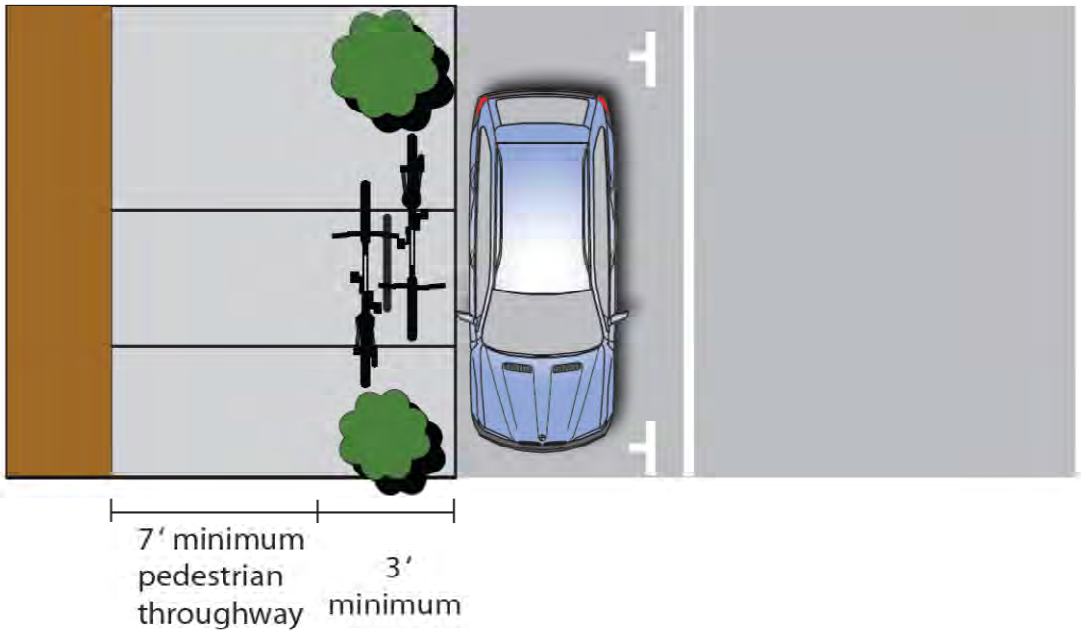
Recommended Design

Inverted-U Bicycle Rack



Bicycle Rack Design Continued

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 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.

Discussion

Bicycle Parking Manufactures:

- Palmer: www.bikeparking.com
- Park-a-Bike: www.parkabike.com
- Dero: www.dero.com
- Creative Pipe: www.creativepipe.com
- Cycle Safe: www.cyclesafe.com
- eLock technologies/BikeLink: www.elock.com

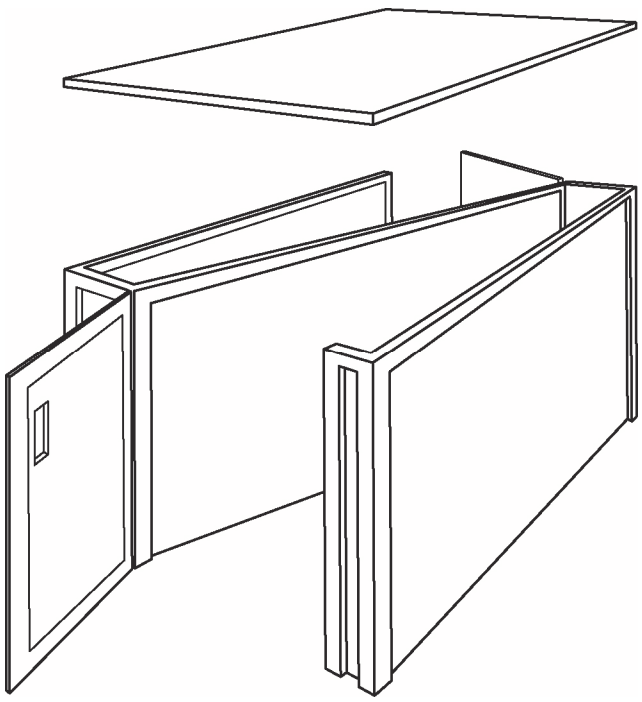
Guidance

- 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-$3,200 each

Recommended Design



A.10. Maintenance Standards

Like all roadways, bicycle 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 Fremont 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	14 years, if thermoplastic
Signage replacement	As needed when vandalized, 12-14 years as maintenance if diamond grade reflective material
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).

Shared Use Path Maintenance Standards Continued	
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 and every 5 years thereafter. • Paths should receive an overlay 20-25 years after construction or as needed. 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, repair due to tree roots	Seal 20-25 years after construction or as needed, potholes and tree root repair as needed
Culvert and drainage grate inspection	Before Winter and after major storms
Pavement markings replacement (including crosswalks)	As needed, 14 years, if thermoplastic
Signage replacement	As needed when vandalized, 12-14 years as maintenance if diamond grade reflective material
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. Survey

The following survey was administered from February 18, 2011 through March 14, 2011. The survey garnered 250 responses and its findings informed the Needs Analysis chapter. The full text of the survey appears on the following page.

Fremont Bicycling Survey

Help us plan for Fremont's future! The City of Fremont is working to understand bicyclist 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 March 14, 2011. 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. Do you own a bicycle?

- ○ Yes
- ○ No

(b) If yes, is it in good working order?

- ○ Yes
- ○ No

8. Why do you bike? (check all that apply)

- ○ I don't bike
- ○ To get to work
- ○ To get to school
- ○ To get to transit
- ○ For pleasure
- ○ For shopping/errands
- ○ Exercise/health
- ○ Personal business (visiting friends, etc)

9. 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

10. (a) What is the average distance of your bicycle rides?

- ○ I don't bike
- ○ 0-1 miles
- ○ 1-2 miles
- ○ 2-5 miles
- ○ 6-10 miles
- ○ 11 miles or more

(b) What is the average time of your bicycle rides?

_____minutes

11. 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
- ○ Insufficient lighting
- ○ Poor road conditions
- ○ No bike parking
- ○ No showers/lockers at work
- ○ Other:

12. Please tell us about specific problem areas or places you avoid when bicycling. Indicate the location (intersection or street block) and type of problem:

13. Where are your favorite places or routes to bike? Please name specific streets or destinations.

14. 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	○	○	○	○

15. What can be done to encourage you to bicycle more in Fremont? (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
- ○ Shower and locker facilities at work
- ○ Financial incentives to bike to work
- ○ Other: _____

Appendix C. Comments on Draft Plan

The following are the comments received on the Draft Plan and the respective responses.

ID	Source	Comment	Response
1	BPTAC Meeting	Alameda Creek Trail: Check with Union City on their Bay Trail crossing Project	There is existing access. Comment noted. No change made.
2	BPTAC Meeting	Bicycle lanes on Paseo Padre in the vicinity of Crandall Creek are missing.	Bike lanes added in the plans on Paseo Padre between Capulet Road and Phebe Road.
3	BPTAC Meeting	BART (From Lake Elizabeth to Peralta Boulevard): Possibility for a path location	Bike path will be recommended from Peralta Boulevard to Fremont BART station. Extension to Lake Elizabeth may be considered in future plans.
4	BPTAC Meeting	Irvington Plaza/BART Station: Bike lane Needed	Bike lanes added to Washington Boulevard and Fremont Boulevard.
5	BPTAC Meeting	E. Warren Avenue: Bike lane as part of roadway improvement.	Any future roadway improvements would include new bike lanes if there is adequate roadway width. No change made.
6	BPTAC Meeting	Lone Tree Creek: Bicycle & pedestrian I-880 Over crossing desired.	Project would provide an alternative to Dixon Landing Road to cross I-880. Demand for such a structure would probably not immediately be high enough to justify the considerable expense, but possibly a long-term project. Added to the Plan as a study project.
7	BPTAC Meeting	When is BART South Fremont/Warm Springs Station scheduled to open? And when is the Warm Springs Boulevard Project scheduled to be completed?	BART Warm Springs Station is scheduled to be operational in 2015. Warm Springs Boulevard improvements with bike lanes should be completed in 2013.
8	BPTAC Meeting	Hilo Street: Network Gap	Added bike loop detection symbol on through lane, and left turn lane. No change to plan will include in next bike detection project. Future traffic study may be warranted.
9	BPTAC Meeting	Kato Road: I-880 Bike/Ped Bridge Xing Locations	Add to section 7.3 880 crossing. Study would determine best location.
10	BPTAC Meeting	Automall Parkway: I-880 Bike/Auto Mall, Difficult Bike Connection. Consider improvements to improve the difficult connection with different striping and traffic devices.	Bike lane is currently provided but additional striping or green paint has been recommended for transition areas. No change made.
11	BPTAC Meeting	Washington Blvd/Planned Irvington BART Station: Consider improving the bike lane striping on Washington/Driscoll/Osgood intersection. The bike Lanes located to the left of the right turn lanes are lengthy and transition way in advance of the intersection resulting in the bicyclist having to ride a bike between the right most through lane and right turn for long segment. It is also much more difficult when this bike lane is on the steep grade.	The City will ensure that bike lanes comply with the design standards set forth in the Bicycle Master Plan. No change made.
12	BPTAC Meeting	Dense Lockwood: Construction Maintenance Signs in Bike Lane at PPP near the underpass, there are sight distance issues for bicyclists traveling towards the low point of the underpass, consider converting the sidewalks to a trail or path so that bicyclists can access and share the pathway with pedestrians. The parallel pathways will provide for improved sight distance.	The Bicycle Master Plan does not endorse riding on the sidewalk, or including facilities that would encourage it. Sharing that space with pedestrians would cause additional safety issues. No change made.
13	BPTAC Meeting	Consider alternate bikeways that are parallel to Fremont Boulevard. Avoid installation of bikeway facilities on Fremont Boulevard because Fremont Boulevard has too many driveway turning movements and is not bikeway friendly.	Some bicyclists will be comfortable riding on Fremont Boulevard and others will be more comfortable on side streets. The Plan seeks to accommodate both types of bicyclists, and the new crosstown network generally follows low-volume alternate bikeways.

ID	Source	Comment	Response
14	BPTAC Meeting	Instead of avoiding Fremont Boulevard work to make it more bicycle friendly. Fremont Boulevard is a central north-south corridor and has plenty of shops, businesses, schools that make it a major attractor-destination. Instead of discouraging new bikeway facilities, continue to work to improve and expand the bikeway facilities along Fremont Blvd.	Some bicyclists will be comfortable riding on Fremont Boulevard and others will be more comfortable on side streets. The Plan seeks to accommodate both types of bicyclists, and the new crosstown network generally follows low-volume alternate bikeways.
15	BPTAC Meeting	Dropped bike lanes on Paseo Padre near Tupelo and Ardenwood	Add as right turn lane improvement location. Also add statement to include other locations not identified in this list will also be considered.
16	BPTAC Meeting	Railroad tracks undercrossing near Paseo Padre - unofficial path	It is a proposed facility (near Deep Creek Road). No change.
17	BPTAC Meeting	Creek good for path (unsure where the creek is)	It is a proposed facility (near Deep Creek Road). No change.
18	BPTAC Meeting	Forrest Park dead ends good for connections. Particularly Xavier Commons at Deep Creek. It needs a ramp.	This is more of a pedestrian issue. City will add to ramp list. No change.
19	BPTAC Meeting	Schools for the Deaf and School for the Blind are not on the maps, they should be	Added to maps.
20	BPTAC Meeting	Mission Blvd at old train bridge needs improvement	This project is part of UPRR Trail project. The City will note in the feasibility study, signage and other improvements are called for. No change.
21	BPTAC Meeting	Niles Canyon needs better access. Would like to see a Class I Path.	No change. Niles Canyon under Caltrans jurisdiction.
22	BPTAC Meeting	Include education programs for police department and for motorists	Programs for both motorists and police added to programs chapter.
23	BPTAC Meeting	BART TAC is updating station access, should coordinate efforts.	No change.
24	BPTAC Meeting	Bicycle Resource Website: limit City involvement and use funds elsewhere	City will continue to improve the Bicycle Resource Website. It is one of the most popular sites on the City Website. No change.
25	BPTAC Meeting	Bicycle Resource Website: would like to see City more involved because other sites are Oakland focused	City will continue to improve the Bicycle Resource Website. It is one of the most popular site on the City Website. No change.
26	BPTAC Meeting	The 880 bike ped crossing study should be Tier 1	Added to Table 9-7 High Priority Projects. It will be a connection to regional employers.
27	BPTAC Meeting	Tree roots are a problem in many bike lanes. Maintenance cost estimates should include repair	Section A10.2 revised to include tree root repair.
28	BPTAC Meeting	Would like to see required bicycle valet parking for events as many Bay Area cities require	Section 7.5. revised to include recommendation that valet bicycle parking should be provided for large events.
29	BPTAC Meeting	Maintenance really needed.	No change made. Plan includes maintenance standards.
30	BPTAC Meeting	Fremont's National Night Out is an opportunity to reach community for education and outreach	Revised to include National Night Out in education programs.
31	BPTAC Meeting	Would like to see street closure events like Sunday Streets.	Program added to encouragement section.
32	BPTAC Meeting	Would like to see more emphasis on programs	Additional programs added as mentioned above.
33	BPTAC Meeting	Would like to see City reallocate funding from infrastructure to programs	No change in Plan but Programs suggested by BPTAC and public will be considered in the CIP review process.
34	BPTAC Meeting	Enforcement program section: really has only one project, such as speed feedback signs. Speed feedback signs is not an enforcement item.	Junior Safety Patrol and Speed Feedback Signs moved to education programs.
35	BPTAC Meeting	Would like to see more enforcement programs for both motorists and bicyclists.	Targeted enforcement program recommended in the Plan. Transportation to discuss with Police other potential programs.

ID	Source	Comment	Response
36	BPTAC Meeting	Targeted enforcement should list specific locations	Revised to include more focused areas for targeted enforcement including near schools. The City will work with police to continue to identify needed enforcement locations.
37	BPTAC Meeting	The design guidelines appendix should be removed	Comment noted. The Design Guidelines include Caltrans standards. No change made.
38	BPTAC Meeting	City should have a place on the website to report road hazards	City will improve to make more user friendly to report bikeway facility issues. No change.
39	BPTAC Meeting	Green bike lane installation locations should be expanded.	Green bike lanes should only be installed in key conflict areas to ensure effectiveness. No change.
40	BPTAC Meeting	Request to pave dirt access pathways to Alameda Creek Trail.	The Alameda Creek Trail is deliberately unpaved on the north and east levees to allow for equestrian and off leash use for dogs. The trail on the west and south side is paved and dogs must be leashed. No change.
41	BPTAC Meeting	Request to extend Fremont Blvd with bike lanes and or trails to Dixon Landing Road.	Feasibility Study currently underway as part of the Bay Trail Feasibility Study Project. No change.
42	BPTAC Meeting	Request improved bikeway facility connection to Mission Boulevard from Mowry Avenue.	Due to limited roadway width City will submit work order to install share the road signs. No change.
43	BPTAC Meeting	Share the plan with adjacent cities and other agencies.	Plans submitted to neighboring cities and County as well as other agencies who may be interested to review and coordinate Fremont Plans with their Plans. No change.
44	BPTAC Meeting	Consider use of rumble strips.	Rumble strips are not bicycle friendly. No change.
45	BPTAC Meeting	More education for Police, motorists and Adults.	See previous response.
46	BPTAC Meeting	Use share the road signs for substandard roadway width.	Comment noted. No change.
47	BPTAC Meeting	Increase bicycling education budget by 10%.	Comment noted. Funding sources are typically very prescriptive regarding how funds can be allocated. Most allow only a small percentage for programs. Education program increase can be considered during the CIP review process. No change.
48	BPTAC Meeting	Include traffic calming in the bike plan.	Traffic calming will be an element of the Pedestrian Master Plan and streetscape improvement projects. No change.
49	BPTAC Meeting	Consider increasing the project ranking of Fremont Blvd in the vicinity of Industrial and I-880.	Response: Revised network score. City is already actively pursuing TDA funds for this project. It will be implemented in the near term.
50	BPTAC Meeting	Consider closing of Niles Canyon to automobiles.	Niles Canyon-Rt 84 is under Caltrans jurisdiction No change.
51	BPTAC Meeting	When will Peralta Boulevard be improved?	The segment of Peralta Blvd between Fremont Blvd and Mowry is under Caltrans jurisdiction. This segment will probably be improved if and when Caltrans transfers ownership of the right of way to the City. No change.

ID	Source	Comment	Response
52	Public	CLASS 1 BIKE TRAIL ALONG BART FROM ALAMEDA BIKE TRAIL TO FREMONT BART STATION I believe this connection is vitally important as it connects the Alameda Bike Trail and the Niles area directly to the downtown area. This connection could hugely promote cycle commuting to/from Niles as it is more direct and therefore easier to ride than to drive to the Bart station and downtown area. Also, the connection to Alameda Bike Trail would allow many people to ride to downtown entirely on class 1 bike paths which would further promote cycling (many people will not ride next to cars) Presently, the best connection is Paseo Padre. This is one of the areas that we explored by bike. It appears that there is space along the Bart line for a bike lane. The space is presently used as access to the Bart tracks. One issue we encountered was a rail road crossing. The bigger issue is how to cross the Alameda Creek.	Niles - Fremont BART connector added to Plan.
53	Public	TUNNEL UNDER RAIL ROAD TO CONNECT SEQUOIA TO SEQUOIA This is important to provide a more direct link from Quarry Lakes, Alameda Bike Trail and Paseo Padre to the Centerville area. There is already a bridge across Alameda Creek and a connection to the Alameda Bike Trail. All that remains is a tunnel to make a nice connection.	Added an overcrossing/undercrossing study to new section 7.3.7
54	Public	BETTER CONNECTION AT RIVERWALK AND PASEO PADRE There is a connection to Alameda Bike Trail at the end of Appletree Ct. I am not sure if this is public or private but I use this connection all the time. The problem occurs at the end of Riverwalk at Paseo Padre. Traveling south from Ardenwood area along the Alameda Bike Trail and into the downtown, I am forced to ride my bike on the sidewalk along Paseo Padre in the "wrong" direction until I get to intersection of Peralta and Paseo Padre. The transition from the sidewalk thru the intersection is awkward and time consuming. A left hand turn from Riverwalk onto Paseo Padre would be my first choice. Otherwise a wider sidewalk along east side of Paseo Padre with some accommodation for the cyclist to better maneuver Peralta/Paseo Padre could work.	Insufficient ROW to convert sidewalk to path on east side of Paseo Padre Parkway. No change made.
55	Public	MORE CONNECTIONS TO THE ALAMEDA BIKE TRAIL The Alameda Bike Trail is the backbone of a north/south route in Fremont and highly desirable to cyclists as there are no cars allowed. I generally take this path from Ardenwood area to downtown even though it is longer than Paseo Padre. The increased length is mitigated by lack of stop signs/signals so this path is not much longer in time. I think trail usage could be improved with more connections to the trail. Many that live very close to the path have a long way to go in order to access the path. There are many Courts and Places that dead end into the path but do not connect. I am sure there must be a few places where we can install a simple, short connection to the path.	Inserted sentence in new section 7.3.7. noting that where feasible, streets that back into Alameda Creek should connect, with weaker language for existing developments.

ID	Source	Comment	Response
56	Public	ALLOW CYCLING ON SIDEWALKS I would like to re-iterate my view that the Fremont Bike Plan should not criminalize cycling on the sidewalks. This would allow parents/guardians to ride with their children on the sidewalks to supervise riding. It is pretty challenging to supervise children from the road. On the weekends, I frequently see parents with young children on the sidewalks along Ardenwood Blvd and Paseo Padre. Since there are very few parallel paths in Fremont, all cyclists are required to ride on these busy, high speed roads to get from one place to another. I can tell you that I do not feel comfortable in letting my 4yr olds to ride on the bike path along those roads. However, I can envision them on the sidewalk along those roads with me very close by to supervise. I believe that most Fremont residents do not feel comfortable with letting older children ride in the bike lanes of those streets. Let us promote cycling especially amongst our young by allowing families to ride on the sidewalk.	Bicycling on sidewalks is undesirable for several reasons. Adult bicyclists travel much faster than other sidewalk traffic, creating hazards for pedestrians and for the bicyclists where the sidewalk is interrupted by a driveway or intersection. No change made.

ID	Source	Comment	Response
57	Public	As Fremont was not designed with the bicycle in mind, I have many an occasion to use the sidewalk myself as practical matter. As a veteran cyclist, I understand some of the dangers in riding on the sidewalk but sometimes practicality triumphs. I just sited above the example along Paseo Padre where I have to ride on sidewalk from Riverwalk to Peralta. There really is no alternative other than riding way out of my way along Paseo Padre in the wrong direction so that I can make a U turn. Nobody is going to do that so why criminalize them? I have also mentioned my experience at D&G Flower Market (fruit stand on Fremont Blvd south of Beard Rd). I cannot take a left onto Fremont Blvd from the D&G parking lot. My bad choices are to ride north along Fremont across freeway on ramp and 3 lanes of traffic to do a U turn. The other option would be to go around the block by taking a right onto Beard, right onto Milton St and then right onto Paseo Padre. This is significantly out of my way. I do not know of any cyclist that would do it. Instead, I ride along the east side of the sidewalk along Fremont Blvd until I hit the first crossing light at Enea. I cross Fremont Blvd at Enea to the bike path on the other side of Fremont Blvd. There are many other examples of where I get stuck on the wrong side of a busy street without a way to cross until an intersection. I can either ride on the sidewalk or ride on the road in the opposite direction to where I want to go and do a U turn if allowed (seems like a lot of no U turns in Fremont). Many of the main roads in Fremont (such as Fremont Blvd and Paseo Padre) have center dividers which means there is no way to cross the street except at intersections. Center dividers definitely encourage cyclists to ride on the sidewalk. Why criminalize the cyclist for a road design that is hostile to cyclists? It is sort of a trap for cyclists. Allowing cyclists on the sidewalk needs to be part of the Fremont Bike Plan.	Sidewalk riding laws generally do not target the half block of sidewalk riding that is sometimes very convenient. However, for such short distances, dismounting and walking the bike would be an alternative to riding in the wrong direction. No change made.
58	Public	RE-STRIPE ARDENWOOD RD ON EAST SIDE FROM KAISER DR TO COMMERCE DR For some reason, the bike lane along the east side of Ardenwood between Kaiser and Commerce is striped to the absolute minimum allowances for the bike. There is barely any asphalt to ride on as the drains and gutters consume most of the space. The puzzle is that the adjacent car lanes is particularly wide and grand. Please move the line to the left to provide a wider bike lane. Cars tend to follow the lanes and they think they have the right to take the inside of the curve and drive right next to you when they have tons of space on the other side of their car. It makes me uncomfortable and I am sure others as well.	If roadway width is adequate, bike lanes can be re-striped to 6′ to 7′. Restripe would be planned for the next road resurfacing project on Ardenwood Boulevard.

ID	Source	Comment	Response
59	Public	CREATE ORDINANCE FOR SOFT CURBS AS OPPOSED TO HARD CURBS PRESENTLY USED ON FREMONT I have mentioned this before. The hard curbs with an L shaped profile are dangerous and inconvenient for cyclists and promote cycling on the sidewalk. The children in my neighborhood have crashed many times by riding near the curb due to the unforgiveness of the hard curbs. Riding parallel to a hard curb is like riding parallel to a rail road track--the front wheel gets caught and you fall. I stay further away from a hard curb while riding inside a bike lane than a soft curb because I do not want my front wheel to get caught by the curb and throw me to the ground. This places me closer to the cars which makes me uncomfortable. Riding close to the curb from either the roadside or the sidewalk is dangerous and requires more space allowance for the cyclist. This is a less space efficient curb. The hard curbs are also very inconvenient. Riding near a soft "S" shaped curb is much more comfortable and therefore more space efficient (you could narrow bike lanes). The transition between sidewalk and road is soft and smooth so they are safe. The front wheel does not get caught in a soft curb. Sacramento has successfully used the soft curb for decades.	Where ample room is provided for bicycling, either in a bike lane or a wide curb lane, hard curbs do not discourage bicycling. The possibility of motor vehicles mounting the curb is a much more serious concern. No change made.
60	Public	I am forever looking for a way to transition from road to sidewalk. There are many places in Fremont without a ramp when there should be one. I see bike paths that end on sidewalks without ramps. There is not even a ramp at the cross walk in front of my son's school. That is pretty basic and must violate some kind of ordinance. The other day, a car blocked the only ramp in sight in front of the Newark Library. I had no way to access the bike parking. I felt obliged and guilty for stopping an officer at the adjacent Police Headquarter to ticket that person. With a soft curb, I could have hopped up anywhere without incident. With a soft curb, you don't have to worry about building ramps because the whole length of the curb is a ramp.	Bike paths and sidewalks should transition into the street at grade. These issues are addressed in the Design Guidelines. No change made. The City also has a ramp installation project in which a number of accessible ramps are installed or updated as funds are available.
61	Public	Hard curbs promote cycling on the sidewalks. There often is not a ramp near where I need to access for parking or something else. This means that I need to ride on the sidewalk from the ramp to the place I need to go. Riding on the sidewalk is illegal in Fremont yet the system is design such that I must break the law. A soft curb would allow be to jump onto the sidewalk anywhere thereby minimizing my time on the sidewalk	The City does not wish to encourage bicycle riding on the sidewalk. No change made

ID	Source	Comment	Response
62	Public	BETTER SEPARATE TRAFFIC I still think there must be a better way to separate bikes from traffic. I really think this is the holy grail to get more people on their bikes. Nobody wants to compete with a 5000lb SUV. Copenhagen appears to do some interesting things along these lines. It would be great to have Fremont Blvd serve both cars and bikes but somehow separately. This is the main north/south route for bikes. Cars have I-880 which do not allow bikes. I believe they combine the sidewalk with the bike trail as opposed to the bike trail with the car lanes. Japan also combines the bikes with pedestrians rather than bikes with cars. These approaches make some sense to me in that cars are much bigger and faster than a bike and therefore no match. Energy and momentum wise, bikes fit better with pedestrians.	Greater separation between bicycles and motorized vehicles is an important component of the Plan.
63	Public	TURNING CIRCLES Fremont needs to consider more turning circles. Most bike and car collisions occur at intersections so we know we need to improve these intersections. Signal lights actually promote speed at the very time when people should be slowing down. Have you ever sped up to make sure you get thru a green or yellow light? Safety demands that you should decrease speed at dangerous areas such as intersections not increase it. Turning circles reduce everyone's speed but can allow for a continuous flow and therefore greater capacity. The result is a safer intersection that services more vehicles. I believe that turning circles would be safer for bikes due to lower speeds and the better alignment of the direction of travel in the circle. By the way, the intersection at Hastings and Country Dr is not a turning circle. It is a 4 way stop with an island in the middle. Stops do nothing to flow traffic.	One recommended location is the intersection of Walnut Avenue, Argonaut Way, and Parkhurst Drive."
64	Public	Elevate bikeways to sidewalk height.	This is not yet an approved Caltrans facility. No change.
65	Public	Funding for cycling should not just come from special bike/ped sources--that will never be enough to support robust cycling. Such special funding should supplement general funding. If we want 15-20% of the population to cycle, we need to spend 15-20% of total transport funding on bicycles. It is unreasonable to expect 15-20% of the population to cycle when you only spend 3-5% of total transport expenditures on bicycles. Cycling and pedestrians should be integral to our transportation system as opposed to a sideline.	Comment noted. Funding for all city programs is limited at this time. City pursues outside funding sources such as grants. Also, all street improvement projects include bicycle and pedestrian facility elements. No change made.
66	Public	Roundabouts would also dramatically reduce the cost of our transport system.	The City is about to implement its first round about project at Walnut-Argonaut-Parkhurst. No change made.
67	Public	Tupelo/Paseo Padre is a major school crossing but the light is not functional.	The traffic light will become functional when the development project resumes. No change made.
68	Public	Traffic lights too fast.	Comment noted. Traffic timing meets current Caltrans standards. Will investigate as part of the Pedestrian Master Plan.

ID	Source	Comment	Response
69	East Bay Bicycle Coalition	Fremont has done well at installing bike lanes to date.	Thank you for your comment. No change made.
70	East Bay Bicycle Coalition	Some Intersections pose a major challenge	Comment noted, no change made.
71	East Bay Bicycle Coalition	Traffic speeds are dangerously high, therefore the plan should have a stronger traffic calming/awareness element	Comment noted. Traffic calming is important for bicycling, but would be more appropriately addressed in the General Plan Transportation Element and Pedestrian Master Plans.
72	East Bay Bicycle Coalition	Colored bike lanes for conflict zones are welcomed.	Comment noted, no change made.
73	East Bay Bicycle Coalition	Bike lanes should be striped continuously at right turn lanes to increase awareness. Figure 7-11 is too weak in this regard	Comment noted. Figure 7-11 removed.
74	East Bay Bicycle Coalition	Mission Boulevard undercrossing at RR tracks needs signage and traffic calming	Added "Installation of appropriate bikeway signage and traffic calming treatments will also be pursued." to this paragraph.
75	East Bay Bicycle Coalition	Inclusion of multi-use pathway through Central Park is welcomed	Comment noted, no change made.
76	East Bay Bicycle Coalition	Proposed bicycle signage is very good	Thank you for your comment. No change made.
77	East Bay Bicycle Coalition	Sharrows should only be used without additional treatments that slow traffic down to 25 MPH or less. Super sharrows are encouraged.	While it is preferred that Class III Routes not be located on arterials and collector roadways, where existing, this Plan recommends Shared Lane Markings to communicate to bicyclists lane positioning and to drives to expect bicyclists. Super sharrows are not in the CA MUTCD. Comments noted. No change made.
78	East Bay Bicycle Coalition	Complete Streets Policy is an important inclusion	Comment noted, no change made.
79	East Bay Bicycle Coalition	Please conduct a feasibility study of a multi-use pathway along the BART right-of-way between Niles and the Fremont BART station	Proposed Bike Path study included in recommendations of the Plan.
80	East Bay Bicycle Coalition	Plan should include a tunnel under the train tracks between Centerville and the Alameda Flood Control Pathway	Study of Sequoia connection added to new section 7.3.7.
81	East Bay Bicycle Coalition	Blacow could be a great north-south bikeway through the city. Bikeway connections are needed between frontage road segments. Cut-throughs and improved street crossing designs are also needed.	Blacow Rd was reviewed for inclusion of bike lanes, however existing conditions do not make it feasible for a continuous bikeways. The crosstown routes will provide a bikeway alternative. No change made.
82	East Bay Bicycle Coalition	All pork chop intersections should be narrowed or eliminated	This is addressed in Section 7.3.2. No change made.
83	East Bay Bicycle Coalition	Peralta and Paseo Padre intersection needs a two-way bikeways from the Flood control channel, with either a box-turn treatment or a bike signal	Insufficient ROW to convert sidewalk to path on east side of Paseo Padre Parkway. No change made.
84	East Bay Bicycle Coalition	Fremont Boulevard should have bike lanes for its entire length, including in Centerville (remove center turn lanes)	Bike lanes are proposed for the entire length of Fremont Boulevard where roadway width are adequate.
85	East Bay Bicycle Coalition	Warren Boulevard needs bike lanes to be fully and properly striped for its entire length	Comment noted. Bike lanes to be installed where feasible. No change made.
86	East Bay Bicycle Coalition	Irvington BART station needs better walking and bicycling conditions in the surrounding area.	Irvington BART is prioritized for bicycle improvements in this Plan. No change made.

ID	Source	Comment	Response
87	East Bay Bicycle Coalition	High-speed roadways like Paseo Padre and Thornton Avenue should have buffered bike lanes. Reference NACTO guide.	While buffered bike lanes would provide greater separation from motor vehicle traffic, it has not yet been adopted in the MUTCD. No change made.
88	East Bay Bicycle Coalition	Implementation section needs a more detailed timeline for construction and to help evaluate progress on the plan.	Comment noted. This level of detail is not feasible given the scope of the Bicycle Master Plan. The Capital Improvement Project and Program process programs projects for funding on two- and five-year cycles.
89	Public	It is not of major importance as stated in paragraph two, that residential and commercial areas are separated. It is assumed that bicyclists (cyclists) should be able to access all parts of the roadway system to go where they want to go.	As the distance associated with traveling between destinations is important to someone's decision to bicycle, this is an important aspect of Fremont's land use. No change made.
90	Public	What does bicycle facilities mean	Bicycle facilities are explained in a later section. No change made.
91	Public	The city is bisected north and south by highway 880 which limits traffic in the east, west directions. Only higher capacity, high speed road ways link the streets on either side of the highway. There are limited roads crossing highway 880. The city is also separated in the south by highway 680 up to the Mission San Jose community. This creates traffic congestion for those traveling in that community	These are significant constraints to regional connections from Fremont. Added a sentence to this section describing them.
92	Public	Strike out "not all concentrated in areas with well-connected bicycle facilities." Fremont is low density city with residents living far away from their places of work, and shopping. Bicycle facilities should be defined. Does it mean that there is a lack of bicycle facilities, that cyclists are unable to use the roadway?	Bicyclists can use the roadway where not specifically prohibited. However, surveys have shown preference for streets with bicycle facilities. No change made.
93	Public	Table 1-1: Fremont's Ten Largest Employers. States no total. The total is 13.91%, meaning that 86.09% of the employees are unaccounted for. Meaning what? Why does this table exist if it represents a minority. What percentage of these employees bicycle to work?	The largest employers in a city are often major attractors for bicycling trips, and can be important partners in safety, education, and infrastructure campaigns. No change made.
94	Public	Fremont is not well connected as the paragraph states. It only has one transit station, and that is not a major destination for bicyclists. It would be argued that the destination sought by cyclists is Niles Canyon, Calaveras Road, and the Dumbarton Bridge. It is recommended that this paragraph be rewritten to reflect these realities.	Fremont's transit system includes many transit providers other than BART. Transit stations, especially those associated with longer-distance transit providers, are an important destination to bicyclists. No change made.
95	Public	Bay Area Rapid Transit (BART) This paragraph states that only 1% of the BART station ridership arrives by bicycle. With 155 bike parking spaces, 34 keyed lockers. It does not state the utilization of the 34 keyed lockers, nor the utilization of the bike spaces.	Electronic bike lockers are planned for installation at the Fremont BART Station in 2011. BART has stated in the past that the Fremont BART station has one of the highest number of people on the bike locker waiting list.
96	Public	During all of my visits to BART, it is hard to determine if any of the bike lockers are being used as I have rarely seen anybody access one. Likewise there have always been space available for bike parking. I would state that bike parking is above moderate, and not high.	Electronic bike lockers are planned for installation at the Fremont BART Station in 2011. BART has stated in the past that the Fremont BART station has one of the highest number of people on the bike locker waiting list.

ID	Source	Comment	Response
97	Public	Existing Bicycle Facilities and Programs There is sufficient evidence that together the Five E's, doesn't what it is intended; 1. to reduce bicycle accidents, 2. increase the number of people properly riding their bikes, and 3. allow motorists and cyclists to get to where they want to go with the least amount of disruption.	Comment noted. No change made.
98	Public	If the Five E's are used, it functions best when emphasis and budget are focused greatest on education, and then on engineering. Proper users of a bicycle transportation system know how to properly ride their bicycle in traffic (called traffic-cycling) and can correctly navigate normal roadways with little trouble. Additionally, motorists using the same roadway also know what to expect when approaching a properly riding cyclist.	Comment noted. The City also considers infrastructure project as education and encouragement because the bike lane striping and infrastructure improvements brings awareness and provides improved safety for bicyclists. No change made.
99	Public	Engineering is valuable in three critical functions: maintaining a flat wide surface, eliminating engineering defects, and minimizing cost of maintenance over the life of the roadway	These important considerations are reflected in several locations throughout the Plan. No change made.
100	Public	It should be noted that this class of bike lane is extremely dangerous and possess the highest rates of accidents for cyclists. It should only be considered as a proving ground for new bike riders, and ridden at pedestrian speeds.	Comment noted. Surveys indicate Class I paths are favored by many types of bicyclists, including those that the goals of this Plan seek to reach. No change made.
101	Public	Care should be taken when designing this feature. This type of stripe is often misunderstood as a lane stripe. In both cases it has a tendency to place cyclists in harms way by forcing these roadway users (cyclists) to delay properly positioning their bike on the roadway. The increases the risk of a collision, or fall.	The City of Fremont will design all bike lanes to meet Caltrans standards. Comment noted. No change made.
102	Public	This is the preferred by trained traffic-cyclists, cycling traffic engineers, and cycling instructors. The roadway is well maintained with no additional painted lines on the roadway that can destabilize the cyclists. Signage only defines this feature.	Societies of pedestrian and bicycle professionals, including the APBP and ITE Bicycle and Pedestrian Council recommend the appropriate type of bicycle facility depending on the characteristics of each situation and do not endorse one treatment overall. No change made.
103	Public	This is a flawed diagram. The concept here should describe the intent of a wide outside lane reflecting motorist speed.	Comment noted. That is not the purpose of this diagram. No change made.
104	Public	This diagram is unacceptable. 14' minimum travel lane in both slow and fast lanes needs to address predominant traffic speed, and on-road parking. Fast lane and slow lane travel do not need to have the same lane width. Likewise a wide outside lane is preferred to cyclists. The solid 4" (inch) edge line is often identified as a bike lane. It is highly recommended that this lane stripe feature be eliminated.	The 14' dimension refers only to the shared use lane. There are not two lanes in the same direction shown. No change made.

ID	Source	Comment	Response
105	Public	There is much more to bicycle parking than numbers of spaces and the type of units purchased. Cyclists have specific needs that go well beyond having a bike rack. Thoughtful placement of the rack where it is protected from the elements, conveniently located, and secured are just a few considerations. Additionally, what is the utilization of these bike racks once installed? Low utilization of the racks after installation, may suggest faulty recognition of need.	Bicycle parking is described in greater detail in the recommendations section. Collecting utilization data could be considered in the future. No change made.
106	Public	Commercial and business may benefit from some sort of low-cost effort by the City to provide correct bicycle parking guidance.	Added that proper bicycle parking can also benefit local businesses and commercial establishments.
107	Public	This short topic should be much longer than it is. Properly trained and knowledgeable cyclists have few requirements . The requirements include the following: Wide, flat well maintained surface, Surface free of destabilizing road way features, Surface with minimal painted surfaces that would cause falls, Minimal protrusions encroaching on the roadway, Roadway sufficiently illuminated for to minimize crimes and muggings.	Comment unclear regarding what additional language should be added. No change made.
108	Public	I applaud the effort of the City's bicycle user map. The question is why do we have it, and what good is it, and who really benefits. There is already an excellent cycling map produced by East Bay Bicycle Coalition, a two map set. It provides useful information for cyclists to plan their trip and give inside knowledge of the difficulty of the terrain and roadway. The quality of their product is on par with the well-known Krebs cycling products. Instead of expending resources on a city only map, support existing regional products and use their distribution system.	The Fremont Bicycle User Map provides a greater level of detail for the Fremont area than the EBBC map and is available for free electronic download and useful to casual cyclists. Referenced these advantages in this section.
109	Public	The City issues a proclamation declaring Bike to Work Day when an individual or organization makes such a request. In 2011 a proclamation was not made. The Energizer stations are placed by sponsoring companies or individuals, and has little to do with the City of Fremont.	The existing conditions section is intended to describe conditions relevant to bicycling in Fremont, regardless of whether they are sponsored directly by the City. No change made.
110	Public	The city spends nothing on cycling education. It spends very little annually on bicycle safety, and bike rodeos. East Bay Bicycle Coalition when it receives funding can put on a three hour seminar called Traffic Skills, and previously held an annual 3-hour Family Cycling Workshop in Niles. It has been documented in Forester's Cycling Transportation book, and in others that single, short bike safety events including the bike rodeos, have little to no effectiveness in reducing bike accidents, nor changing behaviors of young bicyclists. In some cases, it acts to further myths of bicycle safety with helps to increase the rate of cyclist falls and collisions.	The City appropriates approximately $55,000 annually for Traffic education and supports EBBC Bicycle education and skills training class. Comment noted. No change made.

ID	Source	Comment	Response
111	Public	As I understand it, the contract is up for renewal. It should be the effort of the City to service providers from Fremont, then the local area, before selecting vendors from outside the region. Smart Moves is not a local vendor.	Comment noted. No change made.
112	Public	The difference is with John Forester's method called Effective Cycling at the Elementary Level (or Intermediate level for junior high school students, or just Effective Cycling for high school students) is that behaviors can be measured. It is not surprising that graduates of these programs can reduce their accident rate by 80%, and increase proper cycling skill by 650%. This has been proven by Wynn Kageyama's classes at Castro Valley, and Newark. The result of implementing Effective Cycling programs is that graduates have proper cycling behaviors that prevent them from being in the wrong place at the wrong time, and having the problem solving skill to negotiate changing roadway conditions. The city should redirect the Youth Education program to become a recognized leader in proper traffic cycling by adoption Forester's Effective Cycling material.	Comment noted. City currently conducts school evaluations for its traffic education rodeos and workshops and almost all of the evaluations received regarding the traffic education programs are positive. No change made.
113	Public	Fremont has one level four certified instructor from the League of American Bicyclists. Wynn Kageyama, teaches 18-hour traffic-cycling programs in Castro Valley, and Newark Jr. High School. The documented rate of improvement is more than 650%, with an estimated reduction in accidents by 80%.	Comment noted. No change made.
114	Public	Cyclists in this country do not need a driver's license. There is no skills barrier a person needs to have to ride a bike on the roadway system. Most cyclists learn through experience by falling, crashing, near misses, and listening to so-called authority figures such as police officers. Few cyclists attend bike safety seminars and workshops where some information is attained about traffic law, and traffic cycling technique. Even fewer cyclists attend Effective Cycling 18 to 30 hour cycling programs to learn the body of knowledge of traffic-cycling.	Comment noted. No change made.
115	Public	I have performed traffic studies, and testing of individual students. More than 99% of bike riders are novice and beginner bicyclists. These individuals have little or no knowledge of basic traffic principles, lack of traffic-cycling behaviors, even though these same individuals can correctly drive a car. This reflects accurately on the general population of Fremont as well.	Comment noted. No change made.

ID	Source	Comment	Response
116	Public	Figure 4-1 Bicyclists Types (Cyclist Types). Should be categorized as three items: 1. Experienced and trained Cyclists (0.01% est) 2. Experienced club cyclists (0.05% est) 3. Beginner and novice bike riders (99.9%) This accurate figure demonstrates the behavior gap of cyclists using the roadway system in Fremont. It shows that attempting to understand the needs of beginners in addition to catering to their needs misplaces valuable funds and effort. John Forester's Cycling Transportation book properly states that improving cyclist behavior of these beginner cyclists should be main focus. Do not design your roadway system for beginner users.	The Bicyclist Types is not intended to be an assessment of traffic skills. No change made.
117	Public	4.3.3 Regional Transportation Access Cyclist traffic to BART is probably one of the highest concentrated set of users in Fremont yet accounts for only 1% of traffic. This alone should raise red flags that the current plan incorrectly directs the city to fund wasteful projects. By wasteful I mean, projects that have low use, does little to increase the number of proper traffic-cycling users.	Research has shown that improving bicycle facilities will attract bicyclists, highlighting the importance of investing in regional transit access. See, for example Jennifer Dill's research "Bicycle Commuting and Facilities in Major U.S. Cities" as published in the Transportation Research Record. No change made.
118	Public	4.3.4 Commuter and Utilitarian Bicyclists (Cyclist) Needs I recommend separating walking and cycling as two separate modes of transportation. That means one is not a subset of the other as the Update.	This Bicycle Plan Update is not related to the Pedestrian Plan. No change made.
119	Public	Cyclists all share common needs for use of the roadway system. That the roads be flat, wide, and well maintained. Free of destabilizing objects, and markings on the surface that can potentially cause the bike to slip out from under.	These are important needs that are mentioned in the Plan. No change made.
120	Public	Bicycle parking in convenient, safe, and protected locations should be available in volumes consistent with the need.	Comment noted. No change made.
121	Public	4.4 Estimated Commuter and Utilitarian Bicyclists The key goal of the Plan should be to annually substantially increase the number of properly riding traffic-cyclists, and to take steps to dramatically reduce the amount of preventable bike, and car-bike collisions and falls within the city. This can be done by matching the corresponding amount of Effective Cycling at the Elementary Level/Intermediate Level graduates, plus any adult programs offered.	The plan seeks to improve both the safety and convenience of bicycling and to increase the number of bicyclists. Education programs are a component of the plan. No change made.

ID	Source	Comment	Response
122	Public	My analysis of SWITRS from the period of 2006 to 2009 further investigates each and every collision in Fremont. My results show that overall 91% of the collisions and accidents are preventable by the cyclists no matter who is at fault. This is significant in that overtime, it is possible to reduce these accident rates by 50% in a matter of years, and incrementally each year after that. It suggests that because more than 99% of the cyclists are novice and beginners, that these same accidents are involving almost all of the same skill level cyclists. Reviewing these accidents indeed demonstrated that most all collisions involved poor cycling behaviors often involving riding in the wrong direction, or disregarding traffic signals. All of which and more are preventable had the individual learned Effective Cycling at the Elementary/Intermediate level during school. In my analysis from '06-'09, 32% of the accidents were with school age children, and 14% involved recent high school graduates. Together that amounts to 46% of the preventable accidents.	Comment noted. No change made.
123	Public	In other cities, there are higher rates of accidents in different years. Suggesting that 2008 was high in general is inaccurate.	Comment noted. Our research describes general trends which are true. Nationwide, there was a 21 percent increase in bicycle collisions in 2008. See, for example, http://www.edgarsnyder.com/bicycle/accident-statistics.html, and an 11 percent increase in California, as shown by California Highway Patrol Records. No change made
124	Public	Figure 4-3 Collisions by Time of Day No logical conclusions can be drawn and should not be drawn from such a small number when not combined with weather, day or night, and time of year.	That bicycling collisions are highest when traffic volumes are highest is an unsurprising result. No change made.
125	Public	Figure 4-4 Collisions by Day of the Week Again no useful conclusions can be made with this diagram.	The significantly lower number of collisions on weekends is definitely important. No change made.
126	Public	Figure 4-5 Collisions by Month Other than winter months are colder, wetter, and darker, than other months no conclusion can be made.	We agree that with monthly count data, this chart would be more helpful. It is, nonetheless, a helpful finding. No change made.
127	Public	Table 4-6 Primary Collision Factor Reported in Bicycle-Related Collisions My analysis included other factors such as visually reviewing the location of the accident on Google satellite images, and recreating the scene. Other factors such as night time conditions are important. Regardless of who was at fault as stated on the individual entry, an effort was made to categorize by age, road conditions wet of dry, and if the accident was preventable or not. Even though the table states 70.5% of the accidents have the Cyclist at fault, on average 91% of the accidents are preventable by the cyclists acting alone had they been using proper traffic-cycling behaviors.	Comment noted. No change made.

ID	Source	Comment	Response
128	Public	Table 4-7: Intersections with the Most Collisions in Fremont This table demonstrates the lack of cyclist knowledge in properly using the roadway system results in falls and collisions. It could also demonstrate that certain bike lanes increase the rate of accidents by placing the cyclist in the improper roadway position, or possibly providing to the cyclist a false sense of security.	The table does show areas where improvements may be especially important. No change made.
129	Public	4.6 Public Outreach Fremont lacks an independent cycling organization other than Fremont Freewheelers Bicycle Club. This club is mostly a social cycling group with a race team. Participating in community policy is not an emphasis. The city or residents should form an independent cycling association that can work to develop educated and trained advocates in the field of cycling transportation engineering. This would be of great value to the City's Bicycle Advisory committee by being able to readily access a larger body of qualified cycling transportation technicians and engineers. The result would be a better, and cost-effective bicycle program where all users of the roadway system can get to where they want to go with the least amount of inconvenience or interruption.	Comment noted. The City works with the BPTAC and East Bay Bicycle Coalition and receives input from local residents and users. No change made.
130	Public	4.6.2 Survey I am troubled by surveys when the body of users are novice and beginners. Those individuals don't know what is correct, and therefore act on their own fears. The result masks effort to address the root cause of the problem.	The survey was used to gather information regarding bicycling from both those who do bicycle and those who do not. Comment noted. No change made.
131	Public	Table 4-8: Reason for Bicycling (Cycling) The primary reason for cycling is enjoyment. If you do not like to ride a bike, you will find a different source for exercise, shopping, or commuting.	Comment noted. No change made.
132	Public	"No bikeways" is no reason for not riding a bike as roadways are designed for bike traffic when used properly.	The survey results merely report what the respondents indicate and stated concerns. Lack of bikeways is often cited as a reason people do not ride a bike. No change made.
133	Public	Niles and Mission Blvd is a difficult intersection because the traffic signal is insensitive to bicycles. Even with many reports to adjust the sensor at that intersection, crossing there is still difficult. Niles Canyon Road in general is an outstanding roadway, with the few exceptions of lacking proper left turn pockets on Palomares Road, and lack of wide outside lanes for cyclists to use.	Comment noted. This intersection is maintained and operated by Caltrans. No change made.
134	Public	Rumble strips in the center lane, and proposed rumble strips on the outside lane are unacceptable to cyclists under all conditions. Rumble strips act to destabilize bicycles and increases the rates of falls and crashes. It also acts to increase the amount of tire damage to bikes by collecting sharp debris that cause a cyclists to lose control and fall.	Rumble strips are not suggested in this Plan. No change made.

ID	Source	Comment	Response
135	Public	Fremont can vastly improve Niles Canyon Road by limiting or closing through traffic access as exmayor Gus Morrison has suggested to the City Council. Niles Canyon Road is a historic scenic route and serves no useful purpose with highway 680 in close proximity.	Niles Canyon Road is not under Fremont jurisdiction but Caltrans. No change made.
136	Public	Respondents again are reacting emotionally as beginner/novice cyclists to desirable and undesirable. What trained cyclists prefer is a wide unmarked outside travel lane. This type of Class II facility is also most economical for the city to maintain.	This Plan seeks to meet the needs of all community members and their needs. No change made.
137	Public	Table 4-10: Improving Bicycling in Fremont This table could be much more useful by attempting to determine the traffic-cycling behavior level of the responders. My interpretation again is that these individuals are novice/beginners making their voices and concerns heard. Less than 28% of them consider that they need more education, which means that 72% of the consider themselves fully qualified cyclists. How can that be when it has been documented and proven over and over again that more than 99% of the cyclists lack proper traffic cycling behavior. That being the case, table 4-10 is invalid.	Comment noted. Table report survey respondents preference to encourage more bicycling. No change made.
138	Public	4.7 Summary of Bicyclists (Cyclists) Needs Using faulty input, this Plan creates a defective list of programs and infrastructure for the city to expend valuable funds. It is doubtful that the previous Master Plan has substantially increased cycling traffic, and reducing in similar manner the amount of preventable car-bike collisions. Why is it in interest to maintain this path. Reflecting upon the way the surveys are produced one cannot help to make certain claims without first having a strong background in cycling transportation engineering and effective cycling instruction. The Plan as I have said attempts to create a program for beginners and novices, and result in achieving neither objective in satisfactory terms.	Comment noted. This section summarized the chapter. No change made.
139	Public	My suggestion is to disregard this section in its entirety. The plan misses the point of the root cause of what needs to be done to increase the number of properly riding traffic-cyclists, and what needs to be done to dramatically reduce the number of car-bike collisions. I would suggest that the City could do much better with a few modest programs.	Comment noted. This Plan's approach is to review a variety of bicyclist needs. No change made.
140	Public	Focus on maintaining wide outside lanes for bicycle travel free of obstructions, and paint lines.	Removal of obstructions and the use of wide outside lanes where appropriate is mentioned elsewhere in the Plan. No change made.
141	Public	Fix and assure that roadways especially repaired surfaces are flat and level,	Comment noted. Will ensure that this is included in the appropriate section.
142	Public	Keep the roadways free of debris especially in the areas frequented by cyclists,	Comment noted. References added.
143	Public	Remove roadway features that obstruct or destabilize cyclists,	Comment noted. More specifics would be needed for revision. No change made.

ID	Source	Comment	Response
144	Public	Aggressively seek funding to upgrade all school age children in grades 3,5,7,9,11 with 15 school period PE Effective Cycling at the Elementary/Intermediate Level,	Comment noted.
145	Public	Offer and extensively promote Effective Cycling 18-hour programs to adults within the city,	Bicyclist education programs are already included as a recommendation in the Plan. No change made.
146	Public	Offer traffic offenders school of the same for item 6 through traffic-court.	Motorist education program added to Chapter 8.
147	Public	City should fund and organized cycling events such as Criteriums, Road Races, Free Bike Repairs at the Farmers Market, After-school cycling clubs, student chapters of local cycling clubs,	The City can promote and participate in events and will especially research opportunities for supporting educational programs.
148	Public	Fund an independent cycling organization to advocate and train high qualified cycling transportation engineers, technicians, and instructors.	Comment noted. Similar organizations exist. No change made.
149	Public	Provide a facility for a Free and low cost community bike shop to outfit bikes properly for utility,	Comment noted. No funding available for this type of program. No change made.
150	Public	Change the Bicycle Advisory Committee to allow council to appoint permanent that are compensated for their time to upgrade and maintain the plan internally.	Comment noted. Bicycle Pedestrian Technical Advisory Committees serve 4 year terms. Turnover of Committee members provides opportunities for more residents to be involved and provides for new and innovative ideas. No change made.
151	Public	Work eliminate poor and unsafe Federal and Caltrans engineering requirements from becoming adopted in the City of Fremont.	The City of Fremont uses Caltrans standards for bikeways. No change made.
152	Public	5.4.1 Green Bike Lanes... Color applied to bike lanes is a bad idea. It could be worst by painting the lanes. As the diagram shows, the cyclist swerving to the left to merge into a bike lane. This is unsafe. The national transpiration goal is integration, not segregation of traffic flows. Painting a green strip as shown clearly shows traffic segregation and this is unsafe for cyclists.	Green bike lanes are used to designate conflict areas, not to segregate traffic, and are approved for use. No change made.
153	Public	The diagram also shows defective engineering standards by continuing a segregated flow beyond the point of no return. Good engineering technique would be to end the bike lane well prior to the intersection so skilled cyclists could decide for themselves where to best position themselves on the roadway. I highly recommend rejecting this section as being unsafe for use.	The figure is considered to be best practice. No change made.
154	Public	5.4.2 Existing Bike Lanes at Intersection Improvements I suggest the Plan reject this section as being unsafe for the following reasons. It promotes cyclists turning left from the right side of the roadway. It delays correct cyclists from turning left early with the risk of a traffic citation. It improperly positions straight through cyclists in the right turn lane.	The California Vehicle Code requires bicyclists to move to the left lane to prepare a left turn. Bike lanes for through traffic do not discourage this. The bicycle lane is not in the right-turn lane, it is a through lane to the left of right-turning vehicles. Figure 7-11 removed. Figure 7-10 remains.
155	Public	Figure 5-12 places a right turning cyclist in probably the worst location possible.	This figure conforms with State design standards as the bicyclist is properly positioned to the right of through motor vehicles and to the left of right-turning vehicles. No change made.

ID	Source	Comment	Response
156	Public	6.1.1 Bicycle Resource Website As suggested earlier, I recommend the city focus on what is needed to substantially increase the number of properly using traffic-cycling skills through PE in school, and adult school, and traffic court. What is needed to reduce preventable bicycle accidents. Link or facility to report roadway hazards. Beyond that, all other items on the website are secondary.	Comment noted. No change made.
157	Public	6.1.3 Bicycle User Map My recommendation is to partner with East Bay Bicycle Coalition or Krebs Cycling Products to improve or customize their products. Those maps are much more useful than a Fremont only map.	Comment previously addressed. No change made.
158	Public	6.1.4 Bike to Work Day This year Bike to Work day had a low turn out, with little offerings from the "Energizer Stations". I don't recommend the City spend funds to support and furnish these Energizer Stations.	In Alameda County, Bike to Work Day showed a 4.5% increase over last year's numbers. It is an important event to help potential bicyclists discover that they can safely and efficiently bike to work. No change made.
159	Public	6.2.1 Youth Education My recommendation is to scrap the existing youth education program as being ineffective. A bike rodeo has not been proven to be reduce bicycle accidents, nor does it yield permanent changes to cycling behaviors. My recommendation as stated is to acquire substantial funding for long-term 15 to 20 period PE Effective Cycling and the Elementary/Intermediate Level for school grades 3/5/7/9/11 using local certified cycling instructors.	Participants have expressed support and evaluations of the program are positive. No change made.
160	Public	To fund after school bike clubs as student chapters of local cycling clubs in the junior high school and high schools. To provide in the same schools an after school bike shop where students can fix their bike and outfit them for utility, and learn correct aspects of bicycle theory, repair, and transportation engineering.	Added recommendation to Educational Programs section.
161	Public	6.2.2 Adult Bicycling Skills Classes My recommendation is to call this Effective Cycling Classes. Fund and teach real general cycling programs called Effective Cycling to adults where they could learn the body of knowledge of cycling, basic traffic engineering, bike repair, maintenance, equipment evaluation and selection, and commuting. This program was developed by John Forester at www.johnforester.com. It is the best cycling program available and is taught currently in Castro Valley and Newark.	Calling the section "Effective Cycling Classes" would advertise a particular product rather than general education classes. No change made.
162	Public	6.2.3 Senior Bicycle Education Classes I recommend calling this section Effective Cycling as well. Senior citizens are no different than other adults wanting to take general cycling classes. With the exception of having a separate tricycle program, the Effective Cycling classes would be similar.	Calling the section "Effective Cycling Classes" would advertise a particular product rather than general education classes. No change made.

ID	Source	Comment	Response
163	Public	CONNECTING STUDENTS TO SCHOOLS—TUNNEL - I would like to propose a tunnel under the railroad along Paseo Padre to connect a large part of the Ardenwood neighborhood (hundreds of houses) to the 2 elementary schools that service 1800 students. Presently, the only way for these people to get to the schools by foot, bike or car is to travel along Paseo Padre where the speed limit is 45mph. It is probably not surprising that I have never seen a single school age child on foot or bike along Paseo Padre in my 1 yr of commuting my child to school. A tunnel is a perfect solution as it separates ped/bikes from cars to create a perception of safety. A child traveling to either school can walk/ride on local residential roads/sidewalks Such a tunnel would also be consistent with General Plan, Community Planning Element, Chap 12, Policy 12-9.6: Making North Fremont Less Auto Dependent--Explore ways to make North Fremont neighborhoods less auto dependent, including improved pedestrian and bicycle connections between "self-contained" neighborhoods, better access between residential areas and shopping centers, and safer crossings of major thoroughfares and highways.	There are advantages and disadvantages of a tunnel, advantages are less grade to climb and may be less expensive. Disadvantages are construction issues dealing with UPRR, utilities and water table, and police-security issues. The Union Pacific right of way at this location is approximately 70'. A new tunnel for the location could potentially be 80'-90' long. A recent feasibility study for a grade separated bike and ped crossing facility at the Niles Plaza for the Niles Canyon Railway station indicate a cost of about $5 million to $6 million to construct a tunnel with security being a big issue with our police. Having a 80' to 90' tunnel in a more remote area could be a deterrent for most users especially students. My inclination is not to include in the plan unless it has been discussed at the BPTAC at a minimum. Cost and safety security are the major issues for a tunnel. No change made.
164	Public	CONNECTING STUDENTS TO SCHOOLS--STOP SIGN AS TEMPORARY MEASURE While we are waiting for the study and construction of a tunnel, I would like to propose a stop sign at Paseo Padre and Tupelo. Presently, there is a non-functioning light in place. A stop sign would be much cheaper and quicker to implement than waiting for a developer to pay for the connection of this light. I believe there is a need for some kind of traffic calming measure there as this intersection is required for any child to ride their bikes to either of the schools (Ardenwood or Forest Park). The speed limit is 45mph but cars travel faster as they speed down the blind hill. From the other side, the traffic accelerates quickly from the free right turn from Ardenwood. There is no way a school age child can be expected to judge the safety of crossing Paseo Padre with the speed of these vehicles. Without any signal or stop sign, I find myself caught in the middle of the road frequently as I try to navigate the crossing and I am an experienced walker/rider/driver. This intersection is also a bus stop for the city as well as school bus stop for American High School and Thornton Junior High. All of these kids have to make judgements of vehicle speeds in order to cross Paseo Padre. This is a dangerous intersection and serves as a barrier to connecting Ardenwood to any other part of the city	Installation of all way stop control at an intersection for the purposes of slowing traffic speeds on the main street is never the purpose of an all-way stop control at Paseo Padre/Tupelo. City's recommendation is not to not install all way stop controls on major arterial streets and to use traffic signal control. No change made.

ID	Source	Comment	Response
165	Public	BIKE PATH ALONG CANAL NEAR PASEO PADRE/DUNSMIR Ideally, we could connect the tunnel under the rail to a bike/ped trail along the canal near intersection of Paseo Padre and Dunsmir. This trail could connect Ardenwood area with the rest of Fremont with another tunnel under the I-880 and all the way to Fremont Blvd. This would separate cars from bikes/peds for a significant portion of a trip to central Fremont. This would definitely follow the spirit of Policy 12-9.6 above as well as all of the other policies and goals to connect Fremont and promote cycling/walking.	Project may be considered in future and reviewed by BPTAC. No change made.
166	Public	BIKE PATH ALONG I-880 and RAISED BIKE PATH ALONG FREMONT BLVD If we think Fremont Blvd is too difficult to create a good bike path due to all of the intersections and driveways, what about a path along the I-880.I noticed this weekend that there is a trail along the 101 in Menlo Park, Belmont and San Carlos. Interestingly, I saw several families on that trail. It is separated from the cars with cement median and cyclone fence. This could be the express path connecting all of Fremont by bike as it already does by car. There are no other parallel north/south paths other than I-880 and Fremont Blvd that could connect the north to the south in Fremont.	Project may be considered in future and reviewed by BPTAC. No change made.
167	Public	I still think we should investigate the idea of a raised bike path along Fremont Blvd to emphasize this as a bicycle path along the lines of what Eugene, Oregon implemented http://www.bicyclinginfo.org/bikesafe/case_studies/casestudy.cfm?CS_NUM=205 One interesting aspect is the cost, "The raised bike lane component came in at $15 per lineal foot as compared to the City's standard curb and gutter with asphalt street section at $13.50 per lineal foot. A majority of the project costs were funded by Transportation System Development Charges (a.k.a. transportation impact fees) but about 20 percent of the project costs were paid by abutting property owners through assessments."	For Fremont Boulevard the Council's interest is consideration for a fixed rail system as mentioned in the General Plan. Installation of a raised bike path on Fremont Boulevard would be very expensive because of the additional right of way needed and utility relocation and other associated cost. Staff is unlikely to recommend a Class 1 trail for the near term. No change made.
168	Public	REMOVING "PORK CHOPS" OF THE FREE RIGHT TURN INTERSECTION Please add the intersections below to your list to remove the "pork chops" from the free right turn intersections. Paseo Padre/Deep Creek (major intersection for 1800 elementary school children) Paseo Padre/Tupelo (important intersection for several hundred kids to walk/ride to school Paseo Padre/Ardenwood Blvd Ardenwood/Commerce Ardenwood/Kaiser Ardenwood/Ardenwood Terrace	The following locations have been added to Section "Existing Bike Lane at Intersection Improvements"

ID	Source	Comment	Response
169	Public	CLASS 1 MULTI-USE PATHS Add the following to your list of Class 1 Multi-use paths Northgate Trail (from Alameda bike trail to Chauncer Drive) "Patterson Park Trail"--not sure of the name but it goes from Patterson Park to Fremont Blvd	Cabrillo Trail and Northgate Trail is included in Map Figures 4-3 and 7-2 of the Bike Master Plan. No change made.
170	Public	ADD BIKE LANES TO THE FOLLOWING Along north side of Paseo Padre between Deep Creek and Capulet Along north side of Paseo Padre between Tupelo and Ardenwood	North side of Paseo Padre between Deep Creek and Capulet already recommended for bike lane. North side of Paseo Padre between Tupelo and Ardenwood already identified in Section "Existing Bike Lane at Intersection Improvements" No change made.
171	Public	SIDEWALK RAMPS TO ALLOW BIKES/WHEELCHAIRS TO ACCESS SIDEWALK OR ROAD I have screen captured some google maps screens and added notes to signify where we need ramps and connections of sidewalks and bike paths. I am having difficulty reducing the size of the file but will send the file separately so as not to further delay this note.	Projects already added to City list for inclusion in Pedestrian Master Plan Update. No changes made to Bicycle Master Plan.
172	City Staff	For the final revision of the 2011 Plan we should carry over into Chapter 9 the implementation text wording from Item 6.1 (Implementation Process) of the 2005 Bicycle Master Plan	Revised Implementation Process language for the following items from the 2005, Section 6.1 Implementation Process language. For item 2, revised to "Preparation of feasibility…" to read "Preparation of feasibility (if needed)...". For item 5 revised to read "Approval of the of the project by the Planning Commission (if needed)....".
173	Public	With consideration for how much the City has spent on bicycle facilities, it would take 50 years to implement this Plan. What can the City do to implement the Plan in a timely manner?	The City will continue to pursue funds to implement the Plan's recommendations, however given the fiscal environment additional funding from the general budget will not likely be available. No change made.
174	Public	Recommend Council send the Plan back to the BPTAC for additional revisions.	The BPTAC has had three opportunities to review the Plan's recommendations and voted to recommend to Council. No change made.
175	Council	Why recommend the resource website provide information in Spanish only? What about other languages.	Spanish, Mandarin, Hindi, Dari, Pashtu and Punjabi added to recommended languages.
176	Council	Will there be a loss of on-street parking or removal of travel lanes with this Plan?	A thorough public review or community engagement process would be required in which the parking needs of the businesses and residents would be considered. No change made.
177	Council	The costs do not seem to be consistent throughout the document.	All costs have been cross checked to ensure consistency.
178	Council	The City should help facilitate education and encouragment programs.	Comment noted. No change made.
179	City Staff	Include most current APBP Bike Parking Guidelines in the appendix as City's bike parking guidelines.	Recommendations on design of bike parking included as Appendix E.
180	City Staff	On page 1-1, Section 1.2 Bicycle Master Plan Process, state that the City hosted 6 public meetings for the Bicycle Master Plan process.	Section modified to reflect six public meetings.
181	City Staff	Cover page date should match the Council adoption date of January-February 2012. Scott Ruhland to confirm final date. Rene 12-9-11	January 2012 indicated.

ID	Source	Comment	Response
182	City Staff	On page 4-12, Section 4.1.2 connections to Adjacent Communities, state that the bicycle facilities that connect the City of Fremont and the City of Union City are: Union City Boulevard-Ardenwood Boulevard, Isherwood Way-Quarry Lakes Drive, Alvarado Boulevard-Fremont Boulevard, Alvarado-Niles Boulevard-Niles Boulevard, Mission Boulevard and Decoto Road. Also, state that the bicycle facilities that connect the City of Fremont to the City of Newark are: Thornton Avenue, Central Avenue, Mowry Avenue, Stevenson Boulevard, Cherry Street-Boyce Road, Ardenwood Boulevard-Newark Boulevard, Paseo Padre Parkway-Thornton Avenue, and Ardenwood Historic Farm to Route 84 to Lake Boulevard overpass.	Additional connections added.
183	City PD	On Page 8-6, Section 8.2.7 Police Education, state that Police Bike education are conducted internally within the Department and that the most common bike violation is a minor riding without a helmet.	Statement added.
184	City PD	On page 8-7, Section 8.2.9 Speed Feedback Signs, state that the Police Departments radar speed feedback trailer signs are deployed weekly and operational five days a week.	Statement added.
185	City PD	On page 8-8, Section 8.3.2 Targeted Enforcement, state that the community can request traffic enforcement for specific locations by completing the traffic complaint form at the Fremont Police Department's website.	Statement added.

Appendix D. Project Sheets

D.1. Fremont Boulevard to Dixon Landing Road Trail

Project Description

Street	Start	End	Class	Miles
Fremont Boulevard Extension:	Fremont Boulevard South Terminus	Dixon Landing Road	1	0.69

Existing Conditions

This part of the City has seen significant development in recent years and is adjacent to the Bay Trail. The roadway and trail extension will connect the southern part of the City to Milpitas and extend the Bay Trail southward.

Anticipated Users

- Commuters to Santa Clara County
- Recreational bicyclists

Needs Addressed

This project connects bikeway facilities in Fremont and Milpitas and Santa Clara County west of I-880 and creates additional opportunities for recreational bicyclists to access the Bay Trail.

It also provides a continuous facility for regional travel to the South Bay west of I-880.

Connecting Bikeways

- Class II bike lane on Fremont Boulevard
- Class I multi-use path connecting to Coyote Creek
- Class II bike lane on McCarthy Boulevard in Milpitas

Jurisdiction

City of Fremont

Project location

Note: Two Potential Trial alignments. One trail alignment is immediately west of the future Fremont Boulevard extension to Dixon Landing.

The second trail alignment runs from the south terminus of Fremont Boulevard west along the Alameda Flood Control Channel, and south along Coyote Creek Levee and connecting to Dixon Landing Road in Milpitas.

Project Cost Estimate

To be determined as part of Bay Trail Feasibility Study.

D.2.Hetch Hetchy Trail Enhancement Study

Project Description

Street	Start	End	Class	Miles
Hetch Hetchy / Plomosa Trail	Crawford Street	Milpitas City Limits	1	2.19

Existing Conditions

The trail corridor passes through a residential neighborhood in South Fremont within close proximity to schools and Warm Springs area businesses.

Anticipated Users

- Area residents for commute and recreational trips
- Students traveling to school
- Warm Springs area commuters
- Recreational bicyclists

Needs Addressed

This trail will enhance access within the Warm Springs neighborhood and connect the City of Fremont with Milpitas.

Located in close proximity to Warm Springs Park, Booster Park, Lone Tree Creek Park, and Plomosa Park, the corridor will create a network of connected open spaces.

Connecting Bikeways

- Class II bike lanes on Scott Creek Road
- Class I trail continues in Milpitas

Jurisdiction

City of Fremont

Project location

Project Cost Estimate

$75,000 (cost of study)

D.3. UPRR Trail Project

Project Description

Street	Start	End	Class	Miles
UPRR Rail Trail	Clarke Drive	Milpitas City Limits	1	9.09

Existing Conditions

The UPRR trail corridor runs north to south through Central Fremont, following the proposed Warm Springs BART extension and connecting several City neighborhoods and major east-west arterials.

Anticipated Users

- Commuters and shoppers traveling to Central Fremont
- Recreational bicyclists

Needs Addressed

This project provides connections between several of Fremont's commuter and recreational destinations, including planned BART stations, Central Park, Centerville, and Warm Springs. It provides a continuous facility for north-south travel, extending from Clarke Drive in the north to the Milpitas City limits in the south.

South of Auto Mall Parkway there may not be adequate BART right-of-way and the trail may need to be realigned to Warm Springs Blvd as a Class II bike lane.

Connecting Bikeways

- Several Class II facilities on adjacent streets
- Alameda Creek Trail

Jurisdiction

City of Fremont

Project location

Project Cost Estimate

$7,779,700 (excludes right of way acquisition cost)

D.4.Central Park UPRR Crossing

Project Description

Street	Start	End	Class	Miles
UPRR Crossing	Central Park	Gomes Park	Crossing	0.10

Existing Conditions

Central Park is a major recreational destination in close proximity to downtown Fremont. Gomes Park is in a residential neighborhood with a Class I path and schools. The existing Mission Creek Levee/UPRR junction will need a pedestrian crossing signal to connect the Gomes Park (Mission Valley Neighborhood) to Central Park

Anticipated Users

- Recreational bicyclists traveling to Central Park
- Students traveling to school
- Nearby residents
- Commuters to Civic Center and Irvington BART stations

Needs Addressed

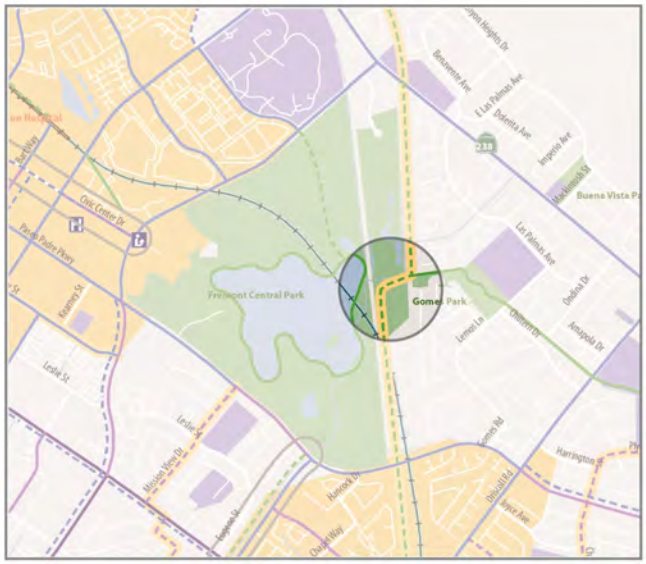
This trail will improve connections between Central Park and residential neighborhoods to the east.

Connecting Bikeways

- Class I multi-use path through Gomes Park
- Planned UPRR Rail Trail

Jurisdiction

City of Fremont



Project Location

Project Cost Estimate

$550,000

D.5.Greenbelt Gateway along Grimmer Boulevard

Project Description

Street	Start	End	Class	Miles
Grimmer Boulevard Greenbelt	Fremont Boulevard	Paseo Padre Parkway	1	0.44

Existing Conditions

Grimmer Boulevard is an existing Class II and Class III facility between Fremont Boulevard and Paseo Padre Parkway. The street is located in a residential area near the future Irvington BART station and two schools. Paralleling the corridor to the north is an Alameda County Flood Control channel and PG&E right-of-way considered for installation of Class I trail.

Anticipated Users

- Families traveling to Central Park
- Students traveling to school
- Nearby commuting residents

Needs Addressed

This project connects the southern edge of Central Park with bikeways that lead to the Irvington District and other parts of the City.

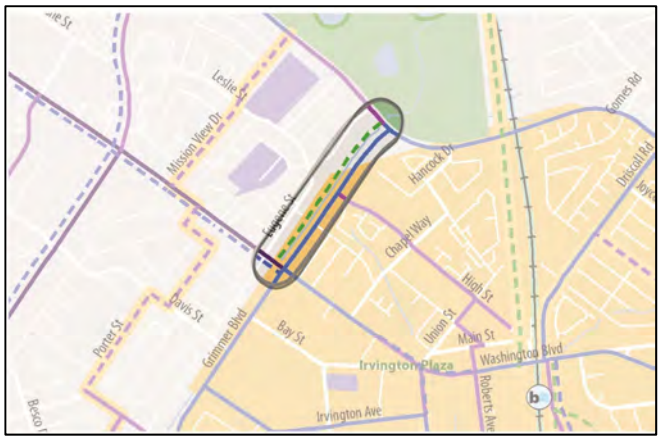
The project addresses the needs of less experienced bicyclists who might prefer quiet off-street paths to Grimmer Boulevard.

Connecting Bikeways

- Fremont Blvd frontage road bike route
- Class III facilities on Paseo Padre Parkway and High Street
- Class II bike lanes on Fremont Boulevard, Paseo Padre Parkway, and Grimmer Boulevard

Jurisdiction

City of Fremont



Project location

Project Cost Estimate

$1,400,000

D.6. Fremont BART to Midtown Bike and Pedestrian Facility Enhancements

Project Description

Street	Start	End	Class	Miles
BART Way	BART Station	Liberty Street	1 and 2	0.59

Existing Conditions

Many bicycle connections between the Fremont BART station to downtown Fremont are circuitous and do not provide a direct route between destinations.

Anticipated Users

- Commuters using the Fremont BART station
- Residents and visitors to the Midtown area

Needs Addressed

The project, in addition to the proposed bike lanes on Civic Center Drive and the accessibility improvements recommended in the City Pedestrian Master Plan, will enhance the BART station as a focal point for the downtown area.

The bikeway components of this project consist of Class II bike lanes to be installed through the passenger drop-off area and on BART Way and a Class I path beginning west of the Civic Center /BART Way intersection. The path crosses Paseo Padre Parkway at a traffic signal and accesses Liberty Street on right-of-way owned by the City of Fremont and the shopping center. Design elements include benches, pedestrian lighting, trees, and bike racks.

Project location

Connecting Bikeways

- Class II bike lanes on Paseo Padre Parkway, and Civic Center Drive
- Class I path connecting the BART station to the library

Jurisdiction

City of Fremont

Project Cost Estimate

$650,000

D.7. Green Bike Lanes through Conflict Areas

Project Description

Street	Start	End	Class	Miles
Twelve locations at freeway interchanges throughout the City. See Chapter 7 Recommendations.				

Existing Conditions

Freeway interchanges are particularly challenging locations for bicyclists, as motorists turning onto the freeway must cross their paths and often travel at high speeds.

Anticipated Users

- Commuter bicyclists
- Recreational bicyclists

Needs Addressed

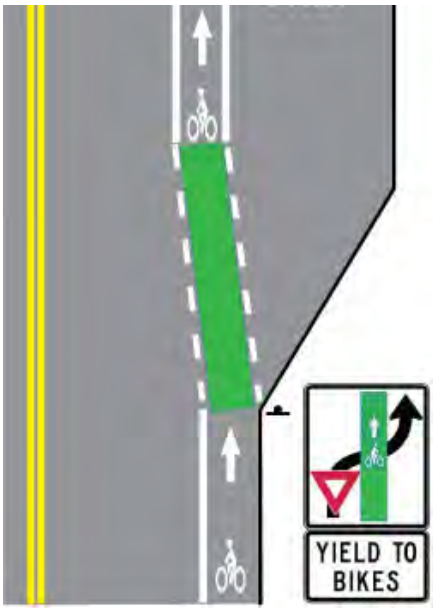
Green bike lanes through conflict areas have been shown to increase visibility and traffic compliance among bicyclists and motorists.

Connecting Bikeways

- These facilities will be particularly important for connections into Newark across Interstate 880.

Jurisdiction

City of Fremont



Example Design

Project Cost Estimate

$345,600 (for 12 interchanges)

D.8. Cross-Town Routes

Project Description

Street	Start	End	Class	Miles
Approximately 35 miles of bikeways throughout the City. See Section 7.2 for specific recommendations.				

Existing Conditions

During public outreach, one of residents' major concerns about the existing bikeway network in Fremont is that most of the facilities are provided on major streets with high traffic volumes and speeds.

Anticipated Users

- Bicyclists who may be less confident than "Strong and Fearless" riders who prefer direct routes on higher-traffic streets
- Families

Needs Addressed

The citywide Cross-Town route project will provide facilities that cross the City on streets parallel to busy streets to accommodate bicyclists who may be concerned about riding in traffic.

Connecting Bikeways

- Class I, II, and III bicycle facilities throughout the City

Jurisdiction

City of Fremont

Berkeley Bicycle Boulevard Example

Project Cost Estimate

$268,700

D.9.Wayfinding Signage Program

Project Description

Street	Start	End	Class	Miles
Locations throughout the City.				

Existing Conditions

The City has installed CA MUTCD standard signage along existing bikeways. However, directional bike route signage exists in only a few spots in Fremont, such as along bikeways accessing the BART station.

Anticipated Users

- Commuter bicyclists
- Recreational bicyclists
- Visitors and people new to bicycling in Fremont

Needs Addressed

Bicyclists often cannot easily carry maps with them while traveling, and while in unfamiliar parts of town they may wish to avoid high-traffic streets while still following reasonably direct routes to their destinations.

Wayfinding signage will be especially important on the Cross-Town route network, where bicycle routes may require more turns.

Connecting Bikeways

- Class II and Class III bikeways throughout the City, especially on the Cross-Town route network.

Jurisdiction

City of Fremont

Directional and Wayfinding Signage Example

Project Cost Estimate

Approximately $300 per sign.

D.10. I-880 Bicycle and Pedestrian Overcrossing Study

Project Description

Street	Start	End	Class	Miles
South Fremont	West of I-880	East of I-880	Crossing	

Existing Conditions

In South Fremont no I-880 crossing opportunities exist between Warren Avenue and Dixon Landing Road, a distance of 1.7 miles. Many employers and residents live in the area and would benefit from increased bikeway connectivity provided by a bicycle and pedestrian overpass of I-880.

Anticipated Users

- South Fremont residents
- Commuters to Warm Springs businesses
- Recreational bicyclists connecting to the Bay Trail

Needs Addressed

While the final location of the I-880 crossing will ultimately need to be determined, this project provides a new opportunity to cross I- 880.

The crossing will connect neighborhoods and businesses east of the freeway with destinations west of the freeway.

Connecting Bikeways

- Class II facilities on Fremont Boulevard
- Class III facilities on Kato Road
- Proposed Bay Trail

Jurisdiction

City of Fremont

Project location

Project Cost Estimate

$75,000 (Study)

D.11. East Bay Greenway Study

Project Description

Street	Start	End	Class	Miles
East Bay Greenway	Fremont City Limits	Central Park at Stevenson Blvd.	1	1.44

Existing Conditions

Northern Fremont includes Quarry Lakes Recreation Area and connections to existing Union City and Fremont BART stations. There are several existing off-street facilities within Quarry Lakes but few other bikeways in the area.

Anticipated Users

- Commuter bicyclists
- Recreational bicyclists

Needs Addressed

The East Bay Greenway is a regional project that proposes a continuous bikeway from Fremont to Oakland along the BART right-of-way corridor.

Within Fremont, the East Bay Greenway will connect the off-street facilities within Quarry Lakes Recreation Area to other places within Fremont and will connect to the UPRR Trail at Central Park.

Connecting Bikeways

- Class II and III facilities on Niles Boulevard
- Several off-street bicycle paths in Quarry Lakes Recreation Area
- Alameda Creek Trail
- Central Park UPRR trail

Jurisdictions

City of Fremont, Alameda County, East Bay Regional Parks District, and BART

Project location

Project Cost Estimate

$75,000 (study)

D.12. Fremont Boulevard Bicycle Lanes

Project Description

Street	Start	End	Class	Miles
Fremont Boulevard	Thornton Avenue	Eggers Drive	2	1.02

Existing Conditions

Fremont Boulevard traverses much of the City on Class II and Class III facilities. This segment is currently Class III and serves the Centerville Area.

Anticipated Users

- Area residents and visitors to the Centerville District
- Commuters using Centerville Train Depot and AC Transit Fremont Boulevard main bus line.
- Elementary, junior high and high school students commuting to school

Needs Addressed

Residents expressed a desire to make Fremont Boulevard a road with continuous Class II facilities. This project closes a bicycle lane gap on Fremont Boulevard.

The project is located within a priority development area.

Connecting Bikeways

- Class II bike lanes on Thornton Avenue and Central Avenue.
- Continuing Class II facilities south of Eggers Drive and north of Thornton Avenue
- Class III facilities on Eggers Drive, Peralta Boulevard, and Bonde Way

Jurisdiction

City of Fremont

Project location

Project Cost Estimate

$43,900

D.13. Peralta Boulevard Bicycle Lanes

Project Description

Street	Start	End	Class	Miles
Peralta Boulevard	Fremont Boulevard	Mowry Avenue	2	1.71

Existing Conditions

Peralta Boulevard is an existing bike route that traverses Central Fremont, connecting employment and population centers.

Anticipated Users

- Residents and visitors to Central Fremont
- Commuting bicyclists

Needs Addressed

The street provides one of the few direct east-west connections within the central part of the City.

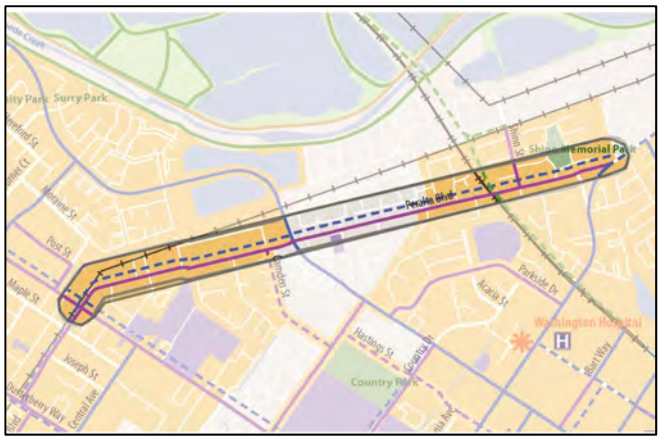
The project enhances this important connection by providing separation from motor vehicle traffic.

Connecting Bikeways

- Class II bike lanes on Mowry Avenue and Paseo Padre Parkway
- Existing Class III facilities on Shinn Street and Fremont Boulevard
- Proposed Class II facilities on Fremont Boulevard

Jurisdiction

City of Fremont



Project location

Project Cost Estimate

$73,500

Appendix E. Bicycle Parking Design Standards

This Appendix presents recommended bicycle rack designs, locations and dimensions as well as typical layouts likely to be used in the City of Fremont.

Bicycle parking design is important because when it is well designed, it not only provides the user with secure parking but also helps prevent improperly parked bicycles from impeding pedestrian activity or obstructing the path of travel for persons with disabilities.

E.1. Standard Bicycle Rack Designs

There are many types of bicycle rack designs. The design of the rack itself should be intuitive to use and provide security against theft. Racks with moving parts or complicated designs may confuse users. A simple yet attractive design will meet the City of Fremont's needs.

Many bicycle rack designs meet national standards and best practices and many do not. The Association of Pedestrian and Bicycle Professionals *Bicycle Parking Guidelines* (2010) recommend the three types of rack designs shown below in **Figure E-1**.

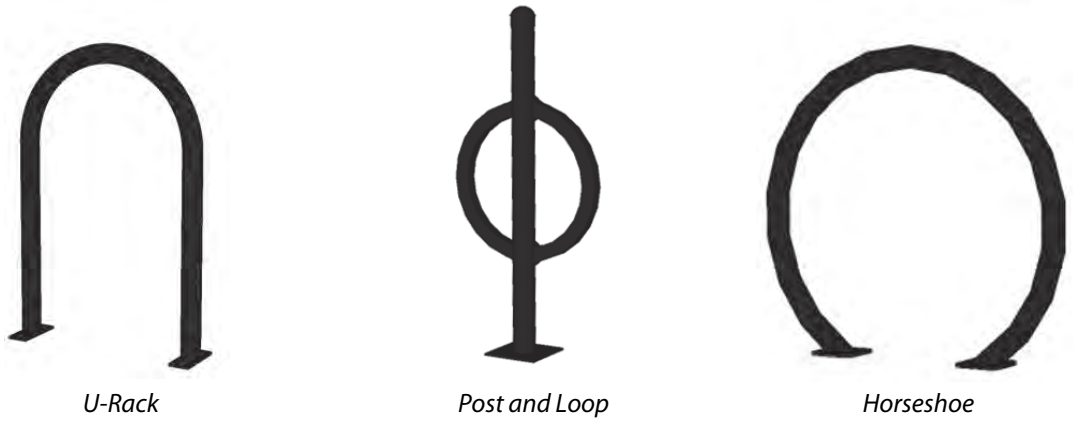


Figure E-1: Standard Bicycle Rack Designs

This Plan recommends these designs as the standard designs for Fremont. The following describes required elements of all bicycle parking installed in the City of Fremont.

Ease of Use

1. Support the bicycle frame at two points.
2. Allow for the frame and at least one wheel of the bicycle to be locked to the rack.
3. Allow front- and back-in parking.
4. Accept a variety of bicycle sizes
5. Allow for the use of U-type lock.
6. Allow for access without moving another bicycle
7. Features a design that is intuitive for users.
8. Minimizes the number of moving parts (to reduce maintenance needs)
9. Not require the user to lift the bicycle

Unacceptable racks include wheel benders, toaster racks, wave racks, and "the contraption" and are shown in **Figure E-2.**

Wheel bender, toaster, and wave racks do not support the bicycle frame at two points or allow for the frame and at least one wheel of the bicycle to be locked to the rack.

Toaster racks are popular with sport bicyclists because of its ability to keep a bike standing without a lock (sport bicyclists tend to not carry locks because of additional weight). Where requested or there is anticipated demand, toaster racks may be an appropriate rack choice.

"Contraption" racks also do not meet the same standards. In addition, these parking types include moving parts that require maintenance and are not intuitive for users.

Design and materials

1. Adhere to the *Americans with Disabilities Act* standards
    - If a protruding edge of the rack is 27"- 80" above the sidewalk surface, it may overhang a maximum of 12". (See: www.access-board.gov/adaag/html/adaag.htm#4.4)
2. Be at least 32" tall and 18" wide.
3. Include no moving parts.
4. Be a material that resists being cut or detached using common tools.
5. Flange-mounted racks: The base plate should be a minimum of 3/8" thick; footers should be a minimum of 5" x 6" for square-tube racks/5" diameter for round-tube racks.
6. In-ground racks: A minimum 1.54" width pipe should extend a minimum of 10" below grade.

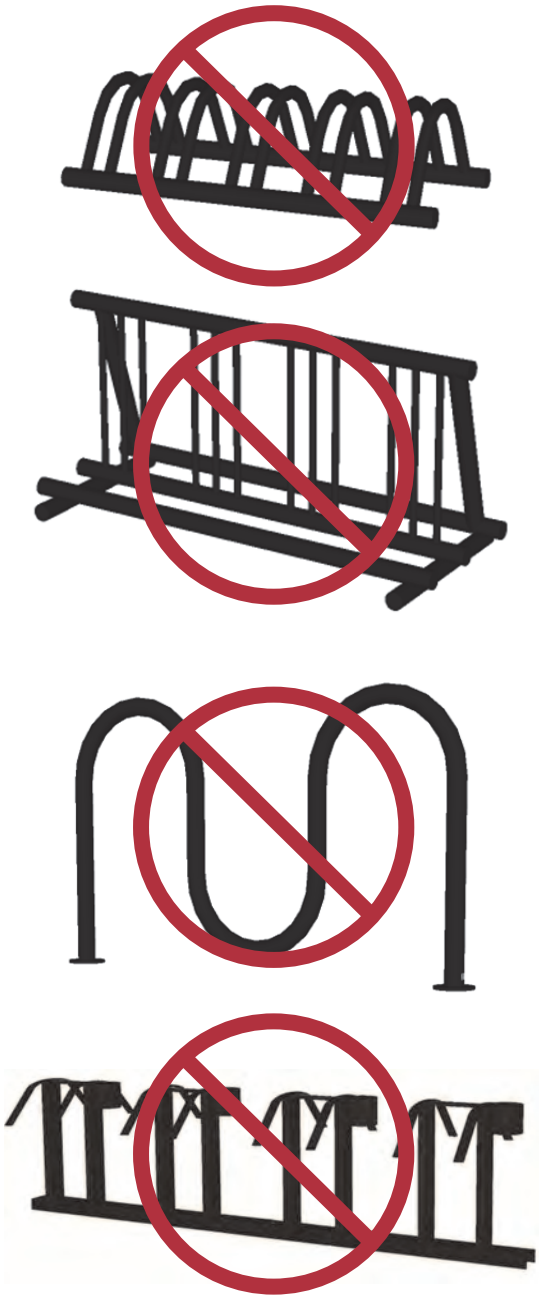


Figure E-2: Unacceptable Racks

Finishes

The selection of a finish for a bicycle rack should include consideration for appearance, durability and maintenance requirements. Typical finishes are described in **Table E-1**

Table E-1: Common Bicycle Rack Finishes

Finish Type	Appearance	Choice of Color	Notes
Galvanized	Silver; may have slight texture	No	Least expensive, durable and maintenance-free; proper application reduces surface texture of finish
Powder coat	Color, typically smooth, may be gloss or matte	Yes[1]	Must be applied over a zinc-rich primer so rust cannot spread beneath the coating from nicks or abrasions that expose bare metal; both powder coating and vinyl may deteriorate quickly and will require ongoing maintenance.
Vinyl (PVC) jacket	Often black	Possibly	
Thermoplastic	Color, typically fairly smooth, comparable in appearance to powder coat	Yes[1]	Sprayed directly onto cleaned (sandblaster) and heated rack. High adhesion rust from spreading beneath surface from nicks or abrasions. Technique is also used to weatherproof naval weaponry.
Stainless steel	Silver/chrome, typically smooth	No	High resistance to cutting. Most expensive finish.

Source: Association of Pedestrian and Bicycle Professionals Bicycle Parking Guidelines (2010)

[1] Manufacturers that feature powder-coated or thermoplastic-coated racks typically offer a set of standard colors. Some can produce special orders using custom colors selected from a larger palette (color chart). Matte black is a standard color that hides dirt better than gloss black.

E.2. Bicycle Parking Location Selection

Bicycle racks should be located near the destination it is intended to serve. Like motorists, bicyclist prefer to park near their destination. Additionally, because theft is a concern for many bicyclists, it is ideal to site a bike rack within close proximity to the site of the destination.

Bicycle racks in the City of Fremont should be installed (when feasible):

- Within 50 feet (and no more than 100 feet) of the destination they serve.
- In a visible area with significant foot traffic.

- With consideration to existing conditions. The location of existing street furniture and other sidewalk elements can restrict placement of bicycle racks. Bicycle racks should be placed in locations that do not impede pedestrian flow.

E.3. Bicycle Parking Dimensions

It is important to consider the space a parked bicycle requires and clearances from elements in the right-of-way in order for it to function properly.

The following measurements and clearances are recommended for the City of Fremont.

E.3.1. Measurement

- Typical footprint (the area occupied by two bicycles when parked at an 18" U-rack) is approximately 90" long x 32" wide.
    - Where a significant number of bicycles with trailers are expected a larger footprint should be used.
- Rack: minimum 32" tall and 18" wide.
- Multiple racks: minimum of 32" apart.
- Single-loop racks placed end-to-end: minimum of 60" apart.

When possible/appropriate, exceed the minimums for spacing.

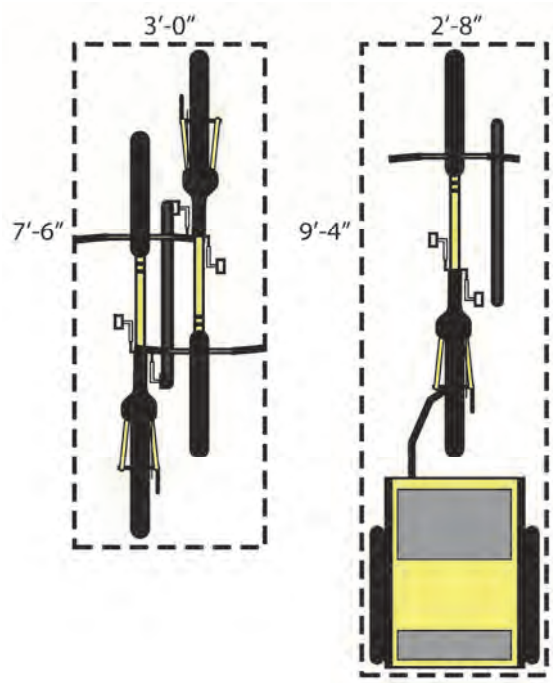


Figure E-3: Standard (left) and extended (right) bicycle footprints

E.3.2. Clearance

Bicycle racks should not be placed in the pedestrian through zone (**Figure E-4**) or impede pedestrian activity or present an obstacle to those with visual impairments. The following clearances are required:

- A minimum of 6-foot clear for pedestrian right-of-way outside from the bicycle footprint to the building frontage.
- The minimum distance from the rack to the building frontage will vary based on rack type and angle of placement.
- Rack placement should always allow a clear and straight path of travel, particularly for people with visual impairments.

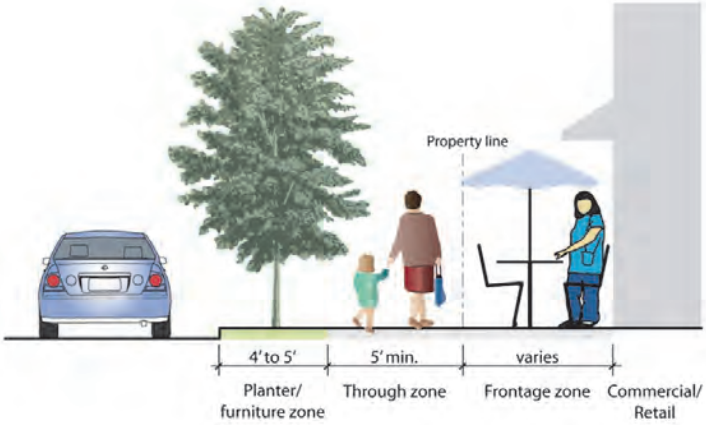


Figure E-4: Sidewalk Zones

Minimum distances between a bicycle rack and street furniture, utilities, landscaping and other typical sidewalk elements are shown in the following table.

Table E-2: Minimum Clearances Typical Sidewalk Elements

Setback from Bicycle Rack	Item in Right-of-Way
24″	• Curb *with parallel parking* • Building façade (if rack is sited adjacent)
30″	• Curb *with angled parking* • Light pole • US mailbox • Trash can • Other sidewalk obstruction • Newspaper rack • Tree well • Surface hardware (PG&E, cable grates, etc.) • Sign pole • Street furniture
48″	• Curb ramp • Storm drain grate • Driveway • Crosswalk • Transit red zone or shelter • White/yellow loading zone • Blue zone (disabled parking)
60″	• Fire hydrant • Bicycle rack (parallel to bicycle orientation)

E.3.3. Example Bicycle Rack Site Spacing Requirements

Figure E-5 and **Figure E-6** present typical bicycle rack spacing requirements. Typical details for bicycle parking in Fremont are presented in Section 4.2.

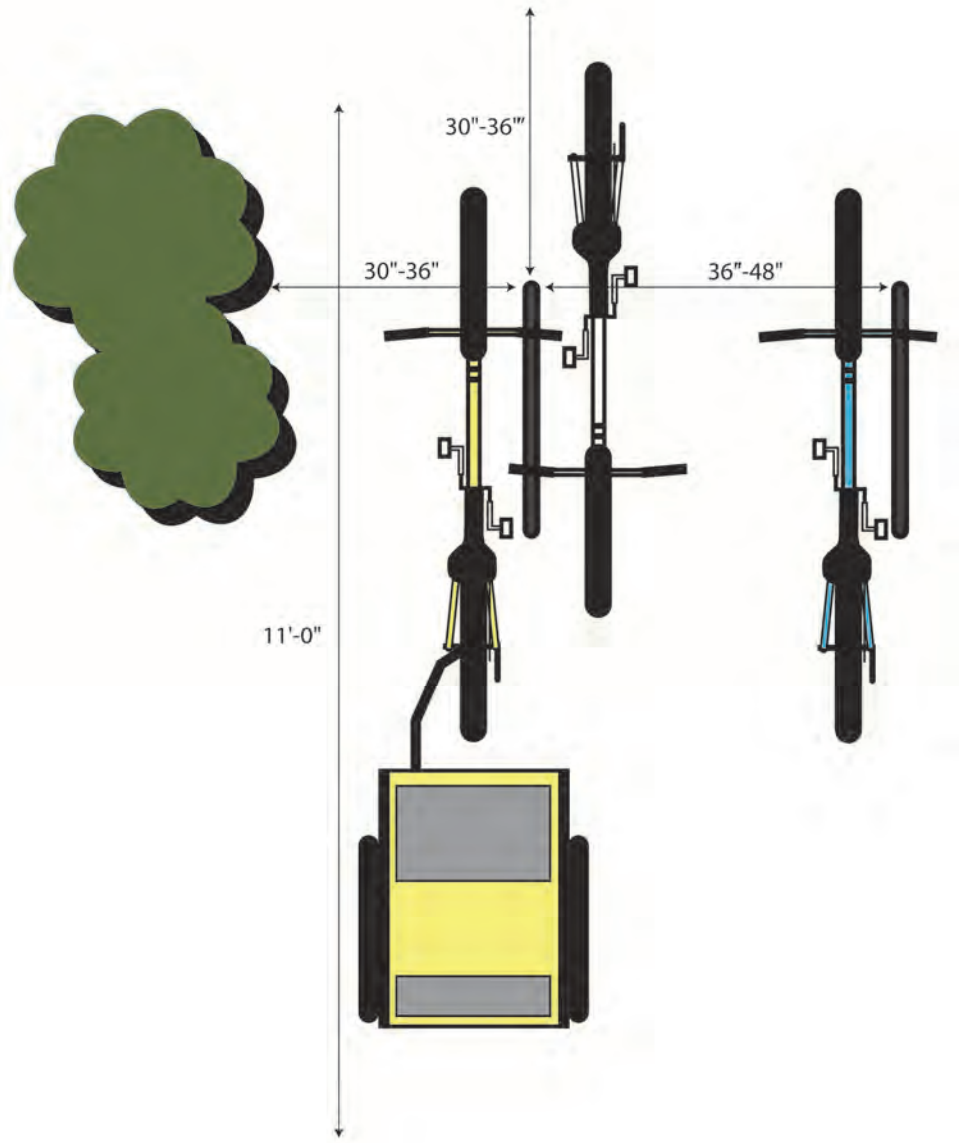


Figure E-5: Typical Bicycle Parking Spacing Example A

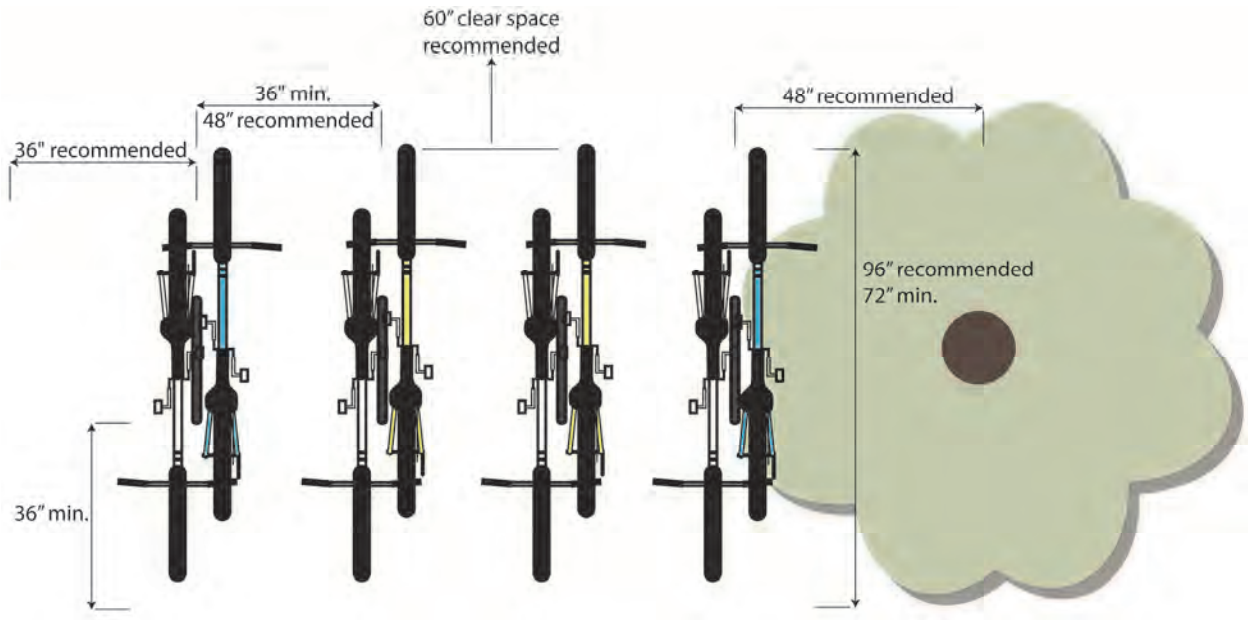


Figure E-6: Typical Bicycle Parking Spacing Example B