Menlo Park
COMPREHENSIVE BICYCLE DEVELOPMENT PLAN

CITY OF MENLO PARK

January 2005

Prepared by: Alta Planning + Design

Menlo Park Comprehensive Bicycle Development Plan

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1. INTRODUCTION

The Menlo Park Comprehensive Bicycle Development Plan provides a blueprint for making bicycling an integral part of daily life in Menlo Park. The Bicycle Plan provides for a citywide system of bike lanes, bike routes, bike paths, bicycle parking, and other facilities to allow for safe, efficient and convenient bicycle travel within Menlo Park and connecting to regional destinations in the Bay Area. This plan is consistent with the Menlo Park General Plan goal of promoting the use of the bicycle as a commute alternative and for recreation.

The bicycle is a low-cost and effective means of transportation that is quiet, non-polluting, extremely energy-efficient, versatile, healthy, and fun. Bicycles also offer low-cost mobility to the non-driving public, especially the young. Bicycling as a means of transportation has been growing in popularity as many communities work to create more balanced transportation systems by giving bicyclists a greater share in use of the roadway networks. In addition, recent national surveys find that more people are willing to cycle more frequently if better bicycle facilities are provided.

1.1. PURPOSE OF THE COMPREHENSIVE BICYCLE DEVELOPMENT PLAN

This Comprehensive Bicycle Development Plan provides a broad vision, strategies and actions for the improvement of bicycling in Menlo Park. The City of Menlo Park is by no means starting from scratch in terms of accommodating and encouraging its residents to ride – in fact, Menlo Park is in somewhat of an enviable position in terms of bicycle transportation:

- According to the 2000 U.S. Census, the number of Menlo Park residents who bicycle as their primary mode of travel to work is five times the State average and nine times the national average.
- Numerous Menlo Park adults and children bicycle to school, for shopping, to the library, and for recreation – witness the number of riders heading up and down Sand Hill Road on any given afternoon.
- The City of Menlo Park has been proactive in installing bicycle facilities on many of the city's roadways, resulting in a network of bike lanes and routes already in place on major streets such as Middlefield Road, Willow Road, Laurel, Valparaiso, and Santa Cruz Avenue.

This Plan seeks to build upon these successes – to enhance and expand the existing bikeway network, connect gaps, address constrained areas, provide for greater local and regional connectivity, and encourage even more residents to bicycle. Adoption of this plan by the City is important for the following reasons:

Maximize Funding Sources for Implementation. A key reason for preparing the Comprehensive Bicycle Development Plan is to satisfy requirements of the California Bicycle Transportation Account (BTA), and other state and federal funding programs for bicycle transportation projects for which Caltrans plays an oversight and review role. In order to qualify for available funding, the State of California requires that applicants have an adopted master plan that includes a number of specific elements related to bicycle commuting, land uses, multi-modal connections, funding, and public input. The complete list of required BTA elements and their locations in this document is provided in **Table 1-1** below.

Table 1-1
Caltrans BTA Requirements

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3. Existing and Proposed Bikeways	5-3
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10. Project Descriptions/Priority Listings	Chapter 5
11. Past Expenditures and Future Financial Needs	2-14, 6-3

Improve Safety. Reduce the accident rate for bicyclists in Menlo Park through design standards and guidelines, education, and enforcement.

Provide needed facilities and services. Menlo Park has existing bikeways on several major roadways including Willow Road, Middlefield Avenue, and Santa Cruz Avenue. While these facilities provide direct routes for experienced cyclists comfortable with riding on streets with relatively high volumes of traffic, much of the success of encouraging new cyclists will depend on meeting the needs of less experienced riders and those who prefer more scenic and pleasant cross-town route alternatives. In addition to incorporating more alternative routes into the existing bikeway network, support facilities such as clear directional signage and secure bicycle parking at schools, employment centers and the Caltrain station will encourage more people to ride bicycles and enhance the level of comfort for all.

Enhance the quality of life in Menlo Park. The development of bicycle facilities provides for people-friendly streets, paths, trails, and activity centers available to everyone, and supports sustainable community development. Bicycling can reduce traffic congestion, vehicle exhaust emissions, noise, and energy consumption by encouraging healthier and more active forms of travel.

Set New Priorities. The Comprehensive Bicycle Development Plan identifies existing network needs and recommends projects that will further enhance and improve bicycling conditions in

Menlo Park for all levels of riders. Projects identified in this plan were evaluated according to priority criteria including safety, connectivity and network needs. These priorities emphasize providing designated bikeways to significant destinations such as downtown, the Civic Center, the Caltrain station, major employers, schools, and parks; enhancing regional connections to adjacent cities; and providing for recreational usage of Menlo Park's bicycle network.

1.2. GOALS AND POLICIES OF COMPREHENSIVE BICYCLE DEVELOPMENT PLAN

This section presents the specific goals and policies for the Menlo Park Comprehensive Bicycle Development Plan. Goals provide the context for the specific policies and actions discussed in the Bike Plan. The goals provide the long-term vision and serve as the foundation of the plan, while the policies provide more specific descriptions of actions to undertake to implement the plan.

Goal 1: Expand and Enhance Menlo Park's Bikeway Network

Policy 1.1. Complete a network of bike lanes, bike routes, and shared use paths that serve all bicycle user groups, including commuting, recreation, and utilitarian trips.

Policy 1.2. Seek funding for bicycle transportation funding through current regional, state, and federal funding programs and encourage multi-jurisdictional funding applications.

Policy 1.3. Monitor and evaluate information on collisions involving bicyclists and use this information to assist in remedying existing problem locations.

Policy 1.4. Develop and implement a signed and numbered route system with wayfinding signage for cross town commuter bicycle routes that serve major employment centers, schools, commercial districts, transit stations and institutions.

Goal 2: Plan for the Needs of Bicyclists

Policy 2.1. Accommodate bicyclists and other non-motorized users when planning, designing, and developing transportation improvements.

Policy 2.2. Review capital improvement projects to ensure that needs of bicyclists and other non-motorized users are considered in programming, planning, maintenance, construction, operations, and project development activities.

Policy 2.3. Encourage traffic calming, intersection improvements, or other similar actions that improve safety for bicyclists and other non-motorized users.

Policy 2.4. Require developers to adhere to the design standards identified in this Comprehensive Bicycle Development Plan.

Policy 2.5. Conduct regular bicycle counts so that trends and usage may be monitored and evaluated.

Goal 3: Provide for Regular Maintenance of the Bikeway Network

Policy 3.1. Develop a program to routinely repair and maintain roads and other bikeway network facilities, including regular sweeping of bikeways and shared use pathways.

Policy 3.2. Include the costs of major maintenance needs of bicycle facilities when calculating the maintenance needs of streets and roadways generally.

Policy 3.3. Develop a program to ensure that bicycle loop detectors are installed at all signalized intersections on the bike network and are tested regularly to ensure they remain functional.

Policy 3.4. Require that construction or repair activities, both on street and of adjacent buildings, minimize disruption to bicycle facilities, ensure bicyclist safety at all times, and provide alternate routes if necessary.

Goal 4. Encourage and Educate Residents, Businesses and Employers in Menlo Park on Bicycling

Policy 4.1. Continue Menlo Park 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 4.2. Develop local adult and youth bicycle education and safety programs, such as the League of American Bicyclists courses. Consider partnering with other local jurisdictions, such as the City of Palo Alto, that already have education programs in place.

Policy 4.3. Develop and distribute a Bikeways Map illustrating the citywide bicycle network and containing information on regional connections and tips on bicycle safety.

Policy 4.4. Support Safe Routes to School efforts that include educational and incentive programs to encourage more students to bicycle or walk to school.

Policy 4.5. Provide information on appropriate use of bicycle facilities by other non-motorized uses such inline skaters and scooter users.

Policy 4.6. Encourage major Menlo Park employers and retailers to provide incentives and support facilities for existing and potential employees and customers that commute by bicycle.

Policy 4.7. Identify ways to encourage bicycling to large civic events such as the Connoisseur's Marketplace or the Farmers Market, such as by providing valet bicycle parking.

Policy 4.8. Explore ways to encourage City staff to bicycle during the work day, such as by providing bicycles at City Hall for short-term employee use.

Policy 4.9 Promote bicycling as a healthy transportation alternative.

Goal 5: Facilitate Coordination and Cooperation in Development of the Bicycle Network

Policy 5.1. Establish regular communication between affected jurisdictions such as adjacent cities, San Mateo County, and Caltrans, regarding regional bicycle planning issues and the regional network.

Policy 5.2. Work with the City/County Association of Governments of San Mateo County to incorporate the bikeway network facilities identified in this Bicycle Development Plan into the County Comprehensive Bicycle Route Plan, to ensure maximum coordination in funding and implementation.

Policy 5.3. Coordinate with adjacent jurisdictions, school districts, and community organizations to ensure connectivity and consistency in bikeway facility design and to review and comment on bicycle issues of mutual concern.

Goal 6: Implement the Comprehensive Bicycle Development Plan

Policy 6.1. Incorporate the Comprehensive Bicycle Development Plan into the Transportation Element of an updated Menlo Park General Plan.

Policy 6.2. Update the Bicycle Plan periodically as required by Caltrans to reflect new policies and/or requirements for bicycle funding.

1.3. MAJOR RECOMMENDATIONS OF THE PLAN

This Comprehensive Bicycle Development Plan recommends the enhancement of the existing network with the addition of approximately 0.3 miles of new Class I Bike Paths, 3.6 miles of new Class II bike lanes, and 16.8 miles of new Class III Bike Routes. The total cost of the recommended projects is estimated to be about $91,000 for Short-Term projects and $86,000 for Mid-Term projects. Several Long-Term projects are also identified, including two short Class I connector segments and two new bicycle/pedestrian undercrossings. Due to the high assumed cost of the undercrossings, the cost for the Long-Term projects is nearly $4 million. The Recommended Bikeway Network is shown in Figure 5-1 in Chapter 5, and the proposed cost breakdown is provided in Table 6-1 in Chapter 6.

In addition to the planned bikeways and bicycle facilities, this plan outlines new educational and promotional programs aimed at bicyclists and motorists. These programs include bicycle parking improvements, multi-modal (transit) support facilities, bicycle safety and education programs for cyclists and motorists, safe routes to schools programs, community and employer outreach programs, continued development of bikeway network maps, and bike-to-work and school day events, among others.

1.4. PLAN CONTENTS

The Menlo Park Comprehensive Bicycle Development Plan is organized as follows:

- Chapter 2, Existing Conditions, provides a description of the existing bicycle conditions in Menlo Park. The conditions presented include the existing bicycle network, support facilities, and programs, as well as existing network needs, opportunities and constraints.

- Chapter 3, Planning and Policy Context, provides an overview of relevant planning documents from Menlo Park and adjacent jurisdictions

- Chapter 4, Needs Analysis, documents the need for bicycle transportation in Menlo Park, including an overview of existing user groups, bicycle commute statistics, and bicycle accident data.

- Chapter 5, Recommended Bikeway System and Improvements, outlines the recommended Class I, II, and III bicycle network map, as well as support facilities and programs such as bicycle parking, Safe Routes to School, and educational efforts that will improve safety and convenience for bicyclist and complement the recommended network. Chapter 5 also includes individual Project Sheets that provide additional detail and highlight design and feasibility issues for each of the major projects identified in this plan.

- Chapter 6, Implementation, provides a complete list of recommended project components with cost estimates, outlines the highest priority projects as determined by the public and Steering Committee, and provides a guide to system implementation and funding sources and strategies for getting the recommended bikeway network and facilities built.

- Appendices:

    - Appendix A: Bikeway Planning and Design
    - Appendix B: Steering Committee Members
    - Appendix C: Bike Plan Survey Form and Results
    - Appendix D: Bike Plan Public Meeting Notices and Summaries
    - Appendix E: Sample Bicycle Parking Code Language
    - Appendix F: Construction Zone Treatments

- Appendix G: Bicycle Commute and Air Quality Calculations

2. EXISTING CONDITIONS

This chapter provides a description of existing conditions within the City of Menlo Park relevant to the Comprehensive Bicycle Development Plan. Information is based on field visits, existing planning documents, maps, and conversations with City of Menlo Park, San Mateo County and other agency staff.

2.1. SETTING

The City of Menlo Park is situated in the central part of the San Francisco Peninsula, approximately halfway between San Francisco and San Jose. Menlo Park has a population of approximately 31,000, and encompasses about 16 square miles of land area, for a population density of about 2,000 persons per square mile. Neighboring cities and towns include Redwood City to the north, Palo Alto, Stanford University and East Palo Alto to the south, and Atherton and Woodside to the west. Menlo Park is located at the southern edge of San Mateo County, at the border with Santa Clara County. The topography in Menlo Park is generally flat, stretching from the San Francisco Bay in the east to the foothills of the Santa Cruz Mountains in the west.

2.1.1. MENLO PARK LAND USES

Menlo Park's existing development consists mostly of low- to medium-density residential, commercial and office uses. Residential areas are dispersed almost evenly throughout the city. Primary activity centers and destinations include the El Camino Real commercial corridor, the downtown district along Santa Cruz Avenue, the Civic Center on Laurel Street, the Caltrain Station, the US Geological Survey and other office parks along Middlefield Road, the Sun Microsystems campus along Bayfront Expressway, the Stanford Linear Accelerator Center on Sand Hill Road, the Veterans Administration Hospital on Willow Road, and the SRI International office park on Ravenswood Avenue. Other significant destinations include the numerous parks, community centers, and public and private schools located throughout the city, as well as the various recreational cycling routes in the foothills and Santa Cruz Mountains that can be accessed via Sand Hill Road.

Given the city's development pattern, planning for the bicycle network needs to acknowledge that people live everywhere within the developed fabric of Menlo Park, that employment, shopping and recreational destinations are dispersed throughout the city (or in many cases located outside of Menlo Park), and that the bikeway system should provide equal access to and from all areas of the city.

2.1.2. AFFECTED JURISDICTIONS AND AGENCIES

Implementation of the Comprehensive Bicycle Development Plan will require cooperation from numerous jurisdictions and agencies that share policy decisions within areas in and immediately adjacent to Menlo Park. These include the following:

2.1.2.1. City of Palo Alto

The City of Palo Alto is directly south of Menlo Park in Santa Clara County. Palo Alto encompasses about 26 square miles and has a population of 61,200. Palo Alto has an extensive network of bicycle facilities, with bikeway connections into Menlo Park at Sand Hill Road and at bicycle/pedestrian bridges over San Francisquito Creek at San Mateo Drive, Alma Street, and Willow Place. Palo Alto is home to the Stanford Research Park, Stanford Shopping Center, and Stanford Hospital, as well as several large technology firms. Many Menlo Park residents commute daily to work in Palo Alto.

2.1.2.2. City of East Palo Alto

The City of East Palo Alto borders the southeastern edge of Menlo Park. East Palo Alto encompasses about 2.5 square miles and has a population of 29,506. East Palo Alto is primarily a residential community with some industrial and commercial development, including a regional big box shopping center adjacent to US 101/University Avenue. East Palo Alto provides bicycle lanes on University Avenue north of US 101, which connect to the SR-84 bike path in Menlo Park.

2.1.2.3. Stanford University

Stanford University is a private coeducational university that enrolls approximately 7,000 undergraduates and 10,000 graduate and professional students. Stanford has over 8,000 employees, including about 1,700 academic faculty members. Stanford owns 8,180 acres of land near Menlo Park and Palo Alto, including the central campus, residential areas for students, faculty and staff, and large tracts of undeveloped foothill land. Stanford lands lie within six jurisdictions: unincorporated Santa Clara County, Palo Alto, Menlo Park, Portola Valley, Woodside, and unincorporated San Mateo County. Stanford University is a major destination for commuting bicyclists coming from or riding through Menlo Park, both by students and employees of Stanford. Stanford University has a bicycle program run through its Parking and Transportation Department.

2.1.2.4. City of Atherton

The City of Atherton is located to the north of Menlo Park. Atherton's population is 7,194 and is mostly residential as there are no businesses or industry within the city limits. Menlo College is located on the border of Menlo Park and Atherton along El Camino Real. The City of Atherton has adopted the San Mateo County Comprehensive Bicycle Route Plan as its bicycle plan.

2.1.2.5. San Mateo County

San Mateo County encompasses a total land area of approximately 531 square miles, stretching from South San Francisco in the north to Menlo Park in the south, including both the coastal and bay sides of the peninsula. The total population of San Mateo County is about 717,900 residents in 18 cities and towns. San Mateo County is responsible for land use decisions for all unincorporated areas. Some "pockets" of unincorporated County lands are located within Menlo Park, including an area between Coleman Avenue and Bay Road north of the Veterans Administration Hospital, and another area north of Marsh Road and east of Middlefield stretching towards Redwood City. Most

unincorporated County lands are located west of Menlo Park in the Santa Cruz Mountains; these areas include many popular recreational bicycling routes.

2.1.2.6. City/County Association of Governments of San Mateo County

The City/County Association of Governments of San Mateo County (C/CAG) is the designated Congestion Management Agency and Regional Transportation Planning Agency for San Mateo County. C/CAG is responsible for the preparation of the area's Regional Transportation Plan and program manager for the area's Transportation Fund for Clean Air, as well as other regional responsibilities such as waste management and airport land use. The C/CAG Board has the ultimate decisionmaking responsibility and authority for C/CAG and is comprised of members from each City within San Mateo County. C/CAG prepared the San Mateo County Comprehensive Bicycle Route Plan in 2000.

2.1.2.7. California Department of Transportation

The California Department of Transportation (Caltrans) has jurisdiction over the state and federal highway system in California. Highways within Menlo Park under Caltrans jurisdiction include Interstate 280 (I-280), US Highway 101 (US 101), State Route 82 (SR-82), more commonly known as El Camino Real, and State Route 84 (SR-84), the Dumbarton Bridge between Menlo Park and Fremont. Caltrans jurisdiction also includes the interchanges where these highways cross the local street network, including Marsh Road/US-101, Willow Road/US-101, and Sand Hill Road/I-280.

2.1.2.8. Local Schools

Primary and Secondary Schools

Five public school districts serve Menlo Park and the adjacent communities. The Menlo Park City School District (grades K-8) serves portions of Menlo Park, Atherton, and parts of unincorporated San Mateo County. The Ravenswood City School District (grades K-12) serves portions of East Palo Alto and Menlo Park. The Las Lomitas School District (grades K-8) serves portions of Menlo Park and Atherton. The Redwood City Elementary School District (grades K-8) serves portions of Menlo Park and Redwood City. The Sequoia Union High School District includes grades 9-12 for four high schools in the area – many public high school students from Menlo Park attend Menlo-Atherton High School, which is located within the Atherton Town Limits. Menlo Park is also home to a number of private elementary and secondary schools. **Table 2-1** lists all the public and private elementary, middle and high schools located in Menlo Park.

Colleges

Menlo College is located within the Atherton Town Limits on a site that borders Menlo Park along El Camino Real. The main entrance to the college is at the intersection of El Camino Real/Encinal Avenue. Menlo College is a small private college that offers bachelor degrees in management, communications and liberal arts, with a total enrollment of about 600 students.

As discussed above, portions of Stanford University are located within Menlo Park Most of the Stanford academic buildings of the university are situated in Palo Alto; the Stanford Linear Accelerator is the major facility located in Menlo Park. Stanford University enrolls approximately 7,000 undergraduates and 10,000 graduate and professional students, and has about 8,000 employees, including about 1,700 academic faculty members.

Table 2-1
Primary and Secondary Schools serving Menlo Park

School Name	Grades	District	Address
La Entrada Middle School	4-8	Las Lomitas	2200 Sharon Road
Laurel School	K-2	Menlo Park City	95 Edge Road
Encinal School	3-5	Menlo Park City	195 Encinal Avenue
Hillview Middle School	6-8	Menlo Park City	1100 Elder Avenue
Oak Knoll Elementary School	K-5	Menlo Park City	1895 Oak Knoll Lane
Belle Haven Elementary School	K-8	Ravenswood City	415 Ivy Drive
Flood (James) Elementary School	K-8	Ravenswood City	321 Sheridan Drive
Menlo Oaks Elementary School	K-8	Ravenswood City	475 Pope Street
Willow Oaks Elementary School	K-8	Ravenswood City	620 Willow Road
Menlo Atherton High School	9-12	Sequoia Union	555 Middlefield Road
East Palo Alto High School	9-12	Ravenswood City	475 Pope Street
Garfield Charter Elementary School	K-8	Redwood City	3600 Middlefield Road
St Raymond Elementary School	K-8	Private	1211 Arbor Road
Nativity Elementary School	K-8	Private	1250 Laurel Street
Trinity School	K-5	Private	2650 Sand Hill Road
Peninsula School	K-8	Private	920 Peninsula Way
Phillips Brooks School	K-5	Private	2245 Avy Avenue
Mid Peninsula High School	9-12	Private	1340 Willow Road
Beechwood School	K-8	Private	50 Terminal Avenue
German American School	K-8	Private	275 Elliott Drive
Sacred Heart Schools	K-12	Private	150 Valparaiso Ave. (Atherton)
Menlo School	6-12	Private	50 Valparaiso Ave. (Atherton)

2.2. EXISTING BICYCLE FACILITIES

2.2.1. DEFINITION OF BIKEWAYS

The three types of bikeways identified by Caltrans in Chapter 1000 of the Highway Design Manual are as follows. Detailed design guidelines for all three types of bikeways are provided in Appendix A.

Class I Bikeway Typically called a "bike path," a Class I bikeway provides bicycle travel on a paved right-of-way completely separated from any street or highway.

Class II Bikeway. Often referred to as a "bike lane," a Class II bikeway provides a striped and stenciled lane for one-way travel on a street or highway.

Class III Bikeway. Generally referred to as a "bike route," a Class III bikeway provides for shared use with pedestrian or motor vehicle traffic and is identified only by signing.

One of the greatest divergences of opinion lies between those who feel paved bike paths, separated from roadways, should be constructed wherever physically possible, versus those who feel more comfortable riding on streets on lanes or routes. This preference is usually based on personal feeling regarding comfort and safety. In general, Class I bike paths are desirable for recreational uses, particularly by families and children. Class I bike paths are preferred for corridors where there are few intersections or crossings, to reduce the potential for conflicts with motor vehicles.

There are also people who argue whether Class II bike lanes are effective, or conversely, that bike lanes should be installed wherever possible. Bike lanes provide an additional buffer between traffic and sidewalks, aiding pedestrians. When properly designed, bike lanes help improve the visibility of bicyclists. In general, Class II bike lanes are highly desirable for bicycle commute routes.

On streets with low traffic volumes and speeds (under 5,000 vehicles per day, 30 mph), bike lanes may not be needed at all. This is based on the potential for serious conflicts being so low that the cost of installing bike lanes is not warranted. On low-traffic neighborhood streets, Class III bike routes can serve as important connectors to schools and recreational areas such as parks. Class III bike routes may also be desirable on certain commute routes where installing bike lanes is not possible, provided that appropriate signage is installed to alert motorists to the presence of bicycles on the roadway.

Menlo Park's existing bicycle network is shown in **Figure 2-1**. The network consists of both on- and off-street facilities. **Table 2-2** shows the limits and lengths of all existing Class I, II, and III bikeway segments in the city.

2.2.2. EXISTING OFF-STREET BIKE PATHS AND BRIDGES

2.2.2.1. Dumbarton Bridge and Bayfront Expressway Bike Path

A bike path along the south side of the Dumbarton Bridge connects Menlo Park with Fremont. The path continues along the south side of Bayfront Expressway to Willow Road. West of Willow Road, the path continues on the north side of Bayfront Expressway to the Bayfront Park entrance at Marsh Road. This bike path is a segment of the San Francisco Bay Trail. From the main Bay Trail, a spur path loops around the Sun Microsystems campus. This spur path extends along the north side of Bayfront Expressway from University Avenue to the Sun campus, follows the perimeter of the Sun property, and connects to the main Bay Trail segment on the north side of Bayfront Expressway at Willow Road.

The bike path along Bayfront Expressway is a segment of the Bay Trail that begins at Bayfront Park and continues east over the Dumbarton Bridge.

2.2.2.2. Bayfront Park Bike Paths

A network of bike paths and walking trails exists within Bayfront Park, located at Bayfront Expressway and Marsh Road. The main Class I Bay Trail alignment wraps around the outer perimeter of Bayfront Park, past salt ponds and sloughs. Extending from the main Bay Trail, a network of paths cover the hills of the park, ranging from old paved landfill roads, to unpaved

bike/walking paths, to narrow footpaths. These bicycle facilities provide an excellent location for recreational and family cyclists, particularly those with children, to ride on a network of trails with flat to moderate terrain and scenic views of the Bay.

2.2.2.3. Alpine Road Class I

A short Class I segment and undercrossing extends beneath Alpine Road near San Francisquito Creek, adjacent to the Stanford Golf Course. This bikeway facility provides an off-street connection to Sand Hill Road through this constrained roadway segment.

2.2.2.4. San Francisquito Creek Bicycle and Pedestrian Crossings

There are three bicycle and pedestrian overcrossings of San Francisquito Creek connecting Menlo Park to Palo Alto: San Mateo Drive, Alma Street, and Willow Place. These bridges provide important off-street connections for cyclists and pedestrians who wish to avoid the busy roadway crossings at Middlefield and El Camino Real.

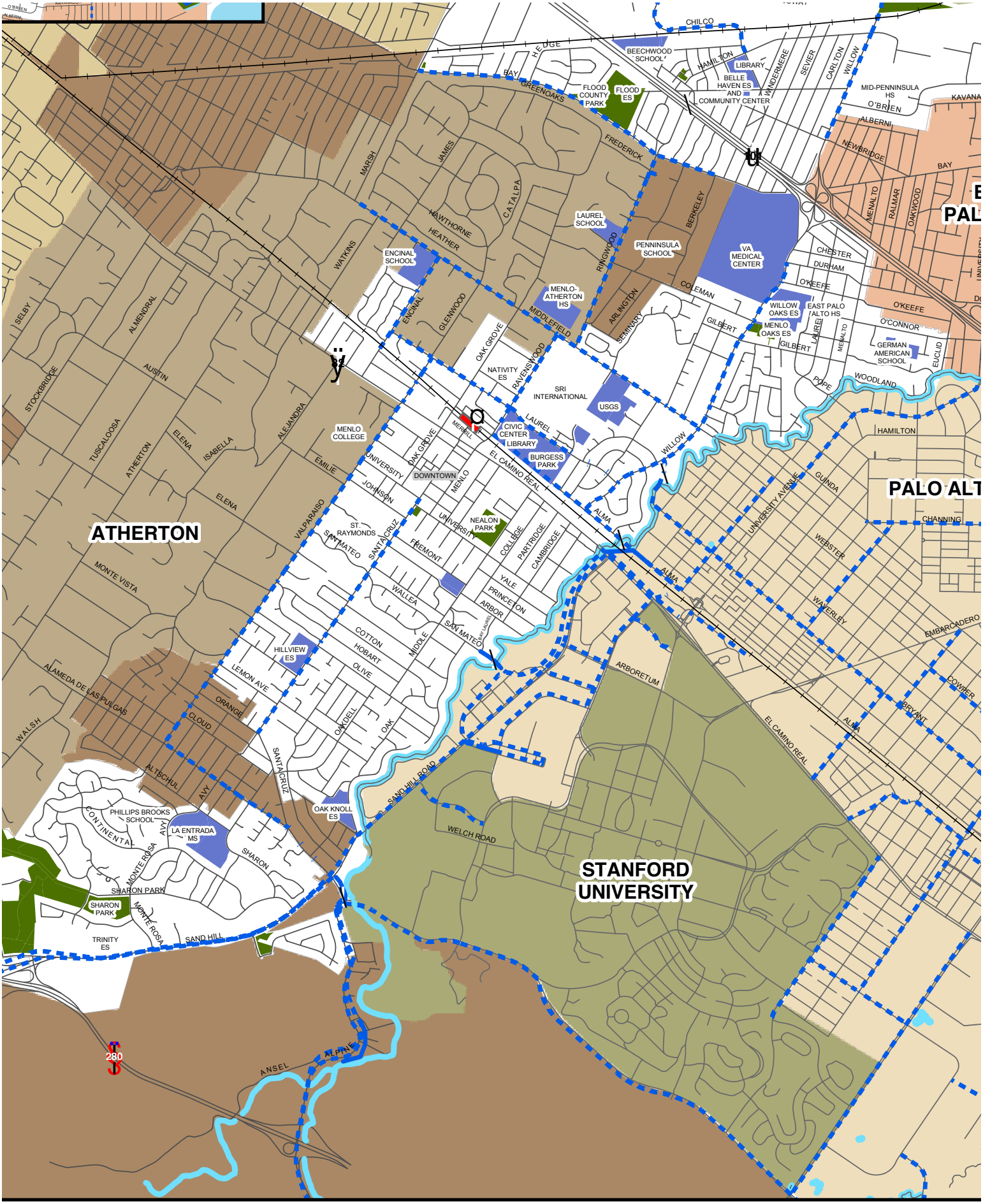
2.2.2.5. Ringwood Avenue Bicycle/Pedestrian Overcrossing

A bicycle/pedestrian overcrossing of US-101 is located between Ringwood Avenue and Pierce Street. Both approaches to this facility are served with "corkscrew" spiraling ramps that have been noted by users as having some visibility and safety concerns. This facility provides an important off-street connection for cyclists and pedestrians who wish to avoid the busy US-101 interchanges at Willow and Marsh Roads.

Table 2-2
Index of Existing City of Menlo Park Bikeways

Name	From	To	Class	Length (mi.)
Bayfront Expressway	Dumbarton Bridge	Marsh Road	I	2.59
Alpine Road	San Francisquito Creek	Sand Hill Road	I	0.24
Sand Hill Road	I-280	Santa Cruz Avenue	II	1.28
Alpine Road	I-280	Sand Hill Road	II	1.15
Alameda De Las Pulgas	Valparaiso	Sand Hill Road	II	0.65
Valparaiso	Alameda De Las Pulgas	El Camino Real	II	1.77
Glenwood	El Camino Real	Middlefield		0.62
Santa Cruz	Avy/Orange	University	II	1.48
Encinal	Laurel	Middlefield	II	0.38
Ravenswood	Middlefield	Laurel	II	0.37
Middlefield	Marsh	Willow	II	1.76
Ringwood	Middlefield	Bay	II	0.88
Bay	Marsh	Berkeley	II	1.40
Willow	Alma	US-101	II	1.51
Willow	US-101	Bayfront Expressway	II	0.84
Chilco	Constitution	Harrison	II	0.63
Laurel	Encinal	Burgess	II	1.10
University	O'Brien	Bayfront Expressway	II	0.62
Santa Cruz	Avy	Sand Hill	III	0.10
Laurel	Burgess	Willow	III	0.10

Source: City of Menlo Park, Bicycle-Related Improvements Plan Map, December 1999; field checked in 2004



EWAYS

LAND USE

\ EXISTING BIKE/PED BRIDGE OR UNDERCROSSING

2.2.3. EXISTING ON-STREET BIKE LANES AND ROUTES

Menlo Park has a partially completed bikeway network comprised almost entirely of on-street bike lanes, as shown in Figure 2-1. Several key Class II segments exist, notably on Willow Road, Sand Hill Road, Santa Cruz Avenue, Valparaiso Avenue, and Middlefield Road. Some streets in the network are discontinuous or have gaps, such as Ravenswood Avenue west of Laurel, due to changes in the roadway width. There are no designated Class III neighborhood bike routes – the only existing Class III facilities are located on Laurel Avenue between Waverly and Willow, and on Santa Cruz Avenue between Avy and Sand Hill Road. Both of these Class III facilities serve as short connector segments between existing Class II bike lanes.

2.2.4. SIGNAGE

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. Currently, Menlo Park uses standard Caltrans bikeway signage, although many facilities lack signage entirely. The City does have non-standard "Shared Right Lane" signage installed along Santa Cruz Avenue and Ravenswood Avenue where the bike lanes end. These signs can be effective in alerting motorists to the presence of bicyclists in shared lane situations, and thus enhancing bicycle safety in areas where installing bike lanes is not feasible.

In terms of wayfinding, there is almost no directional signage provided along bikeways in Menlo Park. Notable exceptions are the bike bridges at Willow Place and San Mateo Drive, which are signed from nearby bike routes. However, most local street connections and continuous bikeway routes are not identified. There is also no directional signage for major destinations, such as the Caltrain station or Stanford University. The lack of good directional signage is considered to be a constraint to bicycling in Menlo Park. Particularly for Class III bike routes, which may follow curving neighborhood streets and occasionally shift a block or two in either direction, the lack of clear directional signage can be confusing for inexperienced cyclists. Destination signage helps to clarify routes, particularly in locations where two routes cross.

The "Shared Right Lane" sign on EB Ravenswood Avenue was installed to enahnce the safety of bicyclists approaching the Caltrain railroad crossing where the bike lanes end and the auto lanes merge.

2.2.5. BICYCLE DETECTOR LOOPS

Bicycle detector loops (BDLs) are sensors that activate traffic signals when a bicyclist positions his/herself where a loop detector is installed, in bicycle or auto travel lanes at signalized intersections. There are currently 107 BDLs installed at 34 intersections throughout the City of Menlo Park as shown in **Table 2-3**. While BDLs facilitate faster and more convenient bicycle trips, if they aren't calibrated properly, or stop functioning, they can frustrate cyclists waiting for signals to change, unaware that the BDL is not working. The City of Menlo Park should develop a regular maintenance program to ensure the intended benefits of BDLs for bicycle travel. In addition, all BDL locations should be marked by a pavement stencil. The stencils wear off and should be repainted when needed. Chapter 5 provides recommendations on the structure of a BDL program.

2.2.6. BICYCLE PARKING

Bicycle parking is an important component in planning bicycle facilities and encouraging people to use their bicycles for everyday transportation. Bicycles are one of the top stolen items in most communities, with components often being stolen even when the bicycle frame is securely locked to a rack. Because today's bicycles are often high-cost and valuable items, many people won't use a bicycle unless they are sure that there is secure parking available at their destinations. In California, bicycle parking facilities are classified as follows:

2.2.6.1. Class I Parking – Long Term

Class I bicycle parking facilities accommodate bicycles of employees, students, residents, and others expected to park more than two hours. This parking is provided in a secure, weather-protected manner and location. Class I bicycle parking includes a bicycle locker or a secure area like a 'bike corral' that may be accessed only by bicyclists. The new "day locker" (bike lid, eLocker, etc.) is a new bicycle locker concept that has gained recent popularity because it requires minimal program administration. These lockers allow for multiple users in the same day, therefore allowing these lockers to function similar to racks.

2.2.6.2. Class II Parking – Short-Term

Class II bicycle parking facilities are best used to accommodate bicycles of visitors, customers, messengers, and others expected to depart within two hours. This parking is provided by bicycle racks, which provide support for the bicycle but do not have locking mechanisms. Racks are relatively low-cost devices that typically hold between two and eight bicycles, allow bicyclists to securely lock their frames and wheels, are secured to the ground, and are located in highly visible areas. Racks should not be designed to damage the wheels by causing them to bend. Bike racks should be located at schools, commercial locations, and activity centers such as parks, libraries, retail locations, post offices, churches, and civic centers, or anywhere personal or professional business takes place.

2.2.6.3. Menlo Park Bicycle Parking Facilities

Inverted-U style bicycle racks are installed at various locations in downtown Menlo Park, as listed in **Table 2-4**. There is currently a bicycle parking cage at the Menlo Park Caltrain station. This bike shelter is a locked and covered cage with racks providing parking for about 20 bicycles. The bike shelter is managed by Caltrain; cyclists who wish to use the cage must contact Caltrain to obtain a key. There have been complaints that potential users have difficulty getting keys and that the phone number for information is no longer posted at the shelter. Based on field visits, the shelter appears to be underutilized, with only a few bicycles inside during weekdays.

The Caltrain Bike Shelter facility is currently underutilized due to security concerns and difficulty in obtaining keys from the facility manager.

Table 2-3
Bicycle Detector Loop Locations

Street Intersection	NB Approach			SB Approach			EB Approach			WB Approach		
	Left	L/T	Thru	Left	L/T	Thru	Left	L/T	Thru	Left	L/T	Thru
Sand Hill/Addison-Wesley		X			X		X			X		
Sand Hill/Saga		X			X		X			X		
Sand Hill/Banner		X			X		X			X		
Sand Hill/Sharon Park	-	-	-	X			X			X		
Sand Hill/Oak	-	-	-	X								
Sand Hill/Santa Cruz	X		X	X		X	X		X	X		X
Santa Cruz/Junipero Serra					X		-	-	-	X		
Santa Cruz/University	X									X		
Laurel/Oak Grove		X			X			X			X	
Laurel/Ravenswood	X		X		X		X			X		
Middlefield/Ravenswood	X						X			-	-	-
Middlefield/Ringwood	X			X			X		X	X		
Middlefield/Willow	X		X	X		X	X		X			X
Willow/Gilbert	X		X	X		X						
Willow/Coleman		X			X							
Willow/Durham	X		X		X		X			X		
Marsh/Bay		X			X					X		
Marsh/Bohannon/Florence	X		X		X		X			X		
Marsh/Scott/Rolison		X			X		X			X		
Sand Hill Road/Sand Hill Circle/I-280 NB Off Ramp						X						
Median Refuge of Sand Hill Road/Sand Hill Circle and I-280 NB Off Ramp		X		X			-	-	-	-	-	-
El Camino Real/Encinal								X			X	
El Camino Real/Valparaiso/ Glenwood							X		X	X		X
El Camino Real/Oak Grove							X		X	X		X
El Camino Real/Santa Cruz							X		X	X		X
El Camino Real/Ravenswood							X		X	X	X	
El Camino Real/Roble								X		-	-	-
El Camino Real/Middle							X			-	-	-
El Camino Real/Cambridge								X		-	-	-
Willow/Bay	-	-	-	X								
Willow/Newbridge	X		X	X		X						
Willow/O'Brien		X		-	-	-						
Willow/Ivy	-	-	-		X							
Willow/Hamilton		X			X							

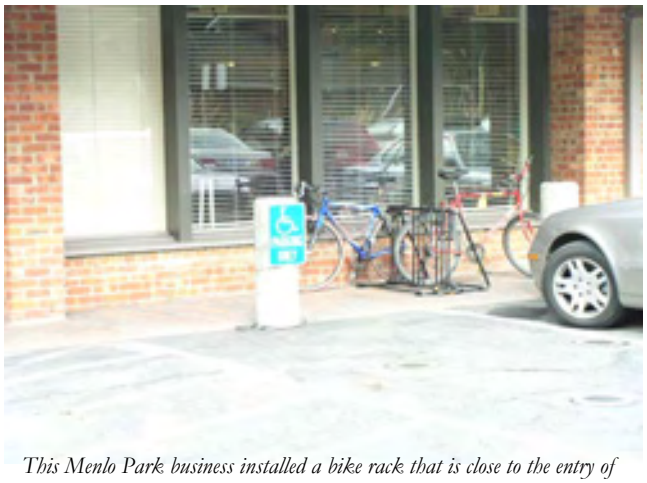
Sources: City of Menlo Park, March 2004
Note: L/T = Combined Left/Through lane

Table 2-4
Downtown Menlo Park Bicycle Rack Locations

Location Street	Adjacent Streets	Number of "Inverted U" Racks
Menlo Avenue	Curtis/Chestnut	1
University Drive	Santa Cruz/Menlo	1
University Drive	Santa Cruz/Oak Grove	1
Santa Cruz Avenue	University/Johnson	1
Santa Cruz Avenue	University/Evelyn	2
Santa Cruz Avenue	Evelyn/Crane	1
Santa Cruz Avenue	Chestnut/Curtis	1
Santa Cruz Avenue	Curtis/Doyle	2
Doyle Street	Santa Cruz/Menlo	1
Chestnut Street	Santa Cruz/Oak Grove	1
Crane Street	Santa Cruz/Oak Grove	1
Crane Street	Santa Cruz/Menlo	1
Menlo Avenue	Chestnut/Curtis	1
Oak Grove Avenue	Hoover/El Camino Real	1

Source: City of Menlo Park, March 2004

There are no bicycle parking requirements in the Menlo Park Municipal Code, therefore it is up to the individual businesses to provide racks for their employees and/or customers. Although there is no mandatory policy regarding the installation of bicycle parking racks, there are recommendations for the installation of bicycle racks in the city's Traffic Demand Management program. Merchants can, but rarely do, put in a request to the City to have bicycle racks installed outside their business free of charge. Menlo Park currently has about a half-dozen "Inverted U" bicycle racks available to be installed upon request. Most public schools in Menlo Park provide bicycle parking facilities as well.



This Menlo Park business installed a bike rack that is close to the entry of the building. However, the design of the rack is a "wheelbender" type that supports the wheel only and not the frame, and bikes placed along the outside could be hit by parking cars.

A number of major employers in Menlo Park provide bicycle parking and shower facilities for use by bicyclists and other non-motorized commuters. **Table 2-5** contains a list of Menlo Park's largest employers, and a summary of whether they provide bicycle racks and showers for their employees.

Table 2-5
Provision of Bicycle Racks and Showers at Major Employers

Employer Name	Racks?	Showers?	Number of Employees
Sun Microsystems	Yes	Yes	3,500
Stanford Linear Accelerator Center	Yes	Yes	2,000
SRI International	Yes	Yes	1,400
Tyco Electronics	Yes	Yes	1,200
U.S. Geological Survey	Yes	Yes	600
E*Trade	Yes	Yes	565
City of Menlo Park	Yes	Yes	200
Nuance Communications	Yes	Yes	200

Sources: City of Menlo Park, March 2004
Rack and Shower information based on Alta Planning + Design telephone survey, March 2004

2.2.7. BIKEWAY SUPPORT FACILITIES

For the purposes of this Plan, bicycle support facilities refer to end-of-trip facilities that would encourage bicyclists to commute to work or other activities that require one to "clean up" after a ride. Typically, these amenities include showers and clothing locker facilities and can be located at places of employment. Such facilities are most often provided by building owners or tenants for use by those who work in the building. Although health clubs provide showers and clothing lockers, they are only available to their members.

Bicycle shops are important for bicyclists making trips between urban areas in the event they suffer an equipment failure and need repair parts or service. Parks and rest stops offer cyclists water, a place to sit or rest, and restroom facilities. Transit transfer stations extend the range cyclist can commute. Locations to shower and change clothes make commuting a more viable alternative.

2.3. BICYCLE FACILITY MAINTENANCE

Currently, the maintenance of Menlo Park's bikeways facilities consists of regular street sweeping of roadways with Class II or Class III bicycle facilities. In addition, the bicyclists can report hazardous road conditions or make other suggestions for improving the bicycle facilities by contacting city staff via the city's website (http://www.menlopark.org/commissions/com_bicycle .html). Other maintenance activities are conducted on an as-needed basis.

Class II bike lanes on Bay Road lack signage and need re-striping and stenciling. Following a rainstorm the bike lane was covered with wet leaves in many places.

2.4. PAST BICYCLE PROGRAM EXPENDITURES

The City of Menlo Park's past bicycle program expenditures totaled about $764,800 between 1997 and 2002. The cost of completing the Comprehensive Bicycle Development Plan in 2004 will be about $40,000. **Table 2-6** lists the past expenditures of the bicycle program per project.

Table 2-6
Past Bicycle Program Expenditures

Project Name	Year	Cost
San Mateo Bicycle Bridge Replacement	1997-1998	$160,000
Encinal Railroad Crossing Improvement	1998-1999	$60,000
Glenwood Railroad Crossing Improvement	1998-1999	$60,000
Oak Grove Railroad Crossing Improvement	1998-1999	$60,000
Ravenswood Railroad Crossing Improvement	1998-1999	$60,000
Traffic Signal Bicycle Detection Project	2000-2001	$15,600
Willow Place Bicycle Bridge Replacement	2001-2002	$273,000
Alma Street Bike Lanes	2001-2002	$22,200
Caltrain Bike/Ped Undercrossing Feasibility Study	2002	$54,000
Comprehensive Bicycle Development Plan	2004	$40,000
Total	-	*$804,800*

Source: City of Menlo Park, Transportation Division, October 2004

2.5. ENCOURAGEMENT AND EDUCATION PROGRAMS

The City of Menlo Park offers bicycle education and improvement programs through the Police Department and by contracting with Safe Moves. The Police Department stages three to four bike rodeos a 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. The Police Department also combines a charitable bicycle helmet distribution program with enforcement efforts. Helmets are donated to the Police Department by the local Kiwanis Club. In addition to distributing helmets at the bike rodeos, police will issue a warning ticket to juveniles riding bicycles without a helmet. The offending juvenile can return the warning ticket, signed by the parent or guardian, in exchange for a free helmet.

Safe Moves is an organization under contract with the City of Menlo Park to provide program services geared towards increasing the awareness of bicycle and pedestrian safety among elementary school students and their parents. They conduct several school workshops a year at the elementary schools in Menlo Park. They also conduct parent workshops and organize school-based traffic safety rodeos for students at elementary schools.

2.6. MULTI-MODAL CONNECTIONS

Multi-modal refers to the use of two or more modes of transportation in a single trip (i.e., bicycling and riding the bus or train). Improving the bicycle-transit link is an important part of making bicycling a part of daily life in Menlo Park. Linking bicycles with mass transit, especially Caltrain commuter trains, buses, and shuttle services, overcomes such barriers as lengthy trips, personal security concerns, and riding at night or in poor weather.

Samtrans and VTA buses equipped with bike racks provide for multi-modal connectivity throughout Menlo Park and the region. Above, the VTA #22 bus provides service between the Menlo Park Caltrain station and Eastridge Mall in San Jose.

Making the multi-modal connection consists of two key elements: providing bicycle parking facilities at bus stops and bike racks on trains and buses. Two other components include improving bikeways that link with transit facilities and stops, and encouraging the use of multi-modal programs. Bicycling to transit, in lieu of driving, benefits the community by reducing air pollution, reducing the demand for parking, reducing energy consumption, and reducing traffic congestion with relatively low investment costs.

Existing multi-modal connections in Menlo Park are especially important when considering regional trip opportunities. A large number of Menlo Park residents work at Stanford University, in Silicon Valley and San Francisco, all areas served by direct commuter rail service on Caltrain. Bus connections to the Millbrae BART station can be made via SamTrans, or to the Union City BART Station via the Dumbarton Express, providing access to Alameda and Contra Costa Counties. Ensuring adequate bicycle access on these connections will extend the range of individuals at both ends of the trip.

2.6.1. CALTRAIN SERVICE AND SHUTTLES

Caltrain operates commuter rail service along the San Francisco Peninsula between San Francisco and San Jose, with weekday commute-hour service to Gilroy. Caltrans operates about 80 weekday trains per day. Caltrain is owned and operated by the Peninsula Corridor Joint Powers Board (JPB), which consists of three members from each of the JPB partners: San Francisco, San Mateo, and Santa Clara Counties. The San Mateo County Transit District (SamTrans) is the managing agency for Caltrain. The Menlo Park Caltrain station is located along Merrill Street, at the eastern terminus of Santa Cruz Avenue.

To facilitate commuter travel to the Caltrain station, Caltrain operates shuttles from the station to stops on Willow Road and Marsh Road. Major employers also provide shuttle service to the Caltrain stop. As previously stated, there is a locked bike shelter located at the Menlo Park Caltrain station stop which is owned and operated by Caltrain.

Bicycles are allowed on every Caltrain train, every day, up to a maximum of 32 bikes per designated bike car, no permit required. All trains have at least one bike car; a second bike car is provided

whenever possible. Boarding of bicycles is in the designated bike car and is on a first-come, first-served basis only. If a bicyclist boards the train and it is full, the bicyclist will have to get off and await the next train. Today Caltrain carries almost 2,000 bikes each weekday.

2.6.2. SAN MATEO TRANSIT SERVICE

Bus service within Menlo Park and north throughout San Mateo County is provided by the San Mateo County Transit District (SamTrans). SamTrans operates along major corridors in Menlo Park and connects to surrounding cities to the north, between Menlo Park and San Francisco. All SamTrans buses are equipped with bicycle racks that have a capacity of two bikes. If the racks are full up to two additional bikes may be allowed inside the bus, depending on passenger load. The only requirement for use of racks is that the bicyclist is able to load and unload the bike without assistance from the bus operator.

2.6.3. VALLEY TRANSPORTATION AUTHORITY

The Valley Transportation Authority (VTA) provides transit service for Santa Clara County and is an important service for regional transit connectivity given Menlo Park's location on the border between Santa Clara and San Mateo Counties. All VTA buses can carry two bicycles on the front-loaded racks of buses, as well as two bicycles inside the bus at to the driver's discretion. VTA bus line 22 stops at the Menlo Park Caltrain station.

2.6.4. MENLO PARK SHUTTLES

The Menlo Park Midday Shuttle Service and Stanford Marguerite Shuttle service both provide free transportation to and from several destinations in Menlo Park and Palo Alto including the Stanford Shopping Center, downtown Menlo Park, Menlo Park Caltrain station, and Stanford Medical Center. The Menlo Park Shuttle services do not provide bicycle racks on their vehicles.

2.6.5. DUMBARTON EXPRESS SHUTTLE

The Dumbarton Express shuttle provides bus service between Palo Alto and the Union City BART station. The Express shuttle has one stop in Menlo Park at the intersection of Middlefield Road and Willow Road. The Dumbarton Express shuttle service can carry two bicycles on its front racks.

2.7. MENLO PARK NEIGHBORHOOD TRAFFIC MANAGEMENT PROGRAM

In 2004 the City of Menlo Park has initiated development of a Neighborhood Traffic Management Program (NTMP) to provide consistent citywide policies for traffic management to ensure equitable and effective solutions for traffic calming and other traffic management issues. The goals and objectives of the NTMP include producing adopted site-specific or area plans that will improve local residents' sense of well-being about their neighborhood streets while giving them the opportunity to identify safety and calming needs and to have a voice in the selection of traffic management

measures to be implemented in their neighborhood. The Menlo Park City Council approved the NMTP document on November 16, 2004.

Traffic calming goals and devices can both conflict and complement bikeway safety and facilities. For example, traffic calming devices such as "chokers" or traffic islands can succeed in slowing auto traffic by narrowing the effective width of the auto travel lanes. But these devices can also narrow the space between bicyclists and auto at this narrow roadway points, compromising a bicyclist's safety. However, if well-designed measures taking into account the presence of bicyclists in the roadway are installed at the appropriate locations, auto speeds can be reduced and bicycle safety will not be compromised and may even improve with the lower traffic speeds. Planning for the presence of bicyclists and a comprehensive understanding how traffic calming measures can satisfy bicyclist needs as well should be integrated into the NTMP process.

3. PLANNING AND POLICY CONTEXT

This section provides an overview of planning and policy documents of Menlo Park, San Mateo County and adjacent jurisdictions that are relevant to the Comprehensive Bicycle Development Plan.

3.1. CITY OF MENLO PARK

3.1.1. CITY OF MENLO PARK GENERAL PLAN

The City of Menlo Park's General Plan (1994) provides a set of directives and guidelines regarding future development in Menlo Park. The General Plan contains maps showing existing and proposed land uses within the City planning limits. **Figure 3-1** shows the Menlo Park General Plan Land Use Diagram. While there are no significant proposed changes of land use in Menlo Park, major planned projects include the following listed in **Table 3-1**.

Table 3-1
Index of Currently Planned Projects in Menlo Park

Project Address	Type of Use	Size	Previous Type of Use	Previous Use Size
525 El Camino Real	Commercial	77,396 sf	Commercial	83,292
3633 Haven Avenue	Industrial	96,403 sf	Industrial	5,597
2498 Sand Hill Road	Office	8,600 sf	N/A	N/A
1283 Willow Road	Office, Retail	8,896 sf	N/A	N/A
110 Linfield Drive	Residential, Office	23 du	Office	17,500 sf
175 Linfield Drive	Residential, Office	36 du	Office	38,000 sf
297 Terminal Avenue	Residential	22 du	Residential	1 du
505-557 Hamilton Avenue	Residential	50 du	NA	NA
1421-1425 San Antonio Way	Residential/Office	5 du	Residential	1 du
996-1002 Willow Road	Residential	13 du	Residential, vacant	1 du, 3,146 sf
1460 El Camino Real	Residential	16 du	Commercial	NA
1702-1706 El Camino Real	Residential	36 du	Restaurant, Office	8,500 sf
Derry Lane	Residential, Commercial	136 du, 17,500 sf	Commercial	21,290 sf

Source: City of Menlo Park Community Planning Division, February 2004
Notes: sf = square feet; du = residential dwelling units

Although Menlo Park does not currently have an adopted Bicycle Plan, the General Plan provides a discussion of a number of bicycle issues and needed improvements. The General Plan provides an existing bicycle related facilities map and a potential bicycle related facilities map.

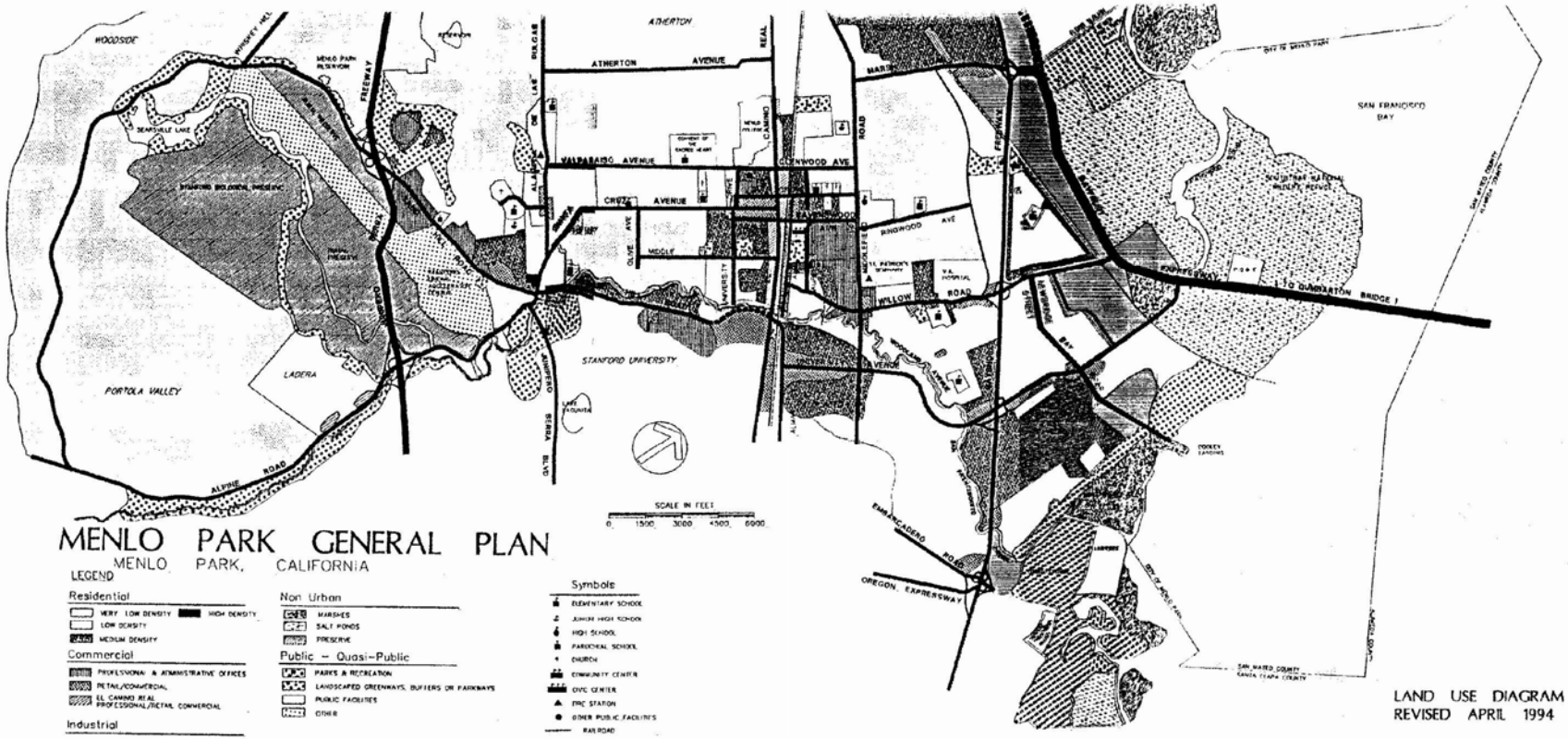


Figure 3-1: Menlo Park General Plan Land Use Map

Menlo Park Comprehensive Bicycle Development Plan

Goals and policies of the Menlo Park General Plan related to development of a comprehensive citywide bikeway network include:

Goal II-A: To maintain a circulation system using the Roadway Classification System that will provide for the safe and efficient movement of people and goods throughout Menlo Park for residential and commercial purposes.

Policy II-A-12: The City shall endeavor to provide for the safe, efficient, and equitable use of streets by the pedestrians and bicyclists through good roadway design, maintenance, and effective traffic law enforcement.

Goal II-D: To promote the use of bicycle as a commute alternative and for recreation.

Policy II-D-1: The City shall endeavor to maintain or improve roadway maintenance through debris removal, intersection sight clearance and pavement quality on all streets and highways except those where bicycle access is prohibited.

Policy II-D-2: The City shall, within available funding, work to complete a system of bikeways within Menlo Park.

Policy II-D-3: The design of streets within Menlo Park shall consider the impact of street cross section, intersection geometrics and traffic control devices on bicyclists.

Policy II-D-4: The City shall require new commercial and industrial development to provide secure bicycle storage facilities on-site.

Policy II-D-5: The City shall encourage transit providers within San Mateo County to provide improved bicycle access to transit including secure storage at transit stations and on-board storage where feasible.

Implementation Program II-12: The City shall develop a comprehensive traffic signs and pavement marking program that documents current conditions, identifies design and standards deficiencies, and proposes an action plan detailing steps to implement the program.

Implementation Program II-12: The City shall review the potential bicycle-related improvements identified in the General Plan. Potential improvements in the General Plan or others identified by the City that are found to be feasible and desirable shall be incorporated into a Bicycle-Related Improvements Program.

In addition to the above goal and policy language, the Menlo Park General Plan identifies several potential bicycle improvement projects, including the following:

- Sand Hill Road Class II bike lanes from Interstate 280 to the eastern planning limit at San Francisquito Creek *(partially completed)*
- Extension of Class II bike lanes on Santa Cruz Avenue from Avy Avenue to Alameda de las Pulgas
- Class II bike lanes on El Camino Real from the northwestern planning limit to Valparaiso Avenue
- Class II bike lanes on Marsh Road from Bayfront Expressway to Bay Road
- Class II bike lanes on Ringwood Avenue from Highway 101 overcrossing to Middlefield Road *(completed from Bay Road to Middlefield Road)*
- Extension of Class II bike lanes on Bay Road to Willow Road
- Class II bike lanes connecting the two existing segments on each side of the Highway 101 crossing on Willow Road
- Class II bike lanes on Willow Place from northern touchdown of San Francisquito Creek crossing to Willow Road
- San Francisquito Creek bicycle/pedestrian crossing at Alma Street *(completed)*
- Extension of Class II bike lanes on Middlefield Road from Ringwood Avenue to Willow Road *(completed)*
- Bike route on San Mateo Drive from San Francisquito Creek to Middle Avenue
- Bicycle and pedestrian undercrossing of El Camino Real from Middle Avenue to Alma Street

3.1.2. MENLO PARK *ZONING ORDINANCE*

The Menlo Park Zoning Ordinance was most recently revised in June 2003. The purpose of zoning ordinance is "to preserve and extend the charm and beauty inherent to the residential character of the city; to regulate and limit the density of population; encourage the most appropriate use of land; to conserve land and stabilize the value of property; to provide adequate open space for light, air and fire protection; to lessen traffic congestion; to facilitate the provision of community facilities; to encourage tree and shrub planting; to encourage building construction of pleasing design; to provide the economic and social advantages of a planned community."

There is currently no bicycle-related language contained in the Menlo Park Zoning Ordinance.

3.1.3. OTHER ONGOING MENLO PARK PLANNING PROJECTS

3.1.3.1. Neighborhood Traffic Management Program

With the goal of developing a citywide formalized process to verify neighborhood level traffic calming needs; coordinating the plan with affected residents; and establishing a set of acceptable improvement measures, in November 2003 the Menlo Park City Council authorized the creation of a citywide Neighborhood Traffic Management Program (NTMP). A steering committee comprising of City staff, police, Transportation and Bicycle commissioners, and a representative from the Menlo

Park Fire District, was formed to advise and provide guidance to the consultant in the development of the City's NTMP plan. The NTMP plan includes an outline of possible traffic management measures, costs, advantages and disadvantages, and special considerations for their implementation. Through this program, the City should ensure that any potential traffic calming installations consider the needs of bicyclists, and that any traffic calming devices placed on the bikeway network are reviewed for potential safety impacts to cyclists. The NTMP plan was approved by the Menlo Park City Council on November 16, 2004.

3.1.3.2. Caltrain Grade Separation

This project evaluates the engineering feasibility of replacing the existing grade crossings of the Caltrain tracks by building grade separations of the roadways from the tracks at Ravenswood, Oak Grove, Glenwood and Encinal Avenues. A feasibility study on this issue was started in July 2002, which extended through mid-2003. In September 2003 the City Council affirmed the concept of split-level grade separations, with tracks partially elevated and roadways partially depressed, as the preferred design. The Council also requested that an alternative of deep undercrossings at Ravenswood and Oak Grove Avenues only be kept under consideration. Next steps include complete refinement and renderings of the preferred alternative, and conducting urban design studies to optimize the fit of the project in the community.

The potential undercrossings on Ravenswood Avenue and Oak Grove Avenue should be designed to provide for continuous bicycle facilities on those streets if possible or designate alternative routes for users of the Oak Grove Avenue and Ravenswood/Menlo Avenue.

3.1.3.3. Sand Hill Road Improvement Project

The City of Menlo Park and Stanford University have entered into an agreement to address traffic congestion problems along Sand Hill Road near Santa Cruz Avenue. The project will include improvements to the intersections of Sand Hill Road/Santa Cruz Avenue and Santa Cruz Avenue/Alpine Road/Junipero Serra Boulevard. The project's goal is to improve area-wide traffic circulation through the construction of 10 major and related road improvements.

The primary improvements to the intersection of Sand Hill Road and Santa Cruz Avenue include two dedicated through lanes, two dedicated left turn lanes, one dedicated right turn lane, through bicycle lanes in each direction. The San Francisquito Creek Bridge widening will include bike lanes in each direction. As part of this project, a new Class I bike path segment will be constructed along the south side of Sand Hill Road between Santa Cruz Avenue and the existing Searsville bike path heading into the Stanford Campus near Oak Avenue.

Stanford University is providing the funding and coordinating the construction. The City of Menlo Park is the lead agency supervising project design and will be inspecting the construction work. Construction of Phase I of the project (new San Francisquito Creek bridge, widening of Sand Hill Road east of Santa Cruz Avenue) began in April 2004 and is expected to finish by December 2004. Construction of Phase II of the project (improvements to the Sand Hill Road/Santa Cruz Avenue and Santa Cruz Avenue/Junipero Serra Boulevard/Alpine Road intersections, improvements to Santa Cruz Avenue between Sand Hill Road and Junipero Serra/Alpine) is expected to begin in early 2005 with completion in December 2005.

Given the large number of cyclists that pass through the intersection of Sand Hill Road/Santa Cruz Avenue when riding to and from the foothills, the City of Menlo Park's supervision and review of this project should ensure that the highest consideration is given to cyclists during project construction activities and in the final intersection design and striping/signage plans.

3.1.3.4. US Highway 101/Willow Road Interchange Reconfiguration

In May 2002, the City of Menlo Park completed a Bicycle and Pedestrian Safety Review of Geometric Layout of the US Highway 101/Willow Road interchange. The Safety Review is currently under review by Caltrans staff. The options presented in the 2002 review include:

- Minimizing or eliminating the use of free-flow movements by installing signalization
- Restrict exits to one lane until beyond the ramp crosswalk(s)
- Replace high-speed exit/entrance curves with right angle corners
- Use bike lanes instead of shoulder stripes
- Limit the grade of Willow Road across the freeway
- Use a bike lane intersection line across ramp exits
- Provide a crosswalk at the Bay Road signal
- Consider median crossing barriers between Bay Road and Newbridge Street
- Consider a Class I path under Willow Road on East Bayshore alignment

3.1.3.5. Menlo Park Bay Trail Feasibility Study

The goal of the Menlo Park Bay Trail Feasibility Study is to identify a feasible alignment for a new trail segment that will connect the existing Bay Trail in the Ravenswood Open Space Preserve to the Bay Trail along the Bayfront Expressway, near the Dumbarton Bridge. The results of the study would enable the City to prepare environmental documents to continue with the subsequent design and construction of the new trail segment. The feasibility study is essential to determine a trail alignment acceptable to all stakeholders, identify construction and any necessary acquisition costs, and outline the steps necessary to begin design and construction of a gap-closing trail. The feasibility study has been completed and was considered by the Menlo Park City Council on November 16, 2004.

3.2. SAN MATEO COUNTY

The *San Mateo County Comprehensive Bicycle Route Plan* was adopted by the City/County Association of Governments of San Mateo County in March 2000. The plan develops goals, objectives, policies and specific projects that were identified as priority projects in the region. The Plan is intended to serve as a guide for planning and implementing regional bicycle facilities for transportation purposes. The plan is currently being updated.

Special emphasis in the County Plan was placed on creating east-west and north-south bicycle facilities that cut through different cities, enhancing regional connectivity. In the County Plan, improvements of these corridors, such as lane-widening or the installation of bicycle loop detectors, in Menlo Park should be considered as high priority projects. The designated north-south corridors include El Camino Real, Alameda De Las Pulgas, and the Bayfront bikeway. The east-west corridors include Alpine Road and Sand Hill Road.

The County Plan identifies two priority projects in Menlo Park: 1) Sand Hill Road and 2) the Willow Road crossing of Highway 101. The County plan identifies a series of potential improvements for the Willow Road crossing of Highway 101 and recommended completing a feasibility study, currently underway, for the project with Caltrans involvement to select the most appropriate treatment.

3.3. SANTA CLARA COUNTY

The Santa Clara Countywide Bicycle Plan promotes a countywide bike route network with several routes that connect to roadways in Menlo Park: Route 1 in the Highway 101/Caltrain Corridor, Route 2 in the I-280 Corridor, Route 13 in the Alma Street/El Camino Corridor, and Route 11 in the existing San Francisco Bay Trail Corridor that runs along the bay shore. Two policies in the Santa Clara Countywide Bicycle Plan relevant to the Menlo Park bicycle planning efforts are:

> Policy A.1: Plan and implement a seamless bicycle and pedestrian travel network that is continuous across city boundaries.
>
> Policy A.4: Coordinate with other federal, state, regional, county and local agencies to plan, design, fund, and construct bicycle projects.

3.4. CITY OF PALO ALTO

The *City of Palo Alto Bicycle Transportation Plan*, adopted in 2003, addresses the importance of regional connectivity and improved cooperation between jurisdictions in planning bicycle facilities. In addition, the Palo Alto bicycle plan suggests cooperating with the City of Menlo Park in conducting joint bicycle safety education programs. Several bikeway projects that connect into Menlo Park were identified in the Palo Alto plan as being important for regional connectivity, including:

- Caltrain undercrossing at Cambridge/Willow – Would provide better access to downtown Menlo Park west of El Camino Real. Would improve and shorten the Willow Road commute route to Stanford University (via San Mateo Drive bike bridge), which currently traverses downtown Menlo Park.
- Alma Street crossing/turning movements at Ravenswood Avenue – Would provide better access to downtown Menlo Park west of El Camino Real.
- Alma/Willow turning movement calming – High-speed left turns onto Willow Road currently intimidate many northbound Alma through-cyclists.

- San Francisquito Creek bridge between El Camino Real and Arboretum, possibly at University Drive – Would connect downtown Menlo Park to Stanford Shopping Center, Palo Alto Transit Center, downtown Palo Alto. Would enable residents of Stanford's new senior facilities near Arboretum/Sand Hill Road to access Menlo Park senior attractions such as Allied Arts.

In addition, the Palo Alto Bicycle Transportation Plan includes the following existing and proposed bikeways connecting to Menlo Park:

- Sand Hill Road Class II bike lane from San Francisquito Creek to El Camino Real.
- Alma Street Class II bike lanes
- Class I bike path in El Palo Alto Park
- Bryant Street Bicycle Boulevard from the San Mateo Drive Bicycle and Pedestrian Bridge landing to East Meadow Drive.
- Bicycle Boulevards from the Chaucer Bridge crossing on University Avenue, and Chaucer Street to Hamilton Avenue to Boyce Avenue.

3.5. STANFORD UNIVERSITY

Stanford University, neighboring Menlo Park is a significant regional destination for employees, students and visitors. The University has a designated campus bicycle and pedestrian coordinator. While the University does not have an official bicycle plan, the school provides many facilities and services for students and faculty who bike to the University and consist of about 20 percent of the total trips to the University. The University is currently compiling a regional map showing recommended roadways, with or without bicycle facilities, to use as routes to Stanford from throughout the region.

3.6. TOWN OF ATHERTON

The Town of Atherton does not have an adopted bicycle plan, and implements policies and projects according to the *San Mateo County Comprehensive Bicycle Route Plan*.

3.7. CITY OF EAST PALO ALTO

The City of East Palo Alto does not have an adopted bicycle plan, and implements policies and projects according to the *Santa Clara Countywide Bicycle Plan*.

4. NEEDS ANALYSIS

This chapter reviews the relationship between bicycle use, commute patterns, demographics, and land use in the City of Menlo Park. It identifies major activity centers and public facilities where bicyclists may be destined, along with the needs of recreational 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 Comprehensive Bicycle Development 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 Menlo Park. The national statistics are based on the 2000 U.S. Census, and the local statistics and information are based on the results of the City of Menlo Park 2001 Employee Commute Survey.

4.1. 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 Menlo Park 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 regional bikeway and transit connections centered around the major activity centers in Menlo Park, including:

- Major employment centers
- Civic buildings such as libraries
- Schools
- Downtown
- Caltrain station
- Stanford University
- Neighborhood parks and regional recreational areas

4.2. COMMUTE PATTERNS

A central focus of presenting commute information is to identify the current "mode split" of people that live and work in Menlo Park. 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 in lessening traffic congestion.

4.2.1. 2000 US CENSUS

Journey to work and travel time to work data were obtained from the 2000 US Census for Menlo Park, San Mateo County, California, and the United States. Journey to work data are shown in **Table 4-1**.

Table 4-1
Journey to Work Data

Mode	United States	California	San Mateo County	Menlo Park
Bicycle	0.4%	0.8%	0.8%	3.7%
Drove Alone	75.7%	71.8%	72.3%	75.5%
Carpool	12.2%	14.6%	12.8%	7.1%
Public Transit	4.7%	5.1%	7.4%	4.0%
Walked	2.9%	2.9%	2.2%	2.2%
Other	4.1%	4.8%	4.5%	7.5%

Source: U.S. Census 2000

As shown, about 3.7% of all employed Menlo Park residents commute primarily by bicycle, which is nine times the national five times the state and San Mateo County averages of 0.8%. This indicates that Menlo Park average of 0.4%, and about already has a relatively high bicycling mode split for commuting purposes. It should be noted that the Census data do not give an indication of the number of people who bicycle for recreation or for utilitarian purposes, such as shopping.

Travel time to work is shown in **Table 4-2**. Travel time is important because it can give an indication of the number of potential new bicycle commuters.

It has been suggested that a reasonable commute time, regardless of mode, is about 30 minutes. Assuming that travel occurs primarily on local roads during peak commute periods, a motor vehicle commute time of 15 minutes or less would be equivalent to about a 30 minute bicycle commute on flat terrain. In other words, converting an under-15 minute motor vehicle commute trip to a bicycle commute trips would still result in a reasonable 30 minute commute time. As shown in Table 4-2, about 27% of Menlo Park residents have a commute time of 15 minutes or less (most of these trips are drive alone, based on the city's mode split data). Total Menlo Park bicycle commuters (562) represent only about 15% of the number residents who live within a 30 minute bicycle ride of their workplace (3,834) – this means there is a substantial number of residents who are taking other modes for these short-distance commutes. While some of these people may be taking transit or

walking, based on the fact that 75% of all Menlo Park residents drive alone to work, it can be assumed that the majority of these short-distance commuters are driving alone to work. Given these data, there is a substantial opportunity to capture some of the short distance (less than 15 minute) motor vehicle commute trips and convert them to bicycle commute trips.

Table 4-2
Travel Time to Work Data

	United States	California	San Mateo County	Menlo Park
Less than 15 minutes	29.4%	25.3%	22.5%	27.0%
15 to 29 minutes	36.1%	35.4%	36.7%	42.0%
30 to 44 minutes	19.1%	20.9%	23.9%	19.1%
45 to 59 minutes	7.4%	8.2%	9.3%	5.1%
60 minutes or more	8.0%	10.1%	7.7%	6.9%

Source: Census 2000

4.2.2. MENLO PARK 2001 EMPLOYER COMMUTE SURVEY

In the spring of 2001, the City of Menlo Park conducted its biennial employee transportation/commute survey to obtain information that allows city staff to monitor the trends of employee commute patterns. The survey asked employees to describe their commute; it was sent to all employers in Menlo Park that have at least 25 employees, and to a sample of smaller employers. For 2001 the total sample size was 776 employers, with individual questionnaires returned by 4,389 employees. Key results of the survey include the following:

- Commute mode choices are as follows: 75% drive to work alone; 13% car/van pool; 6% use public transit; 2% bicycle; and 1% walk. The remainder of Menlo Park employees telecommute. These commute mode choices changed very little from the Commute Survey conducted in 1999.
- Mode choice analyzed by transportation zone suggests that work sites with nearby transit or easy bicycle access significantly reduce the number of drive-alone commuters. The range of drive-alone commuters goes from a high of 89% in the Sand Hill Road zone, where there is minimal transit and bike riding requires hill-climbing, to a low of 65% in the area around the Civic Center and Middlefield Road, where it is flat and safer for bicycles and close to trains and buses.
- Most Menlo Park employees live along the Peninsula, with about 70% living between South San Francisco/Daly City in the north and San Jose in the south. However, fewer than 10 percent of Menlo Park employees surveyed actually live in Menlo Park, with a decrease in Menlo Park employees living in the area between Redwood City and Palo Alto. Also noted was an increase in the number of employees living in the East Bay, with about 16% of employees living between San Leandro and Fremont.
- Average commute distance for respondents was 18.1 miles, and the average commute time was 35 minutes.

While the recommended bicycle network improvements will address the needs of local residents, the employee survey results reinforce the importance of regional connectivity of the bikeway network. Many commuters that bicycle to and from workplaces in Menlo Park may come from surrounding cities, so bikeways that connect regional east-west and north-south corridors are important. The increasing importance of transit connections, as Menlo Park employees are increasingly living in other cities, underlines the need to for transit agencies serving Menlo Park to provide adequate bicycle support facilities such as bike racks on buses and shuttles and secure storage facilities such as bike lockers at transit stations. Providing bicycle links to transit can increase the range of transit commuter who may not live or work within a short walking distance of a transit station. Finally, increased number of Menlo Park employees living in East Bay cities such as Fremont highlights the need to ensure good connections into the City from the Dumbarton Bridge bike path.

4.3. TRIP REDUCTION AND POTENTIAL AIR QUALITY BENEFITS

Based on available census data on mode split, a rough projection of future bicycle ridership in Menlo Park along with the trip reduction and air quality benefits can be made. While these projections are only ambitious estimates, they are important to building an argument for investing in bicycle facilities and programs over time. For example, a traffic model is used to project future roadway improvements over time based on a straight-line assumption about auto use, fuel price, and other factors. The projection on bicycle use and benefits differs only in that it forecasts a minor change in modal choice – not travel behavior – based on a combination of empirical and theoretical data. Research conducted throughout the U.S. by the U.S. Department of Transportation shows a definitive link between bicycle use and (a) age and (b) the miles of bicycle facilities provided. It is possible to derive a causal relationship from this information.

Menlo Park lies within the San Francisco Bay Area Basin which is regulated by the Bay Area Air Quality Management District (BAAQMD). The city is within the South Central Bay District of the Basin. According to the California Air Resources Board, the air quality in the San Francisco Bay Area Basin exceeds the Federal health-based standards for ground-level ozone 35 to 40 days per year, and exceeds the more stringent California standards for ozone more than 100 days per year. The Basin exceeds the Federal standards for airborne particles (PM10) less than five times annually, and exceeds the more stringent California standards for PM10 an average of 90 to 100 days per year. Currently, the Basin is classified as non-attainment for the Federal ground-level ozone and PM10 standards. The Basin is classified as severe non-attainment for the California ozone standard and non-attainment for the California PM10 standard.

According to the BAAQMD, motor vehicles are responsible for approximately 75 percent of the smog in the Bay Area. Reducing vehicle miles traveled (VMTs) is a key goal of the BAAQMD, and fully implementing Menlo Park's bicycle network will help achieve this goal by providing residents safe and functional ways to get to work, school, or shopping without using a motor vehicles. The current number of daily bicycle commuters in Menlo Park is estimated to be 2,918 riders, making a total of 5,836 daily trips and saving an estimated 4,188 VMTs per weekday. With implementation of the Comprehensive Bicycle Development Plan network and programs by 2020, it is estimated that bicycle commuting could increase to 8,132 daily bicycle riders making 16,263 daily trips and saving an approximately 44,854 VMTs per weekday.

Table 4-3 quantifies the estimated reduction in VMT's in Menlo Park following implementation of the bicycle network, and the estimated reduction in air pollutants based on the best available local and national data. Under these estimates, the proposed bikeway system in Menlo Park would increase the bicycle mode share of trips from 3.7 percent in 2000 (U.S. Census) to over 10 percent by 2020. This would result in an estimated decrease of 825 lbs/day of PM10, 2,237 lbs/day of ROG, and 3,256 lbs/day of NOX.

4.4. BICYCLE SAFETY AND ACCIDENT ANALYSIS

Safety is a major concern of both existing and potential bicyclists. For those who ride, safety is typically an on-going concern or even a distraction. For those who don't ride, it is one of the most compelling reasons not to ride. In discussing bicycle safety, it is important to separate out perceived dangers versus actual safety hazards.

Bicycle riding on-street is commonly perceived as unsafe because of the exposure of a lightweight, two-wheeled vehicle to heavier and faster moving automobiles, trucks and buses. Actual collision statistics, however, show that bicyclists face only a marginally higher degree of sustaining an injury than a motorist based on numbers of users and miles traveled. Death rates are essentially the same with bicyclists as with motorists. Bicycle-vehicle collisions are much less likely to happen than bicycle-bicycle, bicycle-pedestrian, or collisions caused by physical conditions. The majority of reported bicycle collisions show the bicyclist to be at fault; generally, these involve younger bicyclists riding on the wrong side of the road or being hit broadside by a vehicle at an intersection or driveway.

Data for reported bicycle collisions were collected for the calendar years 1998 to 2002 in Menlo Park, and are presented in **Table 4-4** below.

Table 4-3
Bicycle Commute and Air Quality Projections

Current Commuting Statistics		**Source**
Menlo Park Population	30,785	*2000 US Census*
Number of Employed Persons	15,237	*2000 US Census*
Number of Bicycle-to-Work Commuters	562	*2000 US Census*
Bicycle-to-Work Mode Share	3.7%	*Calculated from above*
School Children Grades K-8	3,559	*2000 US Census, population ages 6-14*
Estimated School Bicycle Commuters	178	*Calculated based on existing estimates of biking to school*
Number of College Students	1,879	*2000 US Census*
Estimated College Bicycle Commuters	376	*Based on existing estimates of biking to Stanford*
Average Weekday Caltrain Ridership	1,034	*Samtrans, boardings at Menlo Park station*
Number of Daily Bike-Caltrain Users	62	*Bikemap.com survey of Caltrain bike-transit ridership*
Utilitarian Bicycle Trips	1,740	*Calculated from above on existing estimates*
Existing Bicycle Commuters		
Total Number of Bicycle Commuters	2,918	*Total of bike-to-work, transit, school, college and utilitarian bicycle trips. Does not include recreation.*
Total Daily Bicycle Trips	5,836	*Total bicycle commuters x 2 (for round trips)*
Reduced Vehicle Trips per Weekday	4,188	*Assumes 73% of bicycle trips replace vehicle trips for adults/college students and 53% for school children*
Reduced Vehicle Miles per Weekday	16,093	*Assumes average round trip travel length of 8 miles for adults/college students and 1 mile for schoolchildren*
Future Bicycle Commuters		
Number of Future Daily Bicycle Commuters	8,132	*Estimated using increase to 279% of baseline from 2000 Los Angeles County MTA study*
Future Bicycle-to-Work Mode Share	10%	*Calculated from above*
Future Total Daily Bicycle Trips	16,263	*Calculated from above*
Future Reduced Vehicle Trips per Weekday	11,674	*Calculated from above*
Future Reduced Vehicle Miles per Weekday	44,854	*Calculated from above*
Future Reduced Vehicle Miles per Year	388,680	*180 days for students, and 256 days for employed persons*
Future Air Quality Benefits		
Reduced PM10 (tons/weekday)	825	*(.0184 tons per reduced mile)*
Reduced NOX (tons/weekday)	2,237	*(.04988 tons per reduced mile)*
Reduced ROG (tons/weekday)	3,256	*(.0726 tons per reduced mile)*
Reduced PM10 (tons/year)	7,152	*(.0184 tons per reduced mile)*
Reduced NOX (tons/year)	19,387	*(.04988 tons per reduced mile)*
Reduced ROG (tons/year)	28,218	*(.0726 tons per reduced mile)*

Notes:
Sources as noted in the table. For detailed calculations, see "Estimation of Existing Bicycle Usage" spreadsheet provided in ***Appendix G*** *of this Plan.*

Table 4-4
Menlo Park Bicycle Collision Summary 1998-2002

Number of Bicycle Collisions				
Street 1	Street 2	Distance from Intersection (feet)	Type	Year
Bay	Greenwood	528	Injury	2000
Bay	Ringwood	0	Injury	1998
Bayfront Expressway	University	0	Fatal	1999
Bayfront Expressway	Willow	0	Injury	1998
Bayfront Expressway	Willow	0	Injury	1998
Bayfront Expressway	Willow	0	Injury	1999
Blackburn	Willow	35	Injury	2000
Burgess	Middlefield	0	Injury	2002
Carlton	Newbridge	0	Injury	2001
Carlton	Pierce	60	Injury	2001
Chester	Willow	0	Injury	2001
Chilco	Terminal	0	Injury	2002
Durham	Willow	0	Non-Injury	1999
Eastridge	Sharon	0	Injury	2001
El Camino	Alma	50	Injury	2000
El Camino	Buckthorn	100	Injury	2000
El Camino	Cambridge	0	Non-Injury	1998
El Camino	Cambridge	50	Injury	2000
El Camino	El Camino	0	Injury	2001
El Camino	Encinal	0	Non-Injury	2000
El Camino	Glenwood	100	Injury	1998
El Camino	Middle	441	Injury	1999
El Camino	Oak Grove	0	Injury	1998
El Camino	Roble	5	Injury	2002
El Camino	Santa Cruz	0	Non-Injury	2000
El Camino	Valparaiso	50	Injury	2000
Gilbert	Willow	0	Injury	2001
Glenwood	El Camino	20	Injury	2001
Henderson	Ivy	6	Injury	2002
Hollyburne	Newbridge	367	Injury	1999
Ivy	Chilco	200	Injury	1999
Ivy	Chilco	0	Non-Injury	2002
Johnson	Santa Cruz	150	Injury	2000
Junipero Serra	Sand Hill	500	Injury	2001
Laurel	Burgess	0	Non-Injury	2000
Laurel	Oak Grove	150	Injury	2001
Lemon	Stanford	0	Non-Injury	1999
Madera	Pierce	150	Injury	2000
Marcussen	Oak Grove	200	Injury	1998
Marsh	Haven	0	Injury	1999
Menlo	Curtis	60	Injury	2002
Menlo	El Camino	0	Injury	2000
Menalto	O'Keefe	105	Non-Injury	2001
Middle	Claire	50	Non-Injury	1999
Middle	San Mateo	0	Injury	2000

Number of Bicycle Collisions				
Street 1	Street 2	Distance from Intersection (feet)	Type	Year
Middle	University	0	Injury	1999
Middlefield	Middlefield	0	Injury	2002
Middlefield	Ringwood	0	Non-Injury	2002
Middlefield	Santa Margarita	0	Injury	2002
Middlefield	Seminary	290	Non-Injury	2001
Middlefield	Willow	30	Injury	1998
Middlefield	Willow	0	Injury	1998
Newbridge	Sevier	0	Injury	1999
Newbridge	Willow	0	Injury	1999
Newbridge	Willow	0	Injury	2002
Newbridge	Willow	0	Non-Injury	2002
Oak	Pembroke	0	Non-Injury	1998
Oak Grove	Alma	0	Injury	2002
Oak Grove	Alma	0	Injury	2002
Oak Grove	Chestnut	0	Injury	1998
Oak Grove	Chestnut	70	Non-Injury	2000
Oak Grove	Hoover	30	Injury	2002
Oak Grove	Marcussen	0	Injury	2002
Oak Grove	Oak Grove	30	Injury	2002
Partridge	El Camino	0	Injury	2000
Ravenswood	Alma	10	Injury	2000
Ravenswood	Alma	0	Non-Injury	2001
Ravenswood	El Camino	0	Non-Injury	1998
Ravenswood	Laurel	0	Non-Injury	2002
Ravenswood	Marcussen	0	Non-Injury	1998
Ravenswood	Middlefield	528	Injury	2001
Sand Hill	Branner	0	Injury	2001
Sand Hill	Oak	0	Injury	2001
Sand Hill	I-280	1,320	Injury	2000
Sand Hill	Saga	556	Fatal	2001
Sand Hill	Sand Hill	400	Injury	2001
Sand Hill	Sand Hill	75	Injury	2001
Sand Hill	Santa Cruz	0	Injury	2000
Sand Hill	SLAC Entrance	5	Injury	1998
Sand Hill	Stanford	45	Injury	1998
Santa Cruz	Chestnut	25	Injury	1999
Santa Cruz	Cotton	0	Injury	2000
Santa Cruz	El Camino	50	Injury	1998
Santa Cruz	Hillview	0	Injury	2000
Santa Cruz	Junipero Serra	0	Injury	1999
Santa Cruz	Olive	0	Non-Injury	2002
Santa Cruz	University	0	Injury	2001
Santa Cruz	University	101	Injury	2001
University	Alice	0	Injury	2002
University	Plaza 4	0	Injury	1998
Valparaiso	Crane	0	Injury	1999
Valparaiso	Hoover	0	Injury	1998
Valparaiso	Hoover	0	Injury	2001
Valparaiso	Politzer	0	Non-Injury	1998

Number of Bicycle Collisions				
Street 1	Street 2	Distance from Intersection (feet)	Type	Year
Willow	Bay	250	Injury	1998
Willow	Bay	0	Injury	2002
Willow	Bayfront Expressway	0	Injury	2001
Willow	Chester	0	Injury	1998
Willow	Coleman	200	Injury	1999
Willow	Coleman	600	Injury	2000
Willow	Ivy	0	Injury	1999
Willow	Middlefield	0	Injury	1999
Willow	Middlefield	0	Injury	2000
Willow	Middlefield	77	Injury	2001
Willow	Newbridge	0	Injury	1999
Willow	Newbridge	0	Injury	2002
Willow	Willow	0	Injury	1998
Willow	Willow	59	Injury	2000
Willow	Willow	0	Non-Injury	2001

Source: City of Menlo Park, April 2004

As shown, there were 98 bicycle-related collisions reported in Menlo Park from 1998 to 2002. The collision locations are spread throughout Menlo Park. However, of the 98 accidents, 26 (27%) occurred on or near Willow Road and 16 (16%) occurred on or near El Camino Real. Willow Road is the primary existing east-west bikeway in Menlo Park east of El Camino, and is a major commute route for bicyclists and motorists alike. Given that Willow Road already has Class II bike lanes for much of its length, the accident data point to the need to evaluate striping and signing at specific intersections, particularly where cyclists may be maneuvering across vehicle travel or turn lanes.

El Camino Real is the primary north-south arterial through Menlo Park, but currently lacks bicycle facilities. Many cyclists have commented that they prefer to avoid riding on El Camino Real and use alternate routes if possible for through-travel (such as Laurel). However, the large number of commercial destinations along El Camino Real and the fact that the roadway splits through the middle of Menlo Park, necessitates crossing or riding on portions of El Camino for many utilitarian or commuter cyclists. The accident data show that cyclists are currently using El Camino Real despite the lack of dedicated bicycle facilities – therefore, efforts to improve bicycle conditions along El Camino Real, as well as at intersection crossing locations, should be pursued as part of this Plan.

The Menlo Park Police Department enforces all traffic laws, for bicycles and motor vehicles as part of their regular duties. Violations may include bicyclists who break traffic laws, as well as motorists who disobey traffic laws and make the cycling environment more dangerous. The level of enforcement depends on the availability of officers. The Police Department also responds to particular needs and problems as they arise. In addition, an important function of the police department is filing reports for accidents involving bicyclists. The Police Department should keep a record, accessible to the City of Menlo Park transportation planners, on where, when and how collisions between bicyclists and cars and bicyclists and pedestrians occur. The city should consider this incorporate this into bicycle planning efforts in order to improve safety throughout the bicycle network.

4.5. BICYCLIST NEEDS

The purpose of reviewing the needs of bicyclists is twofold: (a) it is instrumental when planning a system that must serve both commuter and recreational user groups; and (b) it is useful when attempting to quantify future usage and benefits to justify expenditures of resources. According to a nationwide 1991 Lou Harris Poll, it was reported that "...nearly 3 million adults (about one in 60) already commute by bike, and projected the number could rise to 35 million if more bicycle friendly transportation systems existed." In short, there is a large reservoir of potential bicyclists who don't ride (or ride more often) simply because they do not feel comfortable using the existing street system and/or don't have appropriate bicycle facilities at their destination.

Key general observations about bicycling needs in Menlo Park include:

- Bicyclists are typically separated between experienced and casual riders. The U.S. Department of Transportation identifies thresholds of traffic volumes, speeds, and curb lanes where less experienced bicyclists begin to feel uncomfortable. For example, on an arterial with traffic moving between 30 and 40 miles per hour, less experienced bicyclists require bike lanes while more experienced bicyclists can comfortably use streets with wide curb lanes.
- Casual riders include those who feel less comfortable negotiating traffic. Others such as children and the elderly may have difficulty gauging traffic, responding to changing conditions, or moving rapidly enough to clear intersections. Other bicyclists, experienced or not, may be willing to sacrifice time by avoiding heavily traveled arterials and using quieter side streets. In some cases, casual riders may perceive side streets (or sidewalks) as being safer alternatives than major through routes, when in fact they may be less safe. Other attributes of the casual bicyclist include cycling shorter distances than the experienced rider and unfamiliarity with many of the rules of the road.
- The casual bicyclist will benefit from route markers, bike lanes, wider curb lanes, and educational programs. Casual bicyclists may also benefit from marked routes that lead to parks, schools, shopping areas, and other destinations.
- Experienced bicyclists include those who prefer the most direct, through route between origin and destination, and a preference for riding within or near the travel lanes. Experienced bicyclists negotiate streets in much the same manner as motor vehicles, merging across traffic to make left turns, and avoiding bike lanes and shoulders that contain gravel and glass. The experienced bicyclist will benefit from wider curb lanes and loop detectors at signals. The experienced bicyclist who is primarily interested in exercise will benefit from loop routes that lead back to the point of origin.
- Bicycles themselves range in cost from about $200 to over $2,000 for adult models. The most popular bicycle types today are the hybrid or mountain bike. These relatively lightweight bicycles feature wider knobby tires that can handle both on-road and off-road conditions, from 10 to 27 gears, and upright handlebars. Advanced versions have features such as front and rear shocks to help steady the rider on rough terrain. The "10-speed" bicycles of years past have evolved into a sophisticated ultra-light "road bike" that is used

primarily by the serious long distance adult bicyclists. These machines feature very narrow tires that are more susceptible to flats and blowouts from debris on the roadway.

- Who rides bicycles? While the majority of Americans (and Menlo Park residents) own bicycles, most of these people are recreational riders who ride relatively infrequently. School children between the ages of about 6 and 14 typically make up a large percentage of the bicycle riders today, often riding to school, parks, or other local destinations on a daily basis, weather permitting. The serious adult road bicyclist who may compete in races, "centuries" (100 mile tours) and/or ride for exercise makes up a small, but important, segment of bikeway users, along with serious off-road mountain bicyclists, who enjoy riding on trails and dirt roads. The single biggest adult group of bicyclists is the intermittent recreational rider who generally prefers to ride on pathways or quiet side streets.

4.5.1. RECREATIONAL BICYCLIST NEEDS

The term "recreational" cyclist covers a broad range of skill and fitness levels. Recreational cyclists in Menlo Park 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 their 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 Cyclists" and "Casual Cyclists," acknowledging that these are generalizations and that the average cyclist may have attributes of both user groups.

Road Cyclists

Road cyclists are those who will bike almost exclusively on street, because roadways are the type of facility that accommodates their desire for higher speeds, longer distances, and few conflicts with other recreational users. Typical trip distances for the road cyclist can range from 10 miles to over 50 miles. While the average road cyclist would likely prefer to ride on roads with little or no traffic, they are generally comfortable riding in traffic if necessary. To this end, a road cyclist will tend to ride in a manner similar to a motor vehicle (e.g. when approaching traffic signals or making left turns). Road cyclists are typically not seeking a recreational destination along the route, as the ride itself is

the recreation. In fact, special cycling clothing and shoes and the lack of a bicycle lock, tends to limit the ability of the road cyclist to park and walk around off the bike.

Due to the relatively narrow width and thin casing of standard road bike tires, road cyclists are often susceptible to flat tires. As such, road cyclists are very concerned about glass, rocks, and other debris on the road or in the shoulder. 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 cyclists will tend to move into the travel lane if any debris is present in the shoulder that might cause a flat tire or other hazard. This can sometimes lead to conflicts with motor vehicles, as many motorists don't understand why a cyclist is riding in the lane if there is a seemingly good shoulder available.

Although very dependent on the fitness level of the rider, topography is less of a limiting factor for road cyclists; in fact, many road cyclists seek out routes that involve challenging and scenic terrain, which is often hilly. For road cyclists in Menlo Park, Sand Hill Road is a very common bicycle route when heading out for rides through Portola Valley or up toward Skyline Drive.

Casual Cyclists

Casual recreational cyclists are those who generally want to ride on off-street bike paths, are seeking a more relaxed cycling experience, and cover shorter trip distances at slower speeds. Casual cyclists will tend to do trips of less than 10 miles in length, and often ride more comfort-oriented bikes, hybrid or mountain bikes. Casual cyclists may ride as a family group, with children, and because they are more likely to ride with others of varying skill and fitness levels, flat topography is generally desired. Casual cyclists are typically not comfortable riding in traffic, and will avoid riding on busy streets when possible, riding on the sidewalk if necessary. Bike routes that extend through low-traffic residential streets are generally acceptable for casual cyclists, even if they are not the most direct route between destinations. Casual cyclists may load their bikes in their cars and drive to a bike path, and are more likely in need of parking areas. Having recreational amenities and features along the route is more important to the casual cyclists, such as drinking fountains, shaded areas, picnic tables, interpretive signs, and scenic vistas. Recreational destinations are also important for casual cyclists, as they provide a place to stop and get off the bike and walk around. To this end, having secure bike parking at destinations is important.

Because of its relatively flat topography, Menlo Park offers many good opportunities for casual and family cyclists, and attractive recreational destinations would include the trail network at Bayfront Park and the Bay Trail. Major barriers would include Highway 101, El Camino Real, and other busy crossings or intersections that might intimidate casual cyclists who are not comfortable negotiating heavy traffic, merging, or lane changes, especially those who go on family rides with young children. Clearly signed bike routes that avoid busy streets and intersections are important to encourage casual cyclists.

4.5.2. COMMUTER BICYCLIST NEEDS

As this plan for enhancing and developing bicycle facilities, and available state and federal bicycle funding is primarily focused on commuting cyclists – those riding to work or school, or for

shopping, errands, and other utilitarian trips – it is important to understand the specific needs of bicycle commuters.

Commuter bicyclists in Menlo Park range from employees who ride to work, a child who rides to school to people, and people riding for recreation or to destinations such as downtown businesses or neighborhood parks. Millions of dollars have been spent throughout the United States attempting to increase the number of people who ride to work or school, with moderate success. Bicycling requires shorter commutes, which runs counter to many of our nation's past land use and transportation policies, which effectively encouraged people to live further, and further from where they work. Access to transit helps extend the commute range of cyclists, but transit systems also face an increasingly dispersed live-work pattern that is difficult to serve. Despite these facts, Menlo Park has the potential to increase the number of people who ride to work or school because of (a) concentrated local employment, (b) a relatively flat topography, (c) a moderate climate, and (d) a high percentage of work commute trips (27%) that are less than 15 minutes in length.

For example, bicycle commuters in the City of Davis have reduced peak hour traffic volumes by over 15 percent -- to the point that many downtown streets that would normally be four lanes of traffic (with no bike lanes) have only two traffic lanes and ample room for bicyclists. While Davis may be an anomaly, national surveys have shown that about 20 percent of the adult population would use a bicycle to ride to work at least occasionally if there were a properly designed bikeway system.

Commuter and student destinations of Menlo Park residents include Stanford University, office parks such as Sun Microsystems, the Stanford Linear Accelerator Center, and SRI International; the Caltrain station; the civic center; hospitals; 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 periods. Enhancing the safety and aesthetic attractiveness of Menlo Park bikeways will help to encourage even more residents to commute on bicycles.

Key commuter needs are summarized below.

- Commuter walking or bicycling typically falls into one of two categories: (1) adult employees, and (2) younger students.
- Commuter trips range from several blocks to one or more miles.
- Commuters typically seek the most direct and fastest route available, with regular adult commuters often preferring to ride on arterials rather than side streets. In Menlo Park, El Camino Real may be an exception to this rule, as the extremely high traffic volumes, relatively narrow lanes, lack of shoulders, and numerous driveways deter even the most experienced cyclists. Unless they have a destination on El Camino Real, many cyclists in Menlo Park have commented that they avoid El Camino and take alternate parallel routes such as Laurel for through travel.
- Unprotected intersection (no traffic control device such as a signal or stop sign) crossing locations are major concerns of all bicycle commuters.

- Commute periods typically coincide with peak traffic volumes and congestion, increasing the exposure to potential conflicts with vehicles.
- Places to securely store bicycles are of paramount importance to all bicycle commuters.
- Major commuter concerns include changes in weather (e.g. rain), riding in darkness, personal safety and security.
- Many younger students use sidewalks for riding to schools or parks, which is acceptable in areas where pedestrian volumes are low and driveway visibility is high. Where on street parking and/or landscaping obscures visibility, sidewalk riders may be exposed to a higher incidence of accidents. Older students who consistently ride at speeds over 10 mph should be directed to riding on street wherever possible.
- Cyclists riding the wrong-way on-street are fairly common and typically account for many recorded accidents, pointing to the need for education programs for both children and adults.

As noted earlier, Menlo Park, like most of California and the country, currently has a bicycle commute mode split of 3.7 percent, which is well above the national average of 0.4 percent.

Commuters and students follow similar paths, which is typically the most direct possible route from origin to destination. For grammar school students, this may consist of residential or collector streets, with few crossings of major arterials. For junior high and high school students, riders may have to cross up to five or six arterials to reach school. For college students and adult commuters, trips are most often under five miles but may be as long as 10 or 15 miles.

Unfortunately, commuters and students need to travel during periods of peak traffic activity, and to destinations that may have high levels of congestion and traffic volumes/speeds. For example, one of the most dangerous parts of a young student's commute is the drop-off zone in front of their school where dozens of vehicles jockey for position.

Once they have arrived at their destinations, bicycle commuters often find no (or poor) 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.

Commuting bicyclists have very obvious and straightforward needs. They require bike lanes or wider curb lanes along all 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. Any other local or employer based incentive to encourage bicycling to work would help to achieve the five-percent commute goal.

Most commute bicycle trips are under five miles, except for those commuters linking to another mode such as Caltrain, Samtrans/VTA buses, or the Dumbarton Express Shuttle. Allowing bicycles on other modes such as rail or bus, or providing bicycle lockers at multi-modal stations help extend

the range of the bicycle commuter. Other bicycle commuters will depend on a well-devised local bikeway network produced by a city in its bicycle transportation plan.

4.6. PUBLIC OUTREACH

Public outreach is an important component of the planning process for the Comprehensive Bicycle Development Plan. Local citizens that ride bicycles for commuting and recreational reasons obviously have a personal interest in the plan as well as valuable insight into specific bicycle needs in Menlo Park.

4.6.1. STEERING COMMITTEE

A Steering Committee comprised of City of Menlo Park staff, project consultant staff, Bicycle Commission and Transportation Commission representatives, and local residents was convened to discuss and review key work products on the Bicycle Development Plan. Steering Committee meetings were held monthly over the course of the Bike Plan process. A list of steering committee members is provided in **Appendix B** to this Plan.

4.6.2. SURVEY

A survey form was prepared to gather information from Menlo Park residents on their current bicycling habits, any problem areas they have identified, and any improvements in the bikeway system they would like to see. The survey was distributed to local cycling groups, bike shops, and available on the City's website. Survey responses were taken during the months of April, May and June. A copy of the survey form and a summary of the responses received are included in **Appendix C** to this Plan.

4.6.3. PUBLIC WORKSHOPS

The Bicycle Plan process included a series of public workshops to receive community input. The first public workshop was held on April 3, 2004, at the Menlo Park Senior Center in Belle Haven. This meeting was intended to gather input on existing bicycling conditions in Menlo Park, and asked participants to discuss what bicycle routes they currently ride, and how those facilities are working. Participants suggested and discussed a variety of proposed improvements to the City's bicycle network, infrastructure, and support programs. The second public workshop was held on May 20, 2004 at the City Council Chambers to present the Draft Bicycle Plan. Following a 30 day public comment period, the Draft Plan and proposed network map were revised to reflect the public input, and a third workshop was held on June 26, 2004 at the Menlo Park Recreation Center to present the Final Comprehensive Bicycle Development Plan. Meeting notices and summary notes from the public workshops are included in **Appendix D** to this Plan.

5. RECOMMENDED BIKEWAY SYSTEM AND IMPROVEMENTS

The recommended improvements for the Menlo Park Comprehensive Bicycle Development Plan consist of a bikeway network and bicycle-related support facilities and programs. The bikeway network includes Class I bike path segments, Class II bike lanes and Class III bike routes linking residential neighborhoods, schools, parks, community centers, libraries, employment centers, commercial and retail areas, and providing regional connections. The recommended bicycle support facilities and programs include bike parking facilities, maintenance programs, Safe Routes to School programs, and educational programs.

The established methodology for selecting a bikeway network for any community begins with the primary effort to receive input from the local bicycling community and local staff familiar with the best routes and existing constraints and opportunities. For this project, a Steering Committee comprised of city staff, Bicycle and Transportation Commissioners, and interested residents was formed to serve as the "sounding board" to discuss existing conditions, the goals of the plan, and the specific improvements recommended here. Steering Committee meetings were held once a month throughout the course of the project. The input of the steering committee was supplemented through formal public workshops, and a survey that was distributed to community members.

The following criteria were used to develop the bicycle network and improvements:

- Existing Bicycling Patterns – Steering committee members, public workshop participants and survey respondents identified preferred bicycling patterns.
- Connectivity – System connectivity, providing access from one bikeway corridor to the next, is important.
- Traffic volumes and travel speeds – Lower volume and lower speed roads are typically preferred by the all cyclists; experienced cyclists may find higher volume and higher speed roads acceptable.
- Amount of side friction (driveways, side streets) – Bicyclists prefer roads that minimize potential side street conflicts.
- Curb-to-curb width – Bicyclists prefer roads with wider riding areas.
- Pavement condition – Bicyclists prefer smooth roadways.
- Access to and from residential areas – Corridors that provide access from residential areas are preferred.

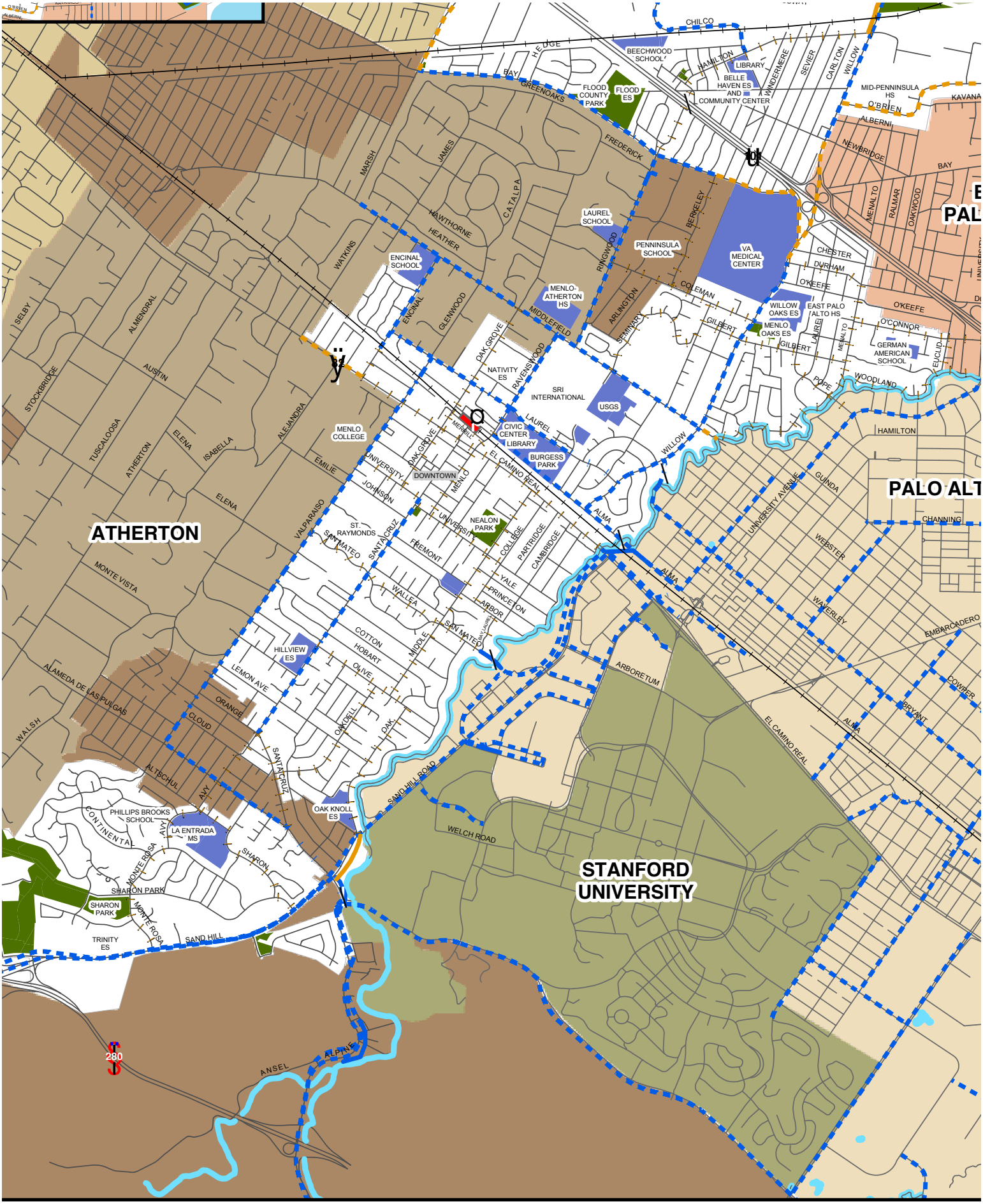
- Number of destinations served – Corridors that maximize the number of destinations served, such as schools, parks, employment centers, and multi-modal terminals, are preferred.
- Topography – Flatter corridors that are on level ground or follow the contours of hills are preferred.
- Integration into the regional system – Connectivity to the regional bikeway system is preferred.
- Adjacent land use – The compatibility with adjacent land uses is important.
- On-street parking – Bicyclists prefer roads that minimize potential conflicts with parked vehicles.
- Existing opportunities such as planned roadway improvements – Integrating recommended bike facility improvements into planned roadway improvements is preferred.
- Routes with intersection protection and minimal delay – Bicyclists prefer corridors that minimize stopping requirements for the bicyclists while maximizing stopping requirements for conflicting vehicle traffic.

Many of the recommended facilities and programs in this chapter resulted directly from input from the Steering Committee and public workshop participants when they discussed the bike routes they regularly ride through Menlo Park and identified locations they viewed as either opportunities or constraints.

5.1. RECOMMENDED BIKEWAY NETWORK

A bikeway network is a system of bikeways that for a variety of reasons – safety, convenience, destinations served, attractiveness – provides a superior level of service for bicyclists. It is important to recognize that, by law, bicyclists are allowed on all streets and roads regardless of whether they are a part of the designated bikeway network. **The bikeway network serves as a tool that allows the City to focus and prioritize bicycle facility implementation efforts where they will provide the greatest benefit to bicyclists and the community at large.**

The Recommended Bikeway Network for Menlo Park is shown in **Figure 5-1**. The system of bikeways is classified into the standard Caltrans Class I, II, and III bikeway categories discussed in Chapter 2.



EWAYS

LAND USE

\ EXISTING BIKE/PED BRIDGE OR UNDERCROSSING

Most of the bikeway facilities identified on Figure 5-1 have been broken down into specific network projects – a project may include several individual bikeway segments that, together, form a logical route or connect a gap in the system. By grouping the bikeway network into projects – rather than discrete segments – the City of Menlo Park will be able to better prioritize the various improvements for implementation. Listing the improvements as projects will also help the city to obtain funding, as each project fills a specific need in the network.

The full bikeway network project list for the Comprehensive Bicycle Development Plan is provided at the end of this chapter, starting on page 5-19. The project list also includes some of the specific support facility improvements discussed below.

5.2. RECOMMENDED SUPPORT FACILITIES AND PROGRAMS

Support programs and facilities are an important component of a bicycle transportation system. Support programs facilities (such as bikeway management and maintenance, signing, and promotional/educational programs) and facilities (such as bicycle racks on buses, bicycle parking racks, and showers and lockers for employees) further improve safety and convenience for bicyclists.

5.2.1. BICYCLE PARKING AND END-OF-TRIP FACILITIES

Bicycle parking includes standard bike racks, covered lockers, and corrals. Bicycle parking should be installed on public property, or available to private entities on an at-cost basis. Bike racks are provided at many local schools and at downtown locations in Menlo Park, but overall the lack of safe and secure bicycle parking is a concern of bicyclists who may wish to ride to work or to shop. Theft and vandalism of bicycles, especially now that bicycles are often worth in excess of $250 to $2,000, is a major impediment to bicycle riding. Showers and lockers are essential end-of-trip facilities, providing comfort and greater security for commuters, and encourage more people to bicycle to work. A systematic program to improve the quality and increase the quantity of bicycle end-of-trip facilities should be implemented in Menlo Park.

RECOMMENDATIONS

Increase Public Bicycle Parking Facilities

Bike racks and lockers should be provided at public destinations, including park-and-ride lots, major bus stops, community centers, parks, and schools. All bicycle parking should be in a safe, secure, covered area (if possible). Commuter locations should provide secure indoor parking, covered bicycle corrals, or Class I bicycle lockers. Bicycle parking on sidewalks in commercial areas should be provided according to specific design criteria, reviewed by merchants and the public, and installed as demand warrants. As a general rule, 'U' type racks bolted into the sidewalk are preferred on downtown sidewalks, to be located intermittently and/or at specific bicycle destinations (such as bike shops).

Adopt a Bicycle Parking Ordinance

Consider adoption of a bicycle parking ordinance, which requires that bicycle parking facilities be included in all new commercial and office development projects in the Menlo Park. For example, all

new commercial development or redevelopment in excess of 40,000 gross leasable square feet should be required to provide one space in an approved bicycle rack per 10 employees. Such an ordinance could also apply to multi-family residential buildings to ensure that residents of apartment buildings are provided a place to store bicycles off the street.

Although the City's *General Plan* discusses the need for such an ordinance, there are currently no requirements for bicycle parking accommodations in the *Zoning Ordinance*. This ordinance would be a complement to the public parking program, which would add parking facilities to existing commercial, office, or multi-family residential locations. Model bicycle parking zoning ordinance language is provided in **Appendix E**.

Encourage Provision of Shower and Locker Facilities

Encouraging employers to provide shower and locker facilities for employees should be a component of all commute and traffic demand management programs as these facilities provide for current commuters and may encourage more commuters to ride their bicycles. Several cities have requirements for shower and locker facilities new and reconstructed developments. The model planning ordinance for the City of San Francisco, provided in Appendix E requires, for example, that new industrial and commercial developments over 10,000 gross square feet in floor are must provide one shower and two clothes lockers.

Provide Valet Bike Parking at Public Events

A new program to provide closed-in secure bicycle corrals at all large public events such as the Farmer's Market or major special events, to encourage residents and visitors to bicycle rather than attempt to drive should be instituted. The appropriate agency or organization should sponsor this corral and seek volunteers to staff the corral during the events.

Improve the Caltrain Station Bike Shelter

Bicycle parking facilities at the Menlo Park Caltrain station should be improved per recommendations provided in the Priority Project discussion at the end of this chapter.

5.2.2. SAFE ROUTES TO SCHOOL

This plan has identified several routes that will benefit school children that walk or bicycle to school. Identifying and improving routes for children to walk or bicycle to school is one of the most effective means of reducing AM traffic congestion and addressing existing safety problems. Most effective school commute programs are joint efforts of the school district and city or county, with parent organizations adding an important element.

RECOMMENDATION

Develop a Safe Routes to School Program

Each public and private school in Menlo Park should conduct its own evaluation of school commute patterns and work with the City Transportation Program in identifying corridor and crossing improvements. School commute routes are highly local in nature, requiring extensive and detailed examination of patterns and conditions and local input. School commute improvements

were discussed in public and staff comments, partially out of concerns about current safety and impacts of school-related traffic, and partially because of new State funding opportunities.

Oak Knoll Elementary School underwent a successful two year Safe Routes to School project that involved parents, residents adjacent to the school and city staff. Hillview Elementary School has been identified as a candidate for the next Safe Routes to School project in Menlo Park.

School commute projects need to be developed in a traditional planning process that includes (a) school administrators and teachers, (b) local PTAs and other groups, (c) neighborhood groups and the public, (d) the police department, and (e) City transportation engineers. The planning process can be accomplished by these groups using the step-by-step process outlined below, or by enlisting professional services.

Steps to Develop a Safe Routes to School Program

1. Form a School Commute Task Force composed of representatives from the school district, public works and law enforcement agencies, the local neighborhood, parent-teachers or other similar group, and the school itself.
2. Set objectives and a reasonable schedule for this Task Force to accomplish its goals.
3. Determine the preferred basic commute routes to the school based on (a) parent and student input, (b) a survey of parent and student community patterns, (c) public works and law enforcement input, and (d) observations of actual commuting patterns.
4. Are there any efforts to guide students who wish to walk or bicycle to school? Does the school provide a map of recommended routes?
5. Does the school wish to encourage more students to walk or bicycle to school? While there is a perception of safety being a concern, statistics show that walking and bicycling are just as safe as driving. Yet many parents insist on driving their children even a few blocks to school--thus contributing to the traffic congestion.
6. Study the parking lot and drop off areas of the school. Is there a pattern where students are walking between cars or through parking lots or drop off areas to reach the school? Are there are management efforts to get parents to follow any specific drop-off protocol?
7. Are there adequate sidewalks and bike lanes on the streets directly serving the school? Are there school access points which encourage students to cross midblock or at other less desirable locations?
8. Where are the first major street crossings on the main school commute routes? Many accidents occur at these intersections. Are they signalized? Is the signal timing adequate even for younger students? Are there crossing guards?
9. Are there any locations where students are crossing major or minor streets at midblock or unprotected locations, i.e., no stop signs or signals? Because children are sometimes hard to see and have difficulty in gauging vehicle speed, these locations can the focus of improvements.
10. Do students have to cross intersections that have very wide turning radii, where vehicles can accelerate and merge while turning? These are problematic because drivers are focused to their left at merging traffic rather than in front at crosswalks.

11. Do all intersections have properly designed crosswalks? The crosswalks should be located so that students can wait safely on the sidewalk prior to seeing if they can cross. Is there adequate visibility and lighting given the speed of traffic? Are there adequate warning signs in advance of the crosswalk?
12. What are the 85th percentile speeds of traffic on the major school commute corridors? Are they significantly above or below the posted speed limits? When was the last speed survey conducted? What is the level of police enforcement, and does it occur only at the beginning of the school year? It is possible to lower speed limits near schools. In other locations, it may be necessary to make physical changes, such as narrowing travel lanes, to slow traffic. It may also be preferable to accept slightly more congestion on a two-lane street, and have slower speeds, than have free flowing high-speed traffic on a four-lane street.
13. School Commute Projects involve numerous often-small incremental changes to sidewalks and roadways, such as adjustments to signal timing or new signing or lighting. In other cases, innovative lighted crosswalk treatments or even grade separation may be warranted. Working with the Task Force will help a school determine the best mix of improvements suitable for each corridor, and compatible with local traffic conditions.
14. A more detailed evaluation methodology, which rate improvements and corridors according to objective criteria, has been developed and is available for use by local schools. However, it may require the services of specialists who understand traffic safety and engineering.
15. Once the improvements have been identified, a preliminary design or plan must be completed which describes the project and its cost. For example, a crosswalk improvement would need to be designed so that it can be reviewed and approved by the appropriate agency. Again, a professional may be engaged for this effort.
16. With a plan and cost estimate, the project still needs a sponsor. Typically this would be the transportation department, who are best connected to available funding sources and familiar with the State and Federal procedures necessary to obtain funding. The project sponsor will need an official authorization, and confirmation that (a) the right-of-way is publicly owned, (b) staff have reviewed and approved the project, and (c) no negative impacts have been identified. With this in hand, the project sponsor can seek funding, which usually requires a 10% or greater matching amount.
17. Programs that may be implemented include a "Walking School Bus Program", which involves parents taking turns walking (or bicycling) with groups of children to school. Other innovative programs are identified in Marketing, Education, and Support Programs.

5.2.3. TRAFFIC CALMING

RECOMMENDATON: Over the past several years, "traffic calming" has grown in popularity as a technique to improve both bicycle and pedestrian safety, especially in residential areas. Traffic calming devices are installed to slow motorists, increase awareness of bicyclists and pedestrians around them, reduce cut-through traffic, and reduce the impacts of higher speed collisions. While traffic calming programs generally complement bicycle planning goals and policies, specific types of projects can cause inconvenience and even safety hazards for bicyclists. The City of Menlo Park's Neighborhood Traffic Management Program provides an opportunity for neighborhood groups to implement projects that slow motorists and enhance safety on Menlo Park streets. Neighborhood groups, bicyclists and city staff should work to minimize safety hazards to bicyclists caused by the

installation of any specific traffic calming devices, as well as to plan for traffic calming efforts on roadways designated as bicycle facilities.

5.2.4. MAINTENANCE

Menlo Park's bikeways need regular maintenance. Typical tasks include repairing damaged and potholed roadway surfaces and clearing plant overgrowth. Bike lanes and bike routes should have regular sweeping to clear debris. Although these latter aspects are generally associated with routine roadway maintenance, special attention to bikeway safety and usability is important and can mean additional costs are incurred. The typical maintenance program for bicycle facilities is provided in **Table 5-1**.

Table 5-1
Maintenance Program for Bicycle Facilities

Item	Frequency
Sign replacement/repair	1-3 years
Trail pavement marking replacement	1-3 years
On-Street pavement marking replacement	1-3 years
Planted tree, shrub, & grass trimming/fertilization	5 months-1 year
Pavement sealing/potholes	5-15 years/30-40 years for concrete
Clean drainage system	Annual
Pavement sweeping	Monthly
Shoulder mowing and weed removal	Bi-Annual – Fall/Spring
Trash disposal	As needed, twice a week
Inspect bridge abutments and structures	After each storm
Graffiti removal	Weekly
Maintain furniture	1 year
Restroom cleaning/repair	Weekly
Pruning to maintain vertical clearance	1-4 years
Remove fallen trees	As needed (on trail only)
Weed control	Monthly
Maintain emergency telephones	1 year
Maintain irrigation lines/replace sprinklers	1 year
Irrigate/water plants	Weekly - as required during establishment growth period
Fencing	Monthly

RECOMMENDATIONS

Develop a Funding Source for the Bicycle Maintenance Program

Bicycling is an integral part of Menlo Park's transportation network, and maintenance of the bikeway network should be part of the ongoing maintenance program for all city transportation facilities. As such, bikeway network maintenance should receive an appropriate allocation of the City's transportation maintenance funds. The City may also want to consider pursuing other methods of securing funding for bikeway and trail maintenance. Several cities have employed successful

"Adopt-a-Trail" programs, the implementation of "recreational fees" on the purchase of recreational equipment in the city, or other fundraising activities. The funding could be used to develop a bicycle and pedestrian maintenance request system, similar to those in Seattle, Portland, and other cities.

5.2.5. INTERSECTION AND BIKEWAY SPOT IMPROVEMENT PROGRAM

RECOMMENDATON: The City should ensure that a mechanism exists to evaluate and make spot improvements to alleviate potential hazards and improve conditions for bicyclists at specific intersections and locations along the bikeway network. Hazards may include improperly designed or placed drainage grates, cracks or seams in the pavement, or overhanging tree limbs or other obstacles located along bikeways. Intersection problems may include areas where lane changes are difficult (e.g., bike lane to left turn pocket), signal timing problems (e.g. green phase too short), or locations where vehicular traffic congestion blocks bike facilities on a regular basis. For intersections, the city should evaluate bicycle accident data on an annual basis to determine if any specific intersection locations appear to have higher accident rates that could be due to design problems. Hazard such as obstacles in a bikeway should be eliminated as quickly as possible. Conducting "pilot projects" for specific intersection locations can be an effective way to test innovative intersection treatments that may improve safety for cyclists, such as "box left turn" markings that provide an alternative to crossing multiple travel lanes to a left turn pocket.

This program is considering ongoing, as hazards may emerge over time (e.g., as bikeway facilities age) and future changes in traffic patterns may affect intersection conditions. The city should ensure that a mechanism is in place for collecting input on problem locations along the bikeway network, such as a form available on the city website. Specific intersection locations that have been identified during the Plan process that could be evaluated for improvement include:

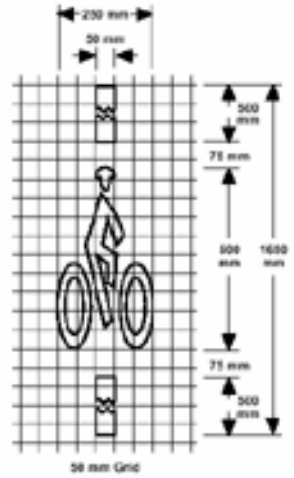
- Willow Road/Bayfront Expressway: Consider signal phasing and/or striping improvement for cyclists heading eastbound on Willow Road across Bayfront into the Sun campus entrance or connecting to the Bay Trail.
- Ravenswood/SRI International entrance: Consider additional striping improvements to better separate bicyclists from vehicles queuing to make right turn to enter the SRI driveway.
- Saga Lane/Sand Hill Road (SLAC Entrance): Consider design treatment to facilitate "box left" turn as an alternative to westbound cyclists crossing to left turn pocket to turn left into SLAC.
- Sharon Park/Sand Hill Road: Consider design treatment to facilitate "box left" turn as an alternative to eastbound cyclists crossing to left turn pocket to turn left onto Sharon Park.
- El Camino Real/Encinal: Consider design treatment to facilitate "box left" turn as an alternative to southbound cyclists crossing to left turn pocket to turn left onto Encinal.

5.2.6. BICYCLE SIGNAL DETECTION

To enable safe bicycle travel through signalized intersections, bicycles should be detected at the waiting positions used by cyclists proceeding through and turning left. Detection of vehicles and bicycles is performed either with inductive loops (in-pavement metal detectors carrying a radio-frequency signal, combined with change detection circuitry) or video (overhead cameras combined with image processing software).

RECOMMENDATON: At appropriate signalized intersections (at a minimum, all signalized intersections on the bikeway network), install and mark traffic detection devices (loops or video) that are responsive to bicycles. Signal detectors and stencils identifying where bicyclists place their bicycles to trigger signals should be reviewed and approved by the City staff prior to implementation. Specific implementation criteria may include sensitivity, impact of overlay projects, cost, and need. All signal detectors should be checked regularly to ensure that they are functioning correctly.

Details of sawcuts and winding patterns for inductive detector loop types appear on Caltrans Standard Detail ES5B. Loop types B (5' square diamond), C (quadrupole), D (diagonal-slashed), Q (figure-8) and modified Type E (circle with slash per City of Palo Alto detail) can reliably detect bicycles across their full width. Types A (6' square) and E (unmodified circle) are not bike-sensitive in their center. The state standard bicycle detection marking appears on Caltrans Standard Plan A24C.



Caltrans Standard Plan A24C bicycle detection

Video image detection should sense bicycles in all approach lanes and also on the left side of right-turn channelization islands. Some video systems can estimate approach speed, and this capability could be used to extend the green time for slow objects assumed to be bicycles.

- The City should ensure that all bicycle loops are tested annually and are calibrated and operable. For locations that have ongoing maintenance or adjustment problems, the City should explore the use of video detection. While the cost of video detection is more expensive in the short term, it should provide a long-term cost savings with reduced maintenance costs.
- Standard bicycle detection markings should be applied in the center of the appropriate lane for all loop locations to show cyclists the best place to wait. (For inductive detection this implies that the loop must sense bicycles in its center). As part of the loop detector testing program, the city should ensure that the markings are placed in the proper location above the detector.
- For new installation it is recommended that the City use Type D for lead loops in all lanes except bike lanes, where a narrow Type C may be appropriate.
- The City should work with Caltrans to have bicycle detection marking applied to the left-turn loops on El Camino Real. Current Caltrans District 4 policy is to not apply detection markings in these locations. Due to the risk involved when cyclists are forced to proceed

against red indications because their bicycles were not detected – perhaps because they could not find loops that were not marked – marking the arterial left turn positions would be prudent.

5.2.7. CONSTRUCTION ACTIVITIES

RECOMMENDATON: Consider impacts on bicycles while performing construction, maintenance and repair work on roadways and trails.

- Provide suitable construction warning signs for any activities that involve work in a designated bikeway.
- Where necessary, provide detour routes around areas undergoing construction.

Detailed guidelines are provided in **Appendix F** for accommodating bicycles in construction zones.

5.2.8. BICYCLE AND BIKEWAY SECURITY

The Menlo Park Police Department should continue to perform enforcement of applicable laws on bike paths, depending on available resources and priorities. Enforcement of vehicle statutes relating to bicycle operation will be enforced on Class II and Class III bikeways as part of the department's normal operations.

RECOMMENDATIONS

Improve Security of Ringwood Avenue Bridge

The Ringwood Avenue bicycle and pedestrian bridge over U.S. 101 has been identified in public workshops as being unsafe due to the lack of visibility, lighting and regular police presence. The bridge will likely be redesigned or replaced by a crossing on Henderson Avenue as part of the *U.S. 101 Auxiliary Lanes and Willow Road Interchange Reconstruction* project. Regardless, the City Transportation Department staff and Police Department should address the existing and future needs for security on the Ringwood Avenue crossing all future crossings or Class I facilities. Recommended improvements, detailed further in the Ringwood Avenue Bridge Improvement project description, include trimming and removing vegetation that inhibits visibility, install additional lighting, install emergency call boxes, install a security camera(s), and provide a more regular police presence.

Increase Safety and Security Through Proper Design and Maintenance

The following recommendations emphasize safety and security through design and maintenance efforts. These actions should be incorporated into the planning and development process of all bicycle facilities.

- Adhere to the established design, operation, and maintenance standards presented in this Bicycle Development Plan.

- Supplement these standards with the sound judgment of professional planners, public safety officials and engineers.
- Maintain adequate recording and response mechanisms for reported safety and maintenance problems.
- Provide regular police patrols to the extent needed.
- Promote measures to reduce bicycle theft such as a registration program, subsidized locks, and training for proper locking techniques.
- Thoroughly research the causes of each reported accident within the City of Menlo Park's bikeway network. Respond to accident investigations with appropriate design or operation improvements.

5.2.9. SIGNING AND STRIPING

All bikeway signing on public roadways in Menlo Park should conform to the signing identified in the Caltrans Traffic Manual and/or the Manual on Uniform Traffic Control Devices (MUTCD). These documents give specific information on the type and location of signing for bicycle facilities in the Menlo Park bikeway network.

RECOMMENDATIONS

Designated Bikeway Signs

The installation of bikeway signs on all designated bicycle facilities is important to heighten motorist awareness and help cyclists find their way. Installing signage is something that can be implemented easily compared to major striping revisions or bike path construction and should be implemented as a priority. An example of where this applies is on Existing Class III Bike Routes where installation of several signs will complete a designated route.

Wayfinding Signage

Wayfinding signage can enhance a bikeway network by providing directional assistance to bicycle facilities and significant local and regional destinations. It is recommended that the City of Menlo Park design bikeway network directional signage for use on the primary network. This signage program would work as a map on the street, identifying designated routes connecting to key destinations in Menlo Park and the region. The signage should also include mileage information. For example, a wayfinding sign on Santa Cruz Avenue may direct a bicyclist going to the Caltrain station, to the proposed Menlo Avenue Bike Route in order to cross El Camino Real.

5.2.10. PROTECT BICYCLE FACILITIES FROM REMOVAL

RECOMMENDATON: Implement a policy that existing bikeway facilities will not be removed. For example, Class II bike lane facilities will not be removed at a future date to increase motor vehicle capacity without a thorough study analyzing the alternatives.

5.2.11. MULTI-MODAL CONNECTIONS

RECOMMENDATON: The various transit agencies operating in Menlo Park – Caltrain, VTA, and SamTrans – should continue to allow bicycle access on all buses and trains. Bicycle travel to transit stops and stations should be enhanced in order to make the transfer between bicycle and transit travel as convenient as possible. As previously discussed, the Bike Shelter at the Caltrain station should be improved with a more secure key/entry system and signs posted to inform users of how to obtain keys.

5.2.12. EDUCATION PROGRAMS

This section covers future efforts to educate bicyclists and motorists, and efforts to increase the use of bicycles as a transportation alternative. Most education and encouragement programs and activities will likely be cooperative efforts between the City of Menlo Park, the Menlo Park Police Department, local school districts, San Mateo County, and local bicycle groups such as the Peninsula Bicycle and Pedestrian Coalition.

The City of Menlo Park, the Police Department, and local school districts work in a variety of ways to educate children and adults on bicycle safety as described in Chapter 2. Unfortunately, statewide trends show that the lack of education for bicyclists, especially younger students, continues to be a leading cause of accidents. For example, the most common type of bicycle accident reported in California involves a younger person (between 8 and 16 years of age) riding on the wrong side of the road in the evening hours. Studies of accident locations around California consistently show the greatest concentration of accidents is directly adjacent to elementary, middle, and high schools.

Many less-experienced adult bicyclists are unsure how to negotiate intersections and make turns on city streets, and educational efforts should explicitly target these adults. In addition, Public Works and utility crews and residential and commercial builders should be provided with information on best methods of mitigation when working on or adjacent to bicycle facilities and roadways that may be used by bicyclists.

RECOMMENDATIONS

Continue and Expand Existing Education Programs

Existing school education programs conducted by Safe Moves and the Police Department should be continued and supported by a secure, regular funding source. A joint City/school district Safety Committee should be formed consisting of appointed parents, teachers, student representatives, administrators, police, active bicyclists and Transportation Department staff whose task it is to identify problems and solutions, ensure implementation, and submit recommendations to the School Boards or City Council. This effort should contribute to the development of the Safe Routes to School program.

For adult education, develop local adult bicycle education and safety programs, such as the League of American Bicyclists courses. Consider partnering with other local jurisdictions, such as the City of Palo Alto, that already have adult education programs in place.

For bicycle infractions (such as running stop signs), consider utilize local League of American Bicyclists or other education programs as a "bicycle traffic school" in lieu of fines.

Provide Safety Handbook

A standard safety handbook format should be developed incorporating the best elements of current handbooks and made electronically available to each school district so they may be customized as needed. Schools should develop a circulation map of the campus and immediate neighborhood showing the preferred circulation and parking patterns and explaining in text the reason behind the recommendations. This circulation map should also be a permanent feature in all school newsletters. Bicycle helmet subsidy programs are available in California and should be used to provide low-cost approved helmets for all school children bicyclists.

Educate Motorists

Motorist education on the rights of bicyclists and pedestrians is virtually non-existent. Many motorists mistakenly believe, for example, that bicyclists do not have a right to ride in travel lanes and that they should be riding on sidewalks. Many motorists do not understand the concept of "sharing the road" with bicyclists, or why a bicyclist may need to ride in a travel lane if there is no shoulder or it is full of gravel, glass, or potholes. Educate motorists and others about the rights and characteristics of bicyclists through a variety of means including:

- Make bicycle safety a part of traffic school curriculum.
- Produce a brochure on bicycle safety and laws for public distribution.
- Enforce existing traffic laws for both motorists and bicycles.
- Send an official letter to the Department of Motor Vehicles recommending the inclusion of bicycle laws in the drivers license exam.
- Develop and hold bicycle planning and design training for all transportation engineers and planners in the city.
- Work with towing companies and emergency clean up crews so they better understand the needs of cyclists.
- Work with contractors, subcontractors and city maintenance and utility crews to ensure they understand the needs of bicyclists and follow standard procedures when working on or adjacent to roadways.
- Create public service announcements on radio and TV to promote the health and livability benefits of bicycling, as well as the detrimental effects of excessive motor vehicle use (e.g. pollution, traffic noise, congestion, loss of life and mobility).

Bicycle Patrol Unit

The Menlo Park Police Department should consider establishing a regular Bicycle Patrol Unit. Bicycles are an excellent community policing tool, as officers on bikes are often viewed as more approachable, thus improving trust and relations between the citizens and police. Bicycle officers can work closely with citizens and other departments to address concerns before they become

problems. In addition to the community policing benefits, bicycle officers can have a direct impact on bicycle safety by enforcing bicycle traffic laws (e.g. wrong-way riding, sidewalk riding, obeying traffic controls, children wearing helmets), and providing bicycle safety education.

5.2.13. ENCOURAGEMENT PROGRAMS

Encouragement programs are vital to the success of the Comprehensive Bicycle Development Plan. Encouragement programs work to get more people out of their cars and on bicycles which will help to reduce traffic congestion and air pollution, as well as improve the quality of life in Menlo Park. However, without community support, the City lacks the resources that are needed to ensure the success of encouragement programs over time. While the City of Menlo Park's Transportation Department may be responsible for designing and constructing physical improvements, strategies for community involvement will be important to ensure broad-based support – which translates into political support – to help secure financial resources. Involvement by the private sector in raising awareness of the benefits of bicycling can range from small incremental activities by non-profit groups, to efforts by the largest employers in the City. Specific programs are described below.

RECOMMENDATIONS

Facilitate the Development of Employer Incentive Programs

Facilitate the development of employer incentive programs to encourage employees to try bicycling to work include providing bicycle lockers and shower facilities, and offering incentives to employees who commute by bicycle by allowing for more flexible arrival and departure times, and possibly paying for transit or taxis during inclement weather. The City may offer incentives to employers to institute these improvements through air quality credits, lowered parking requirements, reduced traffic mitigation fees, or other means. Other efforts should include:

- Developing, promoting and publicizing bicycle commuter services, such as bike shops selling commute gear, bike-on-transit policies, and regular escorted commute rides.
- Creating an annual commuter challenge for area businesses.

Utilitarian and Recreational Trip Incentive Programs

Develop and implement encouragement programs for utilitarian and recreational purposes. Local businesses such as movie theaters and cafes should be involved to encourage customers to use bicycle for their trips. Such efforts may include:

- Implementing a "Bicycle Friendly Businesses" program.
- Creating events such as "Bicycle to the Grocery Store" days, when cyclists get vouchers for, or coupons off items in the store, or "bicycle to the movies" days, when cyclists receive free popcorn or a discount on a movie or refreshments.
- Holding an annual community event to encourage residents to replace one car trip a week with a bicycle trip.

- Supporting the planning and implementation of an annual mass bicycling ride in Menlo Park to attract new riders, showcase the city, and demonstrate the benefits of bicycling.
- Develop and implement a public education campaign to encourage bicycling, such as ads on movie screens, city benches, bicycle locker and billboard advertising, and videos on cable access television.

Bicycle Clunker and Parts Program, Bicycle Repair Program

This program involves obtaining broken, stolen, or other bicycles and restoring them to working condition. The program's dual mission is also to train young people (ages 12 to 18) how to repair bicycles as part of a summer jobs training effort. Bicycles are an excellent medium to teach young people the fundamentals of mechanics, safety, and operation. Young people can use these skills to maintain their own bicycles, or to build on related interests. The program is often staffed by volunteers from local cycling organizations and bicycle shops, who can help build an interest in bicycling as an alternative to driving. The seed money to begin this program often comes from a local private funding source. The proposal submitted to this source should clearly outline the project objectives, operating details, costs, effectiveness evaluation, and other details. The bicycles themselves could be derived from unclaimed stolen bicycles from the police department, or from donated bicycles. The program will need to qualify as a Section 501c(3) non-profit organization to offer tax deductions.

City Staff Bicycle Fleet

The City of Menlo Park should consider developing a bicycle fleet for use by City staff for work trips. Bicycle fleets are relatively inexpensive to operate and maintain compared to auto fleets. The size and general topography of Menlo Park also make use of bicycles for staff travel a viable alternative. The City could either provide bikes or in provide a benefit or subsidy for employees that use a bicycle instead of a City automobile.

Community Bikeway Adoption

Community Bikeway Adoption programs are similar to the widely-instituted Adopt-a-Highway programs throughout the country. These programs identify local individuals, organizations, or businesses that would be interested in "adopting" a bikeway. Adopting a bikeway would mean that person or group would be responsible for maintenance of the bikeway either through direct action or as the source of funding for the City's maintenance of that bikeway. For example, members of a local recreation group may volunteer every other weekend to sweep a bikeway and identify and address larger maintenance needs. Or, a local bike shop may adopt a bikeway by providing funding for the maintenance costs. The managers of an adopted bikeway may be allowed to post their name on bikeway signs throughout the bikeway in order to display their commitment to bicycling in Menlo Park.

Bike Fairs and Races

Hosting bike fairs and races in Menlo Park can raise the profile of bicycling in the area and provide entertainment for all ages at the same time. Bike fairs and races, similar to bike-to-work day events and bike rodeos currently hosted by the City, provide an opportunity to educate and encourage current and potential bicyclists. These events can also bring visitors to Menlo Park that may also contribute to the local economy.

Bicycle Facilities Map

Producing a bicycle facilities map is the primary tool for showing bicyclists all the designated bikeways in Menlo Park. The map should also show significant destinations, the location of bicycle parking facilities, and bicycle facilities in the neighboring communities. The location of bike shops may also be shown. Such advertising on the widely distributed map should also help to offset printing costs of the map. The map should be distributed as widely as possible at locations such as city offices, libraries, schools, bike shops and other recreational retail outlets, Menlo College, and Stanford University. The Bicycle Map should clearly show the type of facility (path, lane, or route) as well as include basic safety information.

Employer Incentives

Local agencies may offer incentives to employers who institute bicycle encouragement programs for employees. Efforts by employers to encourage more employees to bike to work may include sponsoring bike fairs and races, providing shower and locker facilities, and offering incentives to employees who commute by bicycle or walk by allowing for more flexible arrival and departure times. In addition, some employers may offer to pay transit costs or taxis fares for employees who bicycle to work during inclement weather. Incentives that local agencies offer employers that provide such programs may include air quality credits, lowered parking requirements, reduced traffic mitigation fees, or other means.

Bike-to-Work and Bike-to-School Days

The City of Menlo Park should continue to participate in the annual Bike-to-Work day in May, in conjunction with the California bike-to-work week activities. City staff should be present at "energizer" stations along the route. Local Bike-to-School days should be held annually in conjunction with the Safe Moves bicycle education programs. The City should consider hosting other bicycle events unique to the Menlo Park community that will encourage more and safer riding.

Marketing the Comprehensive Bicycle Development Plan

The success of the Menlo Park Comprehensive Bicycle Development Plan depends largely on the community's acceptance and promotion of the Plan's contents. In addition, city departments and commissions should incorporate the policies, objectives and spirit of the Development Plan into their respective projects and responsibilities. The following steps will help ensure the plan becomes a living document, helping shape Menlo Park's future.

- Distribute copies of the Plan to members of the Planning, Transportation and Bicycle Commissions.
- Distribute copies of the Plan to City of Menlo Park's Transportation, Parks and Community Service, Public Works, Police, Recreation, Business Development, Building, Planning, Housing and Redevelopment, and Environmental Departments.
- Provide copies of the City of Menlo Park bicycle facilities map to local schools, bicycle and recreational groups, transit agencies, Stanford University, bicycle shops, and major employers identified on Table 2-5 of this Plan.

5.3. OVERVIEW OF RECOMMENDED NETWORK PROJECTS

The recommended Menlo Park bikeway network shown in Figure 5-1 focuses on providing north-south and east-west bikeways that facilitate cross-town trips, provide access to major destinations such as downtown, schools, parks and civic buildings, and provide for regional connectivity. The existing Class II network along major streets such as Willow, Middlefield and Santa Cruz has been enhanced with projects that connect gaps in the system and link to other bike routes. In addition, an extensive network of new neighborhood Class III routes has been proposed. Menlo Park's irregular borders – particularly along San Francisquito Creek – mean that much of the roadway network lacks a traditional grid pattern, with many curving streets that extend for only a few blocks. Although this makes connectivity more challenging, it has an advantage in that it provides many pleasant neighborhood routes along quiet streets with little traffic. The recommended bikeway network has utilized as many neighborhood street segments as possible to provide functional and direct bikeways that might encourage less experienced cyclists, those riding with families, or children, to use their bicycles for commuting, errands, and recreation.

Several of the proposed Class III facilities are identified as "Shared Use" Facilities. "Shared Use" refers to the designation of these Class III facilities on higher volume roadways, rather than the low-volume neighborhood streets that are often associated with Class III bike routes. Although full Class II bike lanes would be desirable on these higher traffic roadway segments, due to roadway width and/or on-street parking, bike lanes were determined not to be feasible within the existing right-of-way. In most cases, these segments are relatively short and connect between other Class II segments. The "Shared Use" enhancements referred to in the text could consist of signage such as "SHARED RIGHT LANE" (currently in use in locations such as Ravenswood and Santa Cruz), and stenciling such as the Shared Lane Marking stencil that has been studied and implemented in cities such as San Francisco, and was recently recommended by the California Traffic Control Devices Committee to be adopted as a standard traffic control device in California (see **Appendix A, Bikeway Planning and Design**). While these signs and markings do not alter the roadway geometry, they do provide a higher degree of visibility for cyclists, help to position cyclists outside of the door zone where on-street parking exists, and alert motorists to expect cyclists to be sharing the travel lane. The proposed Class III Shared Use segments are viewed as important links in the overall citywide bikeway network.

The section that follows identifies the recommended network projects and provides project sheets that describe the specific elements each project and some of the primary design and implementation issues. Many of the identified projects will require further **feasibility analysis** and **environmental clearance** prior to implementation. A complete street-by-street listing of the proposed new bikeway facilities with cost estimates is provided in **Chapter 6, Implementation**.

The project sheets are broken down by Short-Term, Mid-Term, and Long-Term projects, based on assumptions about current project readiness and ease of implementation. Within the Short, Mid, and Long-Term categories, the projects are listed alphabetically by facility type. This approach will allow the City to take an opportunistic approach to project implementation. A discussion and list of those projects determined by the Steering Committee and public to be highest priority is provided in Chapter 6, and will further assist the city in focusing implementation efforts on those projects with the highest levels of need and support.

5.4. BIKEWAY NETWORK PROJECT LIST

SHORT-TERM PROJECTS

Class II Bike Lanes

- O'Brien Drive Class II Bike Lanes

Class III Bike Routes

- Chaucer/Pope/Gilbert Class III Bike Route
- Coleman Class III Bike Route
- Hamilton Class III Bike Route
- Menalto/Woodland/Durham Class III Bike Route
- Oak Grove Class III Shared Use
- O'Connor Class III Bike Route
- Ringwood Avenue Class III Bike Route
- San Mateo Drive Class III Bike Route
- Seminary Drive Class III Bike Route
- Sharon Park Neighborhood Class III Bike Route

Other Bicycle Projects

- Caltrain Bicycle Shelter Improvements
- Ringwood Avenue Bicycle/Pedestrian Bridge Improvements
- Citywide Bikeway Wayfinding Signage Program

MID-TERM PROJECTS

Class II Bike Lanes

- Bay Road Class II Bike Lane Extension
- El Camino Real Class II Watkins to Encinal
- Middlefield Road Class II Extension
- Sand Hill Road/I-280 Eastbound Class II

MID-TERM PROJECTS, CONTINUED

Class III Bike Routes

- Berkeley Avenue Class III Bike Route
- College/Arbor/Bay Laurel Class III Bike Route
- Constitution Drive Class III Bike Route
- Encinal Avenue Class III Shared Use
- Menlo Avenue Class III Shared Use
- Merrill Street Class III Bike Route
- Middle Avenue Class III Shared Use
- Oak Avenue Class III Bike Route
- Oakdell Avenue Class III Bike Route
- Olive Street Class III Bike Route
- Ravenswood Avenue Class III Shared Use
- Santa Cruz Avenue Gap Class III Shared Use
- University Drive Class III Bike Route

LONG-TERM PROJECTS

Class I Bike Paths

- Independence Drive Class I Connector Path
- Willow Road Class I Connector Path

Class II Bike Lanes

- Marsh Road Class II Bike Lanes
- Willow Road/US-101 Interchange Class II Bike Lanes

Class III Bike Route

- El Camino Real Class III Encinal to Palo Alto

Class III Bike Route

- Bayfront Expressway Bicycle/Pedestrian Undercrossing
- Caltrain Bicycle/Pedestrian Undercrossing

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5.4.1. SHORT-TERM PROJECTS

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O'BRIEN DRIVE CLASS II BIKE LANES

The O'Brien Drive Class II project would create bike lanes on O'Brien Drive between Willow Road and University Avenue at the Menlo Park-East Palo Alto City Limits. The bike lanes would provide a designated bicycle facility connecting East Palo Alto and Menlo Park. This project would connect to the existing Class II bike lanes on Willow Road and the existing Class II bike lanes on University Avenue in East Palo Alto. The striping plans for O'Brien Drive have already been completed by the City of Menlo Park. Implementation of this project would include the following:

- Install standard Class II "Bike Lane" signage, striping and stencils along O'Brien from Willow to University.

- Install wayfinding signage directing bicyclists to the adjacent bicycle facilities along Willow and University and to significant destinations in the area.

O'Brien Drive provides a direct connection between Menlo Park and East Palo Alto on the east side of US-101; a bike lane striping plan for this roadway has already been completed by the City of Menlo Park.

CHAUCER / POPE / GILBERT CLASS III BIKE ROUTE

The Chaucer Street Bridge over San Francisquito Creek is a low-traffic residential street that connects the City of Menlo Park to the City of Palo Alto. Chaucer continues as Pope Street in Menlo Park. The proposed Class III facility would extend north from the Chaucer bridge on Pope Street, jog east on Pope, then turn north on Gilbert. Gilbert provides a signalized crossing of Willow Road. At the intersection of Gilbert/Santa Monica, cyclists could either turn right to access Coleman Ave to head north into Atherton, or turn left to access Seminary Drive to head toward Middlefield.

The Chaucer/Pope/Gilbert route would provide a connection to the Class II bike lanes on Middlefield Road, the proposed Class III route on Coleman Avenue, the proposed Class III route on Woodland and Menalto, and the proposed Bicycle Boulevards on Palo Alto Avenue and Chaucer Street in Palo Alto. Implementation of this project would include the following tasks.

- Standard Class III "Bike Route" signage should be installed on the designated segments of Pope Street and Gilbert Avenue.

- Wayfinding signage should be installed on each route, directing bicyclists to the connecting bicycle facilities, as well as significant destinations. Directional signs at the Chaucer bridge should indicate where this route continues into Palo Alto.

The Chaucer/Pope/Gilbert route provides a pleasant on-street connection between Palo Alto and Menlo Park through tree-lined streets. The City of Menlo Park should work with the City of Palo Alto to provide directional signage to bikeways on the Palo Alto side of the bridge.

COLEMAN AVENUE CLASS III BIKE ROUTE

Coleman Avenue is a two-way roadway that runs between Ringwood Avenue and Willow Road. Coleman Avenue was been identified as a good north-south route by bicyclists at the public meeting, but there are some concerns related to automobiles passing bicyclists near the median traffic islands that have been installed. The only segment of Coleman that is within Menlo Park is between Willow Road and College Avenue; no median islands are located along this section. The recommended improvement for this segment is the installation of Class III Bike Route signage.

- Install standard Class III "Bike Route" signage along Coleman between Ringwood and Willow.

- Install wayfinding signage directing bicyclists to significant destinations and connecting bicycle facilities.

NOTE: The remaining segment of the proposed Coleman bike route is located within unincorporated San Mateo County. The city of Menlo Park should work with the County to ensure that bike route signage continues north within the unincorporated portions and toward the Town of Atherton. The County should also explore striping the travel lanes around the median island and installing "Shared Lane" signage to alert motorists to the possibility of encountering cyclists in these constrained segments around the islands.

Several bicyclists were observed riding on Coleman Avenue, reflecting its use as a connector street between the bike lane facilities Willow Road and Ringwood Avenue.

HAMILTON AVENUE CLASS III BIKE ROUTE

The proposed Hamilton Avenue Class III project would provide a designated route through the Belle Haven neighborhood from the Ringwood Avenue pedestrian overcrossing to Willow Road. This proposed route would provide a low-traffic alternative for cyclists wanting to access the Dumbarton Bridge bike path, Sun Microsystems, or Bayfront Expressway Class I trail without crossing the Willow/US 101 interchange. From the Ringwood Bridge, the route would extend a short distance on Market Street, then turn east on Hamilton to Willow. This proposed route would cross/connect to the existing Chilco Street bicycle lanes. As part of this improvement, directional signage should be installed directing cyclists to and from the pedestrian bridge as well as to various destinations including the Belle Haven community centers and library, Bayfront Park via Chilco, and Dumbarton Bridge path via Willow Road. Implementation of this project would include the following:

- Install Class III "Bike Route" signage at each intersection along Market and Hamilton.
- Install wayfinding signage to and from the Ringwood Avenue/U.S. 101 overcrossing.
- Install wayfinding signage directing bicyclists to destinations such as the Boys and Girls Club, Bayfront Park, and Belle Haven library, and to adjacent bicycle facilities on Chilco Avenue and Willow Avenue.
- Consider putting a bicycle "cut through" in the median on Market Place at Hamilton to better facilitate left turns by westbound cyclists.

The Hamilton Avenue Class III bike route would provide a designated route to destinations throughout the Belle Haven neighborhood, including the Belle Haven Community Library.

The median at the intersection of Market Place and Hamilton Avenue could be modified with an additional "cut through" to allow for easier left turns for westbound cyclists turning off Hamilton onto Market.

MENALTO / WOODLAND / DURHAM CLASS III BIKE ROUTE

The Menalto/Woodland/Durham Class III route would provide a low-traffic east-west route to the south of Willow Road. The route would involve several segments: Beginning at Middlefield, the route would extend east on Woodland Avenue, connecting directly onto Menalto at Chaucer, then turning north on Durham to connect to Willow. This route would connect to several important bikeway segments: the Chaucer-Pope-Gilbert Class III route, the O'Conner Class III route south toward University; and to Willow Road. Durham Street provides direct access into the main entrance of the VA hospital at a signalized intersection of Willow.

Implementation of this project would include the following tasks.

- Install standard Class III "Bike Route" signage along the designated segments of Woodland Avenue, Menalto Avenue, and Durham Street.
- Install wayfinding signage directing bicyclists to the connecting bicycle facilities, as well as significant destinations.

The Menalto/Woodland/Durham Class III network would provide a pleasant neighborhood route linking to several existing and proposed bikeways on the network.

OAK GROVE AVENUE CLASS III SHARED USE

Oak Grove Avenue was identified in the public meeting as a good east-west bicycle route, connecting Atherton toward downtown Menlo Park. The width of Oak Grove the presence of on-street parking makes the implementation of a Class II facility infeasible along most segments. The Oak Grove Class III segment would implement a Class III shared use bike route from Middlefield to University. As part of this Bike Route project, the City should explore installing a bike lane pocket on the east leg of Oak Grove at the intersection of El Camino Real, to better delineate bicyclist position between the through and right-turn lanes. There appears to be sufficient width to provide the bike lane pocket in this location; however, due to the offset of the east and west legs of Oak Grove through El Camino, the city may want to consider paint dashed lane markings through the intersection to opposing vehicles in the proper lanes.

Implementation of this project would include the following:

- Install Class III "Bike Route" signage on Oak Grove between Middlefield and University.
- Install a bike lane pocket on westbound Oak Grove at the intersection El Camino Real.
- Install wayfinding signage directing bicyclists to the Caltrain station, downtown Menlo Park, adjacent bicycle facilities and other significant destinations.

As a Long Term option, the city should explore the possibility of installing Class II bike lanes on Oak Grove between Middlefield Road and El Camino Real. Accommodating Class II bike lanes with the current roadway width would require eliminating some areas of on-street parking, or converting to a "time-of-day" bike lane/parking lane arrangement.

Due to the narrow width and on-street parking, a Class III bike route is the recommended short-term treatment for Oak Grove. Paving the existing unpaved shoulder or eliminating some on-street parking in the future may allow for full Class II bike lanes between Middlefield and El Camino Real.

O'CONNOR STREET CLASS III BIKE ROUTE

The O'Connor Street Class III route project would provide a connection to the new University Circle development in East Palo Alto. When completed the University Circle development will include three large office buildings, 15,000 square feet of retail and a new Four Seasons hotel. The O'Connor Street route would run from Menalto Avenue into East Palo Alto. This route would continue in East Palo Alto to University Avenue via Euclid and Woodland. This route would also be a way for cyclists to access the large shopping centers in East Palo Alto on the east side of US-101, via University Avenue. Implementation of this project would include the following:

- Install standard Class III "Bike Route" signage along O'Connor Street between Menalto to the East Palo Alto border

- Install wayfinding signage directing bicyclists to significant destinations and connecting bicycle facilities.

O'Connor Street would serve as an important connection between Menlo Park and East Palo Alto, providing access to the large commercial shopping centers near the University Avenue/US-101 interchange.

RINGWOOD AVENUE CLASS III BIKE ROUTE

The Ringwood Class III project would provide a Class III bike route that would extend the reach of the existing Ringwood Class II bike lanes that end at Bay Road. The project would connect the end of the Ringwood Avenue bike lanes to the ramp of the Ringwood Bicycle and Pedestrian Bridge crossing U.S. 101. Currently, there is no designated route leading to the bridge ramp, nor are there any signs that direct bicyclists to the crossing. This project would connect to the proposed Hamilton Avenue Class III bike route on the east side of U.S. 101. Implementation of this project would include the following:

- Install standard Class III "Bike Route" signage along Ringwood between Bay and US 101.
- Install wayfinding signage directing bicyclists to the Ringwood Avenue Pedestrian and Bicycle Bridge along adjacent bicycle facilities on both sides of U.S. 101.
- Install wayfinding signage directing bicyclists to significant destinations such as the Belle Haven community center, Boys and Girls Club, Belle Haven Elementary School, Belle Have Library, and Bayfront park on the east side of the Ringwood bridge.

This project is identified in the Menlo Park General Plan.

The Ringwood bicycle bridge is accessed via Ringwood Avenue on the west side of US-101, a low traffic, tree-lined neighborhood street.

SAN MATEO DRIVE CLASS III BIKE ROUTE

The proposed San Mateo Drive Class III route would provide a valuable north-south route through Menlo Park, from the San Mateo Drive Bridge crossing of San Francisquito Creek at Palo Alto to Valparaiso Avenue at the Atherton border. This project would provide a north-south Class III neighborhood route from the San Mateo Drive pedestrian crossing of San Francisquito Creek to Valparaiso Avenue. The route would run primarily on San Mateo Drive, and use the more direct Wallea Drive between Middle Avenue and Santa Cruz Avenue. North of Valparaiso, San Mateo Drive ends at the Town of Atherton begins. Cyclists were noted using the Elena Ave to continue northbound, which is offset to the west of San Mateo Drive. Directional signage should be installed at the end of San Mateo Drive and at Elena Drive to ensure that cyclists make this connection. The implementation of this project should include the following:

- Install standard Class III "Bike Route" signage along San Mateo and Wallea
- Install wayfinding signage on connecting bikeways directing bicyclists to the San Mateo Drive crossing of San Francisquito Creek and to significant destinations and other bicycle facilities.
- The City may want to consider improvements for the San Mateo Drive crossing of Santa Cruz Avenue and Valparaiso. Such improvements could include adding center-island pedestrian refuges to shorten the crossing distance.

This project is identified in the Menlo Park General Plan.

The San Mateo Drive bicycle and pedestrian bridge provides an important connection between the City of Menlo Park and the City of Palo Alto.

SEMINARY DRIVE CLASS III BIKE ROUTE

The Seminary Drive Class III facility would run from Santa Monica Avenue to Middlefield Road. Seminary Drive is a pleasant, low traffic roadway that would provide an alternate route for bicyclists to use instead of Middlefield Road. This project would connect to the proposed Class III routes on Coleman Avenue and Gilbert Avenue, and the existing Class II bike lane facility on Middlefield Road. This project would include the following:

- Install standard Class III "Bike Route" signage along Seminary from Santa Monica to Middlefield.

- Install wayfinding signage directing bicyclists to adjacent bikeways (such as the Gilbert Class III route) and to significant destinations such as Menlo Oaks and Willow Oaks Elementary Schools and East Palo Alto High School.

Seminary Drive would provide a pleasant residential route linking the proposed Gilbert bike route out to the existing bike lanes on Middlefield Road.

SHARON PARK NEIGHBORHOOD CLASS III BIKE ROUTE

The Sharon Park Neighborhood Route would consist of a Class III facility extending through the Sharon Park neighborhood and connecting Sand Hill Road with Santa Cruz Avenue. The route would begin at the terminus of the Santa Cruz bike lanes at Avy/Orange. The route would extend west on Avy, crossing Alameda de Las Pulgas, and turn right (east) on Monte Rosa Avenue to connect to Sand Hill Road. This route does have some short hills heading up from Alameda de Las Pulgas, but could serve as an alternate to cyclists heading west on Santa Cruz Avenue who want to avoid the relatively high-traffic section of Santa Cruz between Avy and Sand Hill that lacks bike lanes. Implementation of this project would include the following:

- Install standard Class III "Bike Route" signage on the Avy Avenue and Monte Rosa Drive segments of the route.

- Install wayfinding signage directing cyclists to and from Santa Cruz Avenue, Alameda De Las Pulgas and Sand Hill Road.

The designated bikeway on Avy Avenue would provide a connection between downtown Menlo Park via Santa Cruz Avenue, and the Sharon Park neighborhood in western Menlo Park.

CALTRAIN BICYCLE SHELTER IMPROVEMENTS

A "Bike Shelter" is provided at the Menlo Park Caltrain station to provide for commuter bicycle parking. The shelter is a covered, locked cage that is accessible only by patrons who have been issued a key. Bicyclists use their own locks to secure their bikes to racks inside the cage. This existing shelter has been noted by many local cyclists as having security problems, and there have been reports of bikes and accessories being stolen from inside the cage. The facility uses a standard mechanical lock and key, and there is no video surveillance camera. In addition to ongoing security concerns, for new users who wish to gain access to the shelter obtaining a key is difficult as a phone number to call for information has been removed from the facility.

In order to provide for secure commuter bicycle parking at this major multi-modal center, Caltrain should develop an improved system of access and monitoring at the Bike Shelter, including:

- Equip the shelter with an electronic key card system that would prevent key duplication, identify each user with a unique code, and store entry/exit information in case of theft or vandalism.

- Consider supplementing the electronic key entry with a surveillance camera inside the shelter to further deter theft.

- Clearly post a telephone number and website for new users who want to obtain a key, or want to report theft or vandalism to their bicycles.

There is no accurate contact information posted at the Bike Shelter for new users who wish to obtain a key.

Several available "smart lock" products support unique user IDs and are battery-operated "drop-in" replacements for mechanical door locks. Typical models have keypads and are programmed with a handheld computer; some also have magnetic card and proximity-key capabilities. They store a downloadable event log including successful entries, consecutive incorrect attempts, mechanical key overrides, and scheduled actions. They also temporarily lock out accesses after several consecutive incorrect attempts.

Just as with mechanical keys, a smart lock requires management effort. To be most effective, user IDs should be promptly deactivated by security staff soon after a user's rental period ends, and previous IDs should not be reassigned soon.

There have been some suggestions that the Palo Alto Bikestation may take over management of the Menlo Park facility; however, at this time due to funding it does not appear that will happen. Having Caltrain turn over management of the facility to another entity such as Bikestation would be another long term option to improve the facility.

RINGWOOD AVENUE BICYCLE/PEDESTRIAN BRIDGE IMPROVEMENTS

The Ringwood Avenue Pedestrian and Bicycle Bridge Improvements project would provide safety and security improvements this important non-motorized connection between east and west Menlo Park. Currently this bridge is the only dedicated bicycle/pedestrian facility across US 101 in Menlo Park; cyclists must otherwise cross at the freeway interchanges at Willow or Marsh, both of which have heavy, high speed traffic entering and exiting the freeway. The Ringwood bike/pedestrian bridge provides an excellent location for less experienced cyclists to cross the freeway. It serves as an important link to the proposed Hamilton Class III route which provides access toward the Dumbarton Bridge bike path, Sun Microsystems, and the Bay Trail. However, the lack of adequate safety and security on the bridge was cited by public workshop participants as a reason to not use the facility, due to the lack of adequate lighting, low visibility from the street due to overgrown vegetation, and the lack of a regular police presence. Visibility for cyclists is also an issue due in the design of the spiraling corkscrew ramps.

It is possible that the entire Ringwood bike/pedestrian bridge structure may be rebuilt as part of the U.S. 101 Auxiliary Lanes and Willow Road Interchange Reconstruction project. The U.S. 101 reconstruction project includes several options, including reconstruction of the Ringwood Avenue Bridge or replacing it with an underpass on Henderson Avenue. If the bridge is reconstructed, it is recommended that the approach ramps be a more open and linear design to provide better visibility. Should a Henderson Avenue undercrossing replace the bridge, the design should also provide for sufficient lighting, vertical and horizontal clearance, and visibility.

These long-term re-design options may be the best solution. However, in the short-term, the following improvements should be implemented on the current Ringwood bridge structure in order to enhance safety and security and encourage its use.

- Trim or remove vegetation that inhibits visibility of the approach ramps from the street and on the bridge.
- Improve the lighting on bridge span and ramps on both sides.
- Install Emergency Call boxes on bridge or bridge landings.
- Provide for a more regular police patrol presence.
- Install a closed-circuit security camera to monitor the structure and deter criminal activity

The existing Ringwood Avenue crossing has security issues related to the design of the bridge and lack of visibility due to overgrown vegetation.

CITYWIDE BIKEWAY WAYFINDING SIGNAGE PROGRAM

In addition to the standard "Bike Lane" and "Bike Route" signage that is recommended to be installed on all existing and proposed bicycle facilities, the City of Menlo Park should consider developing its own unique wayfinding/directional signage program. These signs should include directional arrows and distance information to significant local and regional destinations and connecting bicycle facilities. Such signage programs have been successfully implemented in other cities such as Berkeley, and point to destinations such as the University, BART station, Amtrak station, and downtown. Wayfinding signage can have a simple or decorative design, depending on the desires of the City and residents that may live on the roadways where these signs would be installed. Signs should be visible and easy to read, but should also fit in aesthetically with the context of the neighborhood. The City may want to consider the regional aspect of the signage and decide if the signage program should be coordinated with a County of San Mateo regional bikeway signage system.

At a minimum, in the short-term simple signage should be placed directing cyclists to significant bikeway facilities such as the Bayfront bike path, Ringwood bicycle/pedestrian bridge, bicycle and pedestrian crossings of San Francisquito Creek, and the Laurel Street bikeway (from El Camino Real).

The two primary tasks for developing the signage program would be:

- Compile a list of destinations and facilities to be included in the directional signage program.
- Develop a variety of signage designs for public evaluation. Approve the design with resident and cyclist input.

The City of Berkeley's Bicycle Boulevard signs provide directional and distance information using a design that has a unique purple color and is easy for bicyclists to see.

5.4.2. MID-TERM PROJECTS

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BAY ROAD CLASS II BIKE LANE EXTENSION

Currently, Class II facilities terminate on Bay Road at Berkeley Avenue. The Bay Road Class II extension project would extend the existing bike lanes from Berkeley Avenue to Willow Road. This would provide a connection to the existing Class II facilities on Willow. Additionally, cyclists wanting to continue southbound could utilize Chester or Durham streets to connect into the Menalto, O'Conner, or Gilbert neighborhood Class III routes continuing toward East Palo Alto and Palo Alto. This project would include the following:

- Install standard Class II "Bike Lane" signage, striping and stencils along Bay Road from Berkeley to from Willow.

- Install wayfinding signage directing cyclists onto the major connecting routes, such as the neighborhood Class III routes located on the south side of Willow along Durham and Menalto.

This project is identified in the Menlo Park General Plan.

NOTE: If accommodating Class II bike lanes on this segment is not feasible due to roadway width constraints, the designation of this segment as a Class III Shared Use route, with Shared Right Lane signage and shared lane markings is recommended.

Extending the existing Class II bike lanes on Bay Road would provide a connection to the Willow Road bike lanes.

EL CAMINO REAL CLASS II WATKINS TO ENCINAL

This project would provide designated bicycle lanes on El Camino Real from the Atherton City limits (at Watkins Avenue) to Encinal Avenue. At Encinal Avenue, cyclists could turn off of El Camino Real to connect to the Laurel Street bikeway through Menlo Park, connecting into Palo Alto via the bicycle bridges at Willow Place or Alma Street. In the southbound direction, an existing striped shoulder approximately 5 feet in width could be restriped and stenciled as a Class II bicycle lane. In the northbound direction, a combined parking/bicycle lane could be provided by narrowing the travel lanes.

- Install Class II bike lanes on both sides of El Camino Real between Watkins and Encinal.

- Install loop detectors at the southbound left-turn pocket at Encinal for cyclists to turn onto Encinal to connect to Laurel Street. Evaluate installing a "box" left turn zone in the Menlo College exit at Encinal for cyclists who would prefer not to cross the travel lanes of El Camino Real.

- Install wayfinding signage at Encinal directing bicyclists to the Laurel Street bikeway, noting that this bikeway provides a through route to destinations in Palo Alto.

This project is identified in the Menlo Park General Plan (*the General Plan identifies Class II bike lanes on El Camino to Valparaiso*).

There appears to be sufficient width on El Camino Real to accommodate Class II bike lanes and maintain on-street parking between Encinal and the Atherton limits.

MIDDLEFIELD ROAD CLASS II BIKE LANE EXTENSION

Currently, Class II facilities terminate on Middlefield Road at Willow Road. The Middlefield Road Class II project would extend the existing bike lanes from Willow Road to the San Francisquito Creek crossing at the Palo Alto border. The City of Palo Alto has already proposed to install bike lanes on Middlefield Road from San Francisquito Creek south. In the southbound direction, this crossing would also provide a good connection to Byron Street which provides a parallel residential bikeway off Middlefield. This project would include the following:

- Install standard Class II "Bike Lane" signage, striping and stencils along Middlefield from Willow to the Palo Alto border.

- In the absence of formal bicycle facilities on Middlefield in Palo Alto, put wayfinding signage directing cyclists onto the Byron Street residential route. Install wayfinding signage directing bicyclists to significant destinations and connecting bicycle facilities.

NOTE: If accommodating Class II bike lanes on this segment is not feasible due to roadway width constraints, the designation of this segment as a Class III Shared Use route, with Shared Right Lane signage and shared lane markings is recommended.

Extending the Class II bike lane striping on Middlefield between Willow and the Palo Alto border would provide connections to the proposed Class III on Woodland, and the existing bike route connection on Byron Street.

SAND HILL ROAD EASTBOUND / I-280 CLASS II BIKE LANE

The eastbound direction of Sand Hill Road through the I-280 interchange currently lacks a bike lane. (The westbound direction has been improved with a bike lane and no changes are needed). The eastbound direction has one vehicle lane and a wide shoulder until it reaches the first loop ramp – the merge from southbound I-280. Eastbound cyclists move across merging traffic and share the 16 foot outside lane across the structure. There are several possibilities for restriping the lanes across the structure to add an eastbound bike lane – to this date Caltrans has not approved any of the proposed options.

- It is recommended that the City of Menlo Park work with Caltrans District 4 Traffic Operations staff to restripe the lanes/shoulder and provide an eastbound bike lane through the interchange. (It should be noted that the westbound direction has functioned well for two years with a reduced shoulder and the addition of a bike lane.)

- If an eastbound bike lane is added across the structure, the "exit taper" on the I-280 northbound exit past the structure should be removed.

- The City should work with Caltrans to implement a 40 mph speed limit extending through the interchange

The bike lane on Sand Hill Road eastbound currently terminates prior to the I-280 interchange. In the westbound direction, bike lane striping has been carried through the interchange to improve conditions for cyclists on this heavily-used bicycle route.

BERKELEY AVENUE CLASS III BIKE ROUTE

The Berkeley Avenue Class III bike route project would run on Berkeley Avenue between Coleman Avenue and Bay Road. Berkeley Avenue is within San Mateo County, so this project would require the City of Menlo Park to coordinate with the County. This project would connect to the proposed Class III bike route on Coleman Avenue and the existing Class II bike lanes on Bay Road. Implementation of this project would include the following:

- Install standard Class III "Bike Route" signage on Berkeley Avenue between Coleman and Bay.

- Because this roadway segment is within San Mateo County jurisdiction, the city of Menlo Park should coordinating signage and maintenance efforts with the County.

- Install wayfinding signage directing users to connecting bicycle facilities and significant destinations, such as the Ringwood bicycle/pedestrian bridge.

Berkeley Avenue would provide a neighborhood Class III connection between Bay Road and Coleman Avenue.

COLLEGE / ARBOR / BAY LAUREL CLASS III BIKE ROUTE

The Bay Laurel Drive Class III route project would provide a designated Class III route from the proposed University Drive bike route to the San Mateo Drive bicycle/pedestrian bridge over San Francisquito Creek. This route would provide a signed route for bicyclists going to Palo Alto from downtown Menlo Park.

The route would run on College Avenue between University Drive and Arbor Road, then on Arbor Road to Bay Laurel Drive. The route would run on Bay Laurel Drive which connects to the Class I segment crossing the San Mateo Drive Bridge. This route would connect to the proposed Class III facilities on University Drive and on San Mateo Drive. Implementation of this project would include the following:

- Install Class III "Bike Route" signage on Bay Laurel Drive, Arbor Road, and College Avenue.

- Install wayfinding directional signage on each street of the proposed route to assist bicyclists in following the route and finding the San Mateo Drive bridge.

The College/Arbor/Bay Laurel route network would provide a connection between the University Drive route and the San Mateo bicycle bridge to Palo Alto.

CONSTITUTION DRIVE CLASS III BIKE ROUTE

The Constitution Drive Class III facility would extend from Chilco Street to Independence Drive, providing access to a large area of business park and light industrial employment. The proposed Class III route would provide a connection between the existing Chilco Class II lanes and the proposed Marsh Road Class II lanes (with the proposed Class I connector on Independence). In order to connect to Marsh Road, a counter-flow connection would need to be made along the one-way segment of Independence Drive that comes off of Marsh Road (since cyclists heading north would be traveling in the wrong-way direction). In the short-term, it is recommended that a counter flow bike lane be placed along this segment. In the long-term, it is recommended that a completely separate Class I facility be constructed. By providing access to Marsh Road (and the future Class II bike lanes on Marsh), cyclists using Constitution Avenue could connect to Bayfront Park and the Bay Trail.

Implementation of this project would include the following:

- Install standard Class III signage along Constitution from Chilco to Independence.
- Install wayfinding signage directing bicyclists to connecting bikeways and significant destinations such Bayfront Park.
- Provide a short-term, counterflow on-street connector bikeway facility along the east side of Independence, using a physical delineator such as reflective plastic lane marking poles to create separation from auto traffic.

Connecting Constitution Drive to Marsh Road would require installing a counter-flow on-street facility (or off-street Class I) along this one-way segment of Independence Drive.

In the long-term, a completely separate Class I connector path between Constitution and Marsh should be installed, as discussed under the "Independence Drive Class I Connector" project below.

ENCINAL AVENUE CLASS III SHARED USE

Bike lanes currently exist on Encinal from the railroad right-of-way east to Middlefield. This project would involve implementing a Class III Shared Use treatment on Encinal from El Camino Real to the existing bike lanes at the railroad tracks. The purpose of this bikeway would be to provide a connector route off of El Camino Real – if traveling southbound on El Camino into Menlo Park, Encinal provides the first opportunity to detour off of El Camino and onto the parallel Laurel Street bikeway. With signage on El Camino Real southbound, bicyclists would make a left at Encinal and could connect via the Class III facility to Laurel. This project would include the following:

- Install Class III "Bike Route" signage on Encinal Avenue between Garwood Way and El Camino Real.

- Install "Shared Right Lane" signage and shared lane marking stencils to alert motorists to the presence of bicyclists in the roadway along this segment

- Install directional signage on El Camino Real southbound at Encinal directing cyclists to the parallel Laurel Street bikeway

- Install wayfinding signage directing bicyclists to significant destinations and adjacent bikeways at the intersections with Laurel Avenue, Middlefield Road, and El Camino Real.

The segment of Encinal Avenue between the Caltrain railroad right-of-way and El Camino Real currently lacks bicycle facilities. By designating this segment as a Class III route and providing shared use signage and stencils, Encinal can serve as an important connector between El Camino Real and the Laurel Street bikeway for north-south cyclists.

MENLO AVENUE CLASS III SHARED USE

The Menlo Avenue Class III project would create a bike route extending from El Camino Real to University Drive. Through this segment, the roadway width is too narrow and the presence of on-street parking makes the implementation of a Class II facility infeasible. This bike route would connect to the existing eastbound Class II on Ravenswood Avenue and the proposed Class III route on University Drive. The Menlo Avenue facility would provide an alternative location to Oak Grove Avenue for crossing El Camino Real. Implementation of this project would include the following:

- Install Class III "Bike Route" signage from University Drive to El Camino Real.
- Consider installing shared lane marking stencils along this segment to alert motorists to the presence of cyclists along this segment, and help position cyclists outside the "door zone."
- Install wayfinding signage directing bicyclists to downtown destinations and adjacent bicycle facilities on both sides of El Camino Real, including the Caltrain Station and San Mateo Drive crossing of San Francisquito Creek.

The proposed Class III bike route facility on Menlo Avenue provides a continuation of the Ravenswood facility on the west side of El Camino Real, connecting to University Avenue.

MERRILL STREET CLASS III BIKE ROUTE

This project would designate Merrill Street between Oak Grove and Ravenswood as a Class III Bike Route. Merrill provides direct access to the Caltrain platform, and also provides cyclists with the option of crossing El Camino at Santa Cruz Avenue (located mid-way between Oak Grove and Ravenswood). A key feature of this bike route designation should be signage on Oak Grove and Ravenswood directing cyclists to the Caltrain station, and signage at Santa Cruz directing cyclists toward downtown. This project would involve the following:

- Install Class III "Bike Route" signage along Merrill Street.
- Install wayfinding signage directing bicyclists onto Merrill Street and to the Caltrain station from Oak Grove Avenue, Ravenswood Avenue, and other adjacent roadways.
- Install wayfinding signage directing bicyclists across El Camino Real to downtown via Santa Cruz Avenue.

Merrill Street, shown above at the intersection with Santa Cruz Avenue, provides access to the Caltrain station and to the Santa Cruz Avenue crossing of El Camino Real.

The Menlo Park Caltrain station is the city's primary multi-modal center, providing connections to Caltrain, SamTrans and VTA buses, and local shuttle service.

MIDDLE AVENUE CLASS III SHARED USE

With on-street parking permitted, the width of Middle Avenue is not sufficient to provide for Class II Bike Lanes. Under this project, Middle Avenue would be designated as a Class III Shared Use bike route from El Camino Real to Olive. This Class III route would provide access to the El Camino Real commercial corridor, Nealon Park, and the Little House Senior Citizens facility. The Middle Avenue bike route would provide connections to the Oakdell Class III bike route and the Oak Class III bike route, both via Olive Street. The Middle Avenue facility would also connect to the proposed Class III facilities on University Drive and San Mateo Drive. Implementation of this project would include the following:

- Install Class III "Bike Route" signage along Middle Avenue from El Camino Real to Olive

- Install wayfinding directional signage directing bicyclists to significant destinations and adjacent bicycle facilities.

As a long-term project, the City should study options to remove portions of the on-street parking on Middle and implement Class II bike lanes.

Middle Avenue is too narrow to provide for both on-street parking and a bike lane; however, the relatively wide shoulder/parking area provides adequate width for a Class III bicycle route.

OAK AVENUE CLASS III BIKE ROUTE

Oak Avenue is an east-west residential roadway that extends between Olive Street and Sand Hill Road. The Oak Avenue Class III would serve as an extension of the Middle Avenue facility, with a short jog on Olive Street, and provide a connection to the Class II facilities Sand Hill Road. This route would provide access to Oak Knoll school. Implementation of this project would include the following:

- Install standard "Bike Route" signage on Olive between Middle and Oak Avenue, and on Oak Avenue between Olive and Sand Hill Road.

- Install wayfinding signage to direct bicyclists to adjacent bicycle facilities and significant destinations.

The Oak Class III neighborhood route would provide a continuation of the Middle Avenue facility, extending to Sand Hill Road.

OAKDELL AVENUE CLASS III BIKE ROUTE

Oakdell Drive is an east-west residential roadway that extends between Olive Street and Santa Cruz Avenue. The Oakdell Class III would serve as an extension of the Middle Avenue facility, with a short jog on Olive Street, and provide a connection to the Class III facilities Santa Cruz Avenue. Implementation of this project would include the following:

- Install standard "Bike Route" signage on Olive between Middle and Oakdell, and on Oakdell between Olive and Santa Cruz.

- Install wayfinding signage to direct bicyclists to adjacent bicycle facilities and significant destinations.

The Oakdell Class III neighborhood route would provide a continuation of the Middle Avenue facility, extending to Santa Cruz Avenue.

OLIVE STREET CLASS III BIKE ROUTE

Olive Street is an north-south residential roadway that extends from Santa Cruz Avenue to Oak Avenue. The Olive Class III would serve as part of an extension of the Middle Avenue facility, connecting Middle to both the proposed Oak and Oakdell Class III facilities, and also linking to the Class II facility on Santa Cruz Avenue. Olive Street provides a direct connection to Hillview Elementary School, and would serve as an important neighborhood route. Implementation of this project would include the following:

- Install standard "Bike Route" signage on Olive between Santa Cruz Avenue and Oak Avenue.

- Install wayfinding signage to direct bicyclists to adjacent bicycle facilities and significant destinations such as Hillview Elementary School.

Olive provides a north-south link between the Middle/Oak/Oakdell route network, and also connects to Hillview Elementary school at Santa Cruz Avenue.

RAVENSWOOD AVENUE CLASS III SHARED USE

Currently, there are existing Class II bike lanes on Ravenswood Avenue from Middlefield Road to Noel Drive. The bike lanes are dropped where the roadway widens to two travel lanes in each direction immediately west Noel Drive. (There is also a short bike lane segment from El Camino Real to the Caltrain ROW in the eastbound direction.) This project would involve installing Class III Shared Use signage and shared lane markings on Ravenswood from Noel Drive to El Camino Real. Although continuous bike lanes through this segment would be preferable, the narrow right-of-way and complicated geometry (lane merges, pedestrian crosswalk, and railroad crossing) do not permit the accommodation of Class II bike lanes within the existing roadway width. Given the likelihood that a major grade separation project will be implemented at this location, implementing a major engineering project to widen the roadway to accommodate bike lanes does not appear desirable. As such, a Class III Shared Use facility with signage and stencils alerting motorists to the presence of bicyclists is the recommended treatment.

The Ravenswood Avenue Class III facility would connect to the existing bike lanes on Ravenswood Avenue, the proposed Class III bike route on Menlo Avenue on the west side of El Camino Real. The facility would provide access to downtown destinations, the Caltrain Station, Menlo Park civic center and library, and the El Camino Real commercial corridor. Implementation of this project should include the following:

- Install Class III "Bike Route" signage along Ravenswood between El Camino Real and Noel (westbound) and Alma and Noel (eastbound).
- Additional "Shared Right Lane" signage should be installed along this segment, particularly where lanes merge.
- The city should consider installing shared lane markings on the roadway through this segment to further alert motorists to the presence of bicyclists.

As a long-term project, it is recommended that full Class II Bike Lanes in both directions through this segment be included as part of the Caltrain Grade Separation project.

Additional "Shared Right Lane" signage should be installed in both directions on Ravenswood Avenue between Noel and El Camino Real.

SANTA CRUZ AVENUE GAP CLASS III SHARED USE

The Santa Cruz Avenue Class III project would provide a Shared Use treatment from the end of the existing bicycle lanes on Santa Cruz Avenue (at the intersection with Avy/Orange) to Sand Hill Road. The roadway between Avy Avenue and Alameda de las Pulgas Road is partly within the unincorporated County, and has variable shoulder width with residential on-street parking permitted. Without removing on-street parking, it does not appear that a Class II facility could be installed here – although during the weekday when few vehicles are parked in the shoulder, there is sufficient width for cyclists. Between Alameda de las Pulgas and Sand Hill, parking is permitted on the east side of Santa Cruz but not the west. Even with parking prohibited on one side, there is still insufficient width to provide Class II bike lanes. It is recommended that enhanced Shared Use signage and shared lane markings be installed along this segment to increase the visibility of this roadway as a bicycle route.

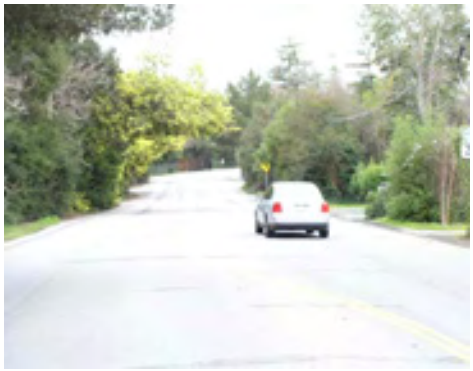
- Install standard Class III "Bike Route" signage on Santa Cruz between Avy Avenue and Sand Hill Road.

- Install additional "Shared Right Lane" signage and new shared lane markings should be installed on both sides of the road through this segment to alert motorists to the presence of bicyclists.

- Install directional signage should be installed directing bicyclists to connecting bicycle facilities and significant destinations, such as the Sand Hill Road bike lanes

NOTE: Most of this segment of roadway is under the jurisdiction of San Mateo County. The City of Menlo Park should work with the County to implement these measures to ensure that the Santa Cruz bikeway is continuous to Sand Hill Road.

This project is identified in the Menlo Park General Plan (*the General Plan notes potential Class II bike lanes from Avy to Alameda de las Pulgas*).



This segment of Santa Cruz Avenue (just west of Avy) is wide enough to comfortably accommodate a Class III facility. The route would serve as a connection to Sand Hill Road and Alpine Road.

UNIVERSITY DRIVE CLASS III BIKE ROUTE

The proposed University Drive Class III bike route would extend from Valparaiso Ave to College Avenue. The route would extend through downtown Menlo Park and connect to the existing Class II on Valparaiso, the proposed Class III on Oak Grove, the proposed Class III on Menlo Avenue, the proposed Class III on Middle Avenue, and the proposed Class III route to the San Mateo Bicycle Bridge on College Avenue. The project would also provide access to Menlo College located directly across the northbound approach of University Drive at Valparaiso Avenue. Implementation of this project would include the following:

- Install standard Class III "Bike Route" signage on University between Valparaiso and College.

- Install wayfinding signage directing cyclists to the San Mateo Drive Bridge crossing of San Francisquito Creek, Menlo College and other significant destinations and adjacent bicycle facilities.

University Drive would provide an east-west route through downtown Menlo Park, connecting to the existing Class II facilities on Valparaiso and Santa Cruz and to the proposed Middle Class III.

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5.4.3. LONG-TERM PROJECTS

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INDEPENDENCE DRIVE CLASS I CONNECTOR PATH

The Independence-Marsh Class I Connector would provide an off-street connection from the proposed Constitution Avenue Bike Route to the Marsh Road Class II bicycle facilities. Under this project, a Class I off-street path would be constructed along the south side of Independence Drive to Marsh Road. (Independence Drive is one-way in the southbound direction off Marsh – therefore cyclists heading north would be traveling counter-flow to traffic – for this reason the off-street Class I is suggested for this short segment). This facility would provide a link to the Marsh Road Class II, to Bayfront Park and the Bayfront Class I, and to Haven Road which provides a regional bike route northbound into Redwood City.

- Install a Class I path along the east side of Independence Drive from Constitution to Marsh Road

- Evaluate installing a new pedestrian crosswalk on the southern leg of Bayfront Expressway, so that cyclists and pedestrians would not be required to cross to the northern leg to cross Bayfront toward the park. This new crossing would need to allow for crossing time and protection from high speed right turns onto Bayfront Express from Marsh Road.

- Install wayfinding signage directing bicyclists to significant destinations and connecting bikeways.

The Marsh Road Class I multi-use path would begin with a curb cut leading from the proposed contra flow bike lane on Independence Drive.

WILLOW ROAD CLASS I CONNECTOR PATH

The Willow Road Class I connector would provide an off-street connection from the proposed Hamilton Avenue bike route to the existing Class I bike path along Bayfront Expressway. Under this project, a Class I bike trail would be constructed on the north side of Willow from Hamilton Avenue to Bayfront Expressway. This would permit bicyclists traveling southbound on Hamilton to access the Bayfront bike path and the Sun Microsystems campus without having to make a left turn onto Willow Rd. and ride in the travel lanes. Currently, there is a short segment of existing sidewalk east of Hamilton to the railroad right-of-way. East of the railroad, dirt pathways exist up to Bayfront Expressway. The existing dirt paths appear to be heavily used by employees of Sun Microsystems who walk on them to access coffee and restaurants located in the shopping centers at Hamilton/Willow. During fieldwork, bicyclists were also observed riding on the sidewalk/dirt paths toward the Sun Campus. This project would involve the following:

- Install a Class I path on the north side of Willow from Hamilton to Bayfront Expressway. East of the railroad tracks, the area is unpaved and there appears to be adequate width in the right of way to accommodate a Class I path. West of the railroad tracks a sidewalk and landscape buffer are present in front of the shopping center; in this area the landscaping area would need to be modified to widen the sidewalk to Class I standards.

- As part of this project, consider opening the existing but closed underpass beneath Bayfront Expressway as a bicycle/pedestrian tunnel. This is discussed in more detail under the "Bayfront Expressway Bicycle/Pedestrian Undercrossing" project above.

The existing sidewalk on the north side of Willow ends at the railroad ROW. Extending a pathway from this point to Bayfront would improve conditions for pedestrians and bicyclists.

An unpaved use path extends across the railroad tracks to Bayfront Expressway. Many Sun Microsystems employees use this path to access the café and restaurants in the shopping center at Willow and Hamilton.

MARSH ROAD CLASS II BIKE LANES

A Class II bike lane facility on Marsh Road would provide an important crossing of U.S. 101 along the northern limit of Menlo Park's bicycle network, and a connection between the Bay Road bike lanes and the Bayfront Expressway path. Although Marsh Road from Middlefield Road to Bay Road is within Atherton and unincorporated San Mateo County, and the crossing of U.S. 101 is within Caltrans jurisdiction, it is an important route for those that live and work in Menlo Park. Bike lanes on Marsh Road, from Middlefield Road to Bayfront Expressway would provide connections to the Bayfront Park trail entry at the intersection of Marsh Road and Bayfront Express, existing bike lanes on Bay Road and to the proposed Class III facility on Constitution Drive. Within Menlo Park, it appears that the most constrained segment in terms of width is between Bay Road and the railroad right of way – installing bike lanes through this segment will require removing a travel lane, parking lane, or widening the roadway. From the railroad ROW to Bayfront Expressway, sufficient width appears to be available, but reconfiguration of travel lanes, turning lanes, shoulder areas, and possibly sidewalk segment would be required to accommodate bike lanes. A more detailed traffic and feasibility analysis will need to be conducted for this segment.

This project will include the following:

- Coordinate planning and implementation of the proposed facility with the Town of Atherton, San Mateo County, and Caltrans.

- Conduct a detailed traffic study for the corridor to evaluate the effects of removing/reconfiguration travel and/or parking lanes to provide for bike lanes in both directions. The most constrained segment in terms of width appears to be Bay Road and the railroad right-of-way. If feasible, install standard Class II signage, striping, and stencils between Bay Road and Bayfront Expressway.

Marsh Road provides an important crossing of U.S. 101 and a direct connection to Bayfront Park and the Bayfront bike path, but crossing the interchange requires cyclists to merge across several free turn lanes.

- Work with Caltrans to evaluate options for reducing the number of free turning lanes going on and off of US-101, to reduce the need for cyclists to merge across multiple high-speed lanes through the interchange.

- Study possible improvements for the crossing of Bayfront Expressway, including the installation of a crosswalk at the southern leg of the intersection.

This project is identified in the Menlo Park General Plan

WILLOW ROAD / US-101 INTERCHANGE CLASS II BIKE LANES

Currently, there are existing Class II bike lanes on Willow Road from El Camino Real to approximately Durham Street. A gap exists in the Willow Road bicycle lanes across the US-101 interchange, from Durham Street to Newbridge Street. The Class II facility on Willow Road provides an important route for commuters and other cyclists traveling from western Menlo Park toward the Sun Microsystems campus, the Dumbarton Bridge and the Bay Trail. However, the lack of bike lanes through the US-101 interchange, and the presence of free turn lanes on and off the freeway, likely discourage less experienced and new riders from using this segment.

This interchange is currently in the planning stages of reconfiguration by Caltrans. The City of Menlo Park submitted the *Route 101/Willow Road Interchange Bicycle and Pedestrian Safety Review of Geometric Layout* report to Caltrans for review as part of the US-101 Auxiliary Lanes and Willow Road Interchange Reconstruction project. While the installation of the Class II bike lane project on the interchange is dependent on Caltrans approval, likely improvements may include:

- Change roadway geometry by converting striped shoulder to Class II bike lanes in each direction
- Install bike lane intersection lines across ramp exits
- Minimize free-flow movements at on- and off-ramps
- Restrict exits to one lane until beyond the ramp crossing(s)

The U.S. 101 interchange at Willow presents a difficult crossing for less experienced cyclists due to the lack of a designated bike lane and high-speed free turn lanes on and off the freeway

As part of the interchange improvements, the segments of Willow between Durham and the interchange and between Newbridge and the interchange also need to be evaluated to see if bike lanes can be accommodated up to the interchange. In particular, the section between Durham and US-101 is constrained by an additional eastbound travel lane, raised center median, and shopping center driveways on the south side of the road. The following is recommended:

- Conduct a detailed traffic study for the corridor to evaluate the effects of removing/reconfiguring travel lanes, turn lanes and/or median areas to provide for bike lanes in both directions. The most constrained segment in terms of width appears to be Durham to US-101.

This project is identified in the Menlo Park General Plan.

EL CAMINO REAL CLASS III TO ENCINAL TO PALO ALTO BORDER

This project would provide a designated bike route on El Camino Real from Encinal to the Palo Alto border. This segment of El Camino provides access to a number of retail and commercial businesses, including a number of restaurants and a supermarket. The width of El Camino Real varies through this segment, and providing full Class II bike lanes through Menlo Park does not appear feasible without travel lane and/or parking lane removal. Some short Class II segments may be possible within the existing right-of-way and lane configurations. A possible option to consider for this segment of El Camino Real would include the use of shared lane markings. The City should view accommodating a bicycle facility on El Camino Real as a long-term goal; as land uses fronting El Camino Real may change in the future, the need for on-street parking may change, and additional right-of-way may become available. Inclusion of El Camino Real as a Long-Term Priority Project is intended to illustrate the significance of this roadway as a direct north-south route through Menlo Park (and through San Mateo County and the Peninsula), as well as the many important businesses located along and accessed from El Camino Real.

Although it is a direct north-south arterial, heavy PM traffic congestion through downtown Menlo Park, along with on-street parking, bus lanes, and numerous driveways, discourages many cyclists from riding El Camion Real.

BAYFRONT EXPRESSWAY BICYCLE/PEDESTRIAN UNDERCROSSING

This project would involve using the existing, but closed, tunnel beneath Bayfront Expressway at Willow Road for a bicycle/pedestrian undercrossing. The undercrossing runs from an undeveloped parcel on the northwest corner of the intersection of Willow Road and Bayfront Expressway to the northern parking lot of the Sun Microsystems office complex on the east side of Bayfront Expressway. The tunnel appears to have sufficient height and width to accommodate non-motorized users; however, the east side would require improvement to provide an ADA-compliant ramp. Some modification of the Sun Microsystems parking lot may be required in order to provide the ramp length. With this tunnel open, bicyclists and pedestrians would completely avoid having to wait at the busy signal to cross Bayfront Expressway. The undercrossing would link the proposed Willow Road Class I connector path segment along Willow Road from Hamilton to Bayfront.

Implementation of this project would include the following tasks.

- Modify the undercrossing to address safety and needs such as lighting, drainage and ADA compliance.

- Modify the approach ramps so that they meet ADA standards. On the east side of the facility, route the ramp so that it does not lead directly into the Sun parking lot.

The entry to the undercrossing on the west side of Bayfront Expressway is currently undeveloped and could be utilized for the proposed Class I connector trail leading to Hamilton.

The existing undercrossing is currently fenced off. Safety and security improvements such as lighting would be required prior to using it as a bicycle/pedestrian facility.

The existing entry ramp on the east side of Bayfront Expressway is blocked by the Sun Microsystems parking lot. A new ramp would need to be provided to meet ADA standards

CALTRAIN BICYCLE/PEDESTRIAN UNDERCROSSING

There is currently no crossing of the Caltrain tracks between Ravenswood and Alma Street in Palo Alto. A bicycle/pedestrian undercrossing of the Caltrain tracks along this segment would allow cyclists to avoid the constrained and congested segment of Ravenswood Avenue between El Camino Real and the Caltrain tracks. No specific location is being proposed for an undercrossing at this time; however the segment of tracks between Ravenswood and Middle/Burgess appears to be the most appropriate area to be studied for development of an undercrossing. If placed at a signalized intersection on El Camino, this would provide a safe and convenient crossing of both El Camino and the railroad tracks for cyclists, and could link up the bikeways on Middle and Willow. The project would require gaining access through one of the commercial parcels fronting El Camino Real, as well as addressing neighborhood concerns on the east side of the tracks.

- The City should study appropriate locations for a tunnel between Ravenswood and Middle/Burgess, taking into account factors such as proximity of connecting bikeways and adjacent land uses.

- The City should explore opportunities to obtain easements, or purchase right-of-way as properties along El Camino change ownership.

- The City should explore the possibility of implementing an undercrossing in conjunction with the Caltrain grade separation project (which may result in raising the tracks through this area).

- Safety concerns related to the undercrossing should be addressed through proper design, lighting and law enforcement monitoring.

This project is identified in the Menlo Park General Plan. It should be noted that a Feasibility Study was prepared in 2002 evaluating a bicycle/pedestrian undercrossing of the Caltrain tracks near Cambridge Avenue/Willow Road. The study was completed, but implementation of the undercrossing project was not pursued by the City Council.

6. IMPLEMENTATION

This chapter identifies steps towards implementation of the proposed facilities and programs of this plan, the estimated costs for the proposed improvements and maintenance, and strategies on funding and financing.

6.1. 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 Menlo Park Comprehensive Bicycle Development Plan by the Menlo Park City Council.
2. Preparation of a Feasibility Study 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. Approval of the project by the Planning Commission and the City Council, including the commitment by the latter to provide for any unfunded portions of project costs.
5. Completion of final plans, specifications and estimates, advertising for bids, receipt of bids and award of contract(s).
6. Construction of Project.

6.2. HIGH PRIORITY PROJECTS

Once a bikeway system has been identified, the greatest challenge is to identify the top priority projects that will offer the greatest benefit to bicyclists if implemented. Prioritization involves a number of factors, including: (a) cost and construction feasibility given existing traffic, safety, and environmental constraints; (b) need, benefit, and public support; (c) strength of the project as measured by specific funding criteria. For the Menlo Park Bicycle Development Plan, an initial list of High Priority projects was developed based on input from the project Steering Committee and from public comments received via surveys and workshops. The High Priority project list represents a combination of both short-term projects that would be relatively inexpensive and easy to implement (e.g. neighborhood Class III routes), as well as long-term, higher cost projects that, despite possibly being years away from implementation, are considered to be extremely important components of the comprehensive bicycle network (e.g. Caltrain undercrossing). It is important to remember that the bikeway system and the individual projects are flexible concepts that serve as guidelines to those responsible for implementation. The High Priority project list, and perhaps even the overall system and segments themselves, may change over time as a result of changing bicycling patterns and implementation constraints and opportunities. The Menlo Park Bicycle Commission

and city staff in the Transportation Program should review the High Priority project list on an annual basis to ensure that it reflects the most current priorities, needs, and opportunities for implementing the bikeway network in a logical and efficient manner. As projects get implemented and taken off the list, new projects should be moved up into High Priority status.

HIGH PRIORITY PROJECT LIST

Class II Bike Lanes

- O'Brien Street Class II (Short-Term)
- El Camino Real Class II from Watkins to Encinal (Mid-Term)
- Marsh Road Class II (Long-Term)
- Willow Road Class II (Long-Term)

Class III Shared Use Bike Routes

- Encinal Class III Shared Use (Mid-Term)
- Oak Grove Class III Shared Use (Short-Term)
- Santa Cruz Avenue Class III Shared Use (Mid-Term)

Class III Neighborhood Bike Routes

- Implement citywide network, in conjunction with Wayfinding Signage program (Short to Mid-Term)

Other Bicycle Projects

- Caltrain Bike Shelter Improvements (Short-Term)
- Caltrain Bike/Ped Undercrossing (Long-Term)
- Ringwood Bridge Improvements (Short-Term)
- Wayfinding Signage Program (Short-Term)

6.3. COST BREAKDOWN

A breakdown of cost estimates for the recommended bicycle network provided by this plan is presented in **Table 6-1** below. Buildout of the recommended system will result in a total of **0.3 miles of new Class I Bike Paths, 3.6 miles of new Class II bike lanes, and 16.8 miles of new Class III Bike Routes**. The total cost of the recommended projects is estimated to be about $91,000 for Short-Term projects, $86,000 for Mid-Term projects, and nearly $4 million for Long-Term projects, the bulk of which is due to the high assumed cost of the Caltrain undercrossing.

(The cost of the undercrossing project could possibly be reduced if it is constructed as part of future Caltrain grade separation activities.) It is important to note the two following assumptions about the cost estimates. First, all cost estimates are highly conceptual, since there is no feasibility or preliminary design completed, and second, the costs do not include the feasibility study costs.

All the projects are recommended to be implemented over the next two to twenty years, or as funding is available. The more expensive projects may take longer to implement. In addition, many funding sources are highly competitive, and therefore impossible to determine exactly which projects will be funded by which funding sources. Timing of projects is also something difficult to pinpoint exactly, due to the dependence on competitive funding sources and, timing of roadway and development, and the overall economy.

The projects listed may be funded through various sources. The funding section in this chapter outlines some of the local, regional, state and federal funding methods and resources for non-motorized transportation projects.

Maintenance costs for the bikeway network will be relatively low due to the lack of long Class I path facilities. The existing and recommended bikeway network is predominately made up of on-street bike lanes and routes that will be treated as part of the normal roadway maintenance program. As part of the normal roadway maintenance program, extra emphasis should be put on keeping the bike lanes and roadway shoulders clear of debris and keeping vegetation overgrowth from blocking visibility or creeping into the roadway. The other typical maintenance costs for the bikeway network, as shown below in **Table 6-2**, include the maintenance of signage, striping and stencils.

The total annual maintenance cost of the primary bikeway system is estimated to be about $26,185 per year when it is fully implemented. Bicycle facility maintenance costs are based on per mile estimate, which covers labor, supplies, and amortized equipment costs for weekly trash removal, monthly sweeping, and bi-annual resurfacing and repair patrols. Other maintenance costs include bike lane line and crosswalk restriping, sweeping debris, and tuning signals for bicycle and pedestrian sensitivity.

Table 6-1
Recommended Bikeway System Cost Estimates

Name	Start	End	Proposed Class	Length (mi)	Cost ($)
SHORT-TERM PROJECTS					
Class II Bike Lanes					
O'Brien Drive	Willow	University	II	0.83	24,900
Class III Bike Routes					
Altschul Avenue	Avy	Sharon Road	III	0.16	800
Avy Avenue	Orange	Monte Rosa	III	0.42	2,100
Coleman Avenue	Willow	Ringwood	III	0.66	3,300
Durham	Menalto	Willow	III	0.34	1,700
Gilbert Street	Menalto	Santa Monica	III	0.43	2,150
Hamilton Avenue	Market	Willow Road	III	0.85	4,250
Market Place	Highway 101 Bike/Ped Bridge	Hamilton	III	0.10	500
Menalto Avenue	Woodland	Durham	III	0.41	2,050
Monte Rosa Drive	Avy	Sand Hill	III	0.55	2,750
Oak Grove Avenue	Middlefield	University	III	0.90	9,000
O'Connor Street	Menalto	Euclid	III	0.41	2,050
Pope Street	Palo Alto Border	Gilbert	III	0.26	1,300
Ringwood Avenue	Bay	Highway 101 Bike/Ped Bridge	III	0.25	1,250
San Mateo Drive	San Francisquito Creek	Wallea	III	0.28	1,400
San Mateo Drive	Wallea	Valparaiso	III	0.33	1,650
Santa Monica Avenue	Seminary	Coleman	III	0.15	750
Seminary Drive	Santa Monica	Middlefield	III	0.62	3,100
Sharon Road	Altschul	Sharon Park Drive	III	0.40	2,000
Sharon Park Drive	Sharon Road	Sand Hill Road	III	0.12	600
Wallea Drive	San Mateo Drive	San Mateo Drive	III	0.41	2,050
Woodland Avenue	Middlefield	Euclid	III	1.27	6,350

Name	Start	End	Proposed Class	Length (mi)	Cost ($)
Other Bicycle Projects					
Caltrain Bike Shelter Improvements	N/A	N/A	N/A	N/A	$2,000
Ringwood Bridge Improvements	N/A	N/A	N/A	N/A	$3,000
Wayfinding Signage Program	N/A	N/A	N/A	N/A	$10,000
Short-Term Project Costs					**$91,000**
MID-TERM PROJECTS					
Class II Bike Lanes					
Bay Road	Berkeley Avenue	Willow Road	II	0.57	17,100
El Camino	Watkins	Encinal	II	0.32	9,600
Middlefield	Willow	Palo Alto City Limits	II	0.10	3,000
Sand Hill Road eastbound	West side of I-280 interchange	East side of I-280 interchange	II	0.47	14,100
Class III Bike Routes					
Arbor	College	Bay Laurel	III	0.11	550
Bay Laurel Drive	Arbor	San Mateo	III	0.16	800
Berkeley Avenue	Coleman	Bay	III	0.43	2,150
College Avenue	University	Arbor	III	0.20	1,000
Constitution Drive	Chilco	Independence	III	0.67	3,350
Encinal Avenue	Garwood	El Camino Real	III	0.17	1,700
Menlo Avenue	University	El Camino Real	III	0.35	3,500
Merrill Street	Ravenswood	Oak Grove	III	0.19	950
Middle Avenue	Olive	El Camino Real	III	1.08	10,800
Oak Avenue	Olive	Sand Hill	III	0.65	3,250
Oakdell Drive	Santa Cruz	Olive	III	0.62	3,100
Olive Street	Oak	Oakdell	III	0.16	800
Ravenswood Avenue	El Camino Real	Noel	III	0.18	1,800
Santa Cruz Avenue	Orange Avenue	Sand Hill	III	0.43	4,300

Name	Start	End	Proposed Class	Length (mi)	Cost ($)
University Drive	Valparaiso	College	III	0.80	4,000
Mid-Term Project Costs					**$85,850**
LONG-TERM PROJECTS					
Class I Bike Paths					
Independence Connector	Constitution Drive	Marsh Road	I	0.10	55,000
Willow Road Connector	Hamilton	Bayfront Expressway	I	0.17	93,500
Class II Bike Lanes					
Marsh Road	Bay Road	Bayfront Expressway	II	0.73	21,900
Willow Road	Durham	Newbridge	II	0.53	15,900
Class III Bike Routes					
El Camino Real	Encinal	Palo Alto city limit	III	1.27	12,700
Other Bicycle Projects					
Bayfront Expressway Bicycle/Pedestrian Undercrossing	East side Bayfront Expressway at Willow	West side Bayfront Expressway at Willow	N/A	N/A	750,000
Caltrain Bicycle/Pedestrian Undercrossing	East side Caltrain tracks south of Ravenswood	West side of Caltrain tracks south of Ravenswood	N/A	N/A	3,000,000
Long-Term Project Costs					**$3,949,000**
TOTAL SYSTEM COST					**$4,125,850**

*Costs per mile: Class I = $550,000 / Class II = $30,000 / Class III Shared Use = $10,000 / Class III = $5,000

Table 6-2
10 Year Operations and Maintenance Cost Estimates for Recommended Network

Facility/Program	Unit Cost ($)	Unit Description	Units	Cost ($)	Notes
Class I Maintenance	8,500	Miles/Year	2.7	22,950	Lighting and debris and vegetation overgrowth removal.
Class II Maintenance	2,000	Miles/Year	35.5	71,000	Repainting lane stripes and stencils, sign replacement as needed
Class III Maintenance	1,000	Miles/Year	167.9	167,900	Sign and shared use stencil replacement as needed
		10-Year Cost		**$261,850**	
		Avg. Cost/Year		**$26,185**	

6.4. FUNDING

There are a variety of potential funding sources including local, state, regional, and federal funding programs that can be used to construct the proposed bicycle improvements. Most of the Federal, state, and regional programs are competitive and involve the completion of extensive applications with clear documentation of the project need, costs, and benefits. Local funding for bicycle projects typically come from Transportation Development Act (TDA) funding, which is prorated to each County based on the return of gasoline taxes. Many of the projects and programs would need to be funded either with TDA, general fund (staff time), and regional, State and Federal sources. The primary funding sources are described below.

6.4.1. FEDERAL FUNDING SOURCES

6.4.1.1. Transportation Equity Act for the 21st Century (TEA-21)

TEA-21 funding is administered through the state (Caltrans or Resources Agency) and regional governments (MTC, San Mateo County Transportation Authority). Most, but not all, of the funding programs are transportation versus recreational oriented, with an emphasis on reducing auto trips and providing inter-modal connections. Funding criteria often includes completion and adoption of a bicycle/pedestrian master plan, quantification of the costs and benefits of the system (such as saved vehicle trips and reduced air pollution), proof of public involvement and support, CEQA compliance, and commitment of some local resources. In most cases, TEA-21 provides matching grants of 80 to 90 percent--but prefers to leverage other monies at a lower rate. This Federal Transportation Legislation Program will end in 2003; a new transportation bill, TEA-3, will replace it in September 2003. TEA-3 is expected to continue support for many of the non-motorized programs that were contained in TEA-21, with current discussions pointing to the inclusion of new non-motorized programs.

6.4.1.2. Congestion Mitigation and Air Quality Improvement Program

Congestion Mitigation and Air Quality Improvement funds are programmed by TEA-21 for projects that are likely to contribute to the attainment of a national ambient air quality standard, and congestion mitigation. These funds can be used for a broad variety of bicycle and pedestrian projects, particularly those that are developed primarily for transportation purposes. The funds can be used either for construction of bicycle transportation facilities and pedestrian walkways or for non-construction projects related to safe bicycle and pedestrian use (maps, brochures, etc.). The projects must be tied to a plan adopted by the State and MPO.

6.4.1.3. National Highway System

National Highway System funds are for improvements to the National Highway System (NHS), which consists of an interconnected system of principal arterial routes that serve major population centers, international border crossings, airports, public transportation facilities, and other intermodal transportation facilities as well as other major travel destinations. These funds can be used to provide pedestrian and bicycle facilities constructed on NHS routes.

6.4.1.4. Federal Lands Highway Funds

Federal Lands Highway funds may be used to build bicycle and pedestrian facilities in conjunction with roads and parkways at the discretion of the department charged with administration of the funds. The projects must be transportation-related and tied to a plan adopted by the State and MPO.

6.4.2. STATE FUNDING SOURCES

6.4.2.1. National Recreational Trails Fund

The Recreational Trails Program provides 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 as well as motorized uses.

Recreational Trails Program funds may be used for:

- Maintenance and restoration of existing trails;
- Development and rehabilitation of trailside and trailhead facilities and trail linkages;
- Purchase and lease of trail construction and maintenance equipment;
- Construction of new trails (with restrictions for new trails on federal lands);
- Acquisition of easements or property for trails;
- State administrative costs related to this program (limited to seven percent of a State's funds); and
- Operation of educational programs to promote safety and environmental protection related to trails (limited to five percent of a State's funds).

6.4.2.2. Bicycle Transportation Account

The State Bicycle Transportation Account (BTA) is an annual statewide discretionary program that is available through the Caltrans Bicycle Facilities Unit for funding bicycle projects. Available as grants to local jurisdictions, the emphasis is on projects that benefit bicycling for commuting purposes. Due to the passage of AB1772 in the year 2000, the BTA has $7.2 million available each year for the next five years. Following the year 2005, the fund will drop to $5 million per year unless new legislation is authored. The local match must be a minimum of 10% of the total project cost.

6.4.2.3. Environmental Enhancement and Mitigation Program

Environmental Enhancement and Mitigation Program Funds are allocated to projects that offset environmental impacts of modified or new public transportation facilities including streets, mass transit guideways, park-n-ride facilities, transit stations, tree planting to equalize the effects of vehicular emissions, and the acquisition or development of roadside recreational facilities, such as trails. State gasoline tax monies fund the EEMP. This program represents an outstanding opportunity to fund future phases of the Solano Bikeway Extension Project as mitigation to the ongoing work on I-80.

6.4.2.4. Safe Routes to School (AB 1475)

The Safe Routes to School program is a recently created state program using funds from the Hazard Elimination Safety program from TEA-21. This program is meant to improve school commute routes by eliminating barriers to bicycle and pedestrian travel through rehabilitation, new projects, and traffic calming. Although the program finished its last cycle in 2002, it is anticipated that it will be re-instated with the passage of TEA-3.

6.4.3. REGIONAL FUNDING SOURCES

6.4.3.1. Transportation Funds for Clean Air Program (TFCA)

Clean Air Funds are generated by a surcharge on automobile registration in the nine counties that make up Bay Area Air Quality Management District (BAAQMD). Approximately $20 million is collected annually which funds two programs: the Transportation Fund for Clean Air 60%, a regional competitive fund appropriated by the BAAQMD, and the Program Manager Fund, also known as the 40% Fund, which is returned to each county to be appropriated by its' CMA or Transportation Authority.

The 40% funds are considered local funds; they are competitive and 100% discretionary. Projects must be consistent with BAAQMD's Clean Air Plan and recipient projects are required to document air quality benefits. These local funds can be used as a match for state or federal programs. Applicants for new projects must demonstrate that they applied for regional competitive TFCA funds and were denied, or that the project would not have been competitive for regional TFCA funds. Projects will be scored according to six criteria (cost effectiveness, project effectiveness, local matching funds, new programs, projects of county-wide significance, and mode shift), and reviewed by a scoring panel. The panel may recommend that some projects compete in the 60% category.

6.4.3.2. Transportation for Livable Communities (TLC)

MTC offers two kinds of assistance through the TLC program: capital improvement and planning. TLC grants are competitive funds meant to fund small-scale transportation improvements that are designed to make a big difference in a community's vitality. Eligible projects include streetscape improvements, transit, pedestrian, and bicycle oriented developments. Projects should be designed to "bring new vibrancy" to downtown areas, commercial cores and neighborhoods, enhancing their amenities and ambience and making them places where people want to live and visit.

6.4.4. LOCAL FUNDING SOURCES

6.4.4.1. TDA Article III (SB 821)

Transportation Development Act (TDA) Article III funds are state block grants awarded annually to local jurisdictions for bicycle projects in California. These funds originate from the state gasoline tax and are distributed to local jurisdictions based on population. These funds should be used as leveraging monies for competitive state and federal sources.

6.4.4.2. Mello-Roos Community Facilities Act

Bike paths and bike lanes can be funded as part of a local assessment or benefit district. Defining the boundaries of the benefit district may be difficult unless the facility is part of a larger parks and recreation or public infrastructure program with broad community benefits and support.

6.4.4.3. New Construction

Future road widening and construction projects are a means of providing 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 standards and guidelines presented in the County's Bicycle Transportation Plan.

6.4.4.4. Impact Fees

Another potential local source of funding is developer impact fees, typically tied to trip generation rates and traffic impacts produced by a proposed project. A developer may reduce the number of trips (and hence impacts and cost) by paying for on- and off-site bikeway improvements that will encourage residents to bicycle rather than drive. Establishing a clear nexus or connection between the impact fee and the project's impacts is critical in avoiding a potential lawsuit.

Other opportunities for implementation will appear over time that may be used to implement the project.

Table 6-3
Funding Sources

Acronyms: AQMD - Air Quality Management District Caltrans - California Department of Transportation CMAQ - Congestion Management and Air Quality CTC - California Transportation Commission FHWA - Federal Highway Administration RTPA - Regional Transportation Planning Agency State DPR - California Department of Parks and Recreation (under the State Resources Agency) TEA-21 - Transportation Equity Act of the 21st Century	Jurisdictions for Menlo Park, California: Caltrans - Caltrans District 4 C/CAG – City/County Association of Governments, San Mateo County San Mateo County Transportation Authority Resources: Caltrans TEA-21 website - http://www.dot.ca.gov/hq/TransEnhAct/

Grant Source	Due Date	Agency	Annual Total	Matching Requirement	Eligible Applicants	Eligible Bikeway Projects			Comments
						Commute	Recreation	Safety/Ed	
Federal Funding									
TEA-21 Regional Surface Transportation Program (RSTP)	varies by RPTA	RTPAs, Caltrans	$320 m	11.47% non-federal match	cities, counties, transit operators, Caltrans, and MPOs	X	X		RSTP funds may be exchanged for local funds for non-federally certified local agencies; no match may be required if project improves safety. Contact Cathy Gomes, Caltrans, (916) 654-3271
TEA-21 Congestion Mitigation and Air Quality Program (CMAQ)	Dec. 1 yearly	RTPAs, Caltrans	$400 m	11.47% non-federal match	federally certified jurisdictions	X			Counties redesignated to attainment status for ozone may lose this source. Contact Cathy Gomes, Caltrans, (916) 654-3271
TEA-21 Transportation Enhancement Activities (TEA)	varies by RTPA	RPTAs, Caltrans	$60 m	11.47% non-federal match	federally certified jurisdictions	X	X		Funds are dispersed through the four shares listed below.
Regional Share	varies by RTPA	RTPAs, Caltrans	$45 m	"	federal, state, or local, depending on category	X	X		Funding share to RTPAs.
Caltrans Share	varies by RTPA	Caltrans	$6.6 m	"	Caltrans	X	X		Funding share to Caltrans. Available only if regional TEA funds are not used
Statewide Transportation Enhancement Share	varies by RTPA	Caltrans, State Resources Agency	$20-30 m	"	federal, state (except Caltrans), regional and local agencies with a state partner	X	X		Funding share for all 12 TEA categories except conservation lands.
Conservation Lands Share	varies by RTPA	Caltrans, State Resources Agency	$11 m	"	RTPAs, counties, cities and non-profits.	X	X		Funding share for conservations lands category - acquisitions of scenic lands with high habitat conservation value.

Grant Source	Due Date	Agency	Annual Total	Matching Requirement	Eligible Applicants	Eligible Bikeway Projects			Comments
						Commute	Recreation	Safety/Ed	
TEA-21 Recreational Trails Program (RTP)	Oct. 1	State DPR	$3 m	20% match	jurisdictions, special districts, non profits with management responsibilities over the land		X		For recreational trails to benefit bicyclists, pedestrians, and other users; contact State Dept. of Parks & Rec. , Statewide Trails Coordinator, (916) 653-8803
Transportation and Community and System Preservation Pilot Program	pending	FHWA	$25 m nationwide	--	state, local, MPOs	--	--	--	Projects that improve system efficiency, reduce environmental impacts of transportation, etc. Contact K. Sue Kiser, Regional FHWA office, (916) 498-5009
Land & Water Conservation Fund (LWCF)	May 1st	State DPR	$7.7 m statewide	50%, including in-kind	Federal, state, city, county, eligible districts		X		Federally-funded. Projects that acquire and develop outdoor recreation areas and facilities. Contact Odel King, State DPR, (916) 653-8758
State Funding									
Environmental Enhancement and Mitigation Program (EEMP)	Nov.	State Resources Agency, Caltrans	$10 m statewide	not required but favored	local, state and federal government non-profit agencies	X	X	X	Projects that enhance or mitigate future transportation projects; can include acquisition or development of roadside recreational facilities. Contact Carolyn Dudley, State Resources Agency, (916) 653-5656
Safe Routes to School (SB 10)	May 31	Caltrans	$18 m	11.5% min.	city, county	X	X	X	Primarily construction program to enhance safety of pedestrian and bicycle facilities. Contact. Caltrans District 4, (510) 286-5598
Habitat Conservation Fund Grant Program	October 1	State DPR	--	50% non-state	city, county, eligible districts	-	-	-	Includes a trails/program/urban access category. Contact Odel King, State DPR, (916) 653-8758
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 Ken McGuire, Caltrans, (916) 653-2750
Regional Transportation Improvement Program (RTIP)	December 15, odd years	RTPA	--	--	city, county, transit operators, Caltrans	X		X	Part of State Transportation Improvement Program (STIP), the main state program for transportation project funding. For "improving transportation within the region." RTPA must program funds.
Petroleum Violation Escrow Account (PVEA)	On-going	State Legislature	$5 m	--	city, county, transit operators, Caltrans	--	--	--	Bicycle and trail facilities have been funded with this program. Contact Caltrans Federal Resource Office, (916) 654-7287

Grant Source	Due Date	Agency	Annual Total	Matching Requirement	Eligible Applicants	Eligible Bikeway Projects			Comments
						Commute	Recreation	Safety/Ed	
Community Based Transportation Planning Demonstration Grant Program	Nov.	Caltrans	$3 m	20% local	MPO, RPTA, city, county	X			Projects that exemplify livable community concepts. Contact Leigh Levine, Caltrans, (916) 651-6012
Office of Traffic Safety Grants	Jan. 31	Office of Traffic Safety	--	--	state, city, county			X	Bicycle and pedestrian projects have been funded through this program. Contact OTS, (916) 262-0990
Local Funding									
Transportation Development Act (TDA) Article 3 (2% of total TDA)	Jan.	RPTA	--	--	--	--	--	--	C/CAG
State Gas Tax (local share)	--	State Auditor Controller	--	--	--	X		X	Allocated by State Auditor Controller
Developer Fees or Exactions (developer fee for street improvements - DFSI)	--	Cities or County	--	--	--	--	--	--	Mitigation required during land use approval process

APPENDIX A: BIKEWAY PLANNING AND DESIGN

This chapter provides basic bikeway planning and design requirements and recommendations for use in developing the Menlo Park bikeway system and support facilities.

BIKEWAY CLASSIFICATION DESCRIPTIONS

According to Caltrans, the term "bikeway" encompasses all facilities that provide primarily for bicycle travel. Caltrans has defined three types of bikeways in Chapter 1000 of the Highway Design Manual: Class I, Class II, and Class III. Descriptions and general design guidelines are presented below. The sources used for these design recommendations were the Caltrans Highway Design Manual and AASHTO's Guide for the Development of Bicycle Facilities. **Figure A-1** provides an illustration of the three types of bicycle facilities.

CLASS I BIKEWAY

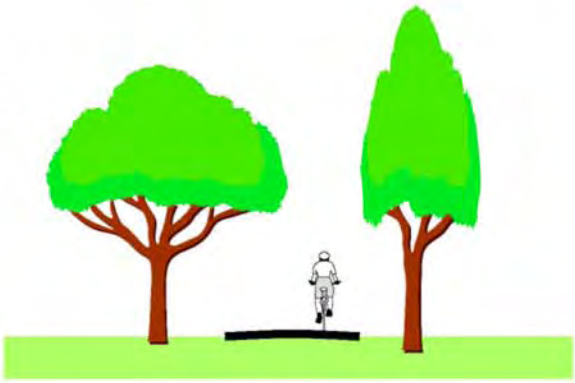
Typically called a "bike path" or "shared use path," a Class I bikeway provides bicycle travel on a paved right-of-way completely separated from any street or highway. The recommended width of a shared use path is dependent upon anticipated usage:

- 8' (2.4 m) is the minimum width for Class I facilities
- 8' (2.4 m) may be used for short neighborhood connector paths (generally less than one mile in length) due to low anticipated volumes of use
- 10' (3.0 m) is the recommended minimum width for a typical two-way bicycle path
- 12' (3.6 m) is the preferred minimum width if more than 300 users per peak hour are anticipated, and/or if there is heavy mixed bicycle and pedestrian use

A minimum 2' (0.6 m) wide graded area must be provided adjacent to the path to provide clearance from trees, poles, walls, guardrails, etc. On facilities with expected heavy use, a yellow centerline stripe is recommended to separate travel in opposite directions. **Figure A-2** illustrates a typical cross-section of a Class I multi-use path.

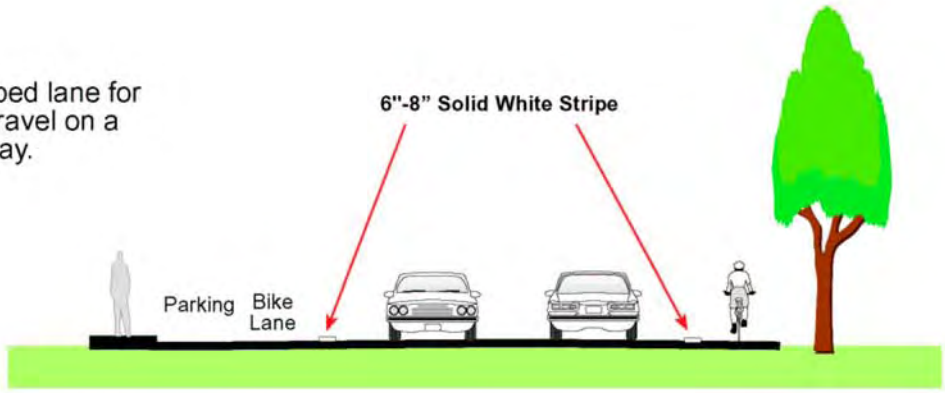
Shared Use Path

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



Bike Lane

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



Bike Route
Signed Shared Roadway

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

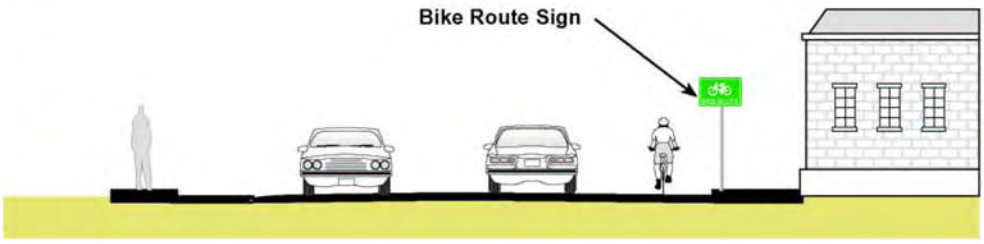


FIGURE A-1 Bicycle Facility Types

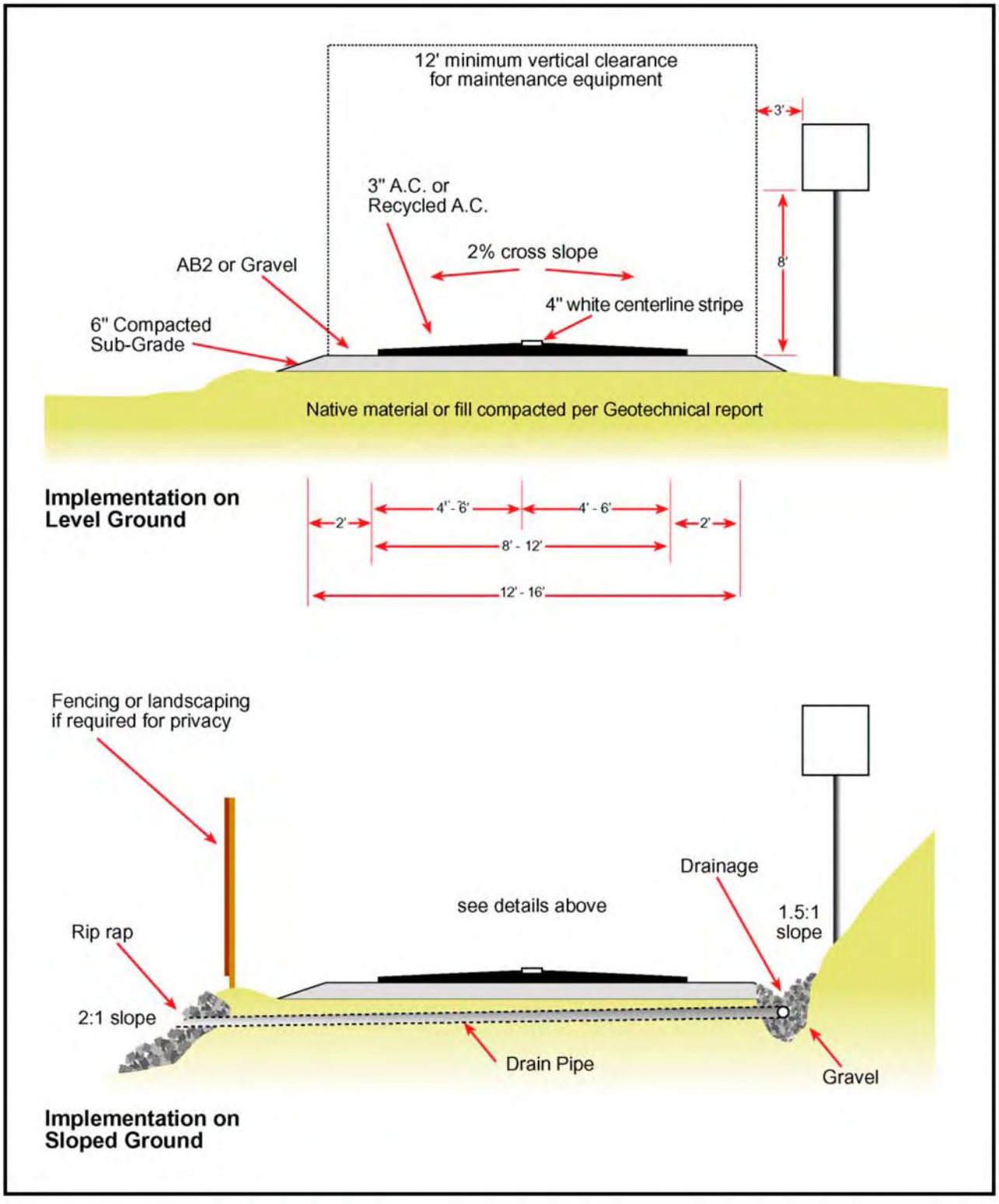


FIGURE A-2 Class I Facility Cross-Section

ADDITIONAL DESIGN RECOMMENDATIONS:

1. Shared use trails and unpaved facilities that serve primarily a recreation rather than a transportation function and will not be funded with federal transportation dollars may not need to be designed to Caltrans standards. However, state and national guidelines have been created with user safety in mind and should be followed as appropriate. Wherever any trail facility intersects with a street, roadway, or railway, standard traffic controls should always be used.
2. Class I bike path crossings of roadways require preliminary design review. Generally speaking, bike paths that cross roadways with average daily trips (ADTs) over 20,000 vehicles will require signalization or grade separation.
3. Landscaping should generally be low water consuming native vegetation and should have the least amount of debris.
4. Lighting should be provided where commuters will use the bike path in the evenings.
5. Barriers at pathway entrances should be clearly marked with reflectors and be ADA accessible (minimum five feet clearance).
6. Bike path construction should take into account impacts of maintenance and emergency vehicles on shoulders and vertical and structural requirements. Paths should be constructed with adequate sub grade compaction to minimize cracking and sinking.
7. All structures should be designed to accommodate appropriate loadings. The width of structures should be the same as the approaching trail width, plus minimum two-foot wide clear areas.
8. Where feasible, provide two-foot wide unpaved shoulders for pedestrians/runners, or a separate tread way.
9. Direct pedestrians to the right side of pathway with signing and/or stenciling.
10. Provide adequate trailhead parking and other facilities such as restrooms and drinking fountains at appropriate locations.

CLASS II BIKEWAY

Often referred to as a "bike lane," a Class II bikeway provides a striped and stenciled lane for one-way travel on either side of a street or highway. **Figure A-3** shows a typical Class II cross-section. To provide bike lanes along corridors where insufficient space is currently available, extra room can be provided by removing a traffic lane, narrowing traffic lanes, or prohibiting parking. The width of the bike lanes vary according to parking and street conditions:

- 4' (1.2 m) minimum if no gutter exists, measured from edge of pavement
- 5' (1.5 m) minimum with normal gutter, measured from curb face; or 3' (0.9 m) measured from the gutter pan seam
- 5' (1.5 m) minimum when parking stalls are marked
- 11' (3.3 m) minimum for a shared bike/parking lane where parking is permitted but not marked on streets without curbs; or 12' (3.6 m) for a shared lane adjacent to a curb face

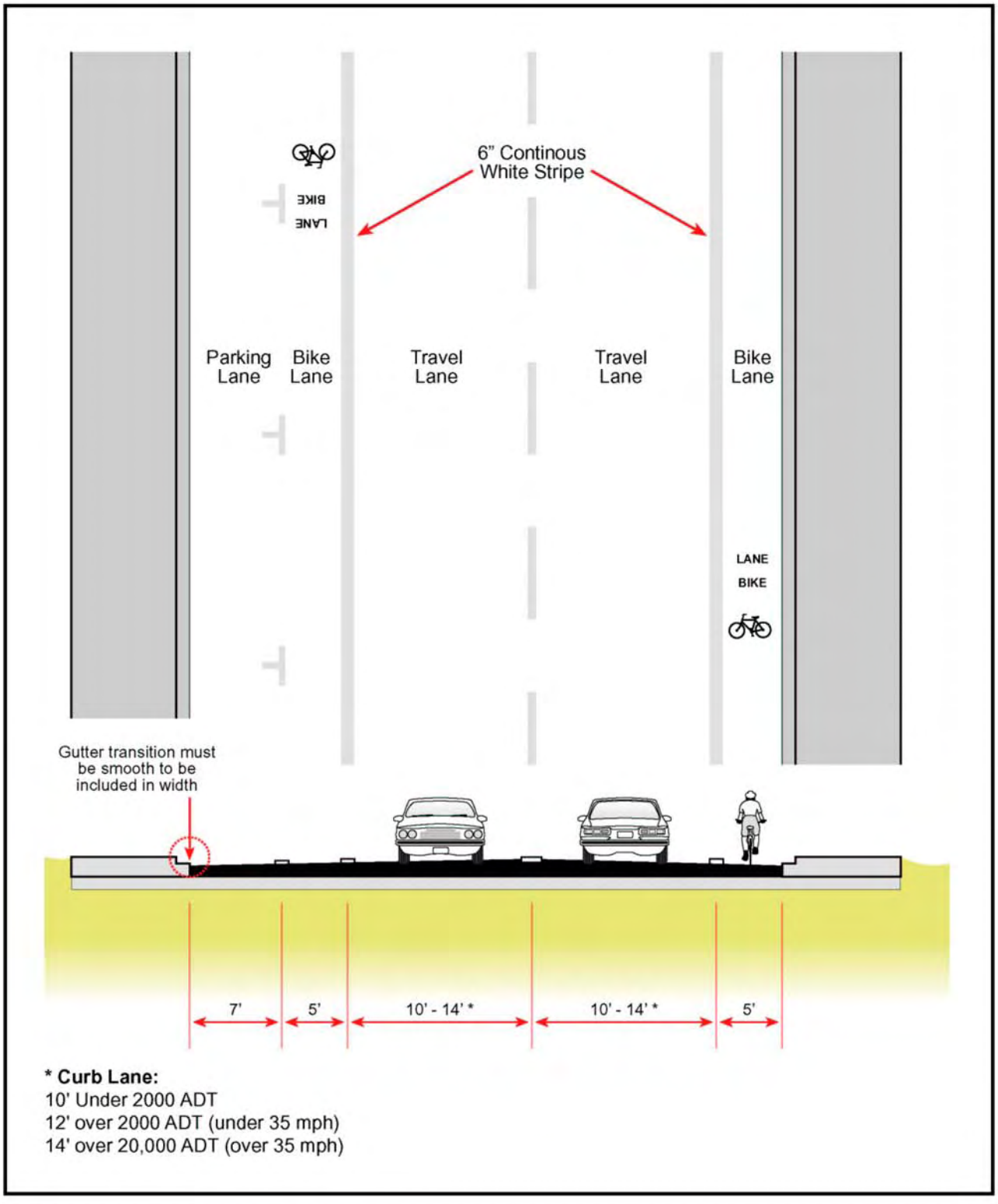


FIGURE A-3 Class II Facility Cross-Section

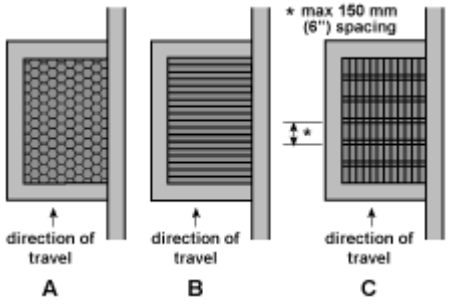
ADDITIONAL DESIGN RECOMMENDATIONS:

1. Whenever possible, the Department of Public Works should recommend that wider bike lanes beyond the minimum standard be installed.
2. Intersection and interchange treatment – Caltrans provides recommended intersection treatments in Chapter 1000 including bike lane "pockets" and signal loop detectors. The Department of Public Works should develop a protocol for the application of these recommendations, so that improvements can be funded and made as part of regular improvement projects.
3. Signal loop detectors, which sense bicycles, should be considered for all arterial/arterial, arterial/collector, and collector/collector intersections. A stencil of a bicycle and the words "Bicycle Loop" should identify the location of the detectors.
4. When loop detectors are installed, traffic signalization should be set to accommodate bicycle speeds.
5. Bicycle-sensitive loop detectors are preferred over a signalized button specifically designed for bicyclists (see discussion of loop detectors, below).
6. Bike lane pockets (min. 4' wide) between right turn lanes and through lanes should be provided wherever available width allows, and right turn volumes exceed 150 motor vehicles/hour.
7. Where bottlenecks preclude continuous bike lanes, they should be linked with Class III route treatments.
8. A bike lane should be delineated from motor vehicle travel lanes with a solid 6" white line, per MUTCD. An 8" line width may be used for added distinction.
9. Word and symbol pavement stencils should be used to identify bicycle lanes, as per Caltrans and MUTCD specifications.

This drainage gate, in the Encinal Avenue bike lane at the intersection with Laurel Street, forces cyclists to veer into the travel lane to avoid it.

Installing bike lanes may require more attention to continuous maintenance issues. Bike lanes tend to collect debris as vehicles disperse gravel, trash, and glass fragments from traffic lanes to the edges of the roadway. Striping and stenciling will need periodic replacing.

Poorly designed or placed drainage grates can often hazardous to bicyclists. Drainage grates with large slits can catch bicycle tires. Poorly placed drainage grates may also be hazardous, and can cause bicyclists to veer into the auto travel lane. For example, the photo to the right shows a drainage grate, in the bike lane at the intersection of Encinal Avenue and Laurel Street, which is a hazard to bicyclists in Menlo Park.



Examples of bicycle friendly drainage grates.

CLASS III BIKEWAY

Generally referred to as a "bike route," a Class III bikeway provides routes through areas not served by Class I or II facilities or to connect discontinuous segments of a bikeway.

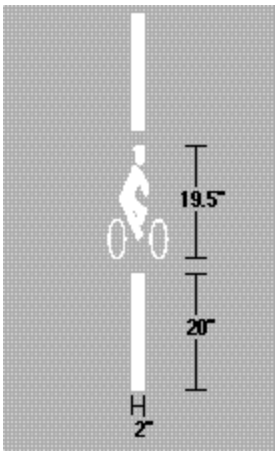
Class III facilities can be shared with either motorists on roadways or pedestrians on a sidewalk (not advisable) and is identified only by signing. There are no recommended minimum widths for Class III facilities, but when encouraging bicyclists to travel along selected routes, traffic speed and volume, parking, traffic control devices, and surface quality should be acceptable for bicycle travel. A wide outside traffic lane (14') is preferable to enable cars to safely pass bicyclists without crossing the centerline.

INTERSECTION CONSIDERATIONS

Intersections represent one of the primary collision points for bicyclists. Generally, the larger the intersection, the more difficult it is for bicyclists to cross. Oncoming vehicles from multiple directions and increased turning movements make it difficult for motorists to see non-motorized travelers.

Most intersections do not provide a designated place for bicyclists. Bike lanes and pavement markings often end before intersections, causing confusion for bicyclists. Loop and other detectors, such as video, often do not detect bicycles.

Bicyclists wanting to make left turns can face quite a challenge. Bicyclists must either choose to behave like motorists by crossing travel lanes and seeking refuge in a left-turn lane, or they act as pedestrians and dismount their bikes, push the pedestrian walk button located on the sidewalk, and then cross the street in the crosswalk. Bicyclists traveling straight also have difficulty maneuvering from the far right lane, across a right turn lane, to a through lane of travel. Furthermore, motorists often do not know which bicyclist movement to expect.



This bicycle loop detector stencil shows bicyclists where to position their bicycle to activate the signal

Changing how intersections operate also can help make them more "friendly" to bicyclists. Improved signal timings for bicyclists, bicycle-activated loop detectors, and camera detection make it easier and safer for cyclists to cross intersections.

Figure A-4 is an example of an intersection that provides bike lanes at critical locations at intersections.

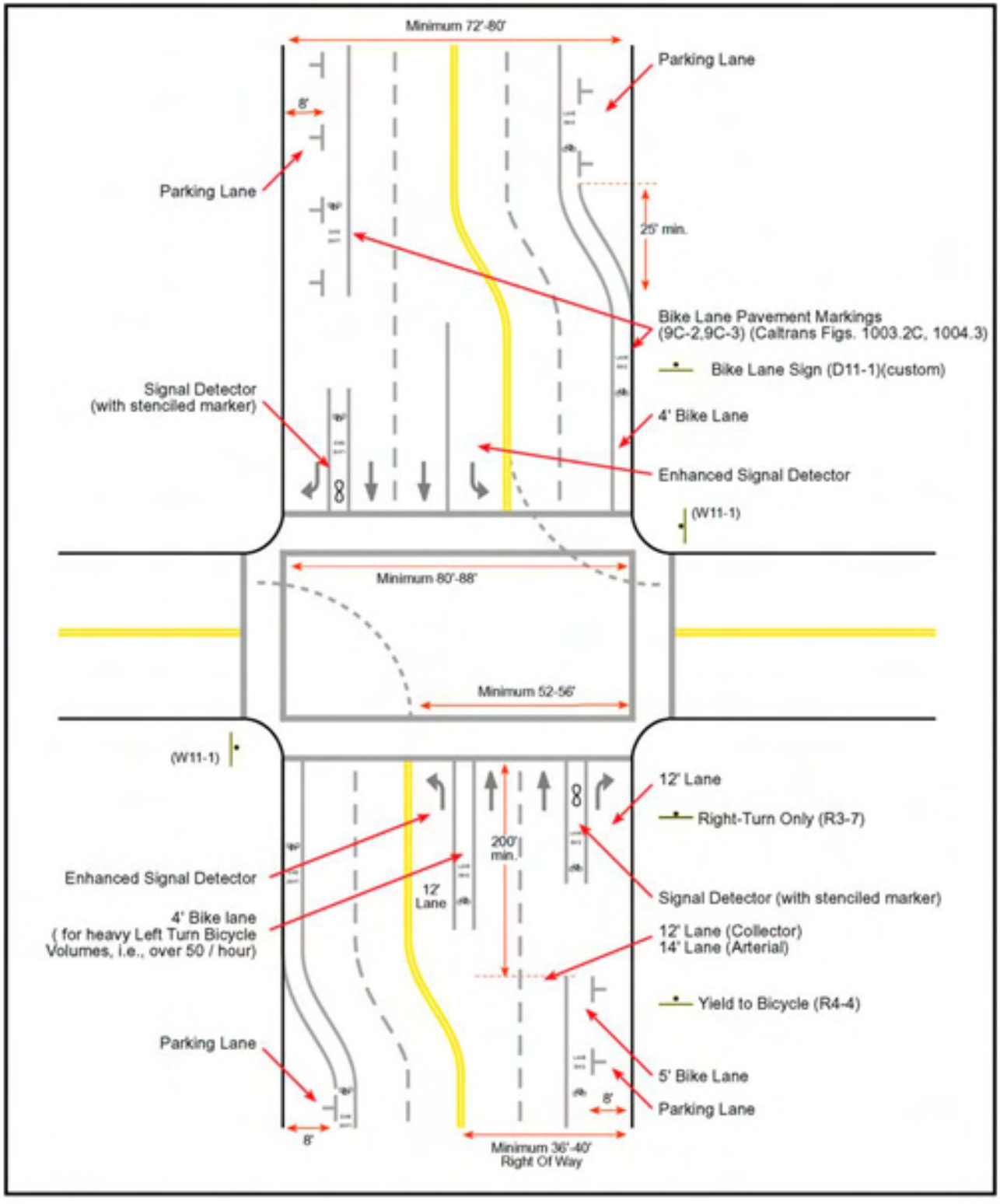
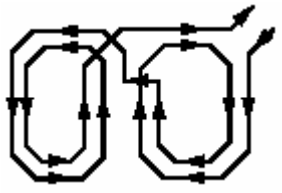


FIGURE A-4 Bike Lanes at Intersection

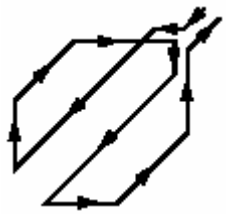
BICYCLE LOOP DETECTORS

The purpose of bicycle loops is to detect bicyclists waiting at intersections, and to give cyclists extra green time (e.g. five seconds) before the light turns yellow to make it through the light. Current and future loops that are sensitive enough to detect bicycles should have pavement markings to instruct cyclists how to trip them. Common loop detector types are shown in **Figure A-5** below:

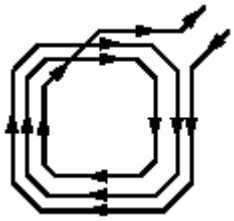
Figure A-5
Common Loop Detector Types



Quadrupole Loop
Detects most strongly in center
Sharp cut-off sensitivity
Used in bike lanes



Diagonal Quadrupole Loop
Sensitive over whole area
Sharp cut-off sensitivity
Used in shared lanes



Standard Loop
Detects most strongly over wires
Gradual cut-off
Used for advanced detection

From: Implementing Bicycle Improvements at the Local Level, FHWA, 1998, page 70.

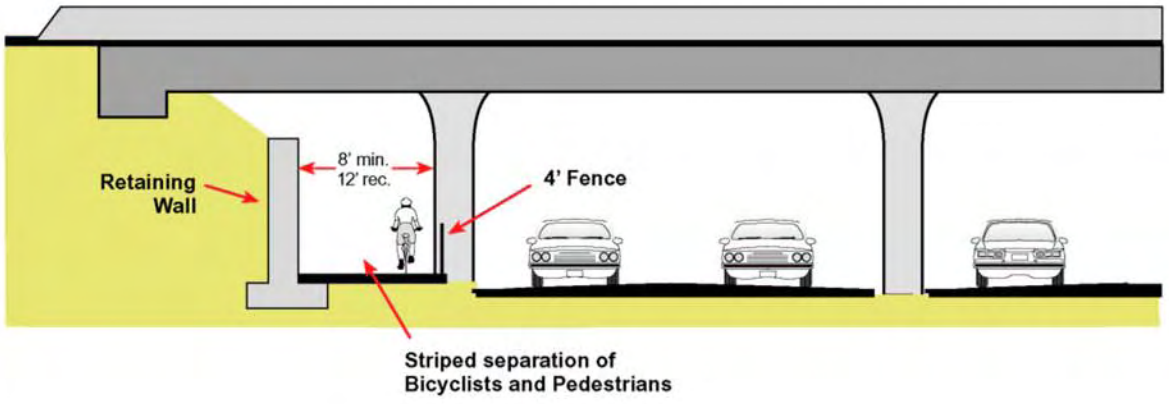
BIKE BOX

A bike box is a relatively new innovation to improve turning movements for bicyclists without requiring cyclists to merge into traffic to reach the turn lane or use crosswalks as a pedestrian. The bike box is formed by pulling the stop line for vehicles back from the intersection, and adding a stop line for bicyclists immediately behind the crosswalk. When a traffic signal is red, a bicyclist can move into this "box" ahead of the cars to make himself more visible, or to move into a more comfortable position to make a turn. Bike boxes have been used in Cambridge, MA; Eugene, OR; and European cities.

Bike box in Eugene, OR. (Photo: Evaluation of an Innovative Application of the Bike Box, FHWA, 2000.)

UNDERCROSSINGS

There are two potential future projects in Menlo Park where new bikeway undercrossings are recommended. **Figure A-6** illustrates basic design standards for undercrossings.



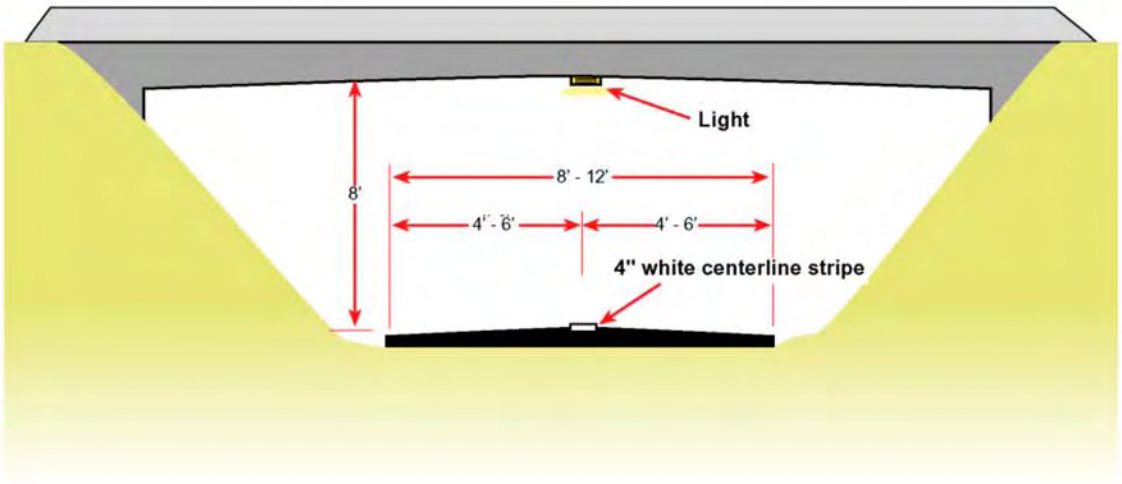


FIGURE A-6 Undercrossing Design Guidelines

The design standards provided here should serve as a guide the potential Caltrain undercrossing and the Bayfront Expressway undercrossing. These designs could also be applicable for accommodating bicyclists in the Caltrain grade separation projects at Ravenswood, Oak Grove and Glenwood. Some design considerations with undercrossings:

- Must have adequate lighting and sight distance for safety
- Must have adequate over-head clearance of at least 3.1 m (10 ft)
- Tunnels should be a mini-mum 4.3 m (14 ft) for several users to pass one another safely; a 3.0 m x 6.0 m (10 ft x 20 ft) arch is the recom-mended standard
- "Channeling" with fences and walls into the tunnel should be avoided for safety reasons
- May require drainage if the sag point is lower than the surrounding terrain

This undercrossing provides ample vertical and horizontal clearance and a clear sight line through the structure, improving the feeling of safety.

SIGNAGE

Implementing a well-planned and attractive system of signing can greatly enhance bikeway facilities by signaling their presence and location to both motorists and existing and potential bicycle users. By leading people to city bikeways and the safe and efficient transportation they offer to local residents and visitors to the county, effective signage can encourage more people to bicycle.

STANDARD SIGNAGE

All bikeway signing should conform to the signing identified in the Caltrans Traffic Manual and/or the Manual on Uniform Traffic Control Devices (MUTCD). These documents give specific information on the type and location of signing for the primary bike system. A list of bikeway signs from Caltrans and the MUTCD is shown in **Table A-1**.

Figures A-7, A-8, A-9, and A-10 illustrate a number of examples of bikeway signage.

In general, the sizes of signs used on bicycle paths are smaller than those used on roadways. Table 9B-1 of the MUTCD lists minimum sign sizes for both path and roadway bicycle facilities. If the sign applies to drivers and bicyclists, then the larger size used for conventional roads shall apply.

Table A-1
Recommended Signing and Marking

Item	Location	Color	Caltrans Designation	MUTCD Designation
No Motor Vehicles	Entrances to trail	B on W	R44A	R5-3
Use Ped Signal / Yield to Peds	At crosswalks; where sidewalks are being used	B on W	N/A	R9-5, R9-6
Bike Lane Ahead: Right Lane Bikes Only	At beginning of bike lanes	B on W	N/A	R3-16, R3-17
STOP, YIELD	At trail intersections with roads	W on R	R1-2	R1-1, R1-2
Bicycle Crossing	For motorists at trail crossings	B on Y	W79	W11-1
Bike Lane	At the far side of all arterial intersections	B on W	R81	D11-1
Hazardous Condition	Slippery or rough pavement	B on Y	W42	W8-10
Turns and Curves	At turns and curves which exceed 20- mph design specifications	B on Y	W1, 2, 3, 4, 5, 6, 14, 56, 57	W1-1, W1-2, W1-4, W1-5, W1-6
Trail Intersections	At trail intersections where no STOP or YIELD required, or sight lines limited	B on Y	W7, 8, 9	W2-1, W2-2, W2-3, W2-4, W2-5
STOP Ahead	Where STOP sign is obscured	B, R on Y	W17	W3-1
Signal Ahead	Where signal is obscured	B, R, G	W41	W3-3
Bikeway Narrows	Where bikeway width narrows or is below 8'	B on Y	W15	W5-4
Downgrade	Where sustained bikeway gradient is above 5%	B on Y	W29	W7-5
Pedestrian Crossing	Where pedestrian walkway crosses trail	B on Y	W54	W11A-2
Restricted Vertical Clearance	Where vertical clearance is less than 8'6"	B on Y	W47	W11A-2
Railroad Crossing	Where trail crosses railway tracks at grade	B on Y	W47	W10-1
Directional Signs	At intersections where access to major destinations is available	W on G	G7, G8	D1-1b(r/l), D1-1-c
Right Lane Must Turn Right; Begin Right Turn Here; Yield to Bikes	Where bike lanes end before intersection	B on W	R18	R3-7, R4-4

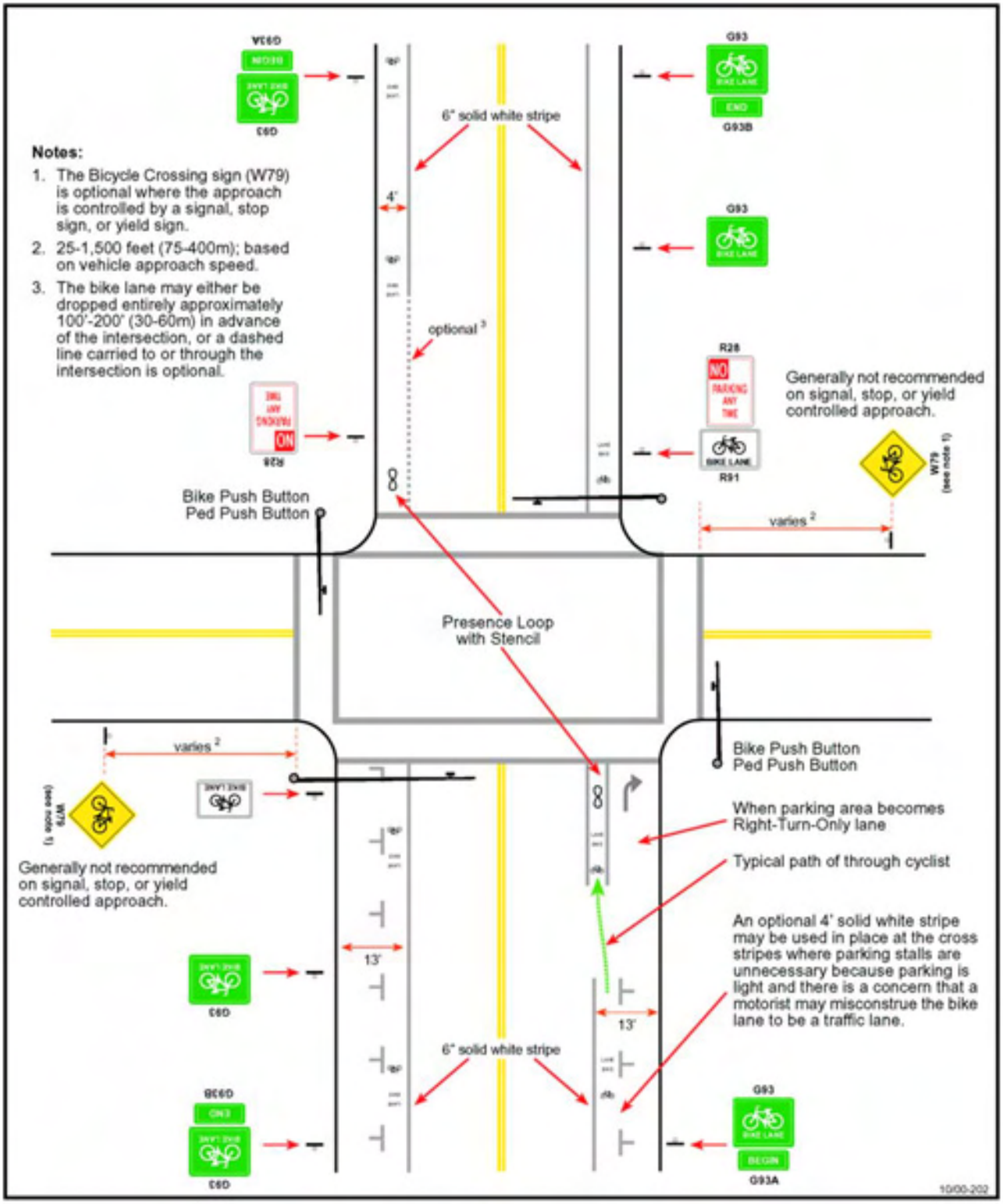
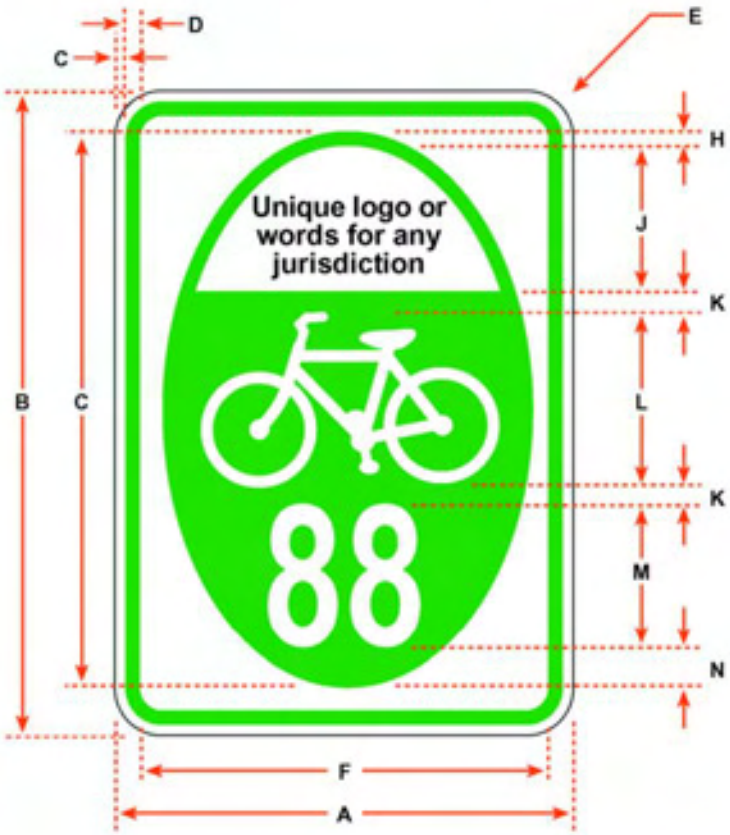


FIGURE A-7 Typical Signing At a Signalized Intersection

State of California - Department of Transportation
Code : SG45
MUTCD Number: None



Sign Size	Dimensions (inches)												
	A	B	C	D	E	F	G	H	J	K	L	M	N
12 x 18	12	18	1/4	1/4	1-1/2	10	16	1/4	4	3/4	4-1/2	4D	1-3/4
18 x 24	18	24	3/8	1/2	1-1/2	15	21	1/2	5	1	6	5D	2-1/2

Colors
Border and Legend - Green (Reflective)
Background - White (Reflective)

10/00-206

FIGURE A-8 Caltrans Customized Bikeway Signs

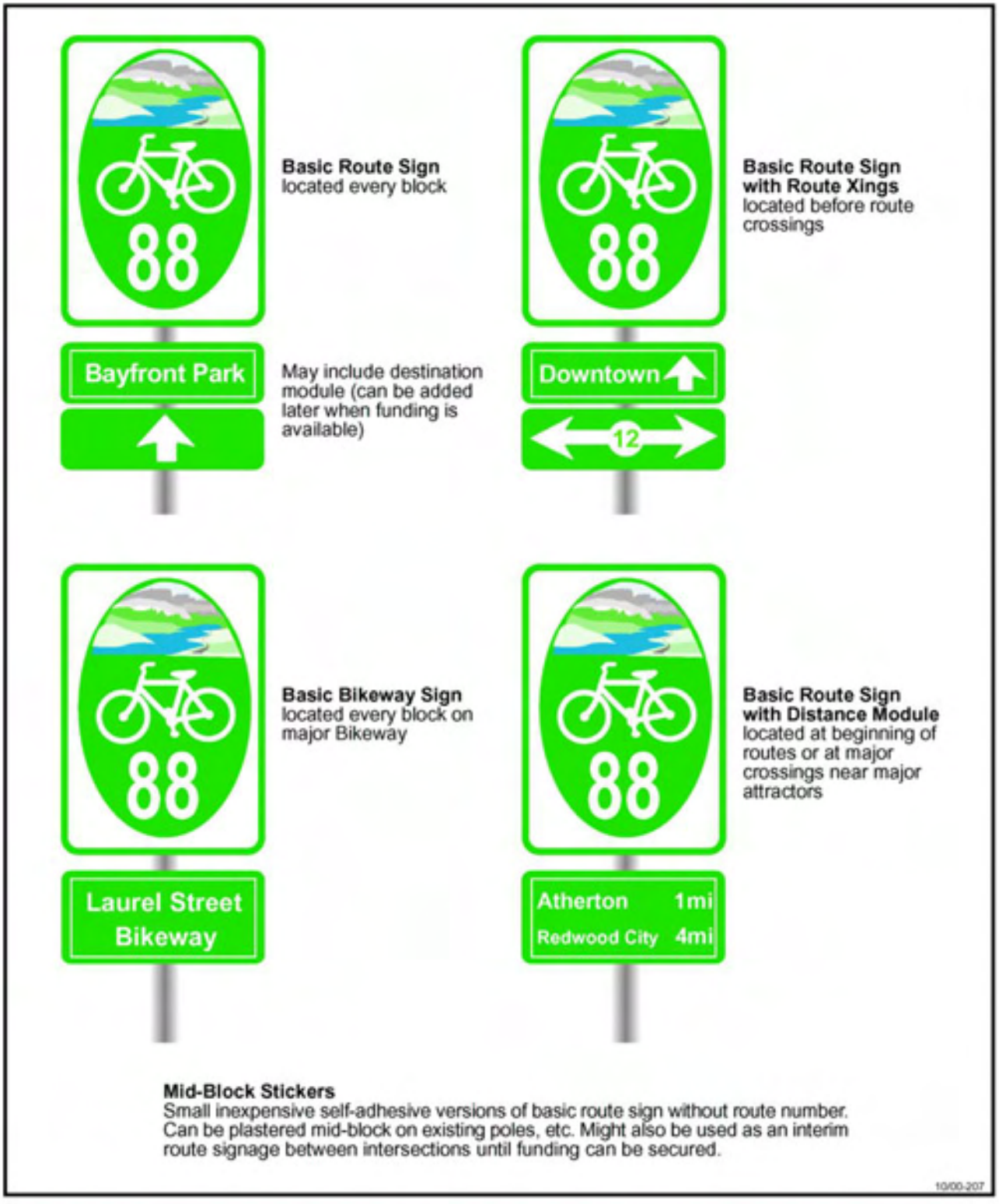


FIGURE A-9 Various Bikeway Informational Signs

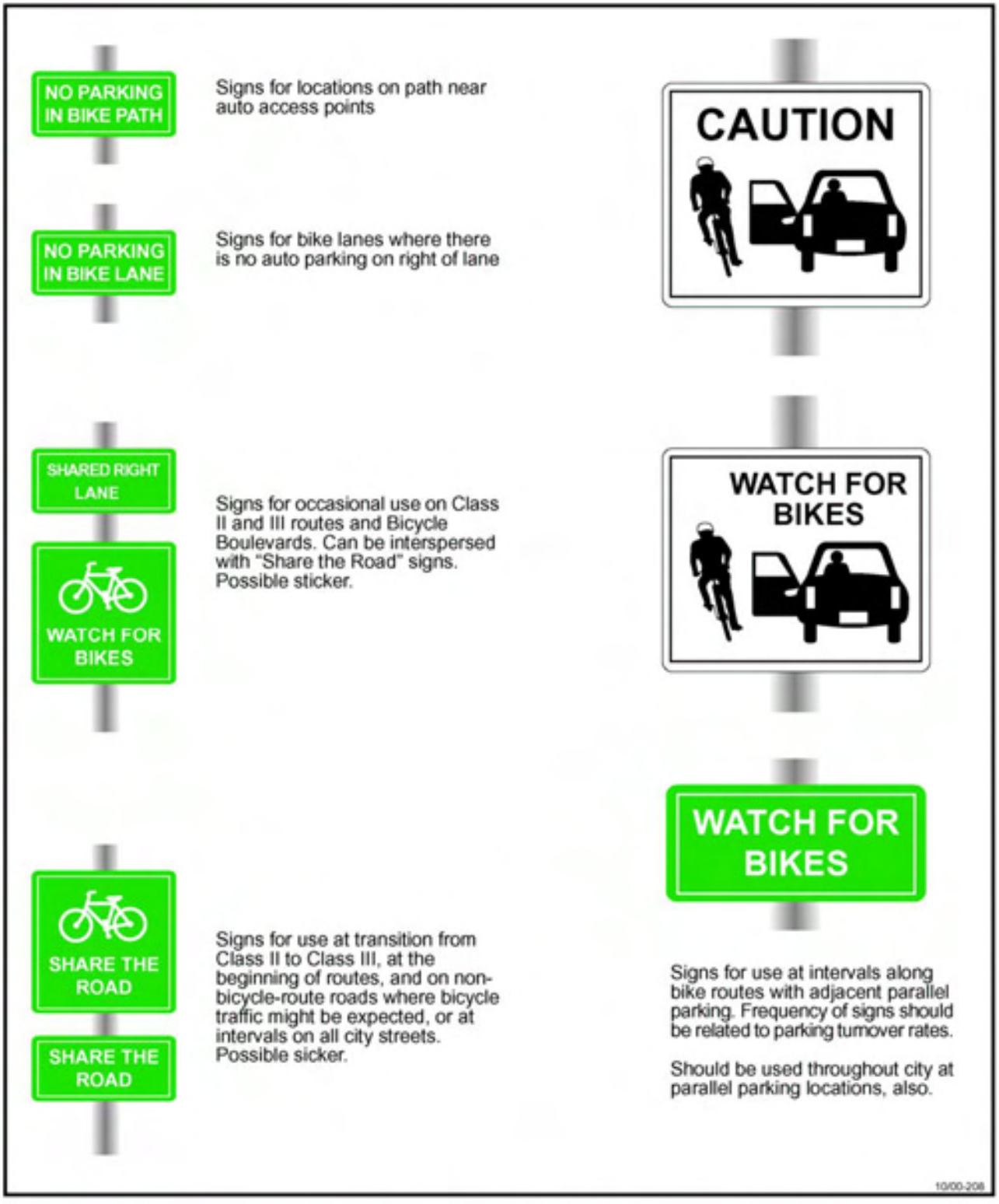


FIGURE A-10 Various On-Street Bikeway Warning Signs

OTHER SIGNAGE

Innovative signing is often developed to increase bicycle awareness and improve visibility. Signs to be installed on public roadways in California must be approved by Caltrans' California Traffic Control Devices Committee. New designs can be utilized on an experimental basis with Caltrans approval.

San Francisco was the first city in California to use the approved customized bike route logo sign. Jurisdictions may choose a graphic of their choice for the upper third portion of the sign and a numbering system, similar to the highway numbering system, can be used in the lower third. Some considerations for the use of directional signage:

- Use signs sparingly, primarily at intersections and junctions with other bicycle routes
- A consistent and recognizable logo, arrows and a destination should be on the sign to clearly direct bicyclists
- Bicycle route signs should be accompanied with destination and direction plaques

The new "Share the Road" sign, adopted by the California Traffic Control Devices Committee in 1999, is designed to advise motorists that bicyclists need to share narrow roadways with motor vehicles. This sign has been installed throughout Marin County.

Interest has been generated over the "Bikes Allowed Use of Full Lane" sign. These words, taken directly from the California Vehicle Code (CVC 21202), remind motorists of the rights of bicyclists on the roadway, Cities may consider using this sign as an experiment as it has not yet been approved by the California Traffic Control Devices Committee.

PAVEMENT MARKINGS

The Manual on Uniform Traffic Control Devices (MUTCD) provides guidance for lane delineation, intersection treatments, and general application of pavement wording and symbols for on-road bicycle facilities and off-road paths. In addition to those presented in the MUTCD, the following experimental pavement markings may be considered.

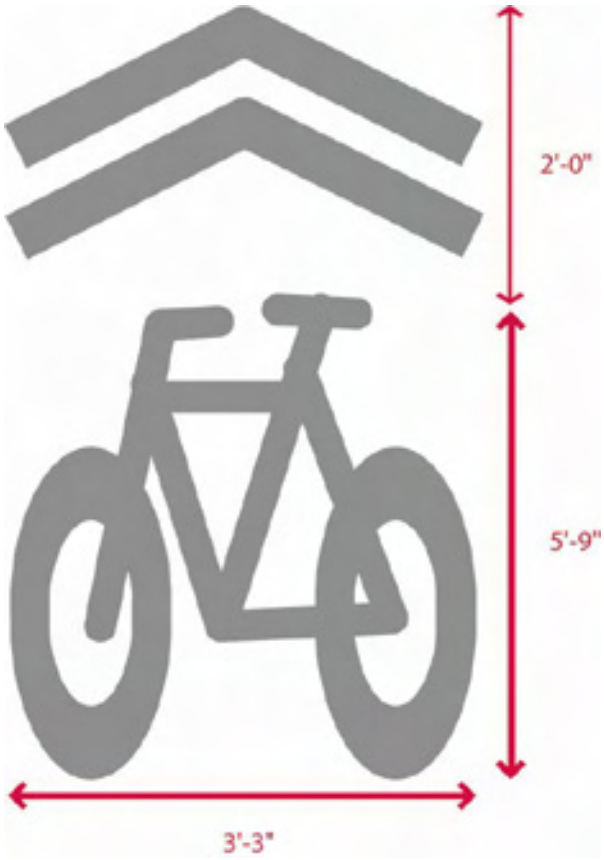
SHARED LANE MARKINGS

Recently, "shared lane marking" stencils, an additional treatment for Class III facilities, have been introduced on city roadways. The shared lane marking emphasizes the share-the-lane concept already promoted in Menlo Park on roadway signs where lane merges occur, as at the intersection of Ravenswood Avenue and Alma Street, and also along roadways like Santa Cruz Avenue. The stencil can serve a number of purposes, such as making motorists aware of bicycles potentially in their lane, showing bicyclists the direction of travel, and, with proper placement, reminding bicyclists to bike further from parked cars to

prevent "dooring" collisions. The City of Denver has effectively used the "bike-in-house" shared marking treatment (shown in photo on previous page) for several years, and San Francisco recently tested two designs of the shared lane marking stencil for use on Class III facilities where lanes are too narrow for sharing. Based on the results of the San Francisco study, the California Traffic Control Devices Committee (CTCDC) recommended in August 2004 that the "Chevron Bicycle Symbol" design of the Shared Lane Marking be adopted by Caltrans as a standard traffic control device in California. The "Chevron" marking design recommended by the CTCDC is shown below in **Figure A-11.** **Figure A-12** illustrates the recommended on-street Shared Lane Marking stencil installation.

Guidance language recommended by the CTCDC for use of the Shared Lane Marking is as follows:

Figure A-11
"Chevron" Design of Shared Lane Marking



Support:
The Shared Lane Marking is intended to improve the positioning of bicyclists on roadways with significant bicycle usage and parked vehicles where the curb lanes are too narrow for motorists and bicyclists to travel side by side within the lane.

Option:
The Shared Lane Marking may be used in shared lanes to improve bicyclists' positioning on roadways, encourages cycling in the correct direction, discourage cycling on sidewalks, and to decrease motor vehicle/bicycle conflicts by informing motorists where to expect cyclists, especially on urban and suburban roadways with narrow curb lanes.

Standard:
If used, the Shared Lane Marking shall be placed so that its center is a minimum of 3.4 meters (11 feet) from the curb face with on-street parking.

On street with no on-street parking, the marking should be placed so that it directs cyclists away from conditions alongside the curb face edge that compromise cyclists' safety, such as drain grates and longitudinal gutter joints. If used, the Shared Lane Marking generally should be spaced at 75 meter (250 foot) intervals.

Option:
The spacing may be increased or decreased based on judgment. On streets with downgrades, higher speeds, or wide parked vehicles, the distance from the curb lane may be increased beyond 3.4 meters (11 feet).

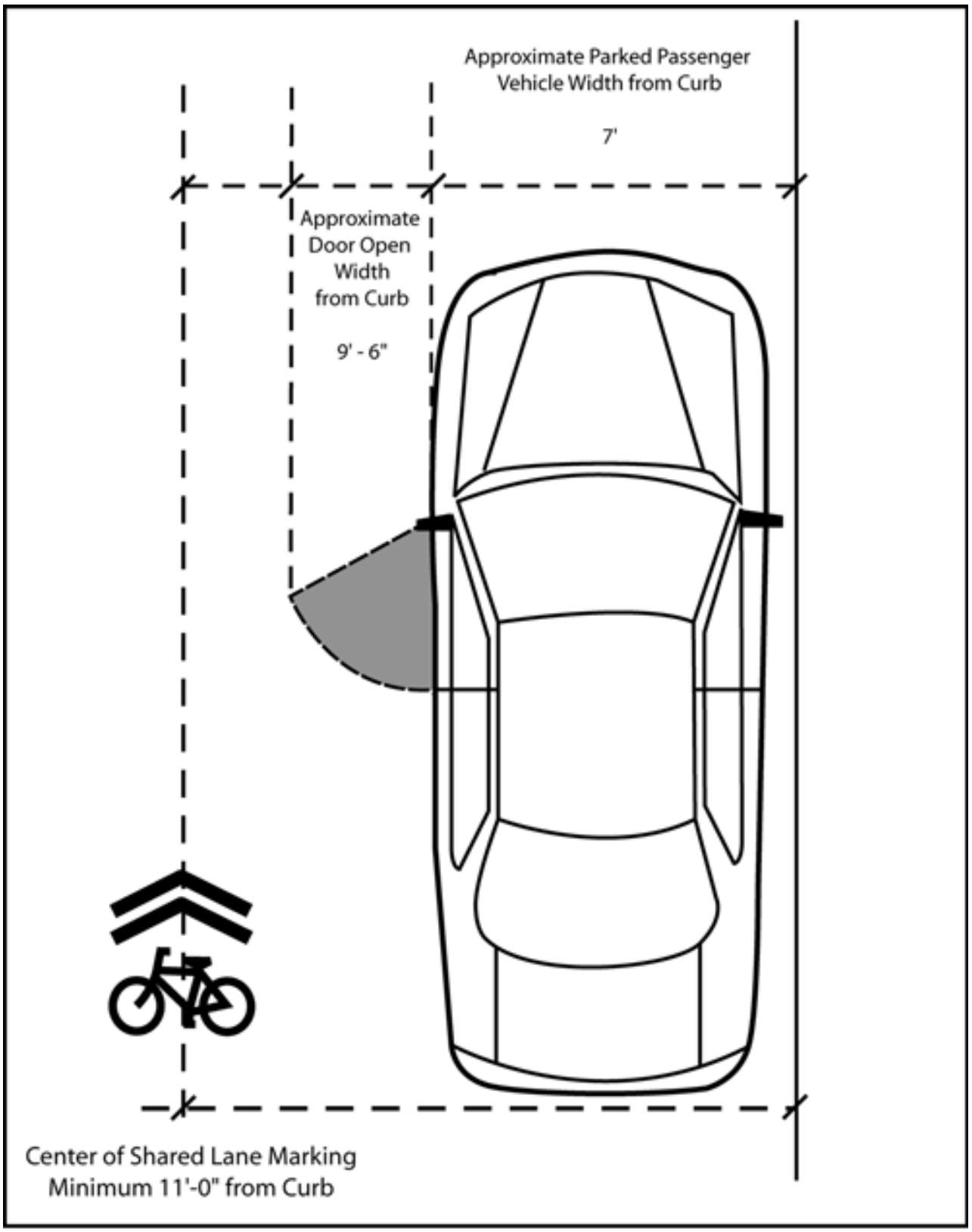


FIGURE A-12 Shared Lane Marking Installation

COMBINED BICYCLE/RIGHT TURN LANE

In this innovative treatment, a standard-width bicycle lane is installed on the left side of the dedicated right-turn lane. A dashed stripe provides the bicycle portion and the right-turn portion of the lane. This installation should be used on roadways where there is not enough room to provide a standard-width bicycle lane and a standard-width dedicated right-turn lane. These facilities are currently used in Eugene, Oregon.

Some considerations for the implementation of combined bicycle/right turn lanes:

- Average vehicle speeds < 48 km/h (30 mi/h)
- Install a sign to instruct motorists and bicyclists how to use the facility
- Stripe and sign bicycle lane pavement markings in the turn lane to position and guide bicyclists in the right-turn lane

The photos above show the operation of a combined bicycle/right turn lane, along with the signage instructing motorists and bicyclists how to properly use the facility.

BICYCLE PARKING

As more bikeways are constructed and bicycle usage grows, the need for bike parking will climb. Long-term bicycle parking at transit stations and work sites, as well as short-term parking at shopping centers and similar sites, both can support bicycling. Bicyclists have a significant need for secure long-term parking because bicycles parked for longer periods are more exposed to weather and theft, although adequate long-term parking rarely meets demand.

BICYCLE RACKS

When choosing bike racks, there are a number of things to keep in mind:

- The rack element (part of the rack that supports the bike) should keep the bike 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.

- Position racks so there is enough room between adjacent parked bicycles. If it becomes too difficult for a bicyclist to easily lock their bicycle, they may park it elsewhere and the bicycle capacity is lowered. A row of inverted "U" racks should be situated on 30" minimum centers.
- Empty racks should not pose a tripping hazard for visually impaired pedestrians. Position racks out of the walkway's clear zone.
- When possible, racks should be in a lighted, high visibility, covered area protected from the elements. Long-term parking should always be protected

Table A-2 provides basic guidelines on the ideal locations for parking at several key activity centers as well as an optimum number of parking spaces.

Sample bicycle parking ordinance language is provided in **Appendix E** of this Plan, which outlines minimum bicycle parking standards for various land uses. This language can serve as a template for the City of Menlo Park in creating a bicycle parking ordinance for inclusion in the zoning code.

Table A-2
Recommended Guidelines for Bicycle Parking Locations and Quantities

Land Use or Location	Physical Location	Bicycle Capacity
City Park	Adjacent to restrooms, picnic areas, fields, and other attractions	8 bicycles per acre
City Schools	Near office entrance with good visibility	8 bicycles per 40 students
Public Facilities (city hall, libraries, community centers)	Near main entrance with good visibility	8 bicycles per location
Commercial, retail and industrial developments over 10,000 gross square feet	Near main entrance with good visibility	1 bicycle per 15 employees or 8 bicycles per 10,000 gross square feet
Shopping Centers over 10,000 gross square feet	Near main entrance with good visibility	8 bicycles per 10,000 gross square feet
Commercial Districts	Near main entrance with good visibility; not to obstruct auto or pedestrian movement	2 bicycles every 200 feet
Transit Stations	Near platform or security guard	1 bicycle per 30 parking spaces

ATTENDED BICYCLE PARKING FACILITIES

Attended bike parking is analogous to a coat check – your bike is securely stored until you need it in a supervised location. An organization called The Bikestation® Coalition is promoting enhanced attended parking at transit stations.

The Bikestation® concept is now in use in Palo Alto and Berkeley in the Bay Area. Bikestations® offer secured valet bicycle parking near transit centers. What makes Bikestations® distinctive are the other amenities that may be offered at the location – bicycle repair, cafes, showers and changing facilities, bicycle rentals, licensing, etc. Bikestations® become a virtual one-stop-shop for bicycle commuters.

Attended bicycle parking can be offered at some special events. For example, the Marin County Bicycle Coalition sponsors valet parking at many festivals in the county, the Sonoma County Bicycle Coalition sponsors valley parking at the downtown Santa Rosa Farmer's Market, and secured bicycle parking is offered at Pac Bell Park in San Francisco.

APPENDIX B: STEERING COMMITTEE MEMBERS

Name	Affiliation
Rene Baile	City of Menlo Park Transportation Program
Jamal Rahimi	City of Menlo Park Transportation Program
Dino Teddyputra	City of Menlo Park Transportation Program
John Fox	Menlo Park Bicycle Commission Chair
Mike Woods	Peninsula Bicycle & Pedestrian Coalition, Resident
Glen Bethel	Menlo Park Resident, Cyclist
Rhoda Alexander	Menlo Park Transportation Commissioner
Pipo Bui	Former Menlo Park Bike Commissioner
Johnnie Walton	Menlo Park Resident
Brett Hondorp	Alta Planning + Design
Michael Jones	Alta Planning + Design

APPENDIX C: BIKE PLAN SURVEY FORM AND RESULTS

Menlo Park Bicycle User Survey

Menlo Park is in the process of preparing an official Comprehensive Bicycle Plan. The Bike Plan will identify ways to enhance and expand the exiting network of bike lanes, routes and paths; connect gaps in the system; and provide improvements such as bike parking, signage, and lane markings to encourage people to bike more. The goal of the Bike Plan is to make Menlo Park a safer and more enjoyable place for you and your children to bicycle to work, to school, or for recreation. This survey will help the city understand what bicycling improvements people want and prefer.

Please return all surveys as soon as possible, but no later than Tuesday June 1, 2004 to:

Rene Baile, City of Menlo Park Transportation Program
701 Laurel Street
Menlo Park, CA 94025
TEL: (650) 330-6770 FAX: (650) 327-5497
Comments can also be emailed to: rcbaile@menlopark.org

Public workshops on the Bike Plan are scheduled for April 3, May 22, and June 26, 2004. Contact Rene Baile for details.

1. How often do you bicycle?
   - ❑ Daily
   - ❑ 1-6 times per week
   - ❑ 1-3 times per month
   - ❑ Rarely
   - ❑ Never

2. Can you describe your typical trip purpose? (Check all that apply)
   - ❑ Work
   - ❑ School
   - ❑ Transit connections/Bus stops
   - ❑ Shopping
   - ❑ Recreation/exercise
   - ❑ Other
   - ❑ Don't Ride

3. How far do you live from work or school?
   - ❑ 0 - 1 mile
   - ❑ 1 - 2 miles
   - ❑ 2 - 6 miles
   - ❑ 6 or more miles
   - ❑ Not applicable

4. Please rank your preference (1 through 3, 1 being highest) for:

   __ Off-street bike paths

   __ On-street bike lanes

   __ Bike routes or boulevards (on local streets)

5. Check the reasons you don't bicycle more often:
   - ❑ Concerns about safety
   - ❑ Lack of bikeways (paths, lanes, routes) to ride on
   - ❑ Too far
   - ❑ Time
   - ❑ Weather / darkness
   - ❑ Lack of bicycle parking/storage
   - ❑ Driving is more convenient
   - ❑ Other

6. On the back of this sheet, please list the routes you ride on a regular basis, including your destinations.

7. Please describe the top priority bicycle projects or programs you would like to see completed or implemented in Menlo Park. This may include correcting major constraints, such as specific intersections, stretches of road, lack of parking, maintenance issues, etc.; or implementing educational programs or enforcement activities. Please feel free to use the back of this survey if more space is needed.

   1. _____
   2. _____
   3. _____
   4. _____
   5. _____

OPTIONAL INFORMATION:

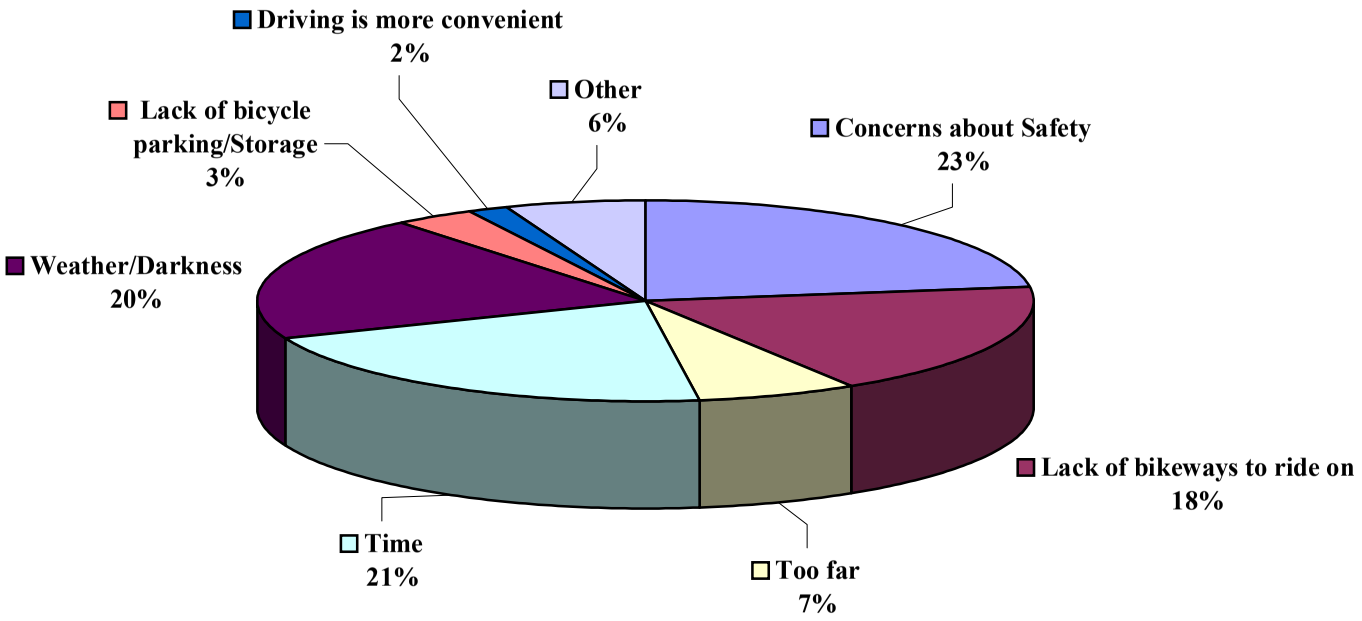
Name:_____ Address:_____

Email:_____ Date Completed:_____ Circle: Male/Female

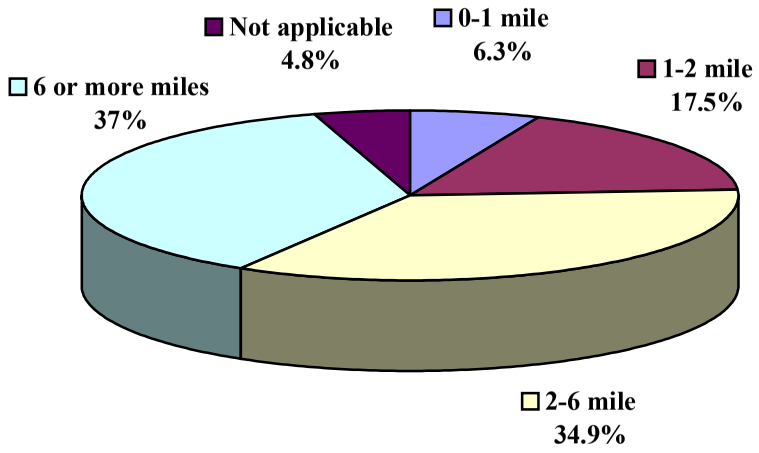
Summary of Bicycle Survey Results

		Number responded	Percent responded
			(%)
	Daily	18	28.6
	1-6 times per week	25	39.7
	1-3 times per week	16	25.4
	Rarely	4	6.3
	Never	0	0.0
2.	***Can you describe your typical trip purpose?***		
	Work	41	65.1
	School	12	19.0
	Transit Connections/Bus stops	7	11.1
	Shopping	24	38.1
	Recreation/exercise	44	69.8
	other	5	7.9
	Don't Ride	0	0.0
3.	***How far do you live from work or school?***		
	0-1 mile	4	6.3
	1-2 mile	11	17.5
	2-6 mile	22	34.9
	6 or more miles	23	36.5
	Not applicable	3	4.8
4.	***Please rank your preference***		
	Off-street bike paths	32	50.8
	On-street bike lanes	18	28.6
	Bike routes or boulevards (on local streets)	13	20.6
5.	***Check the reasons you don't bicycle more often:***		
	Concerns about safety	27	42.9
	Lack of bikeways to ride on	22	34.9
	Too far	8	12.7
	Time	25	39.7
	Weather/Darkness	24	38.1
	Lack of bicycle parking/storage	4	6.3
	Driving is more convenient	2	3.2
	Other	7	11.1

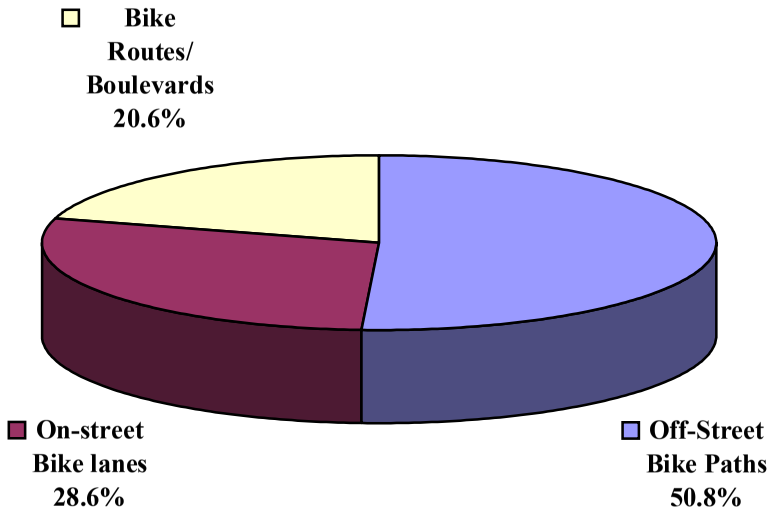
Reasons cyclists don't ride



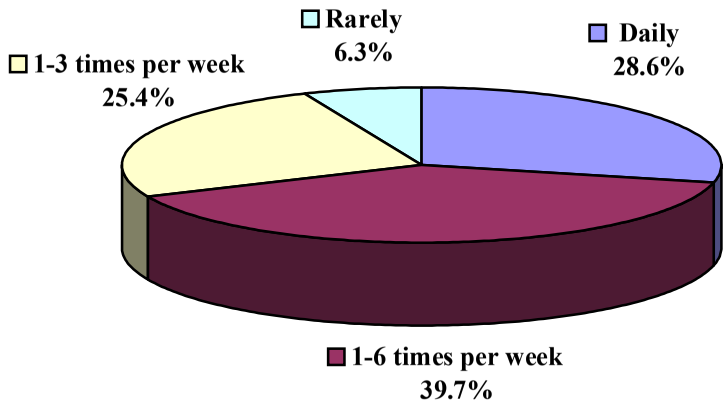
Distance they ride



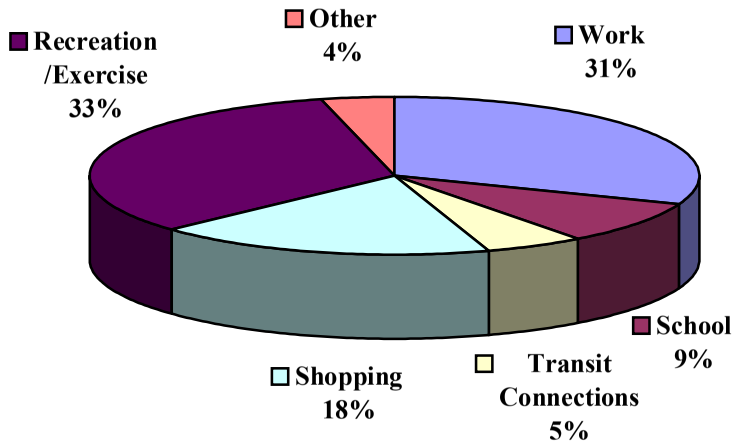
Bicycle Facility preference



Trips



Typical trip purpose



List of Projects Bicycle riders would like to be implemented

1.	Continuous bike boulevards connecting the peninsula.
2.	Off-street bicycle paths to local schools.
3.	Educational programs for all cyclists re cadence/gearing and safety and also for car drivers.
4.	Bicycle friendly bridges over 101 and signs indicating recreation possibilities nearby.
5.	Cycle routes on Marsh road, preferably off-street, in order to get to Holbrook Palmer park
	safely, and Marsh Road shopping center.
6.	Coleman needs to be made safer for cyclists and walkers.
7.	Bicycle friendly traffic light sensors especially for left turns. Mark them.
8.	Install more bike racks.
9.	Need of better pavement on Alma Street.
10.	Need of wider lanes.
11.	Keep bike lanes free of debris. Need clean and smooth lanes.
12.	Maintenance of existing bike lanes and bike lane markings.
13.	Maintenance and repair of shoulders, independent of car lanes.
14.	Need of more bike paths and bike lanes on major streets.
15.	More bicycle parking / storage especially in downtown.
16.	Tear out Alma bulb-outs. These are dangerous to bicyclists.
17.	Enforcement of auto yielding to bicycle right of way.
18.	Need of bicycle lanes on Oak Grove.
19.	Bike paths that go beneath major roads, specially ElCamino Real & Alameda de las pulgas
20.	Need of bike safe boulevards like Bryant.
21.	Bike lanes on Elcamino Real.
22.	More bike parking at Menlo Park Farmer's market.
23.	Safe bike routes through and to downtown and to city center.Need for bike/pedestrian tunnels under
	rail tracks.
24.	Better signage and enforcement to aid safe crossing especially at crosswalks.
25.	Provide bike lockers at some of the caltrain stations.
26.	More bike safety at new Sand Hill / Santa Cruz intersection.
27.	Bridge over San Francisquito Creek from Stanford.
28.	Sand Hill Rd at 280. Need bike lane Eastbound.
29.	Bay Rd. Need to extend bike lanes to Willow.
30.	Bike lanes on Oak Grove between Middlefield and University Ave.
31.	Willow Road safety overpass.
32.	A bike/walking path through Menlo to either Redwood city or Palo Alto.
33.	Widening of Sand Hill Rd San Francisquito Creek bridge to make way for bike lane.

APPENDIX D: BIKE PLAN PUBLIC MEETING NOTICES AND SUMMARIES

Menlo Park Comprehensive Bicycle Development Plan

You are invited to attend a

Community Workshop

on Menlo Park's Bicycle Network

Menlo Park is beginning the process of preparing an official Bicycle Development Plan. The Plan will identify ways to enhance and expand the existing network of bike lanes, routes and paths, connect gaps in the system, and improve problem areas. The workshop will include a presentation on the goals of the Bicycle Plan and an opportunity for residents to ask questions and provide comments on bicycling issues in Menlo Park.

Come share your ideas for a more bicycle-friendly Menlo Park:

- Discuss what parts of the existing bicycle network are working, what parts are not working, and what is missing
- Suggest improvements to existing streets, intersections and paths - such as bike parking, signage or lane markings - that would encourage you and your neighbors to bike more
- Rate the "bikeability" of your neighborhood
- Discuss what the city can do to encourage more employers to provide amenities such as secure bike parking, lockers, and showers to assist bike commuters
- Tell us how to make Menlo Park a safer place for you and your children to bike to work, to school, and for recreation

Saturday, April 3, 2004
10:00 a.m. to 12:00 noon
Menlo Park Senior Center, Belle Haven
110 Terminal Avenue, Menlo Park

CITY OF MENLO PARK

For more information on this workshop, please contact:
Rene Baile, City of Menlo Park
(650) 330-6775
rcbaile@menlopark.org

BICYCLE PLAN PUBLIC WORKSHOP #1 SUMMARY

City of Menlo Park Comprehensive Bicycle Development Plan, Public Workshop #1
Menlo Park Senior Center, Belle Haven
April 3, 2004, 10:00 AM – 12:00 PM

ATTENDEES

Rene Baile – City of Menlo Park Transportation Program
Jamal Rahimi – City of Menlo Park Transportation Program
John Fox – Menlo Park Bicycle Commissioner
Pipo Bui – Former Menlo Park Bicycle Commissioner
Rhoda Alexander – Menlo Park Transportation Commissioner
Steve Van Pelt – Menlo Park Resident
Rebecca Wallace – The Almanac
Irwin David – Palo Alto Resident
Mike Bloomenfeld – Resident and Sun Microsystems employee
Mary Kenney – Menlo Park Resident
Jana Menard – Menlo Park Resident
Jack Hawkins Smith – Menlo Park Resident
Devina Stone – Menlo Park Resident
Brett Hondorp – Alta Planning + Design
Lev Anderson – Alta Planning + Design

WORKSHOP SUMMARY

Rene Baile opened the workshop with some remarks about the Comprehensive Bicycle Plan project and the purpose of the first public workshop. He introduced the members of the Bicycle Plan Steering Committee who were present: John Fox, Rhoda Alexander, and Pipo Bui. Brett Hondorp from Alta Planning + Design then gave a Powerpoint presentation on why Menlo Park is preparing a bicycle plan, key elements of the plan, and the different types of bicycle facilities that will be included in the plan. This presentation is available online at the City's Bicycle Plan project website:

http://www.ci.menlo-park.ca.us/departments/trn/bike_project.html

Following the presentation, the meeting participants gathered at a table with a map of the City's Existing Bicycle Network to discuss what types of bicycle facility improvements they would like to see as part of the Comprehensive Bicycle Development Plan. The comments of the participants are summarized below. Comments have been grouped by generally similar topic areas (e.g. east-west bike facilities, Belle Haven facilities, etc).

Existing Bicycle Network Map

Several participants had comments about the content of the Existing Bicycle Network Map that was displayed. These included:

- The map should show all significant destinations and activity areas including parks, civic buildings (e.g. library), and major employment centers.
- The map shows both sides of Bay Road as being located within Menlo Park city limits. It was asked if the west side of Bay Road is actually in Atherton. Mr. Rahimi responded that the west side of the road is within Atherton city limits. At issue was the maintenance of the bike lanes along Bay Road.
- The map should show railroad right-of-ways, as these could provide opportunities for parallel Class I paths.
- The map should show connecting bicycle facilities in adjacent jurisdictions.
- The map should include inserts with details of specific projects, such as intersection improvements.

Bicycle Parking

Workshop participants discussed ways to increase the availability of bicycle parking in commercial districts and at public events in Menlo Park such as the farmer's market and seasonal fairs. The use of valet parking at downtown destinations was discussed. In addition, participants discussed encouraging businesses to offer incentives to customers that ride bicycles to their businesses. For example, a café could offer two-for-one coffee or ice cream specials for customers on bicycles.

North-South Facilities

Workshop participants discussed the existing condition of north-south bicycle facilities and roadways, as well as potential improvement projects.

- Increased enforcement of Laurel Street's commute-hour bike lane is needed (which reverts to on-street parking outside of the commute period). Cars are frequently parked in the bike lane during the No Parking commute period, requiring cyclists to weave in and out of parked vehicles.
- Bay Avenue was noted as a north-south facility that could use better maintenance. Also, due to a lack of stop-controls along Bay Avenue between Marsh and Ringwood, it was noted that making a left turn onto Bay (from a side street such as Hedge or Greenwood) during the commute hour was very difficult
- The segment of Santa Cruz Avenue from Avy Avenue to Alameda de las Pulgas, which has no existing bike lanes, was described as difficult for bicyclists because of the fluctuating roadway widths and high auto speeds. It was pointed out that there appeared to be some new landscaping along that segment of Santa Cruz Ave. One participant asked why there had been no dedication for bikeway improvement or roadway widening required as part of this recent work.

- One participant noted that a crosswalk had been moved from Santa Cruz Avenue/Oakdell, but questioned why the crosswalk could not have been left in place. Mr. Rahimi stated that there was a sight-distance safety issue that prompted the moving of the crosswalk.
- It was stated that the Alma Street roadway condition is very poor and should be resurfaced. Mr. Rahimi said that the resurfacing project, including bike lane striping, will begin in three weeks.
- Mr. David, a Palo Alto resident, outlined his recommended route from Laurel Street (via Willow Road or Waverly Street) to the Bike/Ped Bridge crossing of San Francisquito Creek at Willow Place. Mr. David stated that he does not like Alma Street, and prefers to take streets such as Waverly as it provides more visual interest.
- Mr. David also suggested that the Chaucer Street bridge crossing of San Francisquito Creek be part of a north-south Class III Bike Route from Palo Alto into Menlo Park. Entering Menlo Park via Chaucer/Pope could connect onto Gilbert Street and continue north to Willow Rd.
- Coleman Ave. was identified as a good north-south route, connecting to Ringwood or Oak Grove for east-west connections.

East-West Facilities

Workshop participants discussed the existing condition of east-west bicycle facilities and roadways, as well as potential improvement projects.

- Mr. Bloomenfeld described his recommended route from the Sharon Heights area to his workplace at Sun Microsystems. His route uses Monte Rosa Drive from Sand Hill Road to Avy Avenue, connecting to the existing Class II bike lanes on Santa Cruz Avenue, and proceeding downtown. From downtown the route varied, but typically utilized Ringwood to the US 101 crossing.
- The Sand Hill Road crossing of San Francisquito Creek was noted as an existing constrained area. Mr. Rahimi noted that construction will begin shortly on the widening of Sand Hill Road from Alpine Road to the creek; this project is being led entirely by Stanford. Discussions of ways to route bicycle traffic during construction were discussed, including possibly using a golf course access road as an alternative.
- Crossings of El Camino Real are major a concern for east-west travel. The Menlo Avenue crossing of El Camino Real was suggested as a location for potential improvements. Participants noted that they will cut through business parking lots or alleyways in order to avoid cycling on El Camino Real
- Oak Grove Avenue from University Drive to Fredrick Avenue was suggested as a good bicycle route. Extensions of the suggested Oak Grove route included; turning south onto Fredrick to connect to the Ringwood Avenue and Bay Road facilities; turning south onto Toyon Road to connect to Ringwood Avenue and Coleman Road.
- Another suggested alternative route parallel to Ringwood Avenue was on Menlo Oaks Drive from Arlington Way to Bay Road.

Belle Haven/East Menlo Park Facilities

The workshop participants discussed the need to enhance safety of the existing Ringwood Avenue/Highway 101 crossing and for increasing the connections between the Belle Haven area with the rest of Menlo Park. East Menlo Park is currently considered as being underserved in term of bicycle facilities.

- Several minutes were spent discussing the Ringwood Bike/Ped crossing of US 101. Participants noted this as a key non-motorized connection between east and west Menlo Park, but many had safety concerns about using the facility, especially after dark, due to loitering, a lack of visibility (from the tight corkscrew ramp design), and a general feeling that there was a lack of "eyes" on the structure. One participant suggested posting signs that the bridge was under surveillance from a nearby traffic camera. Mr. Rahimi stated that a redesign of the existing Bike/Ped Bridge would be done as part of the Highway 101 auxiliary lane project currently underway. It was suggested that the redesign should address safety concerns by installing additional lighting, improving visibility, and perhaps include the installation of an emergency call box.
- Participants stated that the Belle Haven neighborhood was underserved in terms of bicycle facilities and that, with activity centers like the Boys and Girls Club and other public recreational facilities, bicycle facilities are needed. It was noted that a Bicycle Commissioners tour of the Belle Haven area identified a lack of bicycle parking at many of the civic and recreational facilities in the area.
- The workshop participants asked about the status of the Willow Road/Highway 101 crossing. Mr. Rahimi stated that the City had submitted a report identifying desired bicycle improvements to Caltrans, which was reviewing it.
- A potential connection across the Railroad ROW from Kelly Park to Chilco Avenue was noted; this connection is currently available for cyclists who carry their bikes across the tracks.

Bayfront Facilities and Connections

- Mr. Bloomenfeld suggested creating a bike/ped undercrossing of Bayfront Expressway by converted a currently unused tunnel that passes under Bayfront Expressway near Willow Road. He stated that more Sun Microsystems employees would likely bicycle to work if they could use the tunnel or if the Willow Road crossing of Highway 101 was improved. Mr. Rahimi said that money for reconstruction and maintenance for the tunnel had been applied for under Measure A, but suggested the high costs would mean the project wouldn't be a priority.
- Participants stated that the Peninsula/Gateway Corridor Study should include money and plans for bicycle facilities to be implemented along with the planned projects adjacent to the Dumbarton Bridge and Bayfront area.

Safe Routes to School

Workshop participants recommended the need to implement more Safe Routes to School projects in Menlo Park. They said that the Oak Knoll School program was successful, and suggested that the Bicycle Development Plan recommend a Safe Routes to School program for Hillview School where the pick-up and drop-off situation at Santa Cruz and Elder could use improvement.

Specific Problem Locations Identified on Workshop Map

- Santa Cruz Avenue between Avy and Alameda de las Pulgas
- Hillview School pick-up/drop-off at Santa Cruz and Elder
- El Camino Real/Ravenswood
- Alma Street between Burgess and El Palo Alto Park
- Middlefield/Ravenswood and Middlefield/Ringwood
- Bay Street/Greenwood
- Ringwood/US 101 Bike/Ped Bridge
- Willow/US 101 crossing

Specific Opportunity Sites Identified on Workshop Map

- Bayfront Expressway Undercrossing at Willow Rd.
- Kelly Park – Chilco Street Railroad ROW crossing

NEXT PUBLIC WORKSHOPS

Bicycle Plan Public Workshop #2 will be held on Saturday May 22, 2004 from 10:00 AM to 12:00 PM. Public Workshop #3 will be held Saturday June 26, 2004 from 10:00 AM to 12:00 PM. Locations for the two workshops are to be determined. For details about the upcoming workshops, and other information about the Bicycle Plan project, visit the city's website:

http://www.ci.menlo-park.ca.us/departments/trn/bike_project.html

Menlo Park Comprehensive Bicycle Development Plan

The DRAFT Menlo Park Bicycle Plan has been completed

and you are invited to attend a

Community Workshop

to comment on the proposed bikeway network and facilities

Menlo Park has completed a DRAFT Comprehensive Bicycle Development Plan and we want your input! The Draft Bicycle Plan includes a proposed network of new Bike Paths, Bike Lanes, and Bike Routes throughout Menlo Park. The Plan also includes a variety of recommended support programs and amenities to make bicycling safer and more convenient, such as wayfinding signage and improved bike parking. The Draft Bicycle Plan and proposed bikeway network map will be available for review beginning May 17th. Copies of the document can be obtained at City Hall or downloaded from the city's website at:

http://www.menlopark.org/departments/trn/bike_project.html

The community workshop will include a presentation on the bikeway network and programs recommended in the Draft Bicycle Plan, an opportunity to review the Plan document and map, and a chance to ask questions and provide comments on the Plan and on bicycling issues in Menlo Park. Come share your ideas and tell us how to make Menlo Park a safer and more enjoyable place for you and your children to bicycle to work, to school, or for recreation.

Thursday, May 20, 2004

7:00 to 9:00 p.m.

Menlo Park City Council Chambers

801 Laurel Street

CITY OF MENLO PARK

For more information on this workshop
or on the Draft Bicycle Plan, please contact:

Rene Baile, City of Menlo Park
(650) 330-6775
rcbaile@menlopark.org

Menlo Park Comprehensive Bicycle Development Plan

You are invited to attend a

Community Workshop

to discuss the FINAL Menlo Park Bicycle Plan

Menlo Park is in the process of finalizing the Comprehensive Bicycle Development Plan. The Plan includes a network of new Bike Paths, Bike Lanes, and Bike Routes throughout the city. The Plan also includes a variety of recommended support programs and amenities to make bicycling safer and more convenient, such as wayfinding signage and improved bike parking. Copies of the plan and proposed bikeway map can be obtained at City Hall or downloaded from the city's website at:

http://www.menlopark.org/departments/trn/bike_project.html

This is the third and final public workshop on the Bicycle Plan. The workshop will include a presentation on the bikeway network and programs recommended in the Bicycle Plan, an opportunity to review the Plan document and map, and a chance to ask questions and provide comments on the Plan and on bicycling issues in Menlo Park. Come share your ideas and tell us how to make Menlo Park a safer and more enjoyable place for you and your children to bicycle to work, to school, or for recreation.

Saturday, June 26, 2004

10:00 a.m. to 12:00 noon

Menlo Park Recreation Center

700 Alma Street

CITY OF MENLO PARK

For more information on this workshop
or on the Menlo Park Bicycle Plan, please contact:

Rene Baile, City of Menlo Park
(650) 330-6775
rcbaile@menlopark.org

APPENDIX E: SAMPLE BICYCLE PARKING CODE LANGUAGE

This appendix provides sample bicycle parking code language taken from the City of Palo Alto Municipal Code and the City of San Francisco Planning Code. It is recommended that the City of Menlo Park pass a bicycle parking ordinance to include similar language in their zoning code. Both Palo Alto and San Francisco provide detailed parking requirements per building square footage, and include provisions such as employee shower requirements.

PALO ALTO MUNICIPAL CODE

BICYCLE PARKING REQUIREMENTS

Section 18.83.050

Table 1. Minimum Off-Street Parking Requirements

Use	Minimum Off-Street Parking Requirement	Minimum Bicycle Parking Requirements	
		Spaces	Class(1)
Accessory employee housing or guest cottage	1 space per unit	None	
Administrative office services:			
(a) In the LM district	1 space for each 27.9 sq. m. (300 sq. ft.) of gross floor area	10% of auto parking	80% - I 20% - II
(b) In all other districts	1 space for each 23.2 sq. m. (250 sq. ft.) of gross floor area	10% of auto parking	80% - I 20% - II
Animal care facilities	1 space for each 32.5 sq. m. (350 sq. ft.) of gross floor area	10% of auto parking or 1 space-whichever is greater	80% - I 20% - III
Automobile service station:			
(a) Except in parking assessment area	1 space for each 32.5 sq. m. (350 sq. ft.) of gross enclosed floor area, plus queue capacity equivalent to the service capacity of gasoline pumps	None	

Table 1. Minimum Off-Street Parking Requirements

Use	Minimum Off-Street Parking Requirement	Minimum Bicycle Parking Requirements	
		Spaces	Class(1)
(b) In the California Ave. parking assessment area	1 space for each 2.82 sq. m. (310 sq. ft.) of gross enclosed floor area, plus queue capacity equivalent to the service capacity of gasoline pumps	None	
Automotive services:			
(a) Enclosed, except in parking assessment areas	1 space for each 32.5 sq. m. (350 sq. ft.) of gross floor area	None	
(b) Open lot, except parking assessment areas	1 space for each 46.5 sq. m. (500 sq. ft.) of exterior sales, display, or storage site area	None	
(c) In the California Ave. parking assessment area	1 space for each 13.9 sq. m. (150) sq. ft.) of gross floor area, display, or storage on site	None	
Business and trade schools	1 space for each 4-person capacity, or 1 space for each 23.2 sq. m. (250 sq. ft.) of gross floor area, whichever is greater	10% of auto parking	40% - I 60% - II - covered
Churches and religious institutions	1 space for each 4 sets or 4- person capacity, based on maximum use of all facilities at the same time	10% of auto parking	20% - I 40% - II 40% - III
Commercial recreation	1 space for each 4 seats or 4-person capacity, or as adjusted by the Zoning Administrator as part of the conditional use permit, not to exceed a 30% reduction	25% of auto parking	20% - I 20% - II 60% - III or as adjusted by the Zoning Administrator as part of the conditional use permit
Community facilities, including swim club, tennis club, golf course, community centers, neighborhood centers, and similar activities	1 space for each 4-person capacity based on maximum use of all facilities, or as adjusted by the Zoning Administrator as part of the conditional use permit, not to exceed a 30% reduction	25% of auto parking	20% - I 20% - II - covered 60% - III

Table 1. Minimum Off-Street Parking Requirements

Use	Minimum Off-Street Parking Requirement	Minimum Bicycle Parking Requirements	
		Spaces	Class(1)
			or as adjusted by the Zoning Administrator as part of the conditional use permit
Convalescent facilities	1 space for each 2.5 patient beds	10% of auto parking	2 spaces - I remainder - III
Day care centers, day care homes, family day care homes, and residential care homes	a. Day care centers: 1 space for each 1.5 employees	25% of auto parking	100% - I
	b. Day care homes: 2 spaces per dwelling unit, of which one space shall be covered	25% of auto parking	100% - II
	c. Family day care homes: 2 spaces per dwelling unit, or which one space shall be covered	None	
	d. Residential day care homes: 2 spaces, or which one space shall be covered, for the resident owners or tenants	None	
	Where such uses are conditional, to be established by use permit conditions		
Downtown University Avenue Parking Assessment Area - all uses	1 space for each 23.2 sq. m. (250 sq. ft.) of gross floor area	10% of auto parking	40% - I 60% - II
Drive-up windows providing services to occupants in vehicles	Queue line for 5 cars, not blocking any parking spaces, in addition to other applicable requirements	None	
Eating and drinking services:			
(a) With drive-in or take out facilities	3 spaces for each 9.3 sq. m. (100 sq. ft.) of gross floor area	25% of auto parking	40% - I 60% - III
(b) All others, except parking assessment areas	1 space for each 60 gross sq. ft. of public service area, plus one space for each 200 gross sq. ft. for all other areas	10% of auto parking	40% - I 30% - II 30% - III
(c) All others, in the California Ave. parking assessment area	1 space for each 14.4 sq. m. (155 sq. ft.) of gross floor area	10% of auto parking	40% - I 60% - II

Table 1. Minimum Off-Street Parking Requirements

Use	Minimum Off-Street Parking Requirement	Minimum Bicycle Parking Requirements	
		Spaces	Class(1)
Financial Services:			
(a) Bank, savings and loan offices with 696.7 sq. m. or less (7,500 sq. ft.) of gross floor area:			
(1) Except in the parking assessment areas	1 space for each 18.6 sq. m. (200 sq. ft.) of gross floor area	10% of auto parking	40% - I 60% - III
(2) In the California Ave. parking assessment area	1 space for each 16.7 sq. m. (180) sq. ft.) of gross floor area	10% of auto parking	40% - I 60% - III
(b) Banks, savings and loan offices with more than 696.7 sq. m. (7,500 sq. ft.) of gross floor area:			
(1)Except in the parking assessment are	1 space for each 23.2 sq. m. (250 sq. ft.) of gross floor area	10% of auto parking	40% - I 60% - III
(2)In the California Ave. parking assessment area	1 space for each 16.7 sq. m. (180) sq. ft.) of gross floor area	10% of auto parking	
(c) Others	1 space for each 23.2 sq. m. (250 sq. ft.) of gross floor area	10% of auto parking	40% - I 60% - III
General business services:			
(a) Enclosed, except in parking assessment areas	1 space for each 3.25 sq. m. (350 sq. ft.) of gross floor area	10% of auto parking	80% - I 20% - II
(b) Enclosed, in the California Ave. parking assessment area	1 space for each 33.4 sq. m. (360 sq. ft.) of gross floor area	10% of auto parking	80% - I 20% - II
(c) Open lot	1 space for each 46.5 sq. m. (500 sq. ft.) of sales, display, or storage site area	10% of auto parking	100% - III
Hospitals	1 space for each 1.5 patient beds	10% of auto parking	60% - I 40% - II

Table 1. Minimum Off-Street Parking Requirements

Use	Minimum Off-Street Parking Requirement	Minimum Bicycle Parking Requirements	
		Spaces	Class(1)
Hotel	1 space per guestroom; plus the applicable requirement for eating and drinking, banquet, assembly, commercial or other as required for such use, less 75 percent of the spaces required for guestrooms	10% of auto parking	40% - I 30% - II 30% - III
Lodging	1 space for each lodging unit in addition to other residential use requirements	1 space per lodging unit	100% - I
Manufacturing:			
(a) In the LM district	1 space for each 27.9 sq. m. (300 sq. ft.) of gross floor area	10% of auto parking	80% - I 20% - II
(b) In all other districts	1 space for each 46.5 sq. m. (500 sq. ft.) of gross floor area	10% of auto parking	80% - I 20% - II
Medical, professional, and general business offices:			
(a) In the LM district	1 space for each 27.9 sq. m. (300 sq. ft.) of gross floor area	10% of auto parking	60% - I 40% - II
(b) In all other districts, except in parking assessment areas	1 space for each 23.2 sq. m. (310 sq. ft.) of gross floor area	10% of auto parking	60% - I 40% - II
(c) In the California Ave. parking assessment area	1 space for each 28.8 sq. m. (310 sq. ft.) of gross floor area	10% of auto parking	60% - I 40% - II
Mortuaries	1 space for each 4 seats or 4-person capacity, plus funeral procession queue capacity of 5 cars	2 spaces	100% - II
Multiple-family residential use	1.25 spaces per studio unit, 1.5 spaces per 1-bedroom unit, and 2 spaces per 2-bedroom or larger unit; of which at least one space per unit must be covered	1 space per unit	100% - I
(a) Guest parking	For projects exceeding 3 units: 1 space plus 10% of total number of units, provided that if more than one space per unit is assigned or secured parking, then guest spaces equal to 33% of all units is required.	1 space for each 10 units	100% - III
Personal services:			

Table 1. Minimum Off-Street Parking Requirements

Use	Minimum Off-Street Parking Requirement	Minimum Bicycle Parking Requirements	
		Spaces	Class(1)
(a) Except in parking assessment areas	1 space for each 18.6 sq. m. (200 sq. ft.) of gross floor area	10% of auto parking	20% - I 40% - II 40% - III
(b) In the California Avenue parking assessment area	1 space for each 4.18 sq. m. (450 sq. ft.) of gross floor area	10% of auto parking	20% - I 40% - II 40% - III
Private clubs, lodges and fraternal organizations	1 space for each 4 seats or 4-person capacity based on maximum use of all space at one time	10% of auto parking	20% - I 40% - II 40% - III
Research and development:			
(a) In the LM district	1 space for each 27.9 sq. m. (300 sq. ft.) of gross floor area	10% of auto parking	80% - I 20% - II
(b) In all other districts	1 space for each 23.2 sq. m. (250 sq. ft.) of gross floor area	10% of auto parking	80% - I 20% - II
Retail:			
(a) Intensive, except in parking assessment areas	1 space for each 18,.6 sq. m. (200 sq. ft.) of gross floor area	10% of auto parking	20% - I 40% - II 40% - III
(b) Intensive in the California Ave. parking assessment area	1 space for each 22.3 sq. m. (240) sq. ft.) of gross floor area	10% of auto parking	20% - I 40% -II 40% - III
(c) Extensive	1 space for each 32.5 sq. m. (350 sq. ft.) of gross floor area	10% of auto parking	20% - I 40% - II 40% - III
(d) Open lot	1 space for each 46.5 sq. m. (500 sq. ft.) of sales, display, or storage site area	10% of auto parking	100% - III
Schools and educational facilities:			
(a) Grades K-8	2 spaces per teaching station	1 space per every 3 students	100% - III enclosed

Table 1. Minimum Off-Street Parking Requirements

Use	Minimum Off-Street Parking Requirement	Minimum Bicycle Parking Requirements	
		Spaces	Class(1)
(b) Grades 9-12	4 spaces per teaching station	1 space per every 3 students	100% - III enclosed
Shopping center	1 space for each 25.6 sq. m. (275 sq. ft.) of gross floor area	10% of auto parking	40% - I 30% - II 30% - III
Single-family residential use: (including second detached single-family dwelling units)			
(a) In the O-S district	For the primary dwelling unit, 4 spaces, of which one space must be covered	None	
	For all additional units, 2 spaces per unit, of which one space must be covered	None	
(b) In all other districts	2 spaces per unit, of which one space must be covered	None	
Two-family residential use	1.5 spaces per unit, of which one space must be covered	1 space per unit	100% - I
Warehousing and distribution:			
(a) In the LM district	1 space for each 27.9 sq. m. (300 sq. ft.) of gross floor area	10% of auto parking	80% - I 20% - II
(b) In all other districts	1 space for each 92.9 sq. m. (1,000 sq. ft.) of gross floor area	10% of auto parking	80% - I 20% - II
Any use not specified	To be determined by the Director of Planning and Community Environment	To be determined by the Director of Planning and Community Environment	

(1) For description of bicycle parking classes, refer to section 18.83.080

DESIGN STANDARDS: BICYCLE PARKING FACILITIES

Section 18.83.080

(a) Classifications of Bicycle Parking Facilities.

Class I Facilities. Intended for long-term parking; protects against theft of entire bicycle and of its components and accessories. The facility must also protect the bicycle from inclement weather, including wind-driven rain. Three design alternatives for Class I facilities are as follows:

Bicycle Locker. A fully enclosed space accessible only by the owner or operator of the bicycle.

Bicycle lockers may be pre-manufactured or designed for individual sites. All bicycle lockers must be fitted with key locking mechanisms.
In multiple-family developments, the Class I bicycle parking and required storage area for each dwelling unit may be combined into one locked mullet-use storage facility provided that the total space requirement shall be the sum of the requirements for each use computed separately.

The preferred Class I facility is a bicycle locker. Restricted access facilities and enclosed cages may be considered as alternatives to bicycle lockers as indicated below. Class I facilities other than lockers, restricted access rooms, or enclosed cages, but providing the same level of security, may be approved by the Director of Planning and Community Environment.

Restricted Access. Class II bicycle parking facilities located within a locked room or locked enclosure accessible only to the owners or operators of the bicycles parked within. The maximum capacity of each restricted room or enclosure shall be ten (10) bicycles. An additional locked room or enclosure is required for each maximum increment of ten additional bicycles. The doors of such restricted access enclosures must be fitted with key locking mechanisms.
In multiple-family residential developments, a common locked garage area with Class II bicycle parking facilities shall be deemed restricted access provided the garage is accessible only to the residents of the units for whom the garage is provided.

Enclosed Cages. A fully enclosed chain link enclosure for individual bicycles, where contents are visible from the outside, and which can be locked by a user-provided lock. The locking mechanism must accept a 3/8" diameter padlock. This type of facility is only to be used for retail and service uses and multiple family developments.

Class II Facilities. Intended for short term parking. A stationary object to which the user can lock the frame and both wheels with only a lock furnished by the user. The facility shall be designed so that the lock is protected from physical assault. A Class II rack must accept padlocks and high security U-shaped locks.

Class III Facilities. Intended for short term parking. A stationary object to which the user can lock the frame and both wheels with a user-provided cable or chain (6 foot) and lock.

All Class III facilities must be located at street floor level.

(b) The following general design standards shall be observed:

- Class II and Class III facilities shall provide at least a twenty-four inch clearance from the centerline of each adjacent bicycle, and at least eighteen inches from walls or other obstructions.

- An aisle or other space shall be provided to bicycles to enter and leave the facility. This aisle shall have a width of at least five feet (1.5 meters) to the front or the rear of a standard six-foot (1.8 meters) bicycle parked in the facility.

- Parking facilities shall support bicycles in a stable position without damage to wheels, frame, or components. Facilities designed for hanging or vertical storage of bicycles shall not satisfy the requirements of this chapter.

- Bicycle parking should be situated at least as conveniently as the most convenient vehicle parking area. Bicycle and vehicle parking areas shall be separated by a physical barrier or sufficient distance to protect parked bicycles from damage by vehicles.

    - Class I facilities at employment sites shall be located near the building entrances used by employees.

    - Class II or Class III facilities intended for customers or visitors shall be located near the main building entrances used by the public.

  Paving of bicycle parking areas is required.

- Convenient access to bicycle parking facilities shall be provided. Where access is via a sidewalk or pathway, curb ramps shall be installed where appropriate.

- Signage of Bicycle Parking Facilities.

    - Where bicycle parking areas are not clearly visible to approaching bicyclists, signs shall be posted to direct cyclists to the facilities.

    - All bicycle parking areas shall be identified by a sign of a minimum of 12" X 12" in size to identify the area for bicycle parking and to give the name, phone number of location of the person in charge of the facility.

    - Where Class I parking required by this chapter is provided by restricted access parking, the sign shall state that the bicycle enclosure shall be kept locked at all times.

- Lighting shall be provided in all bicycle parking areas. In both exterior and interior locations, lighting of not less than one footcandle of illumination at ground level shall be provided.

- The director of planning and community environment shall have the authority to review the design of all bicycle parking facilities required by this chapter with respect to safety, security, and convenience.

EMPLOYEE SHOWER FACILITY REQUIREMENTS

Section 18.49.040

(e) Requirement for Showers. Employee shower facilities shall be provided for any new building constructed or for any addition to or enlargement of any existing building in compliance with the following table:

Use	Gross Floor Area of New Construction	Number of Showers Required
Medical, professional, general business offices, financial services, business and trade schools and general business services.	0-9,999 sq. ft. 10,000-19,999 sq. ft. 20,000-49,999 sq. ft. 50,000 sq. ft. and up	No requirement 1 2 4
Retail, personal and eating and drinking services.	0-24,999 sq. ft 25,000-49,999 sq. ft. 50,000-99,999 sq. ft. 100,000 sq. ft. and up	No requirement 1 2 4

SAN FRANCISCO PLANNING CODE

BICYCLE PARKING AND SHOWER REQUIREMENTS

Excerpts from the San Francisco Planning Code, Sections 155.1-4.
See: http://sfgov.org/planning/index.htm

SEC. 155.1. BICYCLE PARKING REQUIREMENTS FOR CITY-OWNED AND LEASED BUILDINGS.

In all City-owned and leased buildings, regardless of whether off-street parking is available, the responsible city official, as defined in Section 155.1(a)(11) below, shall provide bicycle parking according to the schedule in Section 155.1(c) below, except as otherwise provided in Section 155.2. The provisions of this Section shall not apply in any case where the City occupies property as a tenant under a lease the term of which does not exceed six months. In the event that a privately owned garage, as defined in Section 155.2, is in a building in which the City leases space, Section 155.2 and not this Section shall apply. All required bicycle parking shall conform to the requirements of Sections 155.1(b) (Location of Facilities) and 155.1(c) (Number of Spaces) set forth below:

(a) **Definitions.**

(1) **Locker.** A fully enclosed, secure and burglar-proof bicycle parking space accessible only to the owner or operator of the bicycle.

(2) **Check-In Facility.** A location in which the bicycle is delivered to and left with an attendant with provisions for identifying the bicycle's owner. The stored bicycle is accessible only to the attendant.

(3) **Monitored Parking.** A location where Class 2 parking spaces are provided within an area under constant surveillance by an attendant or security guard or by a monitored camera.

(4) **Restricted Access Parking.** A location that provides Class 2 parking spaces within a locked room or locked enclosure accessible only to the owners of bicycles parked within.

(5) **Personal Storage.** Storage within the view of the bicycle owner in either the operator's office or a location within the building.

(6) **Class 1 Bicycle Parking Space(s).** Facilities which protect the entire bicycle, its components and accessories against theft and against inclement weather, including wind-driven rain. Examples of this type of facility include (1) lockers, (2) check-in facilities, (3) monitored parking, (4) restricted access parking, and (5) personal storage.

(7) **Class 2 Bicycle Parking Space(s).** Bicycle racks which permit the locking of the bicycle frame and one wheel to the rack and, which support the bicycle in a stable position without damage to wheels, frame or components.

(8) **Director.** Director of the Department of City Planning.

(9) **Landlord.** Any person who leases space in a building to the City. The term "landlord" does not include the City.

(10) **Employees.** Individuals employed by the City and County of San Francisco.

(11) **Responsible City Official.** The highest ranking City official of an agency or department which has authority over a City-owned building or parking facility or of an agency or department for which the City is leasing space.

(12) **Person.** Any individual, proprietorship, partnership, joint venture, corporation, limited liability company, trust, association, or other entity that may enter into leases.

(b) **Location of Facilities.**

(1) At locations where the majority of parking spaces will be long-term (e.g., occupied by building employees for eight hours or more), at least ½ of the required bicycle parking spaces shall be Class 1 spaces. The remaining spaces may be Class 2 spaces. The Director may approve alternative types of parking spaces that provide an equivalent measure of security.

(2) **Alternative Locations.** In the event that compliance with Section 155.1(b)(1) may not be feasible because of demonstrable hardship, the responsible city official may apply to the Director for approval of an alternative storage location. In acting upon such applications, the Director shall be guided by the following criteria: Such alternative facilities shall be well-lighted and secure. The entrance shall be no more than 50 feet from the entrance of the building, unless there are no feasible locations within a 50 foot zone that can be provided without impeding sidewalk or pedestrian traffic. However, in no event shall an alternative location be approved that is farther from the entrance of the building than the closest automobile parking space.

(3) **Exemptions.** If no feasible alternative parking facility exists nearby which can be approved pursuant to Section 155.1(b)(1) or (2) or, securing an alternative location would be unduly costly and pose a demonstrable hardship on the landlord, or on the City, where the City owns the building, the Director may issue an exemption. In order to obtain an exemption, the responsible City official shall certify to the Director in writing that the landlord, or the City, where the City owns the building, will not prohibit bicycle operators from storing bicycles within their office space, provided that they are stored in such a way that the Fire Code is not violated and that the normal business of the building is not disrupted.

(c) **Required Number of Bicycle Parking Spaces.**

(1) **Class 1 Bicycle Parking Spaces.** The following standards shall govern the number of Class 1, long-term, bicycle parking spaces a responsible City official must provide:

(A) In buildings with one to 20 employees, at least two bicycle parking spaces shall be provided.

(B) In buildings with 21 to 50 employees, at least four bicycle parking spaces shall be provided.

(C) In buildings with 51 to 300 employees, the number of bicycle parking spaces provided shall be equal to at least five percent of the number of employees at that building, but in no event shall fewer than five bicycle spaces be provided.

(D) In buildings with more than 300 employees, the number of bicycle parking spaces provided shall be equal to at least three percent of the number of employees at that building but in no event shall fewer than 16 bicycle parking spaces be provided.

(2) In addition to the Class 1 bicycle parking spaces required above, a responsible City official shall also provide Class 2 bicycle parking spaces according to the below enumerated schedule:

(A) In buildings with one to 40 employees, at least two bicycle parking spaces shall be provided.

(B) In buildings with 41 to 50 employees, at least four bicycle parking spaces shall be provided.

(C) In buildings with 51 to 100 employees, at least six bicycle parking spaces shall be provided.

(D) In buildings with more than 100 employees, at least eight bicycle parking spaces shall be provided. Wherever a responsible City official is required to provide eight or more Class 2 bicycle parking spaces, at least 50 percent of those parking spaces shall be covered.

(3) In public buildings where the City provides a public service to members of the public who are patrons or users of the buildings, such as libraries, museums, and sports facilities, the responsible City official shall provide the number of bicycle parking spaces as set out in Section 155.1(c)(1) and (2), except that the average patron load in a building during peak use hours as determined by the Director, rather than the number of employees, shall determine the number of spaces required. This Section shall not apply where a public building has a "garage" (as such term is defined in Section 155.2(a)) that is open to the general public, in which case Section 155.2 shall apply.

(4) The Director shall annually survey the amount, location, and usage of provided bicycle parking spaces in all buildings subject to the requirements of this Section in order to ascertain whether current requirements are adequate to meet demand for such parking spaces. If current requirements are inadequate, the Director shall draft and submit to the Board of Supervisors proposed legislation that would remedy the deficiency.

(5) **Reductions.** The Director may grant a reduction from the number of bicycle parking spaces required by this Section where the applicant shows based upon the type of patronage, clientele, or employees using the building that there is no reason to expect a sufficient number of bicycle-riding patrons, clientele or employees to justify the number of spaces otherwise required by the Section.

(d) **Layout of Spaces.** Class 1 and Class 2 bicycle parking spaces or alternative spaces approved by the Director shall be laid out according to the following:

(1) An aisle or other space to enter and leave the facility shall be provided. The aisle shall provide a width of five feet to the front or rear of a standard six-foot bicycle parked in the facility.

(2) Each bicycle parking space shall provide an area at least two feet wide by six feet deep. Vertical clearance shall be at least 78 inches.

(3) Bicycle parking shall be at least as conveniently located as the most convenient nondisabled car parking. Safe and convenient means of ingress and egress to bicycle parking facilities shall be provided. Safe and convenient means include, but are not limited to stairways, elevators and escalators.

(4) Bicycle parking and automobile parking shall be separated by a physical barrier or sufficient distance to protect parking bicycles from damage.

(5) Class 2 bicycle racks shall be located in highly visible areas to minimize theft and vandalism.

(6) Where Class 2 bicycle parking areas are not clearly visible to approaching bicyclists, signs shall indicate the locations of the facilities.

(7) The surface of bicycle parking spaces need not be paved, but shall be finished to avoid mud and dust.

(8) All bicycle racks and lockers shall be securely anchored to the ground or building structure.

(9) Bicycle parking spaces may not interfere with pedestrian circulation.

(g) **Miscellaneous Requirements.**

(4) Buildings with existing traditional-type racks which support only one wheel shall have two years from the effective date of this Section to replace them with conforming racks.

SEC. 155.3. SHOWER FACILITIES AND LOCKERS REQUIRED IN NEW COMMERCIAL AND INDUSTRIAL BUILDINGS AND EXISTING BUILDINGS UNDERGOING MAJOR RENOVATIONS.

(a) **Definitions.**

(1) **New Building.** A commercial or industrial building for which a building permit is issued at least six months after the effective date of this legislation.

(2) **Major Renovations.** Any construction or renovation project (i) for which a building permit is issued commencing at least six months after the date of enactment of this legislation (ii) which involves an enlargement of an existing public or privately owned commercial or industrial building, and (iii) which has an estimated cost of at least $1,000,000.00. For purposes of this Section, the term "enlargement" shall mean an increase in the square footage of the ground story of a building.

(3) The term "commercial building" shall include, but is not limited to, public or privately owned buildings containing employees working for City government agencies or departments.

(b) **Requirements for New Buildings and Buildings With Major Renovations.** New buildings and buildings with major renovations shall provide shower and clothes locker facilities for short-term use of the tenants or employees in that building in accordance with this Section. Where a building undergoes major renovations, its total square footage after the renovation is the square footage that shall be used in calculating how many, if any, showers and clothes lockers are required.

(c) For new buildings and buildings with major renovations whose primary use consists of medical or other professional services, general business offices, financial services, City government agencies and departments, general business services, business and trade schools, colleges and universities, research and development or manufacturing, the following schedule of required shower and locker facilities applies:

(1) Where the gross square footage of the floor area exceeds 10,000 square feet but is no greater than 20,000 square feet, one shower and two clothes lockers are required.

(2) Where the gross square footage of the floor area exceeds 20,000 square feet but is no greater than 50,000 square feet, two showers and four clothes lockers are required.

(3) Where the gross square footage of the floor area exceeds 50,000 square feet, four showers and eight clothes lockers are required.

(d) For new buildings and buildings with major renovations whose primary use consists of retail, eating and drinking or personal services, the following table of shower and locker facilities applies:

(1) Where the gross square footage of the floor area exceeds 25,000 square feet but is no greater than 50,000 square feet, one shower and two clothes lockers are required.

(2) Where the gross square footage of the floor area exceeds 50,000 square feet but is no greater than 100,000 square feet, two showers and four clothes lockers are required.

(3) Where the gross square footage of the floor area exceeds 100,000 square feet, four showers and eight clothes lockers are required.

(e) **Exemptions.** An owner of an existing building subject to the requirements of this Section shall be exempt from Subsections (c) and (d) upon submitting proof to the Director of the Department of City Planning that the owner has made arrangements with a health club or other facility, located within a four-block radius of the building, to provide showers and lockers at no cost to the employees who work in the owner's building.

(f) **Exclusion for Hotels, Residential Buildings and Live/Work Units.** This Section shall not apply to buildings used primarily as hotels or residential buildings. In addition, this Section shall not apply to "live/work units" as defined in Section 102.13 of the San Francisco Planning Code.

(g) **Owners of Existing Buildings Encouraged to Provide Shower and Clothes Locker Facilities.** The City encourages private building owners whose buildings are not subject to this Section to provide safe and secure shower and clothes locker facilities for employees working in such buildings.

(h) The Department of City Planning may establish more definitive requirements for shower and locker facilities in accordance with this Section. (Added by Ord. 343-98, App. 11/19/98)

SEC. 155.4. BICYCLE PARKING REQUIRED IN NEW AND RENOVATED COMMERCIAL BUILDINGS.

(a) **Definitions.**

(1) All definitions set forth in Section 155.1(a) and Section 155.3(a) are incorporated into this Section.

(2) **New Commercial Building.** A commercial or industrial building for which a building permit is issued on or at least six months after the effective date of this Section.

(3) **Major Renovation.** Any construction or renovation project (i) for which a building permit is issued commencing on or at least six months after the effective date of this Section (ii) which involves an enlargement of an existing commercial building and (iii) which has an estimated construction cost of at least $1,000,000.00.

(b) **Requirements for New Commercial Buildings and Commercial Buildings with Major Renovations.** New commercial buildings and commercial buildings with major renovations, as a condition of approval, shall provide bicycle parking in that building in accordance with this Section. Where a building undergoes major renovations, its total square footage after the renovation shall be used in calculating how many, if any, bicycle parking spaces are required.

(c) **Types of Bicycle Parking.** New commercial buildings and commercial buildings with major renovations shall offer either Class 1 bicycle parking, as defined in Section 155.1(a)(6), or Class 2 bicycle parking, as defined in Section 155.1(a)(7), or a combination of Class 1 and Class 2 bicycle parking.

(d) **Bicycle Parking Spaces - Professional Services.** For new commercial buildings and commercial buildings with major renovations whose primary use consists of medical or other professional services, general business offices, financial services, general business services, business and trade schools, colleges and universities, research and development or manufacturing, the following schedule of required bicycle parking applies:

(1) Where the gross square footage of the floor area exceeds 10,000 square feet but is no greater than 20,000 feet, 3 bicycle spaces are required.

(2) Where the gross square footage of the floor area exceeds 20,000 square feet but is no greater than 50,000 feet, 6 bicycle spaces are required.

(3) Where the gross square footage of the floor area exceeds 50,000 square feet, 12 bicycle spaces are required.

(4) Bicycle Parking Spaces—Retail. For new commercial buildings and commercial buildings with major renovations whose primary use consists of retail, eating and drinking or personal service, the following schedule of required bicycle parking applies:

(1) Where the gross square footage of the floor area exceeds 25,000 square feet but is no greater than 50,000 feet, 3 bicycle spaces are required.

(2) Where the gross square footage of the floor area exceeds 50,000 square feet but is no greater than 100,000 feet, 6 bicycle spaces are required.

(3) Where the gross square footage of the floor area exceeds 100,000 square feet, 12 bicycle spaces are required.

(f) **Notice of Bicycle Parking.** New commercial buildings and commercial buildings with major renovations subject to this Section must provide adequate signs or notices to advertise the availability of bicycle parking.

(g) **Layout of Spaces.** Owners of new commercial buildings and commercial buildings with major renovations subject to this Section are encouraged to follow the requirements set forth in Section 155.1(d) (Layout of Spaces) in installing Class 1 and Class 2 bicycle parking.

(h) **Owners of Existing Buildings Encouraged to Provide Bicycle Parking Spaces.** The City encourages building owners whose buildings are not subject to this Section to provide bicycle parking spaces in such buildings.

(i) **Exemption.** Where a new commercial building or building with major renovations includes residential uses, the building's total non-residential square footage shall be used in calculating how many, if any, bicycle parking spaces are required.

(j) This Section shall not be interpreted to interfere with the Department of Planning's authority to require more than the minimum bicycle parking spaces required by this Section as a condition of approval of a project, where appropriate.

(k) For the purposes of this Section, commercial shall mean commercial and industrial. (Added by Ord. 193-01, File No. 010488, App. 9/7/2001)

APPENDIX F: CONSTRUCTION ZONE TREATMENTS

Construction zones are difficult environments in which to manage traffic. Priorities exist to maintain vehicular traffic flow, to maintain transit service at an acceptable level, to maintain pedestrian access to businesses and the street, and to maintain bicycle traffic flow to minimize inconveniences to riders. Oftentimes, issues related to bicycles are overlooked in construction zones. Some of these issues are discussed here. They include the following.

- Lane Closures
- Signage
- Pavement Smoothness and Compaction
- Enforcement of Guidelines and Inspection
- Trenching and Plate Use
- Gutter-to-Pavement Transition
- Drainage Grate Guidelines

The purpose of this is to provide planning level guidance for the accommodation of bicycles in construction zones. This guidance is based on national and state sources. Actual treatments for treating bicycles in construction zones is dealt with in traffic management plans submitted by contractors to the City. Contractors and the City can use this document to assist them with specific traffic control measures in each construction zone.

LANE CLOSURES

The needs of bicyclists are often neglected when roadway lanes are closed for construction activities. Guidelines should consider the needs of bicyclists and motorists since both are roadway users. Accommodating bicycle space during a lane closure is typically considered only when a bikeway facility (such as a bicycle lane) is affected by construction activities. Wherever bicycles are allowed, measures should be taken to provide for the continuity of a bicyclist's trip through a lane closure. The most important consideration is to maintain adequate width of travel lanes to accommodate bicycle travel. Where bike lanes exist, it may be possible to carry the bike lane through the construction zone. A second option is to provide a wide outside lane through the construction zone for shared use by motor vehicles and bicycles. When necessary, bicycles share a standard travel lane (12 feet) with motor vehicles through a construction zone. Only in rare cases would bicycles be detoured to another street when travel lanes remain open on the street under construction.

A complete road closure affects bicyclists in a similar manner as motorists. If an entire roadway segment is closed for construction activities, a sufficient detour route should be provided for all

modes of travel. The implementation of these detour routes, however, should take into consideration attributes of alternative routes as they pertain to bicycles versus motor vehicles. The same detour route may not be suitable for both modes. For example, a motorist detour may traverse several hills on a major thoroughfare. A bicycle detour might be provided on another set of streets that minimizes changes in elevation that impact bicyclists more than motorists. Maintaining a direct route should be a primary goal when bicycles are detoured.

GUIDELINES

In order to accommodate bicyclists through various lane closures and detours, the following guidelines are recommended. These are based on sources including, the Manual for Uniform Traffic Control Devices (MUTCD), the Caltrans Traffic Control Manual, the Caltrans Highway Design Manual, and the Guide for the Development of Bicycle Facilities published by the American Association of State Highway and Transportation Officials (AASHTO).

- Continuing a bike lane through a construction zone
    - Efforts shall be made to re-create the bike lane to the left of the construction zone if enough space exists to do so. The standard width of a bike lane is five feet.
    - Standard construction zone signs (see MUTCD) are part of the recommended design, including:
        - W21-4A Road Work Ahead
        - W20-5 Right Lane Closed
        - W4-2 Lane Shift, Left Sign
        - W11-1 Bicycle Warning Sign
        - W16-1 Share The Road
    - The bicycle warning sign is recommended in combination with W4-2 and again in combination with W16-1. This effectively warns motorists of the presence of bicycles at the lane drop and again where the work zone begins.
    - Construction barrels equipped with flashers delineate the edge of the construction zone and also indicate the outer edge of the bike lane.

- Transitioning a bike lane to a wide travel lane in a construction zone
    - Where there is insufficient space to carry a bike lane through a construction zone, a wide travel lane adjacent to the construction zone should be considered. The travel lane width should be 14 to 15 feet. Bicycles share the travel lane with motor vehicles.
    - Figure 9.2 illustrates the design of a transition of a bike lane to a wide travel lane in a construction zone. In the example one of two travel lanes in the same direction is closed for construction on a 30 mph street.
    - Standard construction zone signs (see MUTCD) are part of the recommended design, including:

  - W21-4A Road Work Ahead
  - W20-5 Right Lane Closed
  - W4-2 Lane Shift, Left Sign
  - W11-1 Bicycle Warning Sign
  - W16-1 Share The Road
- The bicycle warning sign is recommended in combination with W4-2 and again in combination with W16-1. This effectively warns motorists of the presence of bicycles at the lane drop and again where the work zone begins.
- Construction barrels equipped with flashers delineate the edge of the construction zone and also indicate the outer edge of the bike lane. The barrels delineating the outer bike lane edge do not carry through the work zone.

- Transitioning a bike lane to a standard travel lane in a construction zone
  - Where there is insufficient space to provide a wide travel lane adjacent to the construction zone, then a standard 12-foot wide travel lane should be provided. Bicycles share the travel lane with motor vehicles. The rules of overtaking and passing apply in this case as in similar situations where only one travel lane is provided in one direction.
  - Figure 9.3 illustrates the design of a transition of a bike lane to a standard travel lane in a construction zone. In the example one of two travel lanes in the same direction is closed for construction on a 30 mph street.
  - Standard construction zone signs (see MUTCD) are part of the recommended design, including:
    - W21-4A Road Work Ahead
    - W20-5 Right Lane Closed
    - W4-2 Lane Shift, Left Sign
    - W11-1 Bicycle Warning Sign
    - W16-1 Share The Road
  - The bicycle warning sign is recommended in combination with W4-2 and again in combination with W16-1. This effectively warns motorists of the presence of bicycles at the lane drop and again where the work zone begins.
  - Construction barrels equipped with flashers delineate the edge of the construction zone and also indicate the outer edge of the bike lane. The barrels delineating the outer bike lane edge do not carry through the work zone.

- For a complete roadway closure
  - A sufficient detour route shall be outlined with adequate signage similar to that provided for motor vehicle traffic.

- Consideration should be given to alternative detour routes that minimize vertical transitions and situations where bicyclist safety may be an issue.
- A bicycle detour route different from the one outlined for motor vehicle traffic may be appropriate in cases where significant grades or levels of traffic and/or traffic speeds make the route less than desirable for the average bicyclist.
- Signage specific to bicyclists shall be installed on the detour route to ensure proper guidance through the roadway closure.

SIGNAGE

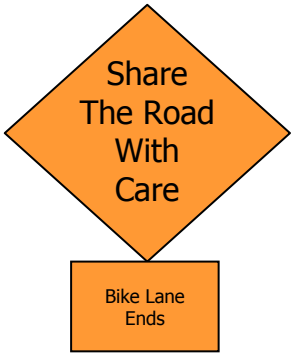
Signage is a critical component of construction activities. Due to the temporary nature of roadway work, information regarding temporary detours and reduced capacity do not appear on conventional maps. Aside from public notification through various media, roadside signage and signals are the only methods a public agency has to notify road users of construction activities. Therefore, signage is crucial in order to successfully manage traffic flow for motorists, pedestrians, and bicyclists.

Signage alerting roadway users of construction activities can provide for motorists and bicyclists alike. However, signage specific for bicyclists should be employed if the circumstances warrant it. Such circumstances may include a detour route that is different for bicyclists and motorists, loss of a bike lane, or reductions in the travel way width that require bicyclists to share a travel lane with motor vehicles.

Another issue with signage is its placement along a roadway. It is often the case that typical orange construction signs, which are large compared to the size of a bicycle, are placed either squarely in a bike lane or in the riding area of a wide curb lane. Sign placement should be made with bicyclists and pedestrians in mind. Because many sidewalks are directly adjacent to the roadway, placing signage on sidewalks would obstruct the pedestrian pathway and may not be visible to motorists. Sign placement can be a tricky issue when construction activities take place.

GUIDELINES

- The City shall place signage related to construction activities in a location that does not obstruct the path of bicycles or pedestrians, including bicycle lanes, wide curb lanes, or sidewalks.
- Signage related to bicycle travel shall be included on all bikeways where construction activities occur. Signage shall also be provided on all other roadways where bicycle travel is likely to occur.
- Signage that increases motorist awareness of bicyclists through construction zones shall be used wherever possible on bikeways and other roadways on which bicyclists travel.
- Recommended signage to be used include the following signage now being used in the City of Denver, Colorado and the County of Clark, Nevada, respectively. These signs are not found in MUTCD or Caltrans manuals:



Among others, signs that may be used in coordination with construction activities include those found on the following page. These include standard signage from the Caltrans Traffic Control Manual, and the Manual of Uniform Traffic Control Devices. Some of these signs may be used in conjunction with one another in order to enhance the visibility of and provide enhanced guidance to bicyclists through construction zones and detours.

ROADWAY SMOOTHNESS AND COMPACTION

Roadway surface is a critical issue for bicyclists. As mentioned previously, bicycles are much more sensitive to subtle changes in roadway surface than are motor vehicles. Various pavement materials are used to pave roadways, and some are smoother than others. Compaction is also an important issue after trenches and other construction holes are filled. Uneven settlement after trenching can affect the roadway space nearest the curb where bicycles travel. Sometimes compaction is not achieved to a satisfactory level, and an uneven pavement surface can result due to settling over the course of days or weeks.

GUIDELINES

- On new construction, the finished surface of bikeways should not vary more than 6 mm from the lower edge of a 2.4 m long straight edge when laid on the surface in any direction.
- The surface of a roadway open to bicycle travel should be smooth, free of potholes, and the pavement edge uniform.
- Pavement shall be maintained so ridge buildup does not occur at the gutter-to-pavement transition or adjacent to railway crossings.
- City officials should inspect the pavement two to four months after trenching construction activities are completed to ensure that excessive settlement did not occur.

ENFORCEMENT OF GUIDELINES AND INSPECTION

Regulations and policies are only as good as the enforcement that accompanies them. Sometimes inspections do not occur during construction and/or after construction is completed. Insufficient resources can affect the ability of a municipality to conduct proper inspections. In order to ensure

that proper construction procedures are followed, it is imperative that inspectors are used to field inspect construction sites while construction activities are occurring and again once they have been completed. When roadway surfaces are not inspected, the surface may be left in an unacceptable condition, such as in an uneven or concave fashion, for months or years. Because these conditions are more likely to occur in the portion of the roadway where bicyclists travel, it is a critical issue for bicyclists.

One of the most important issues related to construction activities is enforcement. Often it is difficult to manage a team of contractors and subcontractors on a given project. The contractor is responsible for the subcontractors' work, and the public agency has very little interaction with subcontractors. The only way for an agency to ensure that procedures and guidelines are being followed is through periodic inspection. Some contractors neglect to draft a traffic control plan and/or implement one as required. Enforcement is certainly a key issue to ensure that proper regulations are followed during construction activities.

GUIDELINES

- A traffic control plan that adequately addresses the needs of bicycle traffic through a construction zone shall be made and approved by the City Traffic Engineering Division prior to the start of construction.
- Inspection shall be made at all sites during construction activities on bikeways and on city streets to ensure that the traffic control plan is being followed.
- Inspection shall be made of the construction site immediately after construction is completed.
- If settling is likely to occur once construction is ended, such as with trenching activities, the City shall inspect the pavement surface quality two to four months after construction activities cease in order to ensure that excessive settlement did not occur.
- The City should ensure adequate staff and budget for inspection and monitoring of construction activities as they affect bicycle traffic on bikeways and all other roadways where bicycle travel is permitted.

TRENCHING AND PLATE USE

Recent years have seen the installation of fiber-optic cable under many city streets. The primary method used to perform this type of work is trenching, which involves cutting a one- to two-foot wide trench. This activity often takes place near the curb of roadways in order to minimize the disruption to automobile traffic. However, the common practice maximizes disruptions to bicycle traffic since bicycle travel predominantly takes place near the curb. Bike lane facilities can also be disrupted because they are located near the curb and away from vehicle travel lanes.

When plates are used to cover open trenches, they are typically not flush with the pavement and have a one- to two-inch vertical transition on the edges. This can puncture a hole in a narrow bicycle tire and can cause the bicyclists to lose control due to the shock of the vertical transition.

Also, coordination among different trenching entities is a significant problem. Trenching performed by different City departments, utility companies, telecommunication companies, and others sometimes creates a situation where a street segment may be trenched several times over the course of a year. Coordination to prevent the duplication of trenching activities is a problem, especially for bicyclists whose riding space is often interrupted during trenching activities.

When activities such as this take place, bicycle travel is negatively affected, but no noticeable difference has occurred to motorists. Bicyclists often are left to their own devices to merge with vehicles in the adjacent travel lane. The interim condition of the trenches during non-construction hours is also of concern because of the impact on bicyclist travel. Although the common practice is to use steel plates during non-construction hours, these plates can be slippery, especially when wet. Slippage can be a significant problem for bicyclists riding over steel plates in any weather.

GUIDELINES

- Steel plates used as a temporary measure during construction activities shall not have a vertical edge greater than 10 mm without a temporary asphalt lip to accommodate bicyclists riding over them.
- The City should consider using non-skid steel plates with no raised steel bar on top.
- Wherever possible, the City should use in-laid steel plates that are flush with the surrounding pavement surface in order to minimize or eliminate the vertical transition between plates and the pavement for bicyclists.
- Steel plates shall be used only as a temporary measure during construction and shall not be used for extended periods of time.

GUTTER-TO-PAVEMENT TRANSITION

As mentioned earlier in this document, the path of travel for bicyclists is most often near the curb of a given roadway. On streets with concrete curb and gutter, one to two feet of this curbside area is typically devoted to the gutter pan, where water collects and drains into catch basins. On many streets, the path of the bicyclist is near the transition between the gutter pan and the edge of pavement. It is at this location that water can erode the transition, creating potholes and a rough surface for travel.

Many streets' pavements do not meet flush with the gutter, creating a vertical transition between these two segments of the roadway. This area can buckle over time and create a hazardous environment to ride in for bicyclists. Since it is the most likely place for bicyclists to ride on the roadway, this issue is significant for bicycle travel.

GUIDELINES

- Gutter-to-pavement transitions should have no more than a 10 mm vertical transition.

- Pavement transitions should be examined during every roadway project for new construction, maintenance activities, and construction project activities that occur in streets.

DRAINAGE GRATES

Drainage grates are encountered in the gutter area near the curb of a roadway. This area is where most bicycle travel occurs. Drainage grates typically have some kind of slots through which water drains into the municipal wastewater system. Many grates are designed with linear parallel bars spread wide enough for a tire to become caught in so that if a bicycle were to ride on them, the front tire would become caught and fall through the slot. This would cause the rider of the bicycle to tumble over the handlebars and sustain potentially serious injuries. Drainage grates are often wider than the gutter making avoiding them difficult and sometimes dangerous pushing bicyclists out into the vehicle traffic lane.

GUIDELINES

- The City shall require that all new drainage grates be bicycle-friendly. These include grates that have horizontal slats on them so that bicycle tires do not fall through the vertical slats.
- A program to inventory all existing drainage grates should be implemented. Grates that are not bicycle-friendly should be replaced or reset citywide.

APPENDIX G: BICYCLE COMMUTE AND AIR QUALITY CALCULATIONS

Table 1
Estimate of Existing Bicycle Transportation Usage
2000

		Input	Calculated Totals	Source(s)
Employed Adults, 16 Years and Older				
a. 2000 Population /1		30,785		U.S. Census or other source
b. 2000 Employed Persons /1		15,237		U.S. Census or other source
c. 2000 Bicycle Commute Share /1		3.70%		U.S. Census or other source
d. Travel Time Less Than 9 Minutes /1		1,543		U.S. Census or other source
e. 2000 est. Bicycle Commuters /1			562	U.S. Census or other source
School Children				
f. 2000 Population, Ages 6-14 /1 (K-8)		3,559		U.S. Census or other source
g. 1990 Bicycle Commute Share /2		5%		Default or local surveys
h. 2000 est. Bicycle School Commuters /3			178	
College				
i. 2000 College Population /1		1,879		U.S. Census or other source
j. 1990 Bicycle Commute Share /4		20%		local surveys
k. 2000 est. Bicycle College Commuters /5			376	
Bike-Transit Users				
l. average daily transit/rail boardings /6		1,034		Samtrans, Menlo Park station boardings
m. average bike-transit boarding percentage /7		6.0%		Bikemap.com survey of bike boardings on Caltrain
n. bike-transit boardings in Menlo Park /8			62	Based on above
Utilitarian (non work or school) Trips				
m. percent of work/school bicycle trips /9		174%		Local surveys or default
n. estimated bicycle utility riders /10			1,740	
l. Total Estimated Daily Bicycle Ridership (excl. recreation)			2,918	
m. Average Two-Way Travel Length (Miles)				
r1. Adults/College Students /11		8		Local surveys or default
r2. School Children /12		1		Local surveys or default
n. Replaced Vehicle Trips	n1. Adults /13	73%		Local surveys or default
	n2. Students /:	53%		Local surveys or default
o. Reduced Vehicle Trips /15			4,188	
p. Reduced Vehicle Miles /16			16,093	
Reduced Annual Vehicle Miles			388,680	

Notes and Sources:

/1 2000 U.S. Census and estimates utilizing 1990 percentages.

/2 Lamorinda School Commute Study (Fehr & Peers Associates, 1995) and San Diego County School Commute Study (1990).

/3 Estimated school children who commute by bicycle, as of 1990.

/4 National Bicycling & Walking Study, FHWA, Case Study No. 1, 1995. Review of bicycle commute share in seven unversity communities (5%) -- Reduced based on Community College

/5 Estimated college students who commute by bicycle, as of 1990.

/6 American Public Transportation Assn. Statistics, first quarter 2002

/7 Bikemap.com survey of Bike-Transit ridership on Caltrain system, 6% of riders bike boardings

/8 ibid

/9 National Bicycling & Walking Study, Case Study No. 1, p. 16.

/10 total work, college, and transit bicycle users times 174 percent.

/11 Based on survey results from 10 California cities conducted by Alta between 1990 and 1999, L.A. Countywide Policy Document survey (1995), and National Bicycling & Walking Study, FHWA, 1995.

/12 Ibid.

/13 Ibid.

/14 Ibid.

/15 Calculated reduced vehicle trips based on assumptions and sources stated above.

/16 Calculated reduced vehicle miles based on assumptions and sources stated above.

Table 2

Estimate of System Completion and User Increases

(No Input Required)

Studies of Other Cities:

Study Cities:	v. Corridor Increases	x. System Completion	y. Adjusted Increase
City of Portland /17	137%	50%	274%
City of San Francisco /18	61%	20%	305%
City of Seattle /19	90%	35%	257%
Average			279%

Projected Increases In Your Community

	Current (2000)	*Buildout*	*Increment*	
q. Bicycle Commute Mode Share /20	3.70%	10.31%	6.61%	
r. Total Daily Bicycle Commuters /21	2,918	8,132	5,214	Calculation
s. Total Daily Bicycle Trips /22	5,835	16,263	10,428	
t. Reduced Daily Vehicle Trips /23	4,188	11,674	7,485	(1/x) x v
u. Reduced Daily Vehicle Miles /24	16,093	44,854	28,761	(1/x) x v

Notes and Sources:

/17 Before and after bicycle counts conducted by the City of Portland.

/18 Before and after bicycle counts conducted by the City of San Francisco.

/19 Based on preference survey study conducted by Stuart Goldsmith for the City of Seattle.

/17-19 Corridor increases refers to the average increase in bicycling in the corridors in each city, before and after bikeways were installed. System completion refers to the percent completion of the bikeway network in each city. Adjusted increase reflects the projected amount of bicycling that will occur when the system is completed, based on studies of communities with completed or nearly completed bikeway systems (National Bicycling & Walking Study, Study No. 1, 1995). This translates into an average 279% increase upon system completion.

/20 Current bicycle commute mode share from U.S. census for LA County (.63%), adjusted to potential mode share when system is 100% complete (1.76%), and the increment (1.13%).

/21 Same as above except that it shows total bicycle commuters (school and college students).

/22 Total commuters from previous line times 2 (each commuter makes 2 trips)

/23 Total reduced trips by category (adult employed, students), times 279% increase (see notes10-14).

/24 Total reduced vehicle miles by category (adult employed, students), times 279% increase (see notes 10-14)