



Alameda County Bicycle Master Plan for Unincorporated Areas



**Prepared by
Alameda County Public Works Agency
& Michelle DeRobertis**

March 2007

Table of Contents

	Pages
Executive Summary	1 thru 3
Introduction.....	1
Existing Conditions	1
Goals and Policies.....	2
Bikeway Network	2 and 3
Implementation Plan.....	3
Chapter 1 – Introduction	4 thru 7
Purpose.....	4
Background.....	5
Existing Bicycle Commuting and Recreational Activity	6
Existing County Bicycle Planning Agencies.....	7
Community Participation.....	7
Chapter 2 – Evaluation of Existing Conditions	8 thru 17
Existing Bicycle Network.....	8
Bike Lanes	8
Bike Paths and Off-Road Trails	10
Bay Trail	10
Bay Area Ridge Trail.....	11
East Bay Regional Park District (EBRPD)	13
Livermore Area Recreation and Park District (LARPD)	13
Hayward Area Recreation Department (HARD)	13
Connectivity to Adjacent Jurisdictions.....	13
Attractors and Generators	14
Major Employment Centers.....	14
Schools.....	14
Parks.....	15
Collision History.....	15
Party-at-fault/Collision Type.....	16
Collision Locations	16
Primary Collision Factor	17
Chapter 3 – Goals and Policies	18 thru 22
1. Bicycle Safety	19
2. Network Provision and Maintenance	19
3. Network Implementation and Prioritization.....	20
4. Network Integration.....	21
5. Encouragement	21
6. Community Health	22

Chapter 4 – Recommended Bicycle Network..... 23 thru 32

- A. Introduction
 - Planned Roadway Improvements and CIP Projects 23
- B. Methodology..... 24
 - 1. Types of Bicyclists 24
 - 2. Major Versus Minor Roads 24
 - 3. Route Selection Criteria 25
- C. Bikeway Classifications 25
 - 1. Standard Classifications 25
 - 2. Bikeway Categories for ACPWA Bicycle Master Plan 26
- D. Recommended Bikeway Network..... 28
 - Bike Paths and Trails..... 30
 - Development-Induced Bicycle Network Revisions 32

Chapter 5 – Bicycle Support Facilities 33 thru 39

- A. Bicycle Parking 33
 - Classes of Bike Parking..... 33
 - Bike Rack Placement Criteria 33
 - Rack Locations 34
- B. Showers and Lockers..... 34
- C. Transportation Systems/Intermodal Connections 35
- D. Mapping and Signing 35
 - Recommended Sign Program 35
 - Bikeway Route Map for Public Use..... 36
- E. Education Programs..... 37
- F. Encouragement Programs..... 38
 - Bike Facilities Funding and Implementation 38

Chapter 6 – Implementation Plan 40 thru 64

- Project Identification and Prioritization 40
- Bicycle Project Cost Estimates..... 41
- Project Types 42
- Bicycle Advisory Committee for County Unincorporated Areas 62
- Funding Opportunities and Strategies 63
 - Traditional Funding Sources 63
 - Non-Traditional Funding Sources 63
 - Grant and Foundation Opportunities..... 63
 - Funding Strategy 64

Appendixes

Appendix A - Bicycle Collision Statistics

Appendix B – Evaluation Criteria Used by Bicycle Transportation Account and TDA

Appendix C – Recommended Bikeway Network

Appendix D – Bicycle Advisory Committees of Other Bay Area Counties

Appendix E – Construction Cost Estimates

Appendix F– Funding Resources

Appendix G – Bicycle Route Maps

2A San Lorenzo and Castro Valley

2B Redwood Road, Cull Canyon, and Crow Canyon

2C Sunol Area

2D Dublin, Pleasanton, and West Livermore

2E Livermore

Appendix H – Comparison of Shoulders vs. Bike Lanes

Appendix I – Bike Racks

Appendix J – Bike Route Signs

Tabulations Table

1-1	Car Ownership – Alameda County.....	5
1-2	Commute to Work Data.....	6
2-1	Western Unincorporated Bike Lanes	9
2-2	Eastern Unincorporated Areas Bike Lanes	10
2-3	High Schools and Middle Schools	15
2-4	Bicycle Collisions By Age of Bicyclist Injured.....	16
2-5	Roadways with Most Reported Bicycle Collisions.....	16
2-6	Roadways with a Reduction in Bicycle/Motor Vehicle Collisions ..	17
3-1	Bicycle Policies in Alameda County	18

Executive Summary

The Bicycle Master Plan Update for the unincorporated areas is the County vision for making bicycling an integral part of the transportation system in Alameda County unincorporated areas. The plan recommends projects, programs, and policies to encourage use of this practical, non-polluting, healthy, safe and affordable mode of transportation.

Bicycling is a healthy, non-polluting, traffic reducing, and fun form of transportation. Increased levels of bicycling can help to alleviate some of the negative effects of growth, including traffic congestion, air pollution, energy consumption, noise pollution, and degradation of the environment. Increased bicycling will also have a positive effect on the overall health of the community. Increased fitness in the community would have the positive effect of cutting down on the growing health care costs that are affecting so many communities. Encouraging people to bicycle when making short trips will help cut down on harmful auto emissions. Reduced vehicle trips will also reduce noise pollutions.

The social, health, and economic benefits of bicycling are particularly valuable to school children. Encouraging students to bike to school will address several pressing problems including childhood obesity, vehicular congestion, and rising school transportation budgets. The fostering of a bicycling culture among students, parents, and school administrators requires establishment of safe, efficient, and attractive routes to school.

In the past year, the Alameda Countywide Bicycle Master Plan, the Alameda Countywide Pedestrian Master Plan, and the Alameda County Pedestrian Master Plan for unincorporated areas have been completed. These plans and the Bicycle Master Plan will help make Alameda County a better place to live.

The Bicycle Master Plan Update includes six chapters: 1) Introduction, 2) Evaluation of Existing Conditions, 3) Goals and Policies, 4) Recommended Bicycle Network, 5) Bicycle Support Facilities, and 6) Implementation Plan.

Introduction

The western areas of Castro Valley, San Lorenzo, Ashland, Cherryland, and Fairview were the focus of the 1999 Bicycle Plan Update. This plan includes the eastern unincorporated areas as well. The existing bicycle conditions were evaluated, the goals and policies for bicycle transportation were confirmed, and recommended projects to implement the network were identified. Finally, this plan contains recommended programs and support facilities that will help improve bicycling as a viable practical mode of transportation in Alameda County.

Existing Conditions

According to the 2000 census, 12 percent of Alameda County residents commute to work by bicycle². This is about equal to the Bay Area average of 1.1 percent. In the study area, the community with the highest bicycle commute percentage is Ashland at 0.8 percent. The other communities are significantly less than the Alameda County average, ranging from 0.1 to 0.5 percent. The 2000 Metropolitan Transportation Commission (MTC) Bay Area Travel Survey revealed that in the Bay Area, 1.3 percent

of home-based shopping trips are also made by bicycle, as are 2.5 percent of social/recreational trips and 3.8 percent of school trips. Overall, 22 percent of all bicycle trips are work trips, 26 percent of bike trips are shopping trips, 12 percent are school trips, and 40 percent are social/recreational trips or family/personal business trips. In addition, recreation bicycle trips have been increasing over the past twenty years. Many persons who begin bicycling by riding recreationally become regular bicycle commuters.

Since the 1999 Western Unincorporated Areas Bicycle Master Plan was adopted, several bike lanes have been implemented. There are now almost 16 miles of bike lanes in the western unincorporated areas. Some bike lanes were completed with grant funds or as part of normal public works roadway resurfacing projects. In the eastern unincorporated areas, there are almost 18 miles of existing bike lanes.

Assuming that 25 percent of those living within bike riding distance would actually bicycle if this plan were fully implemented, the bicycle commute percentage would potentially be about 2.0 percent for Castro Valley, San Lorenzo, Ashland and Cherryland, and 1.0 percent for Fairview. This is about double to triple the existing mode split for these communities. See Table 1-2.

Goals and Policies

The goals and policies for bicycle transportation are expressed in the following six main goals:

1. Provide safe and appropriate bicycle accommodations for every type of trip.
2. Create and maintain a comprehensive system of bicycle facilities in the local and sub-regional transportation network in order to establish a balanced multi-modal transportation system.
3. Maximize use of public and private resources in establishing a bicycle network.
4. Promote fitness and health benefits through increased opportunity for bicycle activity.
5. Promote use of the bicycling, transit, ridesharing, and walking through land use and transportation planning.
6. Encourage bicycling and other transportation alternatives as a means to reduce traffic congestion.

Bikeway Network

The proposed bikeway network consists of a variety of facility types in order to serve the various needs and abilities of the residents of the unincorporated areas. The network was designed to serve the major attractors in the study area. They were also selected to coordinate and align with the bicycle routes of the adjacent jurisdictions of Hayward, San Leandro, Dublin, Pleasanton, and Livermore.

In order to tailor the bikeway network to the unique character of each area neighborhood, four subcategories of Class 3 were used in describing the proposed network. In more suburban areas, where bike lanes cannot be implemented due to physical or political

constraints, wide curb lanes have been recommended on arterials. On minor streets, this plan recommends the designation of RIDEWAY, a residential street that has traffic calming and signage indicating that it is a bike route. On the more rural roads of East County areas, the best provision for bicycles is often the shoulder. This plan recommends wide shoulders for most rural routes, but for low volume roads with topographical constraints, a two-foot shoulder is recommended.

Implementation Plan

The final chapter of the plan identifies distinct projects that when completed will create a comprehensive bicycle network. This chapter also presents funding opportunities and strategies for delivering bicycle projects. The implementation of the Alameda County Bicycle Master Plan will provide a positive impact on the future residents of the County. The anticipated results of a bicycle plan are decreased automobile congestion, improved air quality, improved physical health, and an increase in quality of life by providing alternative transportation options and more recreational opportunities for people living in Alameda County.

Chapter 1- Introduction

Purpose

The 1999 Alameda County Bicycle Master Plan Update addressed the western unincorporated areas (WUA) of the County, specifically San Lorenzo, Castro Valley, Cherryland, Ashland, and Fairview. Much of the information in the 1999 Plan is outdated and there is a need to define new projects and reprioritize projects. The purpose of this new plan is to update the 1999 Plan for the western unincorporated areas and also to address the eastern unincorporated areas (EUA) of the County.

While much of the western areas are developed, most of the eastern unincorporated areas have rural land uses, yet the roadways still experience significant use by both motor vehicles and bicyclists. The western unincorporated areas, particularly San Lorenzo and Castro Valley, are, in essence, suburbs with schools, employers, and housing tracts. The eastern areas are essentially on the periphery of Dublin, Pleasanton, and Livermore and the roads serve the residents and employees of these communities as they are arriving and leaving as well as people residing elsewhere who come to the area by car or bike for its scenic qualities and recreational opportunities.



The Alameda County Public Works Agency (PWA) is responsible for maintaining and improving all roadways in the unincorporated areas. Thus, a single master plan will help the PWA in its efforts to safely and equitably provide bicycle facilities as well as implement roadway projects that are bicycle-friendly in a consistent manner throughout the unincorporated areas.

The recommended network coordinates with and complements those of adjacent communities. The necessary improvement projects to complete the network have been prioritized to efficiently allocate scarce County resources, to facilitate the process of grant applications, and to help focus routine roadway rehabilitation and maintenance. In addition, the State's Bicycle Transportation Account (BTA) account requires that any project funded by BTA be included in an adopted bicycle plan. Other funding sources also encourage, if not, require that funded projects be part of a coordinated bicycle master plan.

Background

Bicycling is the most efficient form of transportation in terms of energy per mile traveled. However, few bicyclists consciously ride for this reason. Bicyclists ride, in fact, for many reasons and the benefits are accrued by both the individual as well as society. Some bicyclists are sometimes referred to as “transit-dependent” as they have no car. But with a bicycle they are not dependent on transit; they have door-to-door mobility at the exact time they need it without having to rely on transit timetables. Almost eight percent of households in the study area have no cars and 33 percent have only one car, resulting in a significant percentage of the adult population, not to mention children who do or could use bicycles as their primary mode of transportation. See Table 1-1.

Table 1-1
Car Ownership - Alameda County

	Zero-Car Household	One-Car Household
Hayward/San Leandro (MTC Superdistrict #17)	7.9%	32.5%
Total Alameda County	11.1%	34.8%
Source: <i>Metropolitan Transportation Commission, Travel Forecasts for the San Francisco Bay Area: 1990-2030, Data Summary (January 2005)</i>		

Other bicyclists have or could afford a car, but, for environmental reasons, choose to use their bikes for transportation. The environmental reasons range from the obvious one of air pollution to the more subtle but just as real problems of noise pollution, water pollution from roadway storm water run-off, reduced area for water drainage, loss of animal habitat due to excessive pavement for roads and parking lots, dependence on foreign oil, etc. Bicycling also produces additional benefits to society other than the environmental. One of these is that reduced vehicle miles results in a reduction in motor vehicle collisions, which are the second leading cause of injuries among teenagers and young adults (ages 16-24) as well as children in Alameda County¹.

In addition to societal benefits, bicycling also has direct benefits for the individual. Bicycling is the least costly transportation mode (other than walking). When there is a fee for car parking, bicycling is even more cost-effective. At seven cents a mile, a five-mile bicycle trip is only 35 cents compared to an auto trip at \$2.10 (42 cents per mile) or an AC Transit one-way fare of \$1.75. Thus, bicycling is chosen by people both with and without cars as the most cost-effective way to travel. Bicycling is particularly convenient when parking is scarce. While not as limited as San Francisco, parking in Alameda County is in short supply at several locations at certain time periods, including downtown areas and at special events. Finally, bicycling is popular among those concerned with health and fitness. Bicycling provides excellent cardiovascular conditioning and studies have shown that employees who regularly bike to work are sick less than the average employee. Many bicycle commuters recognize that the time spent commuting to work is time that does not have to be spent at the gym or on a home treadmill. From a public

¹ Alameda County Department of Public Health, 2003

policy point of view, it is a worthy goal to provide safe and convenient personal mobility to those without cars. Those without cars need access to employment, shopping, and recreation just as those who can afford cars. In sum, investing in bicycling facilities is a fiscally and environmentally sound expenditure of public moneys. It is similar to recycling in that a win-win situation is achieved that improves the environment while saving public dollars in the long run. Just as recycling programs have become mainstream in the last ten years, both in residential areas and at institutions, it is hoped that in the next ten years, bicycling in Alameda County will be a daily or weekly event in the lives of many residents.

Existing Bicycle Commuting and Recreational Activity

According to the 2000 census, 1.2 percent of Alameda County residents commute to work by bicycle². This is about equal to the Bay Area average of 1.1 percent. In the study area, the community with the highest bicycle commute percentage is Ashland at 0.8 percent. The other communities are significantly less than the Alameda County average, ranging from 0.1 to 0.5 percent. This data is presented in Table 1-2. What the census did not measure is how many people use their bicycle for other transportation trips such as shopping, errands, or visiting friends. The 2000 Metropolitan Transportation Commission (MTC) Bay Area Travel Survey revealed that in the Bay Area, 1.3 percent of home-based shopping trips are also made by bicycle, as are 2.5 percent of social/recreational trips and 3.8 percent of school trips. Overall, 22 percent of all bicycle trips are work trips, 26 percent of bike trips are shopping trips, 12 percent are school trips, and 40 percent are social/recreational trips or family/personal business trips. In addition, recreation bicycle trips have been increasing over the past twenty years and the National Bicycle Dealer Associates estimates that there are 31 million adults who ride regularly (at least once a week). Many persons who begin bicycling by riding recreationally become regular bicycle commuters.

**Table 1-2
Commute to Work Data**

	Percent Bike to Work	Percent Live Within Nine Minutes	Potential Percent of Bicycle Commuters
San Lorenzo	0.4	6.7	1.7
Castro Valley	0.1	7.6	1.9
Cherryland	0.5	6.4	1.6
Ashland	0.8	7.5	1.9
Fairview	0.1	3.5	0.9
Average Alameda County	1.2	8.4	2.1
Source: U.S. Census Bureau, Census 2000, Means of Transportation to Work for Workers 16 Years and Over			

² U.S. Census Bureau, Census 2000, Means of Transportation to Work for Workers 16 Years and Over

The pertinent factors in predicting how many persons will bicycle in the future include safe and convenient facilities, but also the number of residents who live within a reasonable bicycling distance of their workplace, school, and shopping areas. Regionally, a percentage of commuters in the Bay Area live within five miles of their workplace³. This data is not available at the city or super district level. What is available from census data by city is the number of minutes workers spend commuting. A reasonable commute time regardless of mode is about 30 minutes. A nine-minute car trip is approximately equivalent to a 30 minute bike ride. This translates into about 2 miles for walking and 6 miles for a bike trip. The census data indicates that about seven percent of study area residents live within nine minutes of their workplace, except for Fairview, where only 3.5 percent live within nine minutes. (This is significantly less than what was revealed by the 1990 census when ten percent of the study area lived within nine minutes of work except for Fairview.) Assuming that 25 percent of those living within bike riding distance would actually bicycle if this plan were fully implemented, the bicycle commute percentage would potentially be about 2.0 percent for Castro Valley, San Lorenzo, Ashland, and Cherryland, and 1.0 percent for Fairview. This is about double to triple the existing mode split for these communities. See Table 1-2.

Existing County Bicycle Planning Agencies

The Public Works Agency (PWA) is responsible for the bicycle planning and projects in unincorporated areas. The Alameda County Congestion Management Agency (CMA) is currently updating the Countywide Bicycle Plan, which addresses connectivity across jurisdictional lines within the County. The Alameda County Transportation Improvement Authority (ACTIA) is responsible for disbursing the Measure B Bicycle Funds from the half cent sales tax approved in 2000. The County Bicycle Coordinator resides in ACTIA and is also responsible for coordinating applications to MTC for the Regional Bicycle and Pedestrian Funding Program.

The ACTIA Bicycle Pedestrian Advisory Committee (BPAC), an eleven-member committee of citizens, was formed in 2003 to advise ACTIA staff and the ACTIA Board on the implementation of the Measure B discretionary funds for bicycle and pedestrian projects. The ACTIA BPAC meets up to four times per year. In addition, this committee also advises the PWA on the list of projects submitted annually to MTC for the TDA Article 3 bicycle and pedestrian grants. The proposed projects are then presented to the Alameda County Transportation Advisory Committee (ACTAC), who recommends their approval to the Alameda County Board of Supervisors.

Community Participation

A Technical Advisory Committee (TAC) was formed to guide the development of this plan. The TAC was composed of a representative from cities adjacent to the unincorporated areas as well as a representative from the East Bay Bicycle Coalition, the Alameda County Sheriff's Department, Alameda County Congestion Management Agency (CMA), the Association of Bay Area Governments (ABAG), MTC, the East Bay Regional Park District (EBRPD), Hayward Area Recreation Department (HARD), and Livermore Area Recreation and Park District (LARPD).

³ 2000 Metropolitan Transportation Commission (MTC) Bay Area Travel Survey

Chapter 2 – Evaluation of Existing Conditions

Existing Bicycle Network

Bike Lanes

Since the 1999 Western Unincorporated Areas Bicycle Master Plan was adopted, several bike lanes have been implemented. There are now almost 16 miles of bike lanes in the western unincorporated areas. These are depicted in Appendix G. A list of these existing bike lanes is presented in Table 2-1. While all of these bike lanes are a minimum of four to five feet wide with a standard 6-inch stripe, and most have the associated pavement markings, some of the existing bike lanes are signed with R81 Bike Lane signs and some are signed with G93 Bike Route signs (see Appendix J).



Bike lanes on parts of East Castro Valley Boulevard and on Five Canyons Parkway were constructed as part of the Centex Homes development in Five Canyons.

Other bike lanes were installed as part of the roadway improvements associated with the Castro Valley BART station. Some bike lanes were completed with grant funds or as part of normal public works roadway resurfacing projects.

In the eastern unincorporated areas, there are almost 18 miles of existing bike lanes. These are depicted in Appendix G and listed in Table 2-2. Again, while these bike lanes are all striped with the standard 6-inch bike lane marking, some locations are signed with R81 Bike Lane signs and other locations are signed with G93 Bike Route signs (see Appendix J).



**Table 2-1
Western Unincorporated Bike Lanes**

ROADWAY	LIMITS	TYPE OF BICYCLE FACILITIES	LENGTH (mi)
Crow Canyon Rd.	Grove Way/E. Castro Valley Blvd. to Cull Canyon Rd.	Class II, Bike Route signs	0.5
Cull Canyon Rd.	Crow Canyon Rd. to Briar Ridge Dr.	Class II, Bike Route signs	0.5
East Castro Valley Blvd.	Grove Way/Crow Canyon Rd. to Jensen Rd./Five Canyons Parkway	Class II	0.5
East Castro Valley Blvd.	Jensen Rd./Five Canyons Parkway to Dublin Canyon Rd.	Class II striping, no pavement markings, Bike Route signs	1.8
Five Canyons Parkway	East Castro Valley Blvd. to Fairview Ave.	Class II striping, no pavement markings, no signs	2.2
Foothill Blvd.	Castro Valley Blvd. to Miramar Ave./164th Ave.	Class II, Bike Route signs	1.3
Grant Ave.	Lorenzo Ave. to 500 ft from west end, San Lorenzo Trail	Class II, Bike Route signs	1.3
Grove Way	Redwood Rd. to Center St.	Class II	0.7
Grove Way	Center St. to Crow Canyon Rd.	Class II, Bike Route signs	0.3
Hathaway Ave.	West Blossom Way to City of Hayward	Class II striping, no pavement markings, no signs	0.3
Meekland Ave.	Hampton Rd. to A St.	Class II	1.5
Norbridge Ave.	Castro Valley Blvd. to Redwood Rd.	Class II, Bike Route signs	0.5
Norbridge Ave.	BART Entrance to Tyee Ct.	Class II, Bike Route signs	0.3
Paseo Grande	At I-880 overcrossing	Class II striping, no pavement markings, no signs	0.2
Redwood Rd.	Castro Valley Blvd. to Knox St.	Class II, Bike Route signs	0.9
Redwood Rd.	Camino Alta Mira to Seven Hills Rd.	Class II, Bike Route signs	0.7
A St.	Knox St. to 6th St. (1 block)	Class II, Bike Route signs	0.04
Villareal Dr.	E. Castro Valley Blvd. to Greenville Pl.	Class II striping, no pavement markings, no signs	1.5
164th Ave.	East 14th St. to Liberty St.	Class II, (Bike Route signs for one block on north side - East 14th St to Blanco St)	0.4
167th Ave.	East 14th St. to Liberty St.	Class II, Bike Route signs	0.3

TOTAL Miles

15.74

**Table 2-2
Eastern Unincorporated Areas Bike Lanes**

ROADWAY	LIMITS	TYPE OF BICYCLE FACILITIES	LENGTH
Del Valle Rd.	Mines Rd. to Del Valle Reservoir	Class II striping, no pavement markings, no signs	3.1
Dublin Canyon Rd.	East Castro Valley Blvd./ Eden Canyon Rd./Palo Verde Rd. to City of Pleasanton	Class II striping, no pavement markings, Bike Route signs	3.7
Greenville Rd.	Tesla Rd. to East Ave.	Class II striping, no pavement markings, no signs	1
Greenville Rd.	East Ave. to Patterson Pass Rd.	Class II, Bike Route signs	1
Mines Rd.	Tesla Rd. to Del Valle Rd.	Class II, Bike Route signs (No signs or pavement markings at Tesla Rd)	3.4
S. Livermore Ave./Tesla Rd.	City of Livermore to Buena Vista Ave.	Class II striping, no pavement markings, no signs	0.8
S. Livermore Ave./Tesla Rd.	Buena Vista Ave. to 0.6 miles east of South Vasco Rd.	Class II	1.5
S. Livermore Ave./Tesla Rd.	0.6 miles e/o South Vasco Rd. to Greenville Rd.	Class II striping, no pavement markings, no signs	0.6
Stanley Blvd.	City of Pleasanton to City of Livermore	Class II striping, no pavement markings, no signs	2.7

Total Miles

17.8

Bike Paths and Off-Road Trails

There are numerous paved Class I bike paths in the unincorporated areas. The Livermore area, in particular, has many such trails. There are also many hiking trails which permit bikes; these are primarily in the major regional parks in both the western and eastern areas. The unpaved trails which permit bikes will be referred to as hiking/biking trails, while the paved bike trails will be referred to as bike paths. The major trails and agencies which develop and/or manage them are discussed below.

Bay Trail

The Bay Trail is a 400+ mile trail that circles the Bay connecting the shorelines of the nine Bay Area counties. Each of the 47 cities and nine counties through which the Bay Trail runs is responsible for implementing the Bay Trail within its borders, but ABAG assists with coordination and occasional grant support. The Bay Trail in western unincorporated

Alameda County fills a gap that provides a continuous Class I trail from the Oakland /San Leandro border at Davis Street to Highway 92 at the southern edge of the Hayward Shoreline Interpretive Center. It is an existing 8-foot wide multi-use paved asphalt trail. The trail includes two bridges, one over San Lorenzo Creek and the other over Bockman Channel. There is also a one-third mile spur trail to access the trailhead (at the foot of Grant Avenue approximately 500 feet west of Phil Drive). The trailhead has a parking lot with 28 parking spaces plus two designated handicapped spaces. There is an information display board, but no other amenities.

Alameda County Public Works Agency is also the lead agency for the study, design, and construction of a trail that would connect the Bay Trail near the foot of 66th Avenue in the Martin Luther King Regional Shoreline to the Coliseum BART station. The adjacent Coliseum/Arena and Amtrak station would also be served by the new bike/pedestrian trail. The major barriers separating the shoreline from the Coliseum are the I-880 freeway, Damon Slough, the UPRR tracks, and the BART tracks.



Bay Area Ridge Trail

The Bay Area Ridge Trail is a proposed 500-mile (800 km) long, multi-use trail encircling the San Francisco Bay Area. Begun in 1989, over 300 miles have been completed as of June 2006, about half of which is fully multi-use (open to hikers, bicyclists, equestrians). All of the trails in San Francisco have been completed, as have large portions on the Peninsula, and in Marin, Santa Clara, and Contra Costa counties. Most of the remaining mileage is on private property and may require easements to continue the expansion of the trail. The acquisition of land to form Crockett Hills Regional Park in Contra Costa, which opened in June 2006, pushed the trail past the 300 mile mark.



East Bay Regional Park District (EBRPD)

The EBRPD has constructed and currently maintains many regional bike paths and hiking and biking trails in the study area. In the western unincorporated areas, these trails are primarily in three EBRPD parks: Lake Chabot Regional Park, Anthony Chabot Regional Park, and Cull Canyon Regional Recreation Area. They also operate and manage segments of the Bay Trail, which run through EBRPD regional shoreline park lands.

In the eastern unincorporated areas, EBRPD is planning three major regional trails:

1. The Iron Horse Trail originates in northern Contra Costa County and runs through Dublin and Pleasanton and would eventually continue through Livermore into San Joaquin County. In the unincorporated areas, Alameda County owns much of the right-of-way, the former Southern Pacific Railroad ROW.
2. The Brushy Peak to Del Valle Trail is a proposed ten mile trail connecting south Livermore with Brushy Peak near I-580 and Greenville Road and is proposed to run along the South Bay Aqueduct. It is included in both the LARPD and EPRPD master plans.
3. Shadow Cliffs to Del Valle Regional Trail is a proposed seven mile trail just outside the Livermore City Limits proposed by both EBRPD and LARPD. It would connect Isabel Parkway to Shadow Cliffs Regional Park and to the existing Del Valle Trail.

Livermore Area Recreation and Park District (LARPD)

Livermore Area Recreation and Park District (LARPD) serves both the City of Livermore and the surrounding unincorporated areas. It has constructed and currently maintains many trails both within and outside the city limits of Livermore. Due to local land use and community desires, many of the trails in the LARPD area accommodate equestrians as well as pedestrians and bicycles.

Hayward Area Recreation District (HARD)

HARD has several existing and proposed unpaved hiking/biking trails in the western unincorporated area. The Greenbelt Trail is eight to ten feet in width and it begins at Memorial Park in Hayward and continues east with several prongs or spurs. The trail at the Hayward Shoreline connects to the EBRPD trails and is part of the San Francisco Bay Trail. These trails are six to ten feet in width.

Connectivity to Adjacent Jurisdictions

This bicycle plan has been coordinated with the existing plans of the adjacent cities and towns as well as the Countywide Bicycle Plan. A list of these plans is presented below:

The existing bike lanes, routes, and paths in these cities which abut the unincorporated areas are depicted in Appendix G.

Agency	Latest Bike Plan
San Leandro	2004
Hayward	2002
Union City	2005
Dublin	2007
Pleasanton	1993
Livermore	2006
Countywide (CMA)	2006

Attractors and Generators

There are numerous attractors of bicycle traffic within the study area. These are depicted in Figures 2-1 and 2-2. These include major employment centers, shopping centers, colleges, high schools, and transit stations. In addition, due to the small size of the study area, residents of the study area and adjacent areas will be bicycling through the study area to access major attractors in the adjacent jurisdictions such as California State University- East Bay, the Alameda County Offices, Chabot College, Southland Mall, and many parks. Even though some of these areas are outside the study area boundaries, it is important that the bicycle network in the study area directly connect to routes that serve these destinations.

Major Employment Centers

A list of major employers in the unincorporated areas of Alameda County was obtained from the Alameda County Congestion Management Agency and the Bay Area Air Quality Management District. The major employers are:

Major Employers in Unincorporated Areas of Alameda County

Lawrence Livermore National Laboratory, Livermore
Eden Hospital Medical Center - 20103 Lake Chabot Rd., Castro Valley
Alameda County Offices - San Leandro, Hayward
Alameda County, John George Pavilion - 2060 Fairmont, San Leandro
Alameda County, Juvenile Hall - 2200 Fairmont Dr., San Leandro
Tharco Precision, Inc. - 2222 Grant Ave., San Lorenzo
Gallo Salame - 2411 Baumann Ave., San Lorenzo
Life Chiropractic College West - 2005 Via Barrett, San Lorenzo
Albertsons Store #30 - 15840 Hesperian Blvd., San Lorenzo
Castro Valley Unified School District
San Lorenzo Unified School District
Albertsons Store - 3445 Castro Valley Blvd., Castro Valley
Oro Loma Sanitary District - 2600 Grant Road, San Lorenzo

Schools

There are three colleges in and near the unincorporated areas: California State University (CSU) – East Bay in Hayward, Chabot College in Hayward, and Las Positas College in Livermore. There are six public high schools and four public middle schools in or immediately adjacent to the western study area. In the eastern unincorporated areas, there are no schools, but the middle and senior high schools that serve the eastern study area are shown in Figure 2-4.

Table 2-3
High Schools and Middle Schools

High Schools	District
Arroyo High School	San Lorenzo Unified School District
San Lorenzo High School	San Lorenzo Unified School District
Castro Valley High School	Castro Valley Unified School District
Roy Johnson High School (disabled students)	Castro Valley Unified School District
Royal Sunset High School	San Lorenzo Unified School District
Hayward High School	Hayward Unified School District
<u>Middle Schools</u>	<u>District</u>
Bohannon Middle School	San Lorenzo Unified School District
Edendale Middle School	San Lorenzo Unified School District
Canyon Middle School	Castro Valley Unified School District
Creekside Middle School	Castro Valley Unified School District

Parks

The major regional parks in the western study area are: Anthony Chabot Regional Park, the Meek Estate, Rowell Ranch, Garin Regional Park, Don Castro Regional Recreation Area, Cull Canyon Regional Recreation Area, Lake Chabot Marina as well as the Bay shoreline and the Bay Trail. Other parks include the East Avenue Park, Castro Valley Community Park, San Lorenzo Park, and the San Lorenzo Swim Center at Arroyo High School. In the eastern study area, the regional parks are: Shadow Cliffs, Del Valle, and Sycamore Grove.

Collision History

The following analysis of collisions between bicyclists and motor vehicles is based on the reported collisions contained in the Statewide Integrated Traffic Records System (SWITRS) database maintained by the California Highway Patrol. There are undoubtedly many more collisions involving bicycles that are not officially reported. Due to lack of information on these collisions, they could not be analyzed. Therefore, any reference to collisions in this report refers to the reported collisions in SWITRS.

In the three-year period 2001-2003, there have been 112 reported collisions involving bicycles in the western and eastern study areas. This is an average of 37 per year. This is a decrease from the last Bicycle Master Plan when there was an annual average of 50 reported collisions over the 1993-95 timeframe. It is unclear whether this decrease is due to increased safety measures, reduced number of bicyclists, or other factors.

One-third of the collisions involved children under the age of 16, compared to over forty percent from the prior period. Collisions involving young adults of ages 18 to 35 also decreased and now comprise one-quarter of the total compared to just over one-third in the early nineties. However, the proportion of middle-aged riders aged 35 to 65 has jumped from 12 percent to 35 percent of the total collisions. A detailed breakdown of collisions by year is provided in Table 2-3.

**Table 2-4
Bicycle Collisions By Age of Bicyclist Injured**

Age	2001	2002	2003	Total	Percent	Adjusted Percent
≤ 12	4	10	6	20	18%	19%
13-15	7	3	5	15	13%	14%
16-17	1	1	3	5	4%	5%
18-35	8	12	8	28	25%	26%
36-50	3	8	10	21	19%	20%
51-65	2	11	3	16	14%	15%
66+	0	1	0	1	1%	1%
NOT STATED	5	0	1	6	5%	-
Total	30	46	36	112	100%	100%
Statewide Integrated Traffic Records System 2001, 2002, 2003						

Party-at-fault/Collision Type

The single most common collision type was the bicyclist riding on the wrong side of the road, which comprised over 35% of the collisions where the bicyclist was deemed at fault. This is an increase from the last study when 22% of bicyclist-at-fault collisions were caused by wrong-way riding. Half of these were children under age 18. The most common collision factor in collisions caused by motorists was an improper turn (26 %) followed by not yielding the right-of-way (21%). The breakdown of collision type by party-at-fault and adult versus child bicyclist is presented in Appendix A.

Collision Locations

Seven roadways had five or more bike collisions in the three year period 2001-2003 and are listed below in Table 2-4. In most cases, there was a reduction in the number of collisions compared to the last study period of 1993-1995.

**Table 2-5
Roadways with Most Reported Bicycle Collisions**

Street	No. of Collisions 2001-2003	No. of Collisions 1993-1995	Roadway Type
Castro Valley Blvd.	11	19	Arterial
Hesperian Blvd.	7	12	Arterial
Redwood Rd.	9	10	Arterial
Center St.	4	9	Major collector
Lewelling Blvd.	5	8	Major collector
Lake Chabot Rd.	5	5	Collector
Tesla Rd.	5	na	Arterial
<i>Source: ACPWA, SWITRS, 2001-2003</i>			

Primary Collision Factor

In some cases, the primary collision factor varied for all of the incidents. However, on the following roadways, many of the collisions on the same roadway had the same primary collision factor. For example, on Center Street, two of the four collisions, and on Lewelling Boulevard, three of the five collisions were caused by wrong-way riding on the part of the bicyclist. On Tesla Road, three of the five collisions were caused by unsafe speed on the part of the bicyclist. On Hesperian Boulevard, three of the seven collisions were due to signal or stop sign violations. Finally, on Castro Valley Boulevard, four of the eleven collisions were due to wrong-way riding and another four were due to “Other Hazard.”

As shown in Table 2-5, an additional four roadways had five or more collisions during the last study period but had fewer than five this study period. Bike lanes have been implemented on Meekland Avenue since the last plan. The reduction in collisions on Meekland Avenue and at other locations is shown below:

**Table 2-6
Roadways with a Reduction in Bicycle/Motor Vehicle Collisions**

Street	No. of Collisions 2001-2003	No. of Collisions 1993-1995	Roadway Type
Meekland Ave.	2	7	Collector
Ashland Ave.	3	5	Arterial/Collector
Heyer Ave.	1	5	Collector
Sunset Blvd.	1	5	Collector

Chapter 3 - Goals and Policies

The goals and policies for the Alameda County unincorporated areas are consistent with the goals and policies of the Alameda County Congestion Management Agency countywide bicycle plan as well as the adjacent jurisdictions that have bike plans. These policies are contained in six main categories; they are compared to the goals of the CMA below in Table 3-1.

**Table 3-1
Bicycle Policies in Alameda County**

Goal	Bicycle Master Plan Update for the Unincorporated Areas (ACPWA)	Alameda Countywide Bicycle Plan (ACCMA)	Goal
1	Bicycle Safety - <i>Provide safe and appropriate bicycle accommodations for every type of trip.</i>	Promote Bicycle Safety and Education - <i>Improve bicycle safety through facilities, education, and enforcement.</i>	4
2	Network Provision and Maintenance - <i>Create and maintain a comprehensive system of bicycle facilities in the local and sub-regional transportation network in order to establish a balanced multi-modal transportation system.</i>	Establish a Countywide Bicycle Network - <i>Create and maintain an inter-County and intra-County bicycle network that is safe, convenient, and continuous.</i>	1
3	Network Funding and Prioritization - <i>Maximize use of public and private resources in establishing a bicycle network.</i>	Promote Implementation of the Countywide Bicycle Plan - <i>Maximize use of public and private resources in establishing a bicycle network.</i>	5
4	Network Integration - <i>Promote the use of transit, ridesharing, bicycling, and walking, through land use, and transportation planning.</i>	Integrate Countywide Bicycle Network - <i>Integrate bicycle travel in transportation planning activities and in transportation improvement projects.</i>	2
5	Encouragement - <i>Encourage bicycling and other transportation alternatives as a means to reduce traffic congestion.</i>	Foster Bicycling as a Mode of Travel - <i>Encourage policies and actions that foster bicycling as a mode of travel.</i>	3
6	Community Health - <i>Promote fitness and health benefits through increased opportunity for bicycle activity.</i>	Promote Bicycle Safety and Education - <i>Improve bicycle safety through facilities, education and enforcement.</i>	4

Goals are the broad expression of the long-term vision. Policies are more specific statements of how to accomplish the vision. Goals and policies address the issues that the planning process is attempting to solve. Issues in bicycle planning fall into one of the following categories: the four E's of education, engineering, enforcement, and encouragement plus planning and legislation. Legislation can mean statewide or local legislation that is necessary to implement the plan. For example, the County can adopt a bicycle parking ordinance to require bicycle parking with all new construction. It should be noted that while goals and policies have been developed for education, enforcement and encouragement, this plan focuses on engineering and planning issues.

The specific policies that apply to each of the four main goals are presented below.

1. Bicycle Safety

Goal: To provide safe and appropriate bicycle accommodations for every type of trip.

Policies

1. The County shall plan, design, and construct bicycle facilities to meet or exceed AASHTO guidelines.
2. The County shall use research programs to address specific safety issues.
3. The County shall assist other agencies in development and dissemination of bicycle safety materials.
4. The County shall institute comprehensive bicycle planning, design, and operations training programs for planners and engineers.
5. The County shall engage enforcement officials in identifying strategies to improve safety for bicyclists.
6. The County shall install bicycle signs where appropriate.
7. The County shall replace existing parallel drainage grates on County roadways with bicycle friendly grates.
8. The County shall work with law enforcement officials on education and enforcement programs to reduce the number of fatalities and injuries on County roadways.

2. Network Provision and Maintenance

Goal: To create and maintain a comprehensive system of bicycle facilities in the local and sub-regional transportation network in order to establish a balanced multi-modal transportation system.

Policies

9. The County shall create and maintain a safe, convenient, and effective bicycle network that maximizes bicycle use for commuting, recreation, and local transportation.
10. The County bicycle network shall link residential, commercial, and recreational uses to encourage bicycling as an alternative to driving.
11. The County shall designate appropriate bicycle facilities to serve routes linking major activity centers, including transit stations, schools, parks, and employment and shopping centers.

12. The County shall designate appropriate bicycle facilities on routes linking schools, after-school child care facilities, libraries, parks, trails, and recreational sites to facilitate the mobility of school-age children.
13. The County shall require that circulation and site plans for individual developments minimize barriers to access by pedestrians, the disabled, and bicycles.
14. County street and road maintenance practices shall consider the needs of bicyclists for smooth and level pavement.
15. The County shall coordinate and cooperate with cities and regional agencies (e.g., East Bay Regional Park District, Hayward Area Recreation and Park District, Livermore Area Recreation and Park District, Alameda County Flood Control and Water Conservation District, Zone 7) to plan and create a bicycle facilities network.

3. Network Implementation and Prioritization

Goal: To maximize the use of public and private resources in establishing a bicycle network.

Policies

16. The County shall pursue public and private funding sources for bicycle projects, such as TEA-21, Transportation Development Act (TDA) Article 3, Transportation Funds for Clean Air (TFCA), Measure B, bridge tolls, Bicycle Transportation Account (BTA), Petroleum Violators Escrow Account (PVEA), non-profit organizations, foundations, corporate sponsors, and development fees.
17. The County shall establish priorities for the allocation of public funds, balancing the needs of commuter and recreational bicyclists.
18. The County shall incorporate bicycle facilities in roadway improvement projects, and on roadways designed for bicycle routes such as widenings, overlays, and restripings, to the extent feasible and not limited to those described in this plan, recognizing that there may be compromises involved for each mode of travel.
19. The County shall consider the needs of bicyclists, residents, and adjacent merchants in determining street lane widths and parking configurations on roads with bicycle facilities.
20. As funding becomes available, bicycle facilities shall be included in the County's regular planning (Road Capital Improvement Plan) and budgeting processes, and shall be subject to public review by appropriate community and planning bodies (i.e., advisory groups and Planning Commission).
21. A County level Bicycle Advisory Committee shall be created to assist staff in the planning, design, and implementation of projects with bicycle facilities system components.
22. The Public Works Agency shall develop design guidelines for bicycle facilities which shall be used by the Agency to implement this plan.

23. Public Works Agency shall review and update this plan and present to Board of Supervisors for re-adoption at intervals not to exceed five years.

4. Network Integration

Goal: To promote the use of transit, ridesharing, bicycling, and walking, through land use and transportation planning.

Policies

24. The County should require commercial and industrial development projects to include bicycle storage facilities for employees and customers, shower/locker areas, and other facilities identified in this plan for employees that commute using bicycles.
25. The County should require development projects to include features that promote the use of transit, bicycle, and pedestrian systems. These features could include bus turnouts, interconnected bicycle and pedestrian paths and sidewalks, and pedestrian-accessible features such as convenient local-serving retail and service uses.
26. The County should require that all traffic impact studies and analyses of proposed street changes should address impacts on bicycling and bicycling facilities. Specifically, the following should be considered:
 - Consistency with General Plan and Bicycle Master Plan policies;
 - Impact on the existing and Master Plan Bikeway System;
 - Permanent travel pattern or access changes including the degree to which bicycle travel patterns are altered or restricted due to any change to the roadway network; and
 - Conformity to accepted bicycle facility design standards and guidelines.
27. Roadway design should not include any action that would compromise bicycle travel such as the narrowing of a curb lane on any road to a width less than acceptable, per the Alameda County Bicycle Design Guidelines nor should any restriping or widening provide a double right-turn lane particularly where the second lane is a shared through-right lane.
28. Encourage the Congestion Management Agency (CMA) to include bicycle facilities in the list of exempt projects whose implementation may exceed Congestion Management Program (CMP) and level of service (LOS) standards.
29. The County will coordinate this Plan and its implementation with the Alameda Countywide Bicycle Plan including the defined countywide bicycle network.

5. Encouragement

Goal: To encourage bicycling and other transportation alternatives as a means to reduce traffic congestion.

Policies

30. The County shall work with transit providers (e.g., AC Transit, BART) to increase accessibility on board transit vehicles to bicycle users, especially during peak commute hours and to provide secure Class I parking at stations.
31. County employees and the public will be encouraged to use bicycles for transportation.

6. Community Health

Goal: To promote fitness and health benefits through increased opportunity for bicycle activity.

Policies

32. The County shall provide model ordinances for improved bicycle facilities in new development and advocate for inclusion in local land use regulations.
33. The County shall improve access to existing and proposed bicycle facilities.
34. The County shall support strategies to increase activity levels of County residents through encouragement of bicycle activities.
35. The County shall encourage County employees and the public to use bicycles for transportation.
36. The County shall promote recreational riding as a community health benefit.
37. The County shall develop educational materials for school age children and distribute to elementary and middle schools.
38. The County shall develop and disseminate education materials to promote the health benefits of bicycling.

Chapter 4 - Recommended Bicycle Network

A. Introduction

This chapter describes the bikeway network for the unincorporated areas of Alameda County. First, the methodology used in selecting the network is described. Then the specific classifications of bikeways and roadway improvements that comprise the network are presented. Lastly, the recommended bikeway network for the east and west County is presented.

The need for bike route signing that includes route destinations and major attractors and generators along the way are discussed in Chapter 5. The associated costs and prioritizations for each project or route segment are presented in Chapter 6.

Planned Roadway Improvements and CIP Projects

Western Unincorporated Areas

- Hesperian Boulevard currently is designated a Class 3B with existing wide curb lanes. There is a planned Capital Improvement Plan (CIP) project for Class 2 bike lanes between Highway 238 and the City of Hayward (est. construction – Phase 1, between Highway 238 and Via Mercado-2008).
- Lewelling Boulevard between Meekland Avenue and Hesperian Boulevard will be improved to include Class II bike lanes (CIP 2009-2010).
- East Castro Valley Boulevard between Villarreal Drive and Eden Canyon Road/ Dublin Canyon Road will have shoulder improvements and the installation of Class II bike lanes (2006).
- Dublin Canyon Road between Eden Canyon Road and the City of Pleasanton will be improved to include Class II bike lanes (CIP 2007).

East County

- Dublin Boulevard Extension - This project is in the long-range planning stage and will be driven by future development in eastern Dublin. It would extend Dublin Boulevard first from its current location near Lockhart Street to the eastern end of Dublin, then later from the eastern end of Dublin through the unincorporated area to North Canyons Parkway. The proposal now is for this roadway to be a 6-lane arterial with bike lanes.
- South Livermore Avenue/Tesla Road between the City of Livermore and Buena Vista Avenue and between 0.6 miles east of South Vasco Road and Greenville Road will have shoulder improvements and Class II bike lanes (CIP 2007).
- North Vasco Road between Mile Markers 3 and 4.3 will have improvements for 8 feet shoulders and right edge striping (CIP 2007).

B. Methodology

The bikeway network was developed keeping in mind the goals and objectives presented in Chapter 3. The primary considerations were to serve all the existing and potential users, to improve safety, and to serve all attractors and generators with through non-circuitous routes. Implicit in serving attractors and generators is linking with the adjacent jurisdiction’s routes. Since much of the bikeway network abuts incorporated cities (San Leandro, Hayward, Dublin, Pleasanton, and Livermore, and, to a lesser extent, Union City and Oakland), there needs to be a continuous seamless bikeway between the unincorporated areas and the incorporated areas. The network maps, therefore, indicate the bikeways that are present in the adjacent cities per the Alameda County CMA Bicycle Plan.

The bikeway network does not distinguish between routes used primarily for transportation or recreation. Many routes that may seem to be primarily recreational are indeed used for commuting or other transportation purposes. Just as roadways are built and maintained for motorists without regard to trip purpose, the recommended routes described in this plan will undoubtedly be used for both transportation and recreation. It is acknowledged that some routes may be more often used by transportation than recreation or vice versa. This is accounted for in the prioritization criteria - Chapter 6. It is also acknowledged that some funding sources are exclusively for transportation bicycle facilities. This is also discussed further in Chapter 6.

1. Types of Bicyclists

This plan recognizes that there are many types of bicyclists with varying skills and levels of comfort in terms of riding in traffic. While they can be loosely categorized as experienced adult, casual adult, and child cyclists, there are many gradations of cycling competency and just as many opinions as to what makes an ideal bike route. Some experienced cyclists eschew bike lanes, some cyclists will ride on busy roads only if bike lanes are provided, some will ride in bike lanes all the time, and some will ride in bike lanes only if parallel residential roads are unavailable.

2. Major Versus Minor Roads

Recognizing that some cyclists prefer the most direct route regardless of its official status as a bike facility, this plan includes all major arterials in the study area. Some of these roads have or are proposed to have bike lanes, while others have severe right-of-way restrictions and providing bike lanes is impossible, at least in the short-term. However, the latter type of road is still included as part of the bicycle network. By being a part of the bikeway network, projects that improve the safety, convenience, and/or travel time of bicyclists on these major roadways can be prioritized for funding opportunities as well as for routine County maintenance. Such projects include but are not limited to upgrading drainage grates, providing signal detectors sensitive to bicycles, signal retiming for safe bicycle clearance intervals, restriping for wider curb lanes, and construction of paved shoulders.

This plan also identifies routes that traverse the study area that have lower speeds and traffic volumes. These routes will be used by those casual or novice cyclists who are intimidated by roadways with high traffic volumes and/or high speeds.

3. Route Selection Criteria

In some areas of the County, there is more than one parallel roadway that provides nearly equal access through that section of the County. Rather than including all these parallel roads, they were evaluated using the criteria described in Appendix B to determine if one or more was clearly superior to the other(s). In other areas of the County, particularly the rural and hilly areas to the east, there is only one road between Point A and Point B. All such roads were included in the bicycle network.

C. Bikeway Classifications

1. Standard Classifications

Chapter 1000 of the Caltrans Highway Design Manual (HDM) describes three types of bicycle facilities. The HDM definition is presented in italics.

Class I Bike Path. Provides a completely separated right of way for the exclusive use of bicycles and pedestrians with cross-flow minimized.

Bike paths are an important component of every bikeway network. Some are long enough and well-located enough to provide a car-free environment for a large portion of a bicycling trip. Other bike paths are used to close gaps in a route such as connecting two dead-end roads or traversing parks.

Bike paths are popular with casual bicyclists and families with children and they can be popular with experienced bicyclists if well designed and located convenient to their route. However, their popularity with slow cyclists and non-bicyclists such as joggers, parents with baby strollers, people walking their dogs, etc., limits the usefulness of the bike path to the cyclists who ride over 15 mph. Serious bicyclists can rarely ride as fast on a bike path as they can on city roads due both to the design of the bike path and the high numbers of slower users. The width of the bike path should be increased depending on the number and stratification of the users.

Class II Bike Lane. Provides a striped lane for one-way bike travel on a street or highway.

The bike lane is for the exclusive use of bicycles with certain exceptions. For instance, right-turning vehicle must merge into the bike lane prior to turning and pedestrians are allowed to use the bike lane when there is no adjacent sidewalk.

Bike lanes should be used when Average Daily Traffic Volumes (ADTs) exceed a certain threshold, e.g., 4,000 vpd. Below this traffic volume, if there is not adequate width for lane sharing, there should be adequate gaps in oncoming traffic for motor vehicles to pass bicyclists by crossing over the centerline.

The HDM specifies the minimum width for bike lanes under three conditions: next to a curb--on-street parking allowed; next to a curb--on-street parking prohibited; and on roadways without curb and gutter--where infrequent parking is handled off the pavement. It also states that widths wider than the minimums should be provided "wherever possible for greater safety."

Class III Route. Provides for shared use with pedestrian or motor vehicle traffic.

Class III has traditionally been used to designate anything from low volume residential roads that have no need for bike lanes to arterials with heavy traffic volumes where widening to provide bike lanes would be infeasible. For planning purposes, this plan has developed subcategories to more accurately describe the conditions on the “Bike Route”. It should be noted that the 1999 AASHTO Guide for the Development of Bicycle Facilities no longer uses the term Bike Route, but rather, Designated Shared Roadway.

2. Bikeway Categories for ACPWA Bicycle Master Plan

The following section describes the additional categories of the HDM in order to provide more detail about the roadway conditions and the specific type of improvement envisioned for each roadway. The following categories are used to describe the bikeway network for this Bicycle Plan:

- Class I - Bike Path - Paved Section
- Class IA - Unpaved Trail - Bikes Allowed
- Class II - Bike Lanes
- Class III- Standard Bike Route - Signed Route
- Class IIIA - Bike Route with Slower Traffic - Rideway
- Class IIIB - Bike Route with Wide Curb Lanes - 14 to 16 feet
- Class IIIC - Bike Route with Wide Shoulders - 4 feet min.
- Class IIID - Rural Bike Route with Two-Foot shoulders where possible * New in 2006

The additional categories are described below:

Class IA Unpaved Trail - In the eastern part of the County, there are unpaved trails that allow bikes even though they are not built to Class I standards. So that all routes available to bicyclists are depicted in single document, this plan includes these unpaved trails and refers to them as Class IA.

IIIA - Traffic Calming - Many of the roadways that have been included in the bikeway network are predominately residential roads. Many residential roads make excellent bike routes because traffic volumes are low and vehicle speeds are slow. In these cases, bike lanes are not designated due to low traffic volumes. In other cases, the traffic volume on these residential roads is significant, but there is no room to widen the road. Others have low traffic volumes but traffic travels significantly faster than 25 mph. In all these cases, bicycling conditions are improved significantly if the passing vehicular traffic is slowed. Ideally, all residential roadways on the Bikeway Network designated Class IIIA routes should be improved for bicycling by slowing traffic via traffic calming measures. Specific traffic calming measures will not be identified for proposed bike routes as part of this study. The Alameda County Neighborhood Traffic Calming Program report should be referenced for appropriate strategies and procedures for implementing these techniques.

Traffic calming would benefit not only the bicyclists but also the residents of these roads. For example, unwarranted STOP signs, if any, can be removed and replaced by traffic calming techniques to slow traffic. Removing STOP signs such that cross-traffic stops, thereby giving right-of-way to travel on the bike route also helps to encourage bicycling.

The slower traffic makes the street much more attractive to casual bicyclists and child bicyclists. Palo Alto and Berkeley, California and Portland, Oregon have implemented such roads and call them Bicycle Boulevards. In this plan, they are called Rideways and are referred to as Class IIIA.

It should be stated that, in some instances, in the past, all-way STOP controls have been used to appease community concerns regarding motorists driving above the posted speed limit. STOP signs add significantly to the travel time of bicyclists and are also ineffective in slowing traffic. Removal of unwarranted STOP signs from Bike Routes should be considered and replaced by traffic calming measures.

IIIB - Wide Curb Lanes - On multi-lane arterials and collector roadways with high traffic volumes, there may not be room to provide bike lanes. Still, conditions for bicyclists can be improved significantly by allocating extra width, if any, to the curb lane where the bicyclists primarily ride. A curb lane width of more than 14 feet and up to 16 feet (no on-street parking) allows a vehicle to pass bicyclists with 2 feet of clearance without changing lanes. This improves the comfort levels of both the bicyclists and the motorists. Large vehicles such as trucks and buses also benefit because they are most often in the curb lane. Where appropriate, consideration should be given to narrowing inner travel lanes to 11 feet in order to provide 14 to 16 feet of width (with no parking) in the curb lane and 22 to 24 feet with on-street parking.



The “Sharrow” marking is a new tool available in California for streets with on-street parking. Its purpose is to reinforce to motorists that bikes belong on the roadway and to indicate to bicyclists the appropriate place to ride in the lane with respect to parked cars to avoid being hit by a car door.

IIIC – Wide Shoulders - Paved shoulders generally provide good riding surfaces for bicyclists when they are kept clear of debris and are of adequate width. In fact, some bicyclists prefer shoulders to official bike lanes. Wider shoulders of at least four feet in width are recommended on certain roadways with traffic volumes over 2,000 to 3,000 vpd. These roads most often do not have curb and gutter and have little demand for on-street parking. It should be acknowledged that shoulder widening has many benefits besides improved conditions for bicyclists. These are described in Appendix H.

IIID - Rural Route - Where traffic volumes are below 2,000 vehicles per day, roads with narrow shoulders (i.e., only an edge line) is generally acceptable from a bicyclist’s point of view since the amount of oncoming traffic is minimal. According to research by others, a road with 24 feet of pavement including shoulders could accommodate traffic volumes of up to 1,760 vpd and still be compatible with bicycle travel. Still, others suggest that 12-foot shared lanes on rural roads are acceptable to experienced bicyclists if traffic volumes are under 2,000 vpd and sight distance is adequate. Roads of this type are in the more rural areas of the County and generally often have topographical constraints, have no curb and gutters, and have little demand for on-street parking.

D. Recommended Bikeway Network

The roadways in the bikeway network are presented below. The recommended bikeway network is depicted in Appendix G by geographical area:

- West County - San Lorenzo and Castro Valley
- Northwest County - Redwood Road to Crow Canyon Road
- Middle County - East Dublin and West Livermore
- Sunol and southern middle County
- East County - north and east of Livermore
- East County - south and east of Livermore

The bikeway projects are listed below by improvement type. These recommendations are presented by project in Chapter 6. A detailed description of each entire route by segment including existing bikeways, ADTs, and other features is presented in the Appendix C.

1. Existing Bike Lanes that need additional signing or striping. Complete the following bike lanes with appropriate signing and pavement markings and striping (currently, most of these have striping but G93 “bike route” signs):

Roadway	From	To
Norbridge	Castro Valley Blvd.	Redwood Rd.
Norbridge	BART Entrance	Tyee Ct.
Grant Ave.	Lorenzo Ace	500 ft. from end
Grove Way	Center	Castro Valley Blvd./ Crow Canyon Rd.
Crow Canyon	Grove Way/E. Castro Valley	Cull Canyon
Redwood Road	Castro Valley Blvd.	Knox
Redwood Road	Camino Alta Mira	Seven Hills Road
Cull Canyon Road	Crow Canyon Rd.	Briar Ridge
167 th St.	E. 14 th St.	Liberty St.
Five Canyons Parkway	E. Castro Valley Blvd.	Fairview Ave.
Dublin Canyon	E. Castro Valley Blvd.	City of Pleasanton
Stanley Blvd.	City of Pleasanton	City of Livermore
S Livermore Ave. /Tesla Rd.	City of Livermore	Buena Vista Ave.
Tesla Rd.	0.6 miles e/o So.Vasco Rd.	Greenville Rd.
Greenville Rd.	Tesla Rd.	East Ave.
Mines Rd.	Tesla Rd.	Del Valle Rd.

2. Implement new bike lanes

Roadway	From	To
Ashland	Mission Blvd.	Lewelling
Meekland	Lewelling	A St.
Washington Ave.	San Lorenzo Creek	Grant Ave.
Mattox	Mission Blvd.	Foothill
Fairmont	Mission Blvd.	Lake Chabot Rd.
Lake Chabot Rd.	Fairmont	Castro Valley Blvd.
Center St.	Grove	San Lorenzo Creek
Heyer Ave.	Redwood Rd.	Cull Canyon Rd.
Mission Blvd.	Lewelling	City of Hayward
E. Lewelling	Hesperian	Meekland
Hesperian Blvd.	SR 238	City of Hayward
Pleasanton-Sunol Rd.	Castlewood Dr.	Niles Canyon Rd.
Tassajara Rd.	I-580	Contra Costa County
Dublin Canyon Rd.	Eden Canyon Rd.	Pleasanton City Limit

3. Class IIIC wide shoulders

Roadway	From	To
N. Vasco Rd.	Livermore City Limit	Contra Costa County Line
Altamont Pass Rd.	North Greenville Rd.	Grant Line Rd.
Grant Line Rd.	I-580	San Joaquin County
Tesla Rd.	Greenville Rd.	Cross Rd.
Arroyo Rd.	Marina	Del Valle Rd.
Niles Canyon Rd.	Fremont City Limit	Pleasanton - Sunol Rd.
Vallecitos	Vineyard Ave.	County Line
Foothill Rd.	Pleasanton City Limit	Kilkare Rd./Main St.

4. Class IIID Rural Routes low volume roads

Roadway	To	From
North Livermore Ave.	I-580	Manning Rd.
May School Rd.	North Livermore Ave.	Daganino Rd.
Daganino/Raymond/Ames/ Dalton	May School Rd.	Vasco Rd.
Manning Rd.	North Livermore Ave.	Highland Rd.
Highland Rd.	Manning Rd.	Contra Costa County Line
Collier Canyon Rd.	Livermore City Limit	Contra Costa County Line
Patterson Pass Rd.	Greenville Rd.	I-580/San Joaquin County
Mountain House	Grant Line Rd.	Contra Costa County Line
North Flynn Rd.	South Flynn Rd.	I-580
South Flynn Rd.	Patterson Pass Rd.	North Flynn Rd.

Class IIID Rural Routes low volume roads (continued)

Roadway	To	From
Tesla Rd.	Cross Rd.	San Joaquin County Line
Mines Rd.	Del Valle	Santa Clara County Line
Norris Canyon Rd.	Crow Canyon Rd.	Contra Costa County Line
Pinehurst Rd.	Redwood Rd.	Contra Costa County Line
Palomares Rd.	I-580/Palo Verde	Niles Canyon Rd./SR 84

5. Unsigned roads that share roadway with bicycles (inc. no shoulders)

Roadway	To	From
Calaveras	Sunol Regional Park	Santa Clara County Line

Bike Paths and Trails

- Coliseum BART to Bay Trail Connector

The Bay Trail is a planned 400-mile continuous multi-purpose path encircling San Francisco Bay. This project would connect the gap between the Oakland Coliseum BART station with the Martin Luther King, Jr. Recreational Shoreline. The project has the potential to connect bicyclists and pedestrians with BART, Amtrak, and AC Transit, as well as increase public access to the Bay Trail.

- Union Pacific Railroad Corridor

The former Union Pacific Railway Corridor crosses several jurisdictions, running from High Street in Oakland to the BART Maintenance Facility near the Hayward/Union City Boundary, is parallel to Western Boulevard in the Ashland and Cherryland communities. A multi-use pathway along this corridor would link these communities and provide connections to Cherryland Elementary School, Hayward Continuation and adult School, Bayfair Mall in San Leandro, the Bayfair BART station, and several other BART stations. A study is needed to determine the feasibility of this multi-jurisdictional project.

- East Bay Greenway

The East Bay Greenway is a proposed multi-use trail that would run along the BART corridor from East Oakland to the Hayward BART station. It will include safe paths for pedestrians and bicyclists, in addition to well-designed recreational facilities such as parks, exercise equipment, and picnic areas.

- San Lorenzo Creek Greenway

The San Lorenzo Creek Greenway will provide parks, open space, and recreational opportunities to one of the most underserved communities in the San Francisco Bay Area. It would connect the San Francisco Bay Trail, the Bay Area Ridge Trail, and the Iron Horse Trail via a 17-mile connector trail and parkway along natural and engineered portions of

San Lorenzo Creek. The Greenway would provide a pedestrian and bicycle route, link regional resources, restore natural elements of the riparian corridor, create parks and rest areas, reestablish viable anadromous fisheries, provide opportunities for education, and improve water quality by inspiring community stewardship of the creek and watershed.

A bike path along San Lorenzo Creek would provide a good recreation facility as well as provide transportation potential to those bicyclists more comfortable on off-street facilities. The San Lorenzo Creek corridor was considered as a pedestrian trail; however, due to community opposition, the project is on hold and may be revisited at a later date.

While there is a service road parallel to the creek on some sections, there are severe right-of-way constraints on other sections.

Proposed Trails in Unincorporated Alameda County

Most trails are being planned and will be maintained by agencies other than the PWA. They are listed here in interest of presenting a complete list of bikeways in the unincorporated areas.

San Lorenzo Creek Trail	Alameda County, HARD	Project on Hold
Name	Responsible Agency	Status
Brushy Peak to Del Valle Trail	Livermore, EBRPD, Dept. of Water Resources, LARPD	Feasibility study needed.
Tassajara Creek Trail	Dublin, EBRPD	Partially constructed segments.
Greenbelt Trail	HARD	
Bay Trail	Albany, Berkeley, Emeryville, Oakland, San Leandro, Alameda County, Hayward, Union City, Newark, Fremont	Partially constructed segments.
Las Positas Creek Trail	Livermore	Partially constructed segments.
Arroyo Del Valle Trail	Pleasanton	Planning underway.
Shadow Cliffs to Iron Horse (includes Alamo Canal & Arroyo de la Laguna)	Dublin, Pleasanton, EBRPD, LARPD	Partially constructed segments. Feasibility study underway for Alamo Canal Trail gap closure at I-580.
Niles Canyon to Shadow Cliffs Trail	Alameda County, Pleasanton, EBRPD	In Adopted Trail Plans.
Shadow Cliffs to Del Valle Trail/Arroyo Del Valle/Sycamore Grove Trail	Pleasanton, Livermore, EBRPD, LARPD	Partially constructed segments. Planning underway.
Iron Horse Trail Extension (Alameda County line to Shadow Cliffs)	Dublin, Pleasanton, EBRPD, Alameda County	Complete to Dublin/Pleasanton BART Station.
Iron Horse Trail Extension (Shadow Cliffs to San Joaquin County Line)	Livermore, Alameda County, EBRPD	Feasibility study needed.
Alameda Creek Trail	Union City, Fremont, EBRPD	Completed.
Isabel Trail (Shadow Cliffs to Morgan Territory Road)	EBRPD, Livermore	Partially constructed segments.

Proposed Trails in Unincorporated Alameda County (continued)

San Lorenzo Creek Trail	Alameda County, HARD	Project on Hold
Arroyo Mocho Trail	Pleasanton, Alameda County (Zone 7) Water Agency, Livermore	Complete in Pleasanton.
Union Pacific Railroad	Alameda county, Oakland, San Leandro, Hayward	Feasibility Study needed.
East Bay Greenway	BART, Urban Ecology	Conceptual Plan underway
BART to Bay Trail Connector	Alameda County, Oakland	Environmental Study underway

* Alameda Countywide Bicycle Master Plan 2006

Development-Induced Bicycle Network Revisions

The bicycle network described above was developed assuming today’s traffic volumes, speeds, and development patterns. However, it is possible that over the next 10 to 50 years, major changes could take place that would affect the roadways and bicycling conditions. The frontage along a major arterial may be redeveloped resulting in an opportunity to acquire more right-of-way with which to provide bike lanes or at least wider curb lanes. Development projects may be approved within or adjacent to unincorporated roadways that would dramatically increase traffic volumes on roads such as Palomares Road. In this case, the existing shoulder widths would not be adequate and the development would need to provide 6-foot shoulders. The following list identifies those routes that, at this point in time, seem the most likely to have long-term recommendations that are different from the recommendations described above:

- Crow Canyon Road
- Lake Chabot Road
- Hesperian Boulevard
- Mission Boulevard
- Meekland Avenue
- Hathaway Avenue
- Center Street
- Palomares Road
- Fairview Avenue
- Redwood Road
- Dublin Canyon Road/East Castro Valley Boulevard
- At-grade crossing of UPRR tracks
- New I-880 overpass for bicycles between Hacienda and A Street
- Tassajara Road

Chapter 5 - Bicycle Support Facilities

This chapter describes the elements beyond the bikeway route network that are essential for bicycling to be a successful and practical mode of transportation in Alameda County: bicycle parking, showers, signing, mapping, and inter-modal connections. While often referred to as “support facilities,” without them, bike usage is hampered. With these support facilities, bicycling is encouraged and the public’s awareness of bicycling for transportation is increased. In some cases, such as lack of safe parking, it may make the difference of the bike trip being made at all. Thus, they are included in this bicycle master plan, as required by the state Bicycle Transportation Act, which defines the required elements of a bicycle master plan.

A. Bicycle Parking

Classes of Bike Parking

Bicycle parking facilities fall into three general categories.

Class I – Bicycle parking which protects the entire bicycle and its components from theft, vandalism, or inclement weather. It is appropriate for long-term bicycle parking such as at employment centers or transit stations. Examples are bike lockers, rooms with key access for regular bike commuters, guarded parking areas, and valet or check-in parking. A common variation of guarded parking is at elementary, middle, and high schools where racks are placed within a fenced compound; the compound is either locked during the day or unofficially guarded by the activity within the school. See Appendix I. A relatively new concept at BART stations (e.g., Fruitvale, Berkeley, and Embarcadero) is a Bike Station, which has attended valet parking for bicycles within an enclosed room.

Class II - This is defined as a rack to which the frame and at least one wheel can be secured with a user-provided U-lock or padlock and cable. This type of parking is appropriate for short-term parking such as at shopping areas, libraries, and other places where the typical parking duration is about two hours. Examples of racks popular with bicyclists are the wave or ribbon racks and the inverted U-rack, or horse rail rack, as illustrated in Appendix I. Increasingly popular are higher security Class II racks as illustrated in Appendix I.

Class III - These racks secure only one wheel to the rack and were (and are unfortunately) quite popular in school yards. They are never recommended except in guarded areas or locked rooms, where they are used in Class I situations.

Bike Rack Placement Criteria

The placement of bike racks is very important for two reasons: to ensure that they can be used to their maximum design capacity and to avoid adversely impacting pedestrian circulation. The Alameda County Bicycle Design Guidelines, prepared as part of the last bicycle master plan, 1999, contain rack placement dimensions for popular bike rack and bicycle locker designs located in plaza type areas or against walls.

Rack Locations

While specific recommendations regarding the location of bicycle parking are beyond the scope of this study, the following are typical locations where Class II racks at a minimum should be placed:

- Grocery stores
- Cafes, delis, and restaurants
- Civic buildings
- Libraries
- Schools and colleges
- Parks
- Major employment centers including office buildings and hospitals
- Shopping centers, regional and neighborhood

Alameda County, in the course of development review of projects in the unincorporated areas, could/does require the provision of bike racks. A recommended bike rack supply for various land uses is contained in Table 2, Alameda County Bicycle Design Guidelines, which is or could be the basis for the bike rack supply. Many cities including Oakland, San Francisco, and Seattle have purchased racks and installed them on sidewalks used in downtown areas for the public since these preexisting areas are unlikely to benefit from developers' conditions. Another strategy is to purchase racks and make them available to private parties such as grocery stores or other retail centers. The Valley Transportation Authority (VTA) in Santa Clara County is currently implementing a bicycle parking program using bike racks purchased with a TFCA grant, and the bike racks are provided free to cities or private parties who agree to install them at pre-approved locations.

B. Showers and Lockers

Showers and storage for clothing encourage bicycle commuting and, depending on the length of the commute, may make the difference as to whether biking to work is feasible. Showers and lockers also provide benefit to all employees as they can be used by those who run, walk, or cycle during lunch breaks. Showers are increasingly common in new office buildings and employment centers along with full fitness centers as they can attract tenants and employees. Clothes storage facilities can be individual lockers or a closet shared by all employees.

The County should consider the adoption of a shower ordinance that would require showers to be included in all new buildings as discussed in Chapter 3. As an alternative to an isolated shower ordinance, developers or companies that provide showers should be eligible for a reduction in the parking requirement, an increase in the floor area, or some other incentive included in an overall Travel Demand Management Program.

Small businesses should be exempt from the ordinance. However, they should be encouraged to share shower facilities with other businesses or arrange for their employees to use other facilities. Retrofitting existing buildings is expensive and should not be mandated but should be encouraged.

C. Transportation Systems/Intermodal Connections

The major bus systems serving the western study area are AC Transit. In addition, there is BART and the Amtrak Capitol Corridor. In the eastern area, there is BART in Dublin and the Altamont Commuter Express - ACE train connecting San Joaquin County to San Jose with stops in Livermore and Pleasanton. The bus service Wheels serving east County is provided by Livermore Amador Valley Transit Authority (LAVTA). There is no ferry service to the study area.

Although there are numerous bus stops, there is no major AC Transit terminal nor is there a multi-modal transfer station. The largest transit centers are the BART stations in Castro Valley and Dublin, the Bay Fair BART station in on the edge of the unincorporated area, and the Hayward BART station is also used by many unincorporated area residents. The closest Amtrak station to the western areas is in Hayward near Meekland Ave. and "A" St. ACE Trains has stations in Hayward, Pleasanton, and Livermore. Caltrans operates two Park-and-Ride lots in the western study area. One is on Center Street just south of I-580 in Castro Valley. The other is at the corner of John Drive and Foothill Road. The location of these transit stations are depicted in Figure 5-1.

AC Transit currently has bike racks on most buses; the MCI buses which are in use on the Transbay lines also have bike racks. AC Transit does not explicitly allow bikes on board any buses, but does give the driver discretion to allow bikes on board when the racks are full.

There are bike racks on Wheels buses holding two to three bikes, depending on the bus.

Amtrak allows bikes inside every car with racks that accommodate at least three bikes per car. ACE Trains also allow bikes on board. BART's policies for bikes on board BART trains are very bike-friendly. As of April 1, 1997, permits are no longer needed and bikes are allowed in the rear of every car except the first car. Bikes can ride in any direction during non-commute hours. During the peak periods, however, bikes can only ride in the reverse-commute direction between Embarcadero Station and the three East Bay stations: Fremont, Richmond, and Pittsburg/Bay Point. The hours bikes are not permitted on any given train are indicated on the train schedule.

D. Mapping and Signing

Recommended Sign Program

A bicycle route signage program is critical to the successful implementation of a bicycle route network. The purpose is to enable a bicyclist to arrive at a particular destination by following the signs without consulting a map. Bicycle route signs, like highway signs, must be consistent throughout the system and easily recognizable to the bicyclist and motorist alike. The California Traffic Control Device Committee has approved the use of a custom G93 Bike Route sign so each local agency can put an identifying logo on their signs. See Appendix J, sign "C". This custom sign, requested by the City of San Francisco, will be included in the Traffic Manual. Bicycle route signs in the study area should include an identifying logo, the route number (if a numbering system is being used), and the general destination. The cities of San Francisco, Denver, CO, and Dallas, TX have adopted a route numbering system, a distinctive system logo,

and customized sign designs. Signs for routes that cross adjacent city boundaries should be coordinated with those cities.

Route Numbering System - The route numbering system should follow a logical and informative pattern so that the route numbers itself will provide the user with some basic knowledge of where the route is and where it is going. The numbering systems, adopted in San Francisco, Denver, and Dallas, are patterned after the established federal highway numbering system, using a system of odd number routes running north-south and even number routes running east-west. Route numbers have been assigned in ascending order from one compass point to the other, i.e., from north to south and from west to east. Numbers have been skipped in the labeling process to allow for routes added in the future. It also might be appropriate to consider the use of an additional designation to identify special-use routes such as scenic routes, regional routes, or spur routes.

Sign Design - The bicycle route system signs should include, at minimum, the identifying system logo, route number, and a directional arrow. Incorporating the route destination, distance to destination, route endpoints, compass direction, and identification of crossing bicycle routes into the sign design would be more useful to the route users. The City of Denver has adopted a "bike-way finding" sign design which includes the system logo, route number, route endpoints, and a schematic route map showing major cross streets, crossing bicycle routes, and a "you-are-here" sticker.

Included in Appendix J are examples of standard signs used for bike route signage. Sign 'A' is the basic bike route sign with a directional arrow approved by the Manual on Uniform Traffic Control Devices (MUTCD) and the Caltrans Traffic Manual. Sign 'B' illustrates the standard sign used for a numbered route as designated by the MUTCD. Sign 'C' is the sign being used in the City of San Francisco.

As shown in Signs "E" and "F", route crossings or distance placards can be added to make the sign more informative. To keep costs down, route numbers can be applied to the appropriate signs with self-adhesive stickers. Signs 'E' and 'F' are much more detailed, more informative, and, unfortunately, more expensive to produce. However, they could be considered cost-effective to use along high volume routes or routes with many turns. Route intersection information is very important to the bicycle network users.

Because of the costs associated with manufacturing the bicycle route signs, the City of Dallas uses small self-adhesive route markers placed on poles along the route. This route marker can be used between other bike route signs and whenever the route does not change direction. Stickers could also be used to identify bicycle route crossings on roads not part of the route network.

Bikeway Route Map For Public Use

A bikeway map distributed to the public can serve as a promotional and educational tool for the bikeway system. Many such maps will include the location of transit stations, bike shops, bike parking, and other support facilities such as water fountains, public restrooms and picnic tables. Points of interest can be added to increase the usefulness of the map including the location of parks, grocery stores, restaurants, and wineries. These maps can be distributed at bike shops, libraries, schools and employment sites. They can also be posted on websites. The costs for producing such a map can be high but can be easily offset by revenues from advertising

opportunities on the map. For example, many communities include the bikeway network on the city maps published by the local Chamber of Commerce. A bikeway map should include a brief synopsis of safe bicycling practices and an explanation of the rules of the road as they pertain to bicycling.

Given the small size and discontinuous nature of the study area, it may be prudent to work with adjacent jurisdictions to produce a map that includes both incorporated and unincorporated areas. Another option is to review maps published by others such as that produced by the East Bay Bicycle Coalition. This map is already used by thousands of cyclists in Alameda County; the County may decide that it may not be necessary for the County to produce their own bikeway map for public use, but instead, partner with others.

E. Education Programs

Bicycling skills are not taught as part of the curriculum in study area schools. Some police departments in Alameda County, such as Piedmont, put on Bicycle Rodeos to teach safe bicycling skills. These are generally held on weekends and are advertised through the area schools. The California Highway Patrol-Hayward Office also disseminates bicycle education materials in the unincorporated areas of San Lorenzo, Hayward, and Castro Valley. This is primarily through talks at schools, both elementary and high school, but also at other community organizations including businesses and rotary clubs.

Bicycle skills and tips have also been addressed in many written forms. The most common are the schematics diagrams on the backs of bike maps and the “bike tips” booklets originally produced and published by the Chicagoland Bicycle Federation but which have been customized for many other localities and produced in several languages including Spanish and Polish.

A standard curriculum has been developed by the Bicycle Federation of America and by other organizations such as Ride Safe in Illinois and some communities in North Carolina. This curriculum can be bought for use in area schools. In the absence of a comprehensive education program, one strategy would be to focus on those behaviors that have resulted in bicycle-motor vehicles collisions. The primary collision factors in collisions when bicyclists under age 16 are at fault are:

- Wrong-way riding(24%)
- Not yielding right-of-way(24%)
- Improper turn(16%)
- Improper driving(13%)

The most common primary collision factors when adult bicyclists are at fault are:

- Improper turn(19%)
- Drugs/alcohol(17%)
- Wrong-way riding(17%)
- Not yielding right-of-way(10%)
- STOP sign/signal(10%)

In addition to children’s education, motorists need continuing education on the rights and responsibilities of bicyclists. Since motorists are at-fault in about half of bicycle collisions, there needs to be a two-pronged strategy that focuses on both the bicyclist and the motorist to reduce injuries due to bicycle-motor vehicle collisions. Based on accident statistics in the study area, motorists need education on the following issues:

- Not yielding right-of-way(44%)
- Improper turn(19%)
- Starting/backing(12%)

F. Encouragement Programs

Just like any other activity, the amount of bicycle riding in a given community is affected by many things both within and outside the control of a government agency. However, the factors that are within the control of an agency can indeed make a difference. Also, bicycling has been proven to be just as susceptible to advertising and marketing as any other activity.

A recent study analyzed the reasons why Canadians cycle to work an average of three times as often as Americans do, despite their colder climate and brutal winters. The pertinent factors were not historical cultural or resources but rather:

- Urban density and trip distance: Canadian cities and metropolitan areas are denser in terms of both population and jobs per square kilometer. Consequently, average trip lengths are less. Controlling for city population size, the average work trip length in Canada is half that of the USA: between 6 and 8 km compared to between 10 and 16 km.
- Cost of driving: While recent gas price increases may have affected these results, at the time of the study, the average cost of owning a car in Canada was 27% higher than in the US while incomes were lower. The cost of owning a car in Canada was thus 29% of the average income compared to 18% in the USA.
- Lower fatality rate: Canada experienced a 45% reduction in the bicyclist fatality rate since 1988 compared to 25% reduction in the USA. Canada’s bicyclist fatality rate (fatalities per 100 million Km cycled) is currently 2.4, (similar to France and Germany) while USA’s rate is the highest at 5.74. (Denmark and the Netherlands have the lowest at around 1.1.)

Bike Facilities Funding and Implementation

- Extensive Bikeway Networks: While hard to measure and compare cities’ networks, a comparison of a few cities indicates Canada, in general, has more bikeway miles than comparably sized US cities. However, the USA currently has more favorable federal policies. US federal policies changed dramatically in 1991 with the passage of ISTEA, and now annual federal funding for bicycle and pedestrian projects is over \$400,000,000. In addition, states have the flexibility to spend their surface transportation program (STP) allocations on bike/pedestrian projects but most do not. The Canadian federal government policies are less generous towards bicycle and pedestrian projects, so the more extensive bikeway networks in Canadian cities is due to other reasons.

- More restrictive car parking policies in Canada: Typical Canadian cities set maximum parking supply rates while American cities set minimums. Canadian policies intended to encourage transit use also have the effect of increasing bicycling.
- National bicycle education program: In Canada, most cities and towns provide a wide range of courses for all age groups. In the USA, it varies greatly from community to community and state to state.

Statistically significant variables: The authors conducted a multiple regression analysis of these and other variables and found that the most statistically significant variables were:

- gasoline price
- fatality rates
- trip distance

The following are examples of ways the County could encourage bicycling among its own employees and among the public:

- County employees should be reimbursed when they travel by bicycle on official business as they are for automobile trips.
- The County should maintain fleets of bicycles and helmets for use by employees along with its motor vehicle fleets (as done by the Metropolitan Transportation Commission and Caltrans District 1).
- The County should promote public awareness and acceptance of bicycling by maintaining appropriate bicycle facility signage, developing and printing maps for bicyclists, making presentations on bicycling to community groups, and encouraging schools to host CHP bicycle safety training for students.

Chapter 6 - Implementation Plan

This chapter presents the implementation plan for the bicycle project identified in this plan for the unincorporated areas of Alameda County. The actual implementation of this plan will occur incrementally in a variety of ways:

1. Many projects will be incorporated into the Capital Improvement Plan (CIP) process and will be implemented as the CIP projects get funded.
2. Some projects can be implemented as part of regular maintenance and operations practices and road resurfacing projects.
3. Development and redevelopment in some areas of the County will present the opportunity to implement some of the recommendations of this plan.
4. Outside funding can be obtained to finance the design and construction of other projects and programs.

Other strategies that help with project implementation are discussed at the end of this chapter including the establishment of a Bicycle Advisory Committee and a County staff bicycle (and/or pedestrian) planner. The various funding sources are also described along with a funding strategy.

Project Identification and Prioritization

The proposed projects serve many different trip purposes and different attractors and generators. This plan identifies gaps in the bicycle networks and makes gap closures safe routes to school and safe routes to transits a high priority. See list of high priority projects below.

Alameda County High Priority Bicycle Projects

Project	Project Limits		Improvements
E. Castro Valley Blvd.	Villareal Drive	Dublin Canyon Rd.	Bike Lane Gap Closure
E. Castro Valley Blvd.	Five Canyons Parkway	Villareal Drive	Bike Lane Gap Closure
Dublin Canyon Rd.	Eden Canyon Rd./ Palo Verde Rd.	Pleasanton City Limit	Bike Lane Gap Closure
E. Dublin Blvd.	Dublin City Limit	Livermore City Limit	Bike Lane/Path Gap Closure
Arroyo Mocho Trail Extension/Stoneridge Dr. to Las Positas Blvd./Isabel Parkway	Pleasanton City Limit	Livermore City Limit	Bike Path Gap Closure
Wente Street	Concannon Blvd.	Marina Ave.	Bike Lane Gap Closure
Tesla Road	So. Vasco Rd.	Greenville Rd.	Bike Lane Gap Closure
Hesperian Blvd.	San Leandro City Limit	Hayward City Limit	Bike Lane Gap Closure
Meekland Ave.	Lewelling Blvd.	A Street	Bike Signage
Mission Blvd./E. 14 th St.	San Leandro City Limit	Ashland Ave.	Widening Curb Lanes
Lewelling Blvd.	Hesperian Blvd.	Mission Blvd.	Bike Lane Gap Closure
Foothill Blvd.	150 th Ave.	164 th Ave./Miramar Ave.	Bike Lane Gap Closure
A Street	Know Street	6 th Street	Bike Lane Gap Closure
Union Pacific Railroad	Oakland (near High St.)	Hayward/Union City Limit	Bike Path
Coliseum BART to Bay Trail Connector	Coliseum BART	Bay Trail	Bike Path/Lane Gap Closure
Stanley Blvd.	Pleasanton City Limit	Livermore City Limit	Bike Path/Lane Upgrade
Castro Valley Blvd.	Foothill Blvd.	Redwood Rd.	Bike Lane Gap Closure
Norbridge Ave.	Tyee Court	Strobridge Ave.	Bike Lane Gap Closure
Mattox Rd.	Foothill Blvd.	Mission Blvd./E. 14 th St.	Bike Lane Gap Closure
Niles Canyon Corridor	Mission Blvd./Hwy. 238	Sunol/Hwy. 84	Multi-use Path

BICYCLE PROJECT COST ESTIMATES

The cost to implement the projects presented in Chapter 4 was developed in conjunction with the County Public Works staff. Unit costs are presented in Appendix E, but it should be recognized that unit costs vary considerably depending on the size of the job and the location. For example, the unit cost of striping only 1000 linear feet can easily cost two to three times that of a 15,000-foot project. Work in urban areas also tends to cost more than work in more rural areas due the delays caused by traffic and intersections. Pavement widening costs also vary considerably depending on the terrain and other variables such as presence of drainage ditches, existing culverts, utility poles, and narrow bridges. Costs per square foot for widening Lake Chabot Road and Crow Canyon Road, for example, are much more than widening roadways in less hilly areas. Thus, for the major proposed projects work, site visits were made and individual cost estimates were prepared. The cost estimate for each route segment is presented in Table 4.

Routes to School Project List

Project #	Project Name	From	To	Length
R2S 1	Channel Street	Bockman Rd.	Grant Ave.	0.6
	Bikeway Type:	2		
	Improvements needed:	striping, signs and pavement markings		
	Cost Estimate	\$58,800	School:	Elementary School Park

Project #	Project Name	From	To	Length
R2S 2	Ashland Avenue	Lewelling Blvd.	Mission Blvd.	1.2
	Bikeway Type:	2		
	Improvements needed:	TBD		
	Cost Estimate	\$117,600	School:	San Lorenzo High School

Project #	Project Name	From	To	Length
R2S 3	Ashland Avenue	Delano St.	Mission Blvd.	0.4
	Bikeway Type:	2		
	Improvements needed:	TBD		
	Cost Estimate	\$39,200	School:	Edendale School

Project #	Project Name	From	To	Length
R2S 4	Bockman Road	Hesperian Blvd.	Grant Avenue	1.7
	Bikeway Type:	3A		
	Improvements needed:	traffic calming		wayfinding High School; Adult School; Elementary School; Park
	Cost Estimate	\$47,600	School:	

Project #	Project Name	From	To	Length
R2S 5	Grant Avenue	Bockman Road	Hesperian Blvd.	2
	Bikeway Type:	2		
	Improvements needed:	Install R81 Bike Lane Sign		
	Cost Estimate	\$196,000	School:	Arroyo High School; Little League Field

Project #	Project Name	From	To	Length
R2S 6	Paseo Grande	Via Alamitos	Meekland Avenue	1.5
	Bikeway Type:	3A		
	Improvements needed:	Wayfinding		wayfinding Colonial Acres School
	Cost Estimate	\$5,250	School:	

Project #	Project Name	From	To	Length
R2S 7	Via Alamitos	S. L. Creek	South End	1.4
	Bikeway Type:	3A		
	Improvements needed:	traffic calming		wayfinding Arroyo High School
	Cost Estimate	\$39,200	School:	

Project #	Project Name	From	To	Length
R2S 8	Lewelling Blvd.	Hesperian Blvd.	Mission Blvd.	1.7
	Bikeway Type:	2		
	Improvements needed:	CIP 2009		wayfinding San Lorenzo High School; S. John Church School
	Cost Estimate	\$166,600	School:	

Project #	Project Name	From	To	Length
R2S 9	Sunset Blvd.	Mission Blvd.	SPRR	1.15
	Bikeway Type:	3A		
	Improvements needed:	traffic calming		wayfinding Brenkwitz H.S./Adult School
	Cost Estimate	\$32,200	School:	

Project #	Project Name	From	To	Length
R2S 10	Santa Maria Ave	Castro Valley Blvd.	Seven Hills Road	1
	Bikeway Type:	3A		
	Improvements needed:	traffic calming		wayfinding Castro Valley High School
	Cost Estimate	\$28,000	School:	

Project #	Project Name	From	To	Length
R2S 11	Heyer Avenue	Redwood Road	Cull Canyon	1
	Bikeway Type:	2		
	Improvements needed:	TBD		wayfinding CV High and Middle schools
	Cost Estimate	\$98,000	School:	

Legend

W-Widen
pavement
BL-bike lane
D39 BL line
R81 BL Sign
BLM BL marking
EL -Edgeline
R-Resurface
SS2-2ft shoulder
SS-4ft min.
shoulder

G93- Bike route
+ destination signs

Routes to Transit Project List

Project #	Project Name	From	To	Length
R2T 1	Mission Bl./E.14th St.*	150th Avenue /San Leandro city limits	168th Avenue	2.4
	Bikeway Type:	3B		
	Improvements needed:	0		
	Cost Estimate	\$168,000	Transit:	Bayfair BART

Project #	Project Name	From	To	Length
R2T 2	Elgin Street	E. 14th Street	BART	1.1
	159th Avenue	Foothill Blvd.	Coelho Drive	0.7
	Coelho Drive	159th Avenue	BART	0.2
	Bikeway Type:	3A		
	Improvements needed:	wayfinding and traffic calming		
	Cost Estimate	\$700	Transit:	Bayfair BART

Project #	Project Name	From	To	Length
R2T 3	Norbridge Avenue	Castro Valley Blvd.	Tyee Ct.	0.6
	Bikeway Type:	2		
	Improvements needed:	Install R81 Bike Lane Sign		wayfinding
	Cost Estimate	\$2,100	Transit:	Castro Valley BART

Project #	Project Name	From	To	Length
R2T 4	Meekland Avenue	Lewelling Blvd.	A Street	1.7
	Bikeway Type:	0		
	Improvements needed:	Wayfinding		wayfinding
	Cost Estimate	\$5,950	Transit:	Hayward Amtrak

Project #	Project Name	From	To	Length
R2T T5	Castro Valley Blvd.**	SR238-Foothill Blvd.	Crow Canyon Road	2.4
	Bikeway Type:	2		
	Improvements needed:			
	Cost Estimate	\$235,200	Transit:	Castro Valley BART

Legend

W-Widen pavement
BL-bike lane
D39 BL line
R81 BL Sign
BLM BL marking
EL -Edgeline
R-Resurface
SS2-2ft shoulder

SS-4ft min. shoulder

G93- Bike route
+ destination signs

Sunol Area Bicycle Project List

Project #	Project Name	From	To	Length
Su 1	Norris Canyon Road	Crow Canyon Rd	Contra Costa Cty	2.1
	Bikeway Type:	3D		
	Improvements needed:		W, SS2	
	Cost Estimate	\$735,000	Priority	3

Project #	Project Name	From	To	Length
Su 2	Pinehurst Rd	Redwood Rd	Contra Costa Cty	1.7
	Bikeway Type	3D		
	Improvements needed:	EL		
	Cost Estimate	\$595,000	Priority	3

Project #	Project Name	From	To	Length
Su 3	Foothill Road	Pleasanton City Limit	Kilkare Rd	2.6
	Bikeway Type:	3D		
	Improvements needed:		W, SS2	
	Cost Estimate	\$910,000	Priority	3

Project #	Project Name	From	To	Length
Su 4	Pleasanton-Sunol Road	Castlewood Dr	Paloma Rd	3.6
	Bikeway Type:	2		
	Improvements needed:	striping, signs and pavement markings		
	Cost Estimate	\$352,800	Priority	3

Project #	Project Name	From	To	Length
Su 5	Pleasanton-Sunol Road	Paloma Way	SR 84	0.5
	Bikeway Type:	3D		
	Improvements needed:		0	
	Cost Estimate	\$175,000	Priority	3

Project #	Project Name	From	To	Length
Su 6	Palomares	Palo Verde Rd/I-580	Hayward City Limit	2
	Bikeway Type:	3D		
	Improvements needed:		EL	
	Cost Estimate	\$700,000	Priority	3

Project #	Project Name	From	To	Length
Su 7	Niles Canyon Rd / state route 84	Fremont City Limit	Pleasanton - Sunol Rd	State
	Bikeway Type:	3C		
	Improvements needed:		W, SS4	
	Cost Estimate	TBD	Priority	3

Project #	Project Name	From	To	Length
Su 8	Niles Canyon Rd / state route 84	Fremont City Limit	Pleasanton - Sunol Rd	4
	Bikeway Type:	1		
	Improvements needed:		TBD	
	Cost Estimate	TBD	Priority	3

Legend

W-Widen pavement

BL-bike lane

D39 BL line

R81 BL Sign

BLM BL marking

EL -Edgeline

R-Resurface

SS2-2ft shoulder

SS-4ft min. shoulder

G93- Bike route

+ destination signs

Castro Valley Bicycle Project List

Project #	Project Name	From	To	Length
CV 1	Foothill Blvd.*	150th Avenue	164th Ave/Miramar Ave	1.1
	Bikeway Type:	2		
	Improvements needed:	striping, signs and pavement markings		
	Cost Estimate	\$107,800	Priority	3

Project #	Project Name	From	To	Length
CV 2	Stanton Avenue*	Castro Valley Blvd.	Somerset Avenue	0.9
	Bikeway Type:	3A		
	Improvements needed:	traffic calming		
	Cost Estimate	\$25,200	Priority	3

Project #	Project Name	From	To	Length
CV 3	Lake Chabot Road*	S.L. City Limits	Castro Valley Blvd.	3.6
	Bikeway Type:	3A	2	
	Improvements needed:	traffic calming	striping, signs and pavement markings	
	Cost Estimate	\$100,800	Priority	3

Project #	Project Name	From	To	Length
CV 4	Wilson Ave*	Parsons Avenue	Redwood Road	0.5
	Parsons Ave*	Somerset Avenue	Seven Hills Road	0.6
	Christensen Lane	Lake Chabot Road	Parsons Ave	0.5
	Bikeway Type:	3A		
	Improvements needed:	traffic calming		
	Cost Estimate	\$14,000	Priority	3

Project #	Project Name	From	To	Length
CV 5	Redwood Road	Skyline Blvd.	Willow Golf Course	9.5
	Redwood Road	Willow Golf Course	Camino Alta Mira	0.6
	Bikeway Type:	3D	3C	
	Improvements needed:	widening		
	Cost Estimate	\$336,000	Priority	3

Project #	Project Name	From	To	Length
CV 6	Redwood Road	Seven Hills Road	Castro Valley Blvd.	0.6
	Bikeway Type:	3B		
	Improvements needed:		restripe	
	Cost Estimate	\$42,000	Priority	0

Project #	Project Name	From	To	Length
CV 7	Madison Avenue*	James Avenue	Sea View Avenue	0.4
	Forest Avenue*	Castro Valley Blvd.	Heyer Avenue	0.7
	Bikeway Type:	3A		
	Improvements needed:		Wayfinding	
	Cost Estimate	\$30,800	Priority	3

Project #	Project Name	From	To	Length
CV 8	Center St.*	Ray Avenue	San Lorenzo Creek	1.6
	Bikeway Type:	3A		
	Improvements needed:		Wayfinding	
	Cost Estimate	\$44,800	Priority	3

Project #	Project Name	From	To	Length
CV 9	Cull Canyon Road*	Briar Ridge Drive	Columbia Drive	4.2
	Bikeway Type:	3C	3D	
	Improvements needed:		widening	
	Cost Estimate	\$3,528,000	Priority	3

Project #	Project Name	From	To	Length
CV 10	Crow Canyon Road	Cull Canyon Road	County Line	7
	Bikeway Type:	3C		
	Improvements needed:		0	
	Cost Estimate	\$5,880,000	Priority	3

Project #	Project Name	From	To	Length
CV 11	Woodroe Avenue*	Kelly Street	End	0.3
	Maud Avenue*	Kelly Street	D Street	0.5
	Fairview Avenue	D Street	Hayward	2.4
	Bikeway Type:	3A		
	Improvements needed:		Wayfinding	
	Cost Estimate	\$89,600	Priority	3

Project #	Project Name	From	To	Length
CV 12	Palo Verde Rd	E. Castro Valley	Niles Canyon Rd	9.5
	Bikeway Type:	3D		
	Improvements needed:		widening	
	Cost Estimate	\$5,320,000	Priority	3

Project #	Project Name	From	To	Length
CV 13	Fairmont Drive	Mission Blvd.	Foothill Blvd.	2.1
	Bikeway Type:	2		
	Improvements needed:		striping, signs and pavement markings	
	Cost Estimate	\$205,800	Priority	3

Project #	Project Name	From	To	Length
CV 14	Arcadian Drive	Lake Chabot Road	Proctor Road	1.5
	Bikeway Type:	3A		
	Improvements needed:		traffic calming	
	Cost Estimate	\$42,000	Priority	3

Project #	Project Name	From	To	Length
CV 15	Proctor Road	Ewing Road	Lake Chabot Road	1.2
	Bikeway Type:	3A		
	Improvements needed:		traffic calming	
	Cost Estimate	\$33,600	Priority	3

Project #	Project Name	From	To	Length
CV 16	Seven Hills Rd*	Lake Chabot Road	Madison Avenue	1.7
	Bikeway Type:	3A		
	Improvements needed:		traffic calming	
	Cost Estimate	\$47,600	Priority	3

Project #	Project Name	From	To	Length
CV 17	Miramar Avenue	Foothill Blvd.	Stanton Avenue	0.6
	Bikeway Type:	3A		
	Improvements needed:		traffic calming	
	Cost Estimate	\$16,800	Priority	3

Project #	Project Name	From	To	Length
CV 18	Somerset Avenue	Stanton Avenue	Salem Rd.	1.2
	Bikeway Type:	3A		
	Improvements needed:	traffic calming		
	Cost Estimate	\$33,600	Priority	3

Project #	Project Name	From	To	Length
CV 19	Grove Way*	Meekland Avenue	Redwood Road	2.1
	Bikeway Type:	3A		
	Improvements needed:	traffic calming		
	Cost Estimate	\$58,800	Priority	3

Legend

- W-Widen pavement
- BL-bike lane
- D39 BL line
- R81 BL Sign
- BLM BL marking
- EL -Edgeline
- R-Resurface
- SS2-2ft shoulder
- SS-4ft min. shoulder

- G93- Bike route
- + destination signs

San Lorenzo Bicycle Project List

Project #	Project Name	From	To	Length
SL 1	Channel Street	ped bike bridge	Grant Ave.	0.6
	Bikeway Type:	3A		
	Improvements needed:		wayfinding	
	Cost Estimate	\$2,100	Priority	3

Project #	Project Name	From	To	Length
SL 2	Via Catherine/Bandoni Ave	Bockman Rd.	Park	0.8
	Bikeway Type:	3A		
	Improvements needed:		wayfinding	
	Cost Estimate	\$2,800	Priority	3

Project #	Project Name	From	To	Length
SL 3	Washington Ave.	S. L. Creek	Grant Avenue	0.3
	Bikeway Type:	2		
	Improvements needed:		0	
	Cost Estimate	\$29,400	Priority	3

Project #	Project Name	From	To	Length
SL 4	Paseo Larga Vista	Grant Avenue	Paseo Grande	0.3
	Bikeway Type:	3A		
	Improvements needed:		wayfinding	
	Cost Estimate	\$1,050	Priority	3

Project #	Project Name	From	To	Length
SL 5	Via Arriba	Paseo Grande	Bockman/JFK Park	0.7
	JFK Park access road	End of Via Arriba	Skywest Drive	0.1
	Bikeway Type:	3A	1	
	Improvements needed:	wayfinding and path construction		
	Cost Estimate	\$56,000	Priority	3

Project #	Project Name	From	To	Length
SL 6	Via Granada	Lewelling Blvd.	Hacienda Avenue	0.9
	Bikeway Type:	3A		
	Improvements needed:		0	
	Cost Estimate	\$3,150	Priority	0

Project #	Project Name	From	To	Length
SL 7	Hathaway Avenue	Ardis/Hacienda Ave	City Limit Hayward	0.5
	Bikeway Type:	3A		
	Improvements needed:		Wayfinding	
	Cost Estimate	\$1,750	Priority	3

Project #	Project Name	From	To	Length
SL 8	Western Blvd. W.*	Hampton Road	Ashland Ave.	3.8
	Bikeway Type:	3A		
	Improvements needed:		Wayfinding	
	Cost Estimate	\$13,300	Priority	3

Project #	Project Name	From	To	Length
SL 9	Mission Blvd	Ashland Ave.	Rose Street- Hayward C.L.	0.7
	Bikeway Type:	3B		
	Improvements needed:		0	
	Cost Estimate	\$49,000	Priority	3

Project #	Project Name	From	To	Length
SL 10	Hacienda Ave	Via Alamitos	Via Toledo/Hathway	0.9
	Bikeway Type:	3A		
	Improvements needed:		traffic calming	
	Cost Estimate	\$3,150	Priority	3

Project #	Project Name	From	To	Length
SL 11	Blossom Way*	Hathaway	Mission Blvd.	1
	Bikeway Type:	2		
	Improvements needed:		0	
	Cost Estimate	\$98,000	Priority	3

Project #	Project Name	From	To	Length
SL 12	164th Avenue	E. 14th Street	Foothill Blvd.	0.9
	Bikeway Type:	2		
	Improvements needed:		-	
	Cost Estimate	\$88,200	Priority	3

Project #	Project Name	From	To	Length
SL 13	167th Avenue	E. 14th Street	Foothill Blvd.	0.4
	Bikeway Type:	2		
	Improvements needed:		Install R81 Bike Lane Sign	
	Cost Estimate	\$5,600	Priority	3

Project #	Project Name	From	To	Length
SL 14	Hampton Road	Meekland Avenue	Mission Blvd.	2.5
	Bikeway Type:	3A		
	Improvements needed:		traffic calming	
	Cost Estimate	\$70,000	Priority	3

Project #	Project Name	From	To	Length
SL 15	Mattox Avenue	Mission Blvd.	SR238-Foothill Blvd.	0.3
	Bikeway Type:	2		
	Improvements needed:	striping, signs and pavement markings		
	Cost Estimate	\$29,400	Priority	3

Project #	Project Name	From	To	Length
SL 16	D Street	164th Ave/Miramar Ave	Fairview Avenue	3.2
	East Avenue	Near 173rd	east end	
	Hansen Road	Foothill Blvd.	East Avenue	
	Bikeway Type:	3A		
	Improvements needed:	traffic calming		
	Cost Estimate	\$89,600	Priority	3

Project #	Project Name	From	To	Length
SL 17	Kelly St	Center Street	east end	0.7
	Bikeway Type:	3A		
	Improvements needed:	traffic calming		
	Cost Estimate	\$19,600	Priority	3

Legend

W-Widen pavement
 BL-bike lane
 D39 BL line
 R81 BL Sign
 BLM BL marking
 EL -Edgeline
 R-Resurface
 SS2-2ft shoulder
 SS-4ft min. shoulder

G93- Bike route
 + destination signs

North East Livermore Bicycle Project List

Project #	Project Name	From	To	Length
NEL 1	North Livermore Avenue	I-580	Manning Rd	3.6
	Bikeway Type:	3D		
	Improvements needed:	W, SS2		
	Cost Estimate	\$1,512,000	Priority	3

Project #	Project Name	From	To	Length
NEL 2	May School Rd	North Livermore Ave	Daganino Rd	1.3
	Bikeway Type:	3D		
	Improvements needed:	W, SS2		
	Cost Estimate	\$546,000	Priority	3

Project #	Project Name	From	To	Length
NEL 3	Daganino/Raymond/Ames/Dalton	May School Rd	Vasco Rd	0
	Bikeway Type:	3D		
	Improvements needed:	EL		
	Cost Estimate	\$0	Priority	3

Project #	Project Name	From	To	Length
NEL 4	Hartford Ave	North Livermore Ave	Lorraine St	1
	Bikeway Type:	3D		
	Improvements needed:	EL		
	Cost Estimate	\$420,000	Priority	3

Project #	Project Name	From	To	Length
NEL 5	Manning Rd	North Livermore Ave	Highland Rd	1.4
	Bikeway Type:	3D		
	Improvements needed:	W, SS2		
	Cost Estimate	\$588,000	Priority	3

Project #	Project Name	From	To	Length
NEL 6	Highland Rd	Manning Rd	Contra Costa Cty	0.1
	Bikeway Type:	3D		
	Improvements needed:	W, SS2		
	Cost Estimate	\$42,000	Priority	0

Project #	Project Name	From	To	Length
NEL 7	Vasco Rd	Dalton Ave. / Livermore city limit	Contra Costa Cty	4.4
	Bikeway Type:	3C		
	Improvements needed:	0		
	Cost Estimate	\$15,400	Priority	CIP 2007

Legend

W-Widen
pavement
BL-bike lane
D39 BL line
R81 BL Sign
BLM BL marking
EL -Edgeline
R-Resurface
SS2-2ft shoulder
SS-4ft min.
shoulder

G93- Bike route
+ destination signs

South East Livermore Bicycle Project List

Project #	Project Name	From	To	Length
SEL 1	Patterson Pass Road	Greenville Rd	I-580/San Joaquin Cty	5
	Bikeway Type:	3D		
	Improvements needed:			
	Cost Estimate	\$2,800,000	Priority	3

Project #	Project Name	From	To	Length
SEL 2	Altamont Pass Road	North Greenville Rd	Grant Line Rd	8
	Bikeway Type:	3C		
	Improvements needed:		W, SS4	
	Cost Estimate	\$6,720,000	Priority	3

Project #	Project Name	From	To	Length
SEL 3	Grant Line Road	I-580	San Joaquin Cty	2.1
	Bikeway Type:	3C		
	Improvements needed:		W, SS4	
	Cost Estimate	\$1,764,000	Priority	3

Project #	Project Name	From	To	Length
SEL 4	Mountain House	Grant Line Rd	Contra Costa Cty line	4.3
	Bikeway Type:	3D		
	Improvements needed:		W, SS2	
	Cost Estimate	\$2,408,000	Priority	3

Project #	Project Name	From	To	Length
SEL 5	North Flynn Rd	South Flynn Rd	I-580	1.3
	Bikeway Type:	3D		
	Improvements needed:		W, SS2	
	Cost Estimate	\$728,000	Priority	3

Project #	Project Name	From	To	Length
SEL 6	South Flynn Rd	Patterson Pass Rd	North Flynn Rd	2.5
	Bikeway Type:	3D		
	Improvements needed:		W, SS2	
	Cost Estimate	\$875,000	Priority	3

Project #	Project Name	From	To	Length
SEL 7	S Vasco Rd	Livermore eastern City Limit	San Joaquin County Line	0
	Bikeway Type:	3D		
	Improvements needed:		SS2	
	Cost Estimate	\$0	Priority	3

Project #	Project Name	From	To	Length
SEL 8	S Livermore Ave/Tesla Rd	City of Livermore	Buena Vista Ave	2.3
	Bikeway Type:	2		
	Improvements needed:	Install R81, Bike Lane Markings		
	Cost Estimate	\$32,200	Priority	3

Project #	Project Name	From	To	Length
SEL 9	Tesla Rd	0.6 miles e/o South Vasco Rd	San Joaquin County Line	12
	Bikeway Type:	2		
	Improvements needed:	Install R81, Bike Lane Markings		
	Cost Estimate	\$168,000	Priority	3

Project #	Project Name	From	To	Length
SEL 10	Mines Rd	Del Valle	Santa Clara County line	0
	Bikeway Type:	3D		
	Improvements needed:	W, SS2		
	Cost Estimate	\$0	Priority	3

Project #	Project Name	From	To	Length
SEL 11	Arroyo	Livermore City Limit	Santa Clara County line	0
	Bikeway Type:	3D		
	Improvements needed:	0		
	Cost Estimate	\$0	Priority	3

Project #	Project Name	From	To	Length
SEL 12	Vallecitos Rd	Livermore City Limit	I-680	0
	Bikeway Type:	3D		
	Improvements needed:	0		
	Cost Estimate	\$0	Priority	3

Legend

W-Widen pavement

BL-bike lane

D39 BL line

R81 BL Sign

EL -Edgeline

R-Resurface

SS2-2ft shoulder

SS-4ft min. shoulder

G93- Bike route

+ destination signs

West Livermore/East Pleasanton/Dublin Bicycle Project List

Project #	Project Name	From	To	Length
WL 1	Tassajara Rd	MP 2.1 n.o I-580	Contra Costa Cty	0.6
	Bikeway Type:	2		
	Improvements needed:	Widen, striping, signs and pavement markings		
	Cost Estimate	\$8,400	Priority	3

Project #	Project Name	From	To	Length
WL 2	E Dublin Blvd	Dublin City Limit	Livermore City Limit	2.5
	Bikeway Type:	1		
	Improvements needed:	Build path		
	Cost Estimate	\$1,400,000	Priority	1

Project #	Project Name	From	To	Length
WL 3	Stanley Blvd	City of Pleasanton	City of Livermore	2.7
	Bikeway Type:	2		
	Improvements needed:	striping, signs and pavement markings		
	Cost Estimate	\$37,800	Priority	3

Project #	Project Name	From	To	Length
WL 4	Stanley Blvd path	City of Pleasanton	to City of Livermore	2.7
	Bikeway Type	1		
	Improvements needed:	-		
	Cost Estimate	\$1,512,000	Priority	3

Project #	Project Name	From	To	Length
WL 5	Collier Canyon Road	Livermore Ctiy Limit	Contra Costa Cty	3.7
	Bikeway Type:	3D		
	Improvements needed:	EL		
	Cost Estimate	\$51,800	Priority	3

Project #	Project Name	From	To	Length
WL 6	Arroyo Mocho Trail extension/ Stoneridge Dr to Las Positas Blvd/Isabel Pkway	Pleasanton City Limit	Livermore City Limit	2
	Bikeway Type:	1		
	Improvements needed:	Build path		
	Cost Estimate	\$1,120,000	Priority	1

Project #	Project Name	From	To	Length
WL 7	Arroyo Mocho Trail	Pleasanton City Limit	Livermore City Limit	3
	Bikeway Type:	1		
	Improvements needed:	Build path		
	Cost Estimate	\$1,680,000	Priority	2

Project #	Project Name	From	To	Length
WL 8	Wente St.	Concannon Blvd.	Marina Ave	0
	Bikeway Type:	2		
	Improvements needed:	bike lane construction		
	Cost Estimate	\$0	Priority	1

Project #	Project Name	From	To	Length
WL 9	Marina Ave	Wente St.	Arroyo Rd	0
	Bikeway Type:	2		
	Improvements needed:	bike lane construction		
	Cost Estimate	\$0	Priority	2

Legend

W-Widen pavement

BL-bike lane

D39 BL line

R81 BL Sign

BLM BL marking

EL -Edgeline

R-Resurface

SS2-2ft shoulder

SS-4ft min. shoulder

G93- Bike route

+ destination signs

Project Prioritization - Network infill projects should be prioritized, as there are too many to implement with current funds. An objective set of criteria is essential to avoid controversy among various project proponents as well as to efficiently respond to funding applications. The project prioritization criteria used in two common funding sources are presented in the Appendix B.

BICYCLE ADVISORY COMMITTEE FOR COUNTY UNINCORPORATED AREAS

One of the best ways to ensure that the County follows the plan policies is by incorporating these ideals into all its planning and procedures and by establishing a countywide Bicycle Advisory Committee (BAC). There are several models for a BAC; with one model being a committee composed of entirely volunteer citizens with a County staff representative and the other being a committee composed of representatives from citizens, as well as staff from pertinent agencies such as planning, public works, public safety, and the school districts. The latter can become pretty cumbersome, especially at the County level. The BAC structure of three other Bay Area counties, San Francisco, Contra Costa, and Santa Clara, is presented in Appendix D.

For Alameda County, a BAC should advise all County departments and agencies on decisions and actions that directly and indirectly affect bicycling. This includes long-term planning such as roadway development approval and transportation infrastructure. This also includes roadway reconstruction and/or restriping projects, intersection design, and other improvement projects. Early in the planning process of each design project, the BAC should be given an opportunity to apprise project engineers of the issues which should be considered during the design that affect bicyclists. Addressing these issues at this phase can reduce costs considerably. The BAC should also assist the County in prioritizing bicycle projects in terms of applying for grant funding.

FUNDING OPPORTUNITIES AND STRATEGIES

Traditional Funding Sources

This section outlines the most probable funding sources to implement the recommended bikeway projects. While some funding sources are dedicated to the County, others are competitive. Even among dedicated funding sources there is no guaranteed amount for the unincorporated areas. Lastly, Alameda County receives funding for roadway projects that can be used to implement some bikeway projects in this report.

The following paragraphs describe in more detail the various funding sources that can be used to fund the projects in this report whether they are bicycle-specific or general transportation funds. Appendix F presents a more comprehensive list of the various local, regional, statewide, and federal funding sources that can be used for roadway, trail, or traffic safety (including bicycle safety) projects. The most likely funding opportunities for Alameda County are:

- **Transportation Development Act Article 3 Funds**
The entire County of Alameda receives about \$800,000 per year for all jurisdictions. The County receives 15% of the total for use in unincorporated areas.
- **Bay Area Air Quality Management District Funds - TFCA**
40 percent/60 percent.
- **Bicycle Lane Account - Caltrans**
- **Surface Transportation Program of TEA-21**
This is often used to fund projects with bicycle components. In fact, bicycle facilities enable the project to score higher. Alameda County receives between \$10 and \$13 million per year in STP funds.
- **Office of Traffic Safety**
This funding source is often used for bicycle and pedestrian safety projects and can be used for traffic calming programs as well.

Non-Traditional Funding Sources

In addition to the programs itemized in Table 9, there are several non-traditional funding sources that might be available for the long-term implementation of project and program recommendations. The following paragraphs briefly describe several of the unusual or innovative ways that communities have funded as part of their bicycle program.

Grant and Foundation Opportunities

Private foundations provide excellent opportunities for funding specific capital projects or single event programs. To qualify for these types of funds, the Bicycle Advisory Committee or an established non-profit group acting in their behalf must exist. It also might be possible to work with existing non-profit organizations such as the Friends of Recreation and Parks. According to the 1994 "Foundation Directory," there are over 650 foundations within the State of California, many of them located in the Bay Area. The Directory only includes those organizations which held assets of \$2 million or more or gave \$200,000 or more in grant awards in the previous year. In general, private foundations are initially established for specific purposes, e.g., children and youth needs, promotion of certain professional objectives, educational opportunities, the arts, and community development. There are four types of foundations located in the Bay Area:

- **Independent Foundations**
- **Company-Sponsored Foundations**
- **Operating Foundations**
- **Community Foundations**

A description of several foundations that favor environmentally-related projects is presented in the previously mentioned report *Guide to Bicycle Program Funding in California*. In general, private foundations prefer to fund programs that are special in nature such as conferences or children's education events, rather than programs viewed as city responsibilities such as constructing and maintaining roadways.

Adopt-A-Trail/Path Programs - Modeled upon the Southern California program of highway maintenance contributions, this program would post signs to indicate which individual or group has contributed to the development, installation, or maintenance of a particular bike facility.

Memorial Funds - These programs are advertised as potential donor projects to be funded via on-going charitable contributions or funds left to a particular project through a will. Most memorial projects include the location of a memorial plaque at a location specific to the improvement or a scenic vista point.

Revenue Producing Operations - As part of the development of a trail or bike path, plans can specifically include the location of a revenue producing operation adjacent to the proposed improvement. For example, bicycle rental facilities, food and drink establishments, bike storage facilities and equipment centers, and/or equestrian centers would be appropriate uses. The on-going lease revenues from these operations could then be used for trail/path maintenance.

Funding Strategy

Some funding sources do not provide more than One or Two Hundred Thousand Dollars per year. To fund a \$1 million dollar or more projects with these sources would commit this one funding source for about ten years or more. This would be to the neglect of many other smaller projects in the County that may be as beneficial. Although the prioritization criteria take into account the cost-benefit ratio, it still does not make sense to commit one source of funds for several years to only one project. Rather, smaller sources of funding such as TDA Article 3 and TFCA should be used for funding the less costly projects and larger pools of funding should be sought for the more expensive projects. For example, widening the shoulders of Crow Canyon Road would be a good candidate for an STP project but not a TDA project.

Appendix A

Bicycle Collision Statistics

**APPENDIX A
BICYCLE COLLISION STATISTICS**

Primary Collision Factor By Party At Fault By Year

Primary Collision Factor	Bicyclist at Fault					Driver at Fault					Total
	2001	2002	2003	Subtotal	Subtotal %	2001	2002	2003	Subtotal	Subtotal %	Percent
Wrong Side	6	13	7	26	35%	0	1	1	2	5%	25%
R-O-W Auto	3	2	5	10	13%	2	6	0	8	21%	16%
Improper Turn	5	3	4	12	16%	3	3	4	10	26%	19%
Improper Pass	0	1	0	1	1%	0	0	1	1	3%	2%
Drugs/Alcohol	1	3	0	4	5%	2	0	0	2	5%	5%
Improper Driving	2	0	0	2	3%	0	1	0	1	3%	3%
STOP/Signal	2	4	0	6	8%	1	3	1	5	13%	10%
Unsafe Speed	0	3	3	6	8%	0	1	1	2	5%	7%
Starting/Backing	0	0	1	1	1%	0	0	0	0	0%	1%
Other Hazard	0	1	3	4	5%	3	1	1	5	13%	8%
Lane Change	0	0	0	0	0%	0	0	1	1	3%	1%
Other Equipment	0	0	0	0	0%	0	1	0	1	3%	1%
Pedestrian Violation	0	1	0	1	1%	0	0	0	0	0%	1%
Other Improper Driving	0	1	1	2	3%	0	0	0	0	0%	2%
Impeding Traffic	0	0	0	0	0%	0	1	0	1	3%	1%
Totals	19	32	24	75	100%	11	18	10	39	100%	100%

Statewide Integrated Traffic Records System 2001, 2002, 2003

Appendix B

**Evaluation Criteria Used
by
Bicycle Transportation
Account and TDA**

APPENDIX B
EXAMPLES OF PRIORITIZATION CRITERIA

Bicycle Transportation Account

Will the project be used mostly by bicycle commuters?

Does the project have the potential to increase bicycle commuting?

Is the project the best alternative for this situation?

Will the project improve continuity with existing bikeways?

Will the project provide a direct route to activity centers?

TDA Article 3

MTC processes each county's TDA applications but gives great leeway to each county to prioritize their own projects. Thus, MTC does not apply criteria directly to the TDA projects. However, its application sheet identifies the following evaluation criteria:

Elimination of problem areas

Access to or bicycle parking in high activity areas

Bicycle/transit or pedestrian/transit use

Continuity of longer routes

Local support

Appendix C

Recommended Bikeway Network

**APPENDIX C
RECOMMENDED BIKEWAY NETWORK**

RET#	STREET	STREET SEGMENT			Existing Bikeway type			IMPROVEMENTS 2006 PLAN				ATTRACTORS
		BETWEEN	AND	LENGTH (mi)	striping	signs	pavement legends	PROPOSED TYPE	IMPROVEMENT NEEDED	CONSTRAINTS	PRIORITY	
SL SAN LORENZO												
S1	Channel Street	Bockman Rd.	Grant Ave.	0.6				2	striping, signs and pavement markings		2	Elementary School Park
1	Via Nueva	ped bike bridge	Grant Ave.	0.6				3A	wayfinding		3	Existing Ped/Bike bridge to San Leandro
2	Via Catherine/Bandoni Ave.	Bockman Rd.	Park	0.8				3A	wayfinding		3	
3	Washington Ave.	S. L. Creek	Grant Avenue	0.3				2			3	Arroyo High School
S7	Via Alamos	Grant Avenue	Bockman Rd.	0.7				3A	traffic calming		2	
S7	Via Alamos	Bockman Rd.	South End	0.4				3A	wayfinding		2	
4	Paseo Larga Vista	Grant Avenue	Paseo Grande	0.3				3A	wayfinding		3	
5	Via Arriba	Paseo Grande	Bockman/JFK Park	0.7				3A	wayfinding		3	

**APPENDIX C
RECOMMENDED BIKEWAY NETWORK**

RET#	STREET	STREET SEGMENT			Existing Bikeway type			IMPROVEMENTS 2006 PLAN				ATTRACTORS
		BETWEEN	AND	LENGTH (mi)	striping	signs	pavement legends	PROPOSED TYPE	IMPROVEMENT NEEDED	CONSTRAINTS	PRIORITY	
5	JFK Park access road	End of Via Arriba	Skywest Drive	0.1				1	build path		3	
cip	Hesperian Blvd.*	San Lorenzo Creek/S.L. City Limit	n/o Grant Ave.		3B			2	striping, signs and pavement markings		CIP 2008	
cip	Hesperian Blvd.	n/o Grant Avenue	n/o Paseo Grande		3B			2	striping, signs and pavement markings		CIP 2008	
cip	Hesperian Blvd.*	n/o Paseo Grande	Paseo Grande		3B			2	striping, signs and pavement markings		CIP 2008	Hesperian Center
cip	Hesperian Blvd.	Paseo Grande	Via Mercado	1.8	3B			2	striping, signs and pavement markings		CIP 2008	
cip	Hesperian Blvd.*	Via Mercado	Hacienda Avenue		3B			2	striping, signs and pavement markings		CIP 2008	Residential frontage on both sides
cip	Hesperian Blvd.*	Hacienda Avenue	Bockman Rd.		3B			2	striping, signs and pavement markings		CIP 2008	
cip	Hesperian Blvd.	Bockman Rd.	McConaghy St.		3B			2	striping, signs and pavement markings		CIP 2008	McConaghy Estate

**APPENDIX C
RECOMMENDED BIKEWAY NETWORK**

RET#	STREET	STREET SEGMENT			Existing Bikeway type			IMPROVEMENTS 2006 PLAN				ATTRACTORS
		BETWEEN	AND	LENGTH (mi)	striping	signs	pavement legends	PROPOSED TYPE	IMPROVEMENT NEEDED	CONSTRAINTS	PRIORITY	
cip	Hesperian Blvd.*	McConaghy St.	A Street/H.C.L.		3B			2	striping, signs and pavement markings		CIP 2008	Target Shopping Center
6	Via Granada	Lewelling Blvd.	Via Toledo	0.2				3A			3	
6	Via Toledo	Via Granada	Paseo Grande	0.2				3A	Wayfinding		3	
6	Via Toledo	Paseo Grande	Hacienda Avenue	0.5				3A	Wayfinding		3	
7	Hathaway Avenue	Ardis/Hacienda Ave	West Blossom Way	0.2				3A	Wayfinding		3	
7	Hathaway Avenue	West Blossom Way	City Limit Hayward	0.3	Y	N	N	2	Install R81, Bike Lane Markings		3	In Hayward
S2	Ashland Avenue	Lewelling Blvd.	BART	0.8				2	TBD		2	San Lorenzo High School
S2	Ashland Avenue	Under BART						2	TBD		3	
S3	Ashland Avenue	Delano St.	Mission Blvd.	0.4				2	TBD		2	Edendale School
T4	Meekland Avenue	Lewelling Blvd.	Hampton Road	0.2	2	Y	Y		Wayfinding		1	Hayward Amtrak
T4	Meekland Avenue	Hampton Road	A Street	1.5	2	Y	Y		Wayfinding		1	Cannery Park
8	Western Blvd. W.*	Hampton Road	A Street	1.4				3A	Wayfinding		3	

**APPENDIX C
RECOMMENDED BIKEWAY NETWORK**

RET#	STREET	STREET SEGMENT			Existing Bikeway type			IMPROVEMENTS 2006 PLAN				ATTRACTORS
		BETWEEN	AND	LENGTH (mi)	striping	signs	pavement legends	PROPOSED TYPE	IMPROVEMENT NEEDED	CONSTRAINTS	PRIORITY	
T1	Mission Bl./E. 14th St.*	150th Avenue /San Leandro city limits	Ashland Ave.	2.4				3B			1	Bayfair BART
9	Mission Blvd.	Ashland Ave.	168th Avenue					3B			3	
9	Mission Blvd.*	168th Avenue	Lewelling Blvd.					3B			3	
9	Mission Blvd.	Hampton Road	Cherry Way	0.3				2	striping, signs and pavement markings		3	
9	Mission Blvd.	Cherry Way	Rose Street-Hayward C.L.	0.4				2	striping, signs and pavement markings		3	
S4	Bockman Road	Hesperian Blvd.	Via Arriba	0.1				3A	traffic calming		3	
S4	Bockman Road	Via Arriba	Via Alamos	0.5				3A	Wayfinding		2	High School; Adult School; Elementary School; Park

**APPENDIX C
RECOMMENDED BIKEWAY NETWORK**

RET#	STREET	STREET SEGMENT			Existing Bikeway type			IMPROVEMENTS 2006 PLAN				ATTRACTORS
		BETWEEN	AND	LENGTH (mi)	striping	signs	pavement legends	PROPOSED TYPE	IMPROVEMENT NEEDED	CONSTRAINTS	PRIORITY	
S4	Bockman Road	Via Alamos	Via Chiquita	0.1				3A	Wayfinding		2	Residential
S4	Bockman Road	Via Chiquita	Via LaJolla	0.1				3A	Wayfinding		2	
S4	Bockman Road	Via LaJolla	Channel St.	0.1				3A	Wayfinding		2	
S4	Bockman Road	Channel St.	Via Amigos	0.5				3A	Wayfinding		2	
S4	Bockman Road	Via Amigos	Grant Avenue	0.3				3A	Wayfinding		2	
CBL	Grant Avenue*	500 ft e/o end	Bockman Rd.	0.5	2	G93	Y	2	Install R81 Bike Lane Sign		3	
CBL	Grant Avenue	Bockman Road	Via Seco	0.5	2	G93	Y	2	Install R81 Bike Lane Sign		2	Bay Trail Access/Industrial uses
CBL	Grant Avenue*	Via Seco	Channel St	0.7	2	G93	Y	2	Install R81 Bike Lane Sign		3	
CBL	Grant Avenue	Channel Street	Lorenzo Avenue	0.3	2	G93	Y	2	Install R81 Bike Lane Sign		2	Arroyo High School; Little League Field

**APPENDIX C
RECOMMENDED BIKEWAY NETWORK**

RET#	STREET	STREET SEGMENT			Existing Bikeway type			IMPROVEMENTS 2006 PLAN				ATTRACTORS
		BETWEEN	AND	LENGTH (mi)	striping	signs	pavement legends	PROPOSED TYPE	IMPROVEMENT NEEDED	CONSTRAINTS	PRIORITY	
-	Grant Avenue*	Washington Avenue	Hesperian Blvd.	0.5				3A	Wayfinding		3	
S6	Paseo Grande	Via Alamitos	Paseo Largavista	0.4				3A	Wayfinding		3	Residential
S6	Paseo Grande	Paseo Largavista	Hesperian Blvd.	1.1				3A	Wayfinding		2	Shopping center
S6	Paseo Grande	Hesperian Blvd.	Via Granda					3A	Wayfinding		2	
S6	Paseo Grande	Via Granada	Meekland Avenue					3A	Wayfinding		2	Colonial Acres School
10	Hacienda Ave.	Via Alamitos	Via Arriba					3A	traffic calming		3	
10	Hacienda Ave.	Via Arriba	Hesperian Blvd.	0.9				3A	Wayfinding		3	
10	Hacienda Ave.	Hesperian Blvd.	Ricardo Ave.					3A	Wayfinding		3	
10	Hacienda Ave.	Ricardo Ave	Via Toledo/Hathway					2			3	
11	Blossom Way*	Hathaway	Meekland Avenue	1				3A			3	
11	Blossom Way*	Meekland Avenue	Mission Blvd.					3A			3	Residential

**APPENDIX C
RECOMMENDED BIKEWAY NETWORK**

RET#	STREET	STREET SEGMENT			Existing Bikeway type			IMPROVEMENTS 2006 PLAN				ATTRACTORS
		BETWEEN	AND	LENGTH (mi)	striping	signs	pavement legends	PROPOSED TYPE	IMPROVEMENT NEEDED	CONSTRAINTS	PRIORITY	
12	164th Avenue	E. 14th Street	Liberty Street	0.4	2	R81	Y	2	-		3	
12	164th Avenue	Liberty Street	Foothill Blvd.	0.1				2			3	
13	167th Avenue	E. 14th Street	Liberty Street	0.3	2	G93	Y	2	Install R81 Bike Lane Sign		3	Ashland Park and Community Center
13	167th Avenue	Liberty Street	Foothill Blvd.	0.1				2	striping, signs and pavement markings		3	
cip-S8	Lewelling Blvd.	Hesperian Blvd.	Tracy Street					2			CIP 2009	
cip	Lewelling Blvd.	Tracy Street	Railroad	1.7				2			3	Orchard Supply Hardware
cip	E Lewelling Blvd	Railroad	Meekland Avenue					2			2	San Lorenzo High School; S. John Church School
cip	E Lewelling Blvd	Meekland Avenue	Mission Blvd.					2			3	
14	Hampton Road	Meekland Avenue	Western					3A	traffic calming		3	Meek Estate
14	Hampton Road	Western Blvd.	Cambridge	0.8				3A			3	
14	Hampton Road*	Cambridge Avenue	Mission Blvd.					3A			3	
15	Mattox Avenue	Mission Blvd.	SR238-Foothill Blvd.	0.3				2	striping, signs and pavement markings		3	

**APPENDIX C
RECOMMENDED BIKEWAY NETWORK**

RET#	STREET	STREET SEGMENT			Existing Bikeway type			IMPROVEMENTS 2006 PLAN				ATTRACTORS
		BETWEEN	AND	LENGTH (mi)	striping	signs	pavement legends	PROPOSED TYPE	IMPROVEMENT NEEDED	CONSTRAINTS	PRIORITY	
S9	Sunset Blvd.	Mission Blvd.		0.2				3A	traffic calming		2	
S9	Sunset Blvd.	Vallejo Street	Vallejo	0.1				3A	Wayfinding		3	
S9	Sunset Blvd.	200' c/o UPRR	200 e/o UPRR	0.1				3A	Wayfinding		3	
S9	Sunset Blvd.*	200' w/o RR		0.5				3A	Wayfinding		2	Brenkwitz H.S./Adult School
S9	Sunset Blvd.	Gap across SPRR	SPRR	0.25				3AA			2	
16	D Street	Hayward City limit	Fairview Avenue	0.8				3A	traffic calming		3	
16	East Avenue	Hayward City limit	east end	1.7				3A			3	
16	Hansen Road	Fairview Avenue	East Avenue	0.7				3A	traffic calming		3	
17	Kelly St.	Center Street	Mansfield Avenue					3A	traffic calming		3	
17	Kelly St.*	Mansfield Avenue	Maud Avenue	0.2				3A			3	Residential
17	Kelly St.*	Maud Avenue	east end	0.5				3A			3	Residential

**APPENDIX C
RECOMMENDED BIKEWAY NETWORK**

RET#	STREET	STREET SEGMENT			Existing Bikeway type			IMPROVEMENTS 2006 PLAN				ATTRACTORS
		BETWEEN	AND	LENGTH (mi)	striping	signs	pavement legends	PROPOSED TYPE	IMPROVEMENT NEEDED	CONSTRAINTS	PRIORITY	
CV CASTRO VALLEY												
1	Foothill Blvd.*	150th Avenue	164th Ave/Miramar Ave	1.1				2	striping, signs and pavement markings		3	
CBL	Foothill Blvd.	164th Ave/Miramar Ave	John Drive	1	Y	G93	Y	2	Install R81 Bike Lane Sign		3	
1	Foothill Blvd.	Near 173rd	Strobridge Avenue					2	NONE		3	
1	John Drive	Foothill Blvd.	Castro Valley Blvd.	0.2				2	NONE		3	
1	Foothill Blvd./S.R.238*	Castro Valley Blvd.	Apple Avenue H.C.L.	0.3				2	NONE		3	
2	Stanton Avenue*	Castro Valley Blvd.	Somerset Avenue	0.5				3A	traffic calming		3	Mostly residential
2	Stanton Avenue	Somerset Avenue	Sydney Way	0.4				3A			3	Mostly residential
3	Lake Chabot Road*	S.L. City Limits	Fairmont Drive	1.7				3A	traffic calming		3	
3	Lake Chabot Road*	Fairmont Drive	Seven Hills Road	0.7				2	striping, signs and pavement markings		3	
3	Lake Chabot Road	Seven Hills Road	Somerset Avenue	0.7				2			2	Castro Valley Community Center

**APPENDIX C
RECOMMENDED BIKEWAY NETWORK**

RET#	STREET	STREET SEGMENT			Existing Bikeway type			IMPROVEMENTS 2006 PLAN				ATTRACTORS
		BETWEEN	AND	LENGTH (mi)	striping	signs	pavement legends	PROPOSED TYPE	IMPROVEMENT NEEDED	CONSTRAINTS	PRIORITY	
3	Lake Chabot Road	Somerset Avenue	Castro Valley Blvd.	0.5				2			2	Eden Hospital
S10	Santa Maria Ave.	Castro Valley Blvd.	Somerset Avenue	0.4				3A	traffic calming		2	Castro Valley High School
S10	Santa Maria Ave.	Somerset Avenue	Wilson Avenue	0.4				3A	Wayfinding		2	
S10	Santa Maria Ave.	Wilson Avenue	Seven Hills Road	0.2				3A	Wayfinding		2	
4	Wilson Ave.*	Parsons Avenue	Redwood Road	0.5				3A	traffic calming		3	
4	Parsons Ave.*	Somerset Avenue	Seven Hills Road	0.6				3A	Wayfinding		3	Residential
4	Christensen Lane	Lake Chabot Road	Parsons Ave	0.5				3A	Wayfinding		3	Residential
5	Redwood Road	Skyline Blvd.	Willow Golf Course	9.5				3D	widening		3	
5	Redwood Road	Willow Golf Course	Camino Alta Mira	0.6				3C	widening		3	Willow Golf Course
CBL	Redwood Road	Camino Alta Mira	Proctor Road	0.1	2	G93	Y	2	Install R81 Bike Lane Sign		3	
CBL	Redwood Road	Proctor Road	Seven Hills Road	0.5	2	G93	Y	2	Install R81 Bike Lane Sign		2	Proctor Elementary School, Senior Center,

**APPENDIX C
RECOMMENDED BIKEWAY NETWORK**

RET#	STREET	STREET SEGMENT			Existing Bikeway type			IMPROVEMENTS 2006 PLAN				ATTRACTORS
		BETWEEN	AND	LENGTH (mi)	striping	signs	pavement legends	PROPOSED TYPE	IMPROVEMENT NEEDED	CONSTRAINTS	PRIORITY	
6	Redwood Road	Seven Hills Road	Heyer Avenue					3B	restripe		3	
6	Redwood Road*	Heyer Avenue	Somerset Avenue	0.2				3B			3	
6	Redwood Road	Somerset Avenue	Castro Valley Blvd.	0.4				3B			3	Mixed I.u.
CBL	Redwood Road	Castro Valley Blvd.	Hwy 580	0.3	2	G93	Y	2	Install R81 Bike Lane Sign		CIP	Planned 6 lanes with bike lanes
CBL	Redwood Road	Hwy. 580	Grove Way	0.4	2	G93	Y	2	Install R81 Bike Lane Sign		CIP	Planned 4-6 lanes with bike lanes; pkg on one side
CBL	Redwood Road	Grove Way	San Lorenzo Creek	0.4	2	G93	Y	2	Install R81 Bike Lane Sign		3	
CBL	A Street	Knox Street	6th Street	0.04	2	G93	Y	2	Install R81 Bike Lane Sign		1	
7	Madison Avenue*	James Avenue	Sea View Avenue	0.4				3A	Wayfinding		3	Residential
7	Forest Avenue*	Castro Valley Blvd.	Heyer Avenue	0.7				3A	Wayfinding		3	
8	Center St.*	Ray Avenue	Heyer Avenue	0.3				3A	Wayfinding		3	Residential
8	Center St.*	Heyer Avenue	Castro Valley Blvd.	0.9				3A	Wayfinding		2	Adult School/RESIDENTIAL
8	Center St.*	Castro Valley Blvd.	Grove Way	0.2				2			3	Commercial

**APPENDIX C
RECOMMENDED BIKEWAY NETWORK**

RET#	STREET	STREET SEGMENT			Existing Bikeway type			IMPROVEMENTS 2006 PLAN				ATTRACTORS
		BETWEEN	AND	LENGTH (mi)	striping	signs	pavement legends	PROPOSED TYPE	IMPROVEMENT NEEDED	CONSTRAINTS	PRIORITY	
8	Center St.*	Grove Way	San Lorenzo Creek	0.2				2			3	Commercial
8	Center St.*	At Creek		0.04				2			HISTORIC BRIDGE	
CBL	Cull Canyon Road	Crow Canyon Road	Heyer Avenue	0.4	2	G93	Y	2	Install R81 Bike Lane Sign		3	Cull Canyon Recreation Area
CBL	Cull Canyon Road	Heyer Avenue	Briar Ridge Drive	0.2	2	G93	Y	2	Install R81 Bike Lane Sign		3	
9	Cull Canyon Road*	Briar Ridge Drive	Columbia Drive	0.2				3C	widening		3	
9	Cull Canyon Road*	Columbia Drive	end	4				3D		TOPO	3	
CBL	Crow Canyon Road	E. Castro Valley Blvd.	Cull Canyon Road	0.5	2	G93	Y	2	Install R81 Bike Lane Sign		3	
10	Crow Canyon Road	Cull Canyon Road	County Line	7				3C			3	
11	Woodroe Avenue*	Kelly Street	End	0.3				3A	Wayfinding		3	Don Castro Regional Park
11	Maud Avenue*	Kelly Street	D Street	0.5				3A	Wayfinding		3	
11	Fairview Avenue	D Street	Hayward	2.4				3A	Wayfinding		3	
12	Palo Verde Rd.	E. Castro Valley	Dublin Canyon Rd	0.5				3D	widening		3	
12	Palomares Road	Palo Verde Rd	Niles Canyon Rd	9.5				3D			3	

**APPENDIX C
RECOMMENDED BIKEWAY NETWORK**

RET#	STREET	STREET SEGMENT			Existing Bikeway type			IMPROVEMENTS 2006 PLAN				ATTRACTORS
		BETWEEN	AND	LENGTH (mi)	striping	signs	pavement legends	PROPOSED TYPE	IMPROVEMENT NEEDED	CONSTRAINTS	PRIORITY	
13	Fairmont Drive	Mission Blvd.	Foothill Blvd.	0.5				2	striping, signs and pavement markings		3	
13	Fairmont Drive	Foothill Blvd.	Lake Chabot Road	1.6				3B			3	Lake Chabot Marine
14	Arcadian Drive	Lake Chabot Road	East end	0.5				3A	traffic calming		3	
14	Arcadian Drive	East End	West end	0.3				1			3	
14	Arcadian Drive	West End	Proctor Road	0.7				3A	traffic calming		3	
15	Proctor Road	Ewing Road	Redwood Road	0.6				3A	traffic calming		3	
15	Sydney Way	Stanton Avenue	Lake Chabot Road	0.6				3A	Wayfinding		3	
16	Seven Hills Rd.*	Lake Chabot Road	Redwood Road	1.1				3A	traffic calming		3	Residential
16	Seven Hills Rd.*	Redwood Road	Madison Avenue	0.6				3A	Wayfinding		3	Residential/Park
T2	159th Avenue	Foothill Blvd.	Coelho Drive	0.7				3A	Wayfinding		2	
T2	Coehlo Drive	159th Avenue	BART	0.2				3A	Wayfinding		2	
T2	Elgin Street	E. 14th Street	Kent Avenue	0.3				3A	wayfinding and traffic calming		2	Bayfair BART
T2	Elgin Street	Kent Avenue	Elgin Ct.	0.8				3A	Wayfinding		2	
T2	Elgin Street	Elgin Ct.	BART					3A	Wayfinding		2	Bayfair BART

**APPENDIX C
RECOMMENDED BIKEWAY NETWORK**

RET#	STREET	STREET SEGMENT			Existing Bikeway type			IMPROVEMENTS 2006 PLAN				ATTRACTORS
		BETWEEN	AND	LENGTH (mi)	striping	signs	pavement legends	PROPOSED TYPE	IMPROVEMENT NEEDED	CONSTRAINTS	PRIORITY	
17	Miramar Avenue	Foothill Blvd.	Crest Avenue	0.3				3A	traffic calming		3	
17	Miramar Avenue	Crest Avenue	Stanton Avenue	0.3				3A	Wayfinding		3	
18	Somerset Avenue	Stanton Avenue	Lake Chabot Road	0.2				3A	traffic calming		3	Residential
18	Somerset Avenue	Lake Chabot Road	Redwood Road	0.8				3A			3	Commercial
18	Somerset Avenue	Redwood Road	Salem Rd.	0.2				3A			3	Residential
S11	Heyer Avenue	Redwood Road	Center Street	0.7				2	TBD		2	CV High and Middle schools
S11	Heyer Avenue	Center Street	Cull Canyon	0.3				2			2	
T5	Castro Valley Blvd.**	SR238-Foothill Blvd.	Freeway underpass	0				2			3	
T5	Castro Valley Blvd.*	Freeway underpass	Stanton Avenue	0.5				2			2	
T5	Castro Valley Blvd.	Stanton Avenue	Lake Chabot Road	0.2				2			2	Commercial
T5	Castro Valley Blvd.**	Lake Chabot Road	Redwood Road	0.7				2			2	Commercial
T5	Castro Valley Blvd.*	Redwood Road	I-580 wb onramps	0.5				2			2	Neighborhood shopping center

**APPENDIX C
RECOMMENDED BIKEWAY NETWORK**

RET#	STREET	STREET SEGMENT			Existing Bikeway type			IMPROVEMENTS 2006 PLAN				ATTRACTORS
		BETWEEN	AND	LENGTH (mi)	striping	signs	pavement legends	PROPOSED TYPE	IMPROVEMENT NEEDED	CONSTRAINTS	PRIORITY	
T5	Castro Valley Blvd.*	I-580 wb onramps	Crow Canyon Road	0.5				2			2	Commercial
T5	E Castro Valley Blvd.*	Crow Canyon Road	Five Canyons Parkway	0.5				2			3	
CBL	E Castro Valley Blvd.*	Five Canyons Parkway	Villareal Drive	0.7	2	G93	N	2	Install R81, Bike Lane Markings		3	
CBL	E. Castro Valley Blvd.	Villeral Drive	Dublin Canyon Rd.	1.1	2	G93	N	2	Install R81, Bike Lane Markings		CIP 2006	
CBL	Dublin Canyon Road	Eden Canyon Rd/Palo Verde Rd.	City Limit Pleasanton	3.7	2	G93	N	2	Install R81, Bike Lane Markings		CIP 2007	Rowell Ranch Park
CBL	Villareal Dr.	East Castro Valley Blvd.	End/Greenville Pl.	1.5	2	N	N	2	Install R81, Bike Lane Markings		3	
19	Grove Way*	Meekland Avenue	Mission Blvd.	0.9				3A	traffic calming		3	Residential
19	Grove Way*	Mission Blvd.	Ocean View Dr.					3A	Wayfinding		3	Residential
19	Grove Way	Ocean View Dr.	Foothill Blvd.					3A	Wayfinding		3	
19	Grove Way*	Foothill Blvd.	Bedford Drive	1.2				3A	Wayfinding		3	
19	Grove Way*	Bedford Dr.	Carlos Bee Park					3A	Wayfinding		3	
19	Grove Way*	Carlos Bee Park	Redwood Road					3A	Wayfinding		3	
	Grove Way*	Redwood Road	Center Street	0.7	2	R81	Y	2	NONE		3	

**APPENDIX C
RECOMMENDED BIKEWAY NETWORK**

RET#	STREET	STREET SEGMENT			Existing Bikeway type			IMPROVEMENTS 2006 PLAN				ATTRACTORS
		BETWEEN	AND	LENGTH (mi)	striping	signs	pavement legends	PROPOSED TYPE	IMPROVEMENT NEEDED	CONSTRAINTS	PRIORITY	
CBL	Grove Way*	Center Street	Castro Valley Blvd.	0.2	2	G93	Y	2	Install R81 Bike Lane Sign		3	
CBL	Five Canyons Parkway	E. Castro Valley Blvd.	Fairview Avenue	2.2	2	N	N	2	Install R81, Bike Lane Markings		3	
T3	Norbridge Avenue	Castro Valley Blvd.	Redwood Road	0.3	2	G93	Y	2	Install R81 Bike Lane Sign		2	Castro Valley BART
T3	Norbridge Avenue*	Redwood Road	Wilbeam Avenue	0.1				2	Install R81 Bike Lane Sign		2	Castro Valley BART
T3	Norbridge Avenue	Wilbeam Avenue	Tyee Ct.	0.4	2	G93	Y	2	Install R81 Bike Lane Sign		2	Castro Valley BART/Residential

**APPENDIX C
RECOMMENDED BIKEWAY NETWORK**

EAST COUNTY

RET#	STREET	STREET SEGMENT			Existing Bikeway type			IMPROVEMENTS 2006 PLAN				ATTRACTORS
		BETWEEN	AND	LENGTH (mi)	striping	signs	pavement legends	PROPOSED TYPE	IMPROVEMENT NEEDED	CONSTRAINTS	PRIORITY	
Su Sunol - EAST OF CASTRO VALLEY AND WEST AND SOUTH OF PLEASANTON												
1	Norris Canyon Road	Crow Canyon Rd.	Contra Costa Cty.	2.1				3D	W, SS2	TOPO	3	
2	Pinehurst Road	Redwood Rd.	Contra Costa Cty.	1.7				3D	EL		3	
3	Foothill Road	Pleasanton City Limit	Kilkare Rd.	2.6				3D	W, SS2		3	
4	Pleasanton-Sunol Road	Castlewood Dr.	Paloma Rd.	3.6				2	striping, signs and pavement markings		3	
5	Pleasanton-Sunol Road	Paloma Way	SR 84	0.5				3D			3	
6	Palomares	Palo Verde Rd/I-580	Hayward City Limit	2.0				3D	EL		3	
7	Niles Canyon Rd./State Route 84	Fremont City Limit	Pleasanton - Sunol Rd.	State				3C	W, SS4	TOPO	3	
8	Niles Canyon Rd./State Route 84	Fremont City Limit	Pleasanton - Sunol Rd.	4				1	TBD	TOPO	3	
WL WEST LIVERMORE -East Dublin Pleasanton AREA												
1	Tassajara Rd.	MP 2.1 n.o I-580	Contra Costa Cty.	0.6				2	Widen, striping, signs and pavement markings	TOPO		
-	Dougherty Rd.	Not in unincorp area										

**APPENDIX C
RECOMMENDED BIKEWAY NETWORK**

RET#	STREET	STREET SEGMENT			Existing Bikeway type			IMPROVEMENTS 2006 PLAN				ATTRACTORS
		BETWEEN	AND	LENGTH (mi)	striping	signs	pavement legends	PROPOSED TYPE	IMPROVEMENT NEEDED	CONSTRAINTS	PRIORITY	
2	E Dublin Blvd.	Dublin City Limit	Livermore City Limit	2.5				1	Build path		1	Las Positas College
3	Stanley Blvd.	City of Pleasanton	City of Livermore	2.7	2	N	N	2	striping, signs and pavement markings		3	
4	Stanley Blvd. Path	City of Pleasanton	to City of Livermore	2.7	I	Y	Y	1	-		3	
5	Collier Canyon Road	Livermore City Limit	Contra Costa Cty.	3.7				3D	EL		3	
6	Arroyo Mocho Trail Extension/ Stoneridge Dr. to Las Positas Blvd./Isabel Pkwy.	Pleasanton City Limit	Livermore City Limit	2				1	Build path		1	Dublin BART
7	Arroyo Mocho Trail	Pleasanton City Limit	Livermore City Limit	3				1	Build path		2	
8	Wente St.	Concannon Blvd.	Marina Ave.					2	bike lane construction		1	
9	Marina Ave.	Wente St.	Arroyo Rd.					2	bike lane construction		2	
NEL NORTH EAST LIVERMORE AREA												
1	North Livermore Avenue	I-580	Manning Rd.	3.6				3D	W, SS2		3	
2	May School Rd.	North Livermore Ave.	Daganino Rd.	1.3				3D	W, SS2		3	
3	Daganino/Raymond/Ames/Dalton	May School Rd.	Vasco Rd.					3D	EL		3	

**APPENDIX C
RECOMMENDED BIKEWAY NETWORK**

RET#	STREET	STREET SEGMENT			Existing Bikeway type			IMPROVEMENTS 2006 PLAN				ATTRACTORS
		BETWEEN	AND	LENGTH (mi)	striping	signs	pavement legends	PROPOSED TYPE	IMPROVEMENT NEEDED	CONSTRAINTS	PRIORITY	
4	Hartford Ave.	North Livermore Ave.	Lorraine St.	1				3D	EL		3	
5	Manning Rd.	North Livermore Ave.	Highland Rd.	1.4				3D	W, SS2	TOPO	3	
6	Highland Rd.	Manning Rd.	Contra Costa Cty.	0.1				3D	W, SS2	TOPO	3	
7	Vasco Rd.	Dalton Ave. / Livermore City Limit	Contra Costa Cty.	4.4	??			3C			CIP 2007	
SEL SOUTHEAST OF LIVERMORE AREA												
1	Patterson Pass Road	Greenville Rd.	I-580/San Joaquin Cty.	5				3D	SS2		3	
2	Altamont Pass Road	North Greenville Rd.	Grant Line Rd.	8				3C	W, SS4	TOPO	3	
3	Grant Line Road	I-580	San Joaquin Cty.	2.1				3C	W, SS4	TOPO	3	
4	Mountain House	Grant Line Rd.	Contra Costa Cty. Line	4.3				3D	W, SS2	TOPO	3	
5	North Flynn Rd.	South Flynn Rd.	I-580	1.3				3D	W, SS2	TOPO	3	
6	South Flynn Rd.	Patterson Pass Rd.	North Flynn Rd.	2.5				3D	W, SS2	TOPO	3	
7	S Vasco Rd.	Livermore eastern City Limit	San Joaquin County Line					3D	SS2		3	

**APPENDIX C
RECOMMENDED BIKEWAY NETWORK**

RET#	STREET	STREET SEGMENT			Existing Bikeway type			IMPROVEMENTS 2006 PLAN				ATTRACTORS
		BETWEEN	AND	LENGTH (mi)	striping	signs	pavement legends	PROPOSED TYPE	IMPROVEMENT NEEDED	CONSTRAINTS	PRIORITY	
8	S Livermore Ave./Tesla Rd.	City of Livermore	Buena Vista Ave.	0.8	2	N	N	2	Install R81, Bike Lane Markings		3	
8	S Livermore Ave/Tesla Rd.	Buena Vista Ave.	0.6 miles east of South Vasco Rd.	1.5	2	R81	Y	2	NONE		3	
9	Tesla Rd.	0.6 miles e/o South Vasco Rd.	Greenville Rd.	0.6	2	N	N	2	Install R81, Bike Lane Markings		3	
9	Tesla Road	Greenville Rd.	Cross Road	2.5				3C	W, SS4	TOPO	3	
9	Tesla Road	Cross Road	San Joaquin County Line	8.9				3D	W, SS2		3	
CBL	Greenville Rd.	Tesla Rd.	East Ave.	1	2	N	N	2	Install R81, Bike Lane Markings		3	
CBL	Greenville Rd.	East Ave.	Patterson Pass Rd.	1	2	G93	Y	2	Install R81 Bike Lane Sign		3	
CBL	Mines Rd.	Tesla Rd.	Del Valle Rd.	3.4	2	G93	Y	2	Install R81 Bike Lane Sign		3	
10	Mines Rd	Del Valle	Santa Clara County Line					3D	W, SS2		3	
11	Arroyo	Livermore City Limit	Santa Clara County Line					3D			3	
12	Vallecitos Rd.	Livermore City Limit	I-680					3D			3	

Appendix D

**Bicycle Advisory
Committees of Other
Bay Area Counties**

APPENDIX D
BICYCLE ADVISORY COMMITTEES OF OTHER BAY AREA COUNTIES

BICYCLE ADVISORY COMMITTEE STRUCTURE OF SELECTED BAY AREA COUNTIES			
	Santa Clara County	Contra Costa County	San Francisco County
Number of members	16	12	11
How selected	nominated by each city council, approved by VTA Board	5 by CC BOS, 1 each from seven bicycle clubs 1 from bicycle industry	All appointed by County BOS
Representing who e.g. council district, all at-large, etc.	one from each city and one for the county	5 supervisor districts 7 bicycle clubs 1 bicycle industry	3 from bicycle org., 1 from bicycle industry, 2 from environmental org., 5 at-large.
Term length	2 years	NA	2 years
County staff (or other agency staff)	1 VTA non voting	1 public works 1 CHP 1 County Board of Education 1 EBRPD	Non-voting representatives from Public Works, City Planning, Muni, Police, Engineering and Parking and Traffic
Meeting time	6 PM, 2 nd Wednesday	Not scheduled	6 PM 4th Thursday
Meeting frequency	Monthly	One to three times per year	Monthly
Typical Agenda Issues Addressed	- Road & Transit plans review. - 20-year transportation plan, bike element. - Countywide route network	TDA grant evaluation	Funding; Policies; Routes; Education
Official Duties	Approve Bicycle Expenditure plan projects, Annual TDA-3 "guaranteed funds" prioritization for County, and Countywide TDA-3 "Discretionary" prioritization.	Evaluate TDA applications only	
Other pertinent information	Most <u>cities</u> in Santa Clara County also have BAC's.	Some cities also have a BAC. CCC BAC also wrote a Bicycle Action Plan	S.F. is a City and a County. SF BAC also has 3 subcommittees that meet monthly.
VTA - Santa Clara Valley Transportation Authority BOS - Board of Supervisors			

Appendix E

Construction Cost Estimates

APPENDIX E
CONSTRUCTION COST ESTIMATES

All work for 1 mile segment

1. Bike Path

Item No.	Work Description	Quantity	Unit	Unit Cost	Total Cost
1	Roadway Ex	1200	cy	\$ 55	\$ 66,000
2	Asphalt Concrete	1000	ton	\$ 120	\$ 120,000
3	Aggregate Base	1400	ton	\$ 70	\$ 98,000
4	Grading	300	ton	\$ 70	\$ 21,000
5	Signing	8	ea	\$ 300	\$ 2,400
6	Striping	5300	lf	\$ 1	\$ 5,300
7	Pavement Markings	8	ea	\$ 50	\$ 400
8	Misc and Adj of Bid	1	ls	\$ 65,000	\$ 65,000
Total					\$ 378,100
Call					\$ 400,000

3" ac, 4" ab
2" x 2' graded material
Misc and Adj = 20%+

2. Bike Lane

Item No.	Work Description	Quantity	Unit	Unit Cost	Total Cost
1	Traffic Control	1	ls	500	\$ 500
2	Signing	8.00	ea	\$ 300.00	\$ 2,400
3	Striping	5300.00	lf	\$ 1.00	\$ 5,300
4	Pavement Markings	8.00	ea	\$ 50.00	\$ 400
Total					\$ 8,600
Call					\$ 9,000

3A. Rideway

Item No.	Work Description	Quantity	Unit	Unit Cost	Total Cost
1	Signing	8.00	ea	\$ 300.00	\$ 2,400
				Total	\$ 2,400
				Call	\$ 2,500

3A. Rideway with Speed Humps

Item No.	Work Description	Quantity	Unit	Unit Cost	Total Cost
1	Signing	16.00	ea	\$ 300.00	\$ 4,800
2	Speed Humps	4.00	ea	\$ 3,000.00	\$ 12,000
				Total	\$ 16,800
				Call	\$ 17,000

3B. Restripe Roadway, 4 Lanes, Keep Existing Centerline

Item No.	Work Description	Quantity	Unit	Unit Cost	Total Cost
1	Traffic Control	1	ls	\$ 500.00	\$ 500
2	Striping Removal	11000	lf	\$ 0.25	\$ 2,750
3	Striping	11000	lf	\$ 0.50	\$ 5,500
				Total	\$ 8,750
				Call	\$ 9,000

3B. Restripe Roadway, 4 Lanes, Including Centerline

Item No.	Work Description	Quantity	Unit	Unit Cost	Total Cost
1	Traffic Control	1	ls	\$ 500.00	\$ 500
2	Striping Removal	16000	lf	\$ 0.25	\$ 4,000
3	Striping	16000	lf	\$ 0.50	\$ 8,000
4	Pavement Markers	675	ea	\$ 4.00	\$ 2,700
				Total	\$ 15,200
				Call	\$ 16,000

3B. Restripe Roadway, 6 Lanes, Keep Existing Centerline

Item No.	Work Description	Quantity	Unit	Unit Cost	Total Cost
1	Traffic Control	1	ls	\$ 800.00	\$ 800
2	Striping Removal	21500	lf	\$ 0.25	\$ 5,375
3	Striping	21500	lf	\$ 0.50	\$ 10,750
Total					\$ 16,925
Call					\$ 17,000

3B. Restripe Roadway, 6 Lanes, Including Centerline

Item No.	Work Description	Quantity	Unit	Unit Cost	Total Cost
1	Traffic Control	1	ls	\$ 800.00	\$ 800
2	Striping Removal	27000	lf	\$ 0.25	\$ 6,750
3	Striping	27000	lf	\$ 0.50	\$ 13,500
4	Pavement Markers	675	ea	\$ 4.00	\$ 2,700
Total					\$ 23,750
Call					\$ 25,000

3C. Widen Shoulders 3 ft, Relatively Flat, Some Drainage Improvements

Item No.	Work Description	Quantity	Unit	Unit Cost	Total Cost
1	Traffic Control	1	ls	\$ 3,000	\$ 3,000
2	Water Pollution Control	1	ls	\$ 7,000	\$ 7,000
3	Roadway Ex	2000	cy	\$ 55	\$ 110,000
4	Asphalt Concrete	450	ton	\$ 130	\$ 58,500
5	Aggregate Base	900	ton	\$ 70	\$ 63,000
6	Drainage Improvements	1	ls	\$ 25,000	\$ 25,000
7	Misc and Adj of Bid	1	ls	\$ 55,000	\$ 55,000
Total					\$ 321,500
Call					\$ 325,000

6" ac, 12" ab
 drainage imp = \$25,000
 Misc. and Adj. = 20%+

**3C. Widen Shoulder 3 ft, Relatively Flat, Some Rolling Hills, Some Cut and Fill
Some Drainage Improvements**

Item No.	Work Description	Quantity	Unit	Unit Cost	Total Cost
1	Traffic Control	1	ls	\$ 5,000	\$ 5,000
2	Water Pollution Control	1	ls	\$ 7,000	\$ 7,000
3	Roadway Ex	2000	cy	\$ 55	\$ 110,000
4	Asphalt Concrete	450	ton	\$ 130	\$ 58,500
5	Aggregate Base	900	ton	\$ 70	\$ 63,000
6	Grading and Fill Material	1	ls	\$ 25,000	\$ 25,000
7	Drainage Improvements	1	ls	\$ 25,000	\$ 25,000
8	Misc. and Adj. of Bid	1	ls	\$ 60,000	\$ 60,000
				Total	\$ 353,500
				Call	\$ 375,000

6" ac, 12" ab
 grading, fill material for 25%, 3" = \$25,000
 drainage imp = \$25,000
 Misc and Adj = 20%+

**3C. Widen Shoulder 3 ft, Rolling Hills, Some Cut and Fill, Some Drainage
Improvements**

Item No.	Work Description	Quantity	Unit	Unit Cost	Total Cost
1	Traffic Control	1	ls	\$ 7,000	\$ 7,000
2	Water Pollution Control	1	ls	\$ 10,000	\$ 10,000
3	Roadway Ex	2000	cy	\$ 55	\$ 110,000
4	Asphalt Concrete	450	ton	\$ 130	\$ 58,500
5	Aggregate Base	900	ton	\$ 70	\$ 63,000
6	Grading and Fill Material	1	ls	\$ 200,000	\$ 200,000
7	Drainage Improvements	1	ls	\$ 50,000	\$ 50,000
8	Misc. and Adj. of Bid	1	ls	\$ 100,000	\$ 100,000
				Total	\$ 598,500
				Call	\$ 625,000

6" ac, 12" ab
 grading, fill material for 25%, 1'x4' = \$150,000
 drainage imp = \$50,000
 Misc. and Adj. = 20%+

3D. Widen Shoulders 2 ft, Relatively Flat, Some Drainage Improvements

Call = \$225,000

cost =2/3 of 3C

3D. Widen Shoulder 2 ft, Relatively Flat, Some Rolling Hills, Some Cut and Fill

Call = \$250,000

cost =2/3 of 3C

3D. Widen Shoulder 2 ft, Rolling Hills, Some Cut and Fill

Call = \$425,000

cost =2/3 of 3C

3E Drainage Grate

Call = \$900

3E. Railroad Track Crossing

Call = \$1,700/ft of crossing

Appendix F

Funding Resources

**APPENDIX F
FUNDING RESOURCES**

Table 1

Grant Source	Due Date	Agency	Eligible Bikeway Projects		
			Commute	Recreation	Safety/Ed
Federal Funding					
TEA-21 Regional Surface Transportation Program (RSTP)	varies by RPTA	RTPAs, Caltrans	X	X	
TEA-21 Congestion Mitigation and Air Quality Program (CMAQ)	December 1 yearly	RTPAs, Caltrans	X		
TEA-21 Transportation Enhancement Activities (TEA)	varies by RTPA	RTPAs, Caltrans	X	X	
Hazard Elimination Safety (HES) program	November	Caltrans	X	X	
Regional Share	varies by RTPA	RTPAs, Caltrans	X	X	
Caltrans Share	varies by RTPA	Caltrans	X	X	
Statewide Transportation Enhancement Share	varies by RTPA	Caltrans, State Resources Agency	X	X	
Conservation Lands Share	varies by RTPA	Caltrans, State Resources Agency	X	X	
TEA-21 Recreational Trails Program (RTP)	October 1 st	State DPR		X	
Transportation and Community and System Preservation Pilot Program	pending	FHWA	---	---	---
Land & Water Conservation Fund (LWCF)	May 1 st	State DPR		X	

State Funding					
Environment Enhancement and Mitigation Program (EEMP)	November	State Resources Agency, Caltrans	X	X	X
Safe Routes to School (SB10)	May 31 st	Caltrans	X	X	X
Habitat Conservation Fund Grant Program	October 1 st	State DPR	---	---	---
Bicycle Transportation Account	December	Caltrans	X		X
Regional Transportation Improvement Program (RTIP)	December 15, odd years	RTPA	X		X
Petroleum Violation Escrow Account (PVEA)	On-going	State Legislature	---	---	---
Community-Based Transportation Planning (CBTP) Grant Program	November	Caltrans	X		
Office of Traffic Safety Grants	January 31 st	Office of Traffic Safety			X
Local Funding					
Transportation Development Act (TDA) Article 3 (2% total TDA)	January	RPTA	---	---	---
Transportation Fund for Clean Air (TFCA)	June 30 th	BAAQMD	X		X
Bay Trail Grant Program	On-going	Association of Bay Area Governments	X	X	
State Gas Tax (local share)	---	Allocated by State Auditor Controller	X		X
Developer Fees or Exactions (developer fee for street improvements – DFSI)	---	Cities or County	---	---	---

Measure B-Bicycle/Pedestrian Countywide Discretionary Funds	December	ACTIA	X	X	X
Road Funds	On-going	ACPWA	X	X	X
CMAQ Regional Bicycle Pedestrian Program	December	ACCMA	X	X	

Acronyms:

- AQMD - Air Quality Management District
- Caltrans – California Department of Transportation
- CMA – Congestion Management Agency
- CTC – California Transportation Commission
- FHWA – Federal Highway Administration
- MPO – Metropolitan Planning Organization
- 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 Contra Costa County, California:

- AQMD – Bay Area Regional Air Quality Management District (BAAQMD)
- Caltrans – Caltrans District 4
- MTC – Metropolitan Transportation Commission
- ABAG – Association of Bay Area Governments
- ACTIA – Alameda County Transportation Improvement Authority
- ACCMA – Alameda County Congestion Management Agency
- ACPWA – Alameda County Public Works Agency

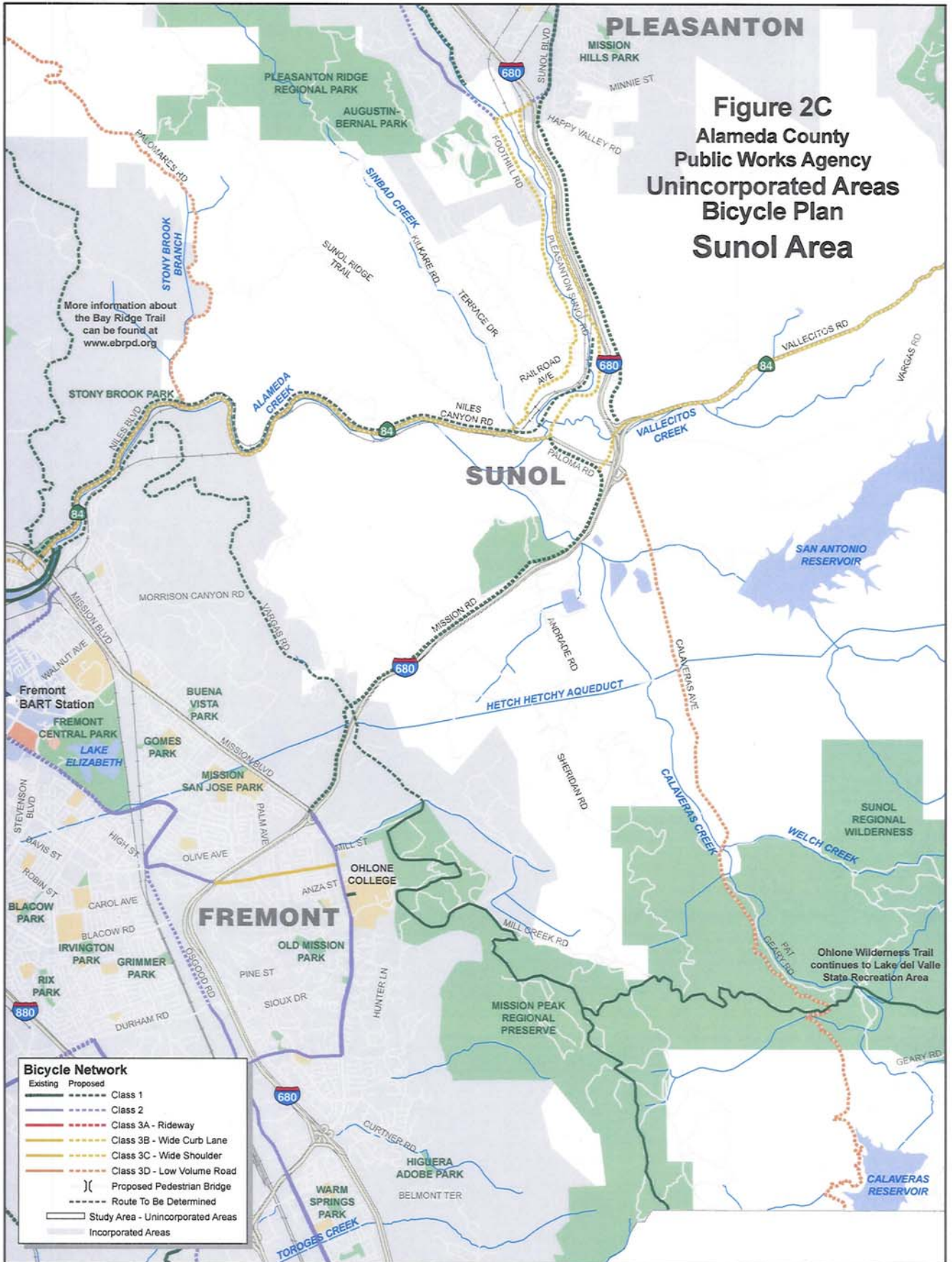
Resources:

Caltrans TEA-21 website – <http://www.dot.ca.gov/hq/TransEnhAct/>

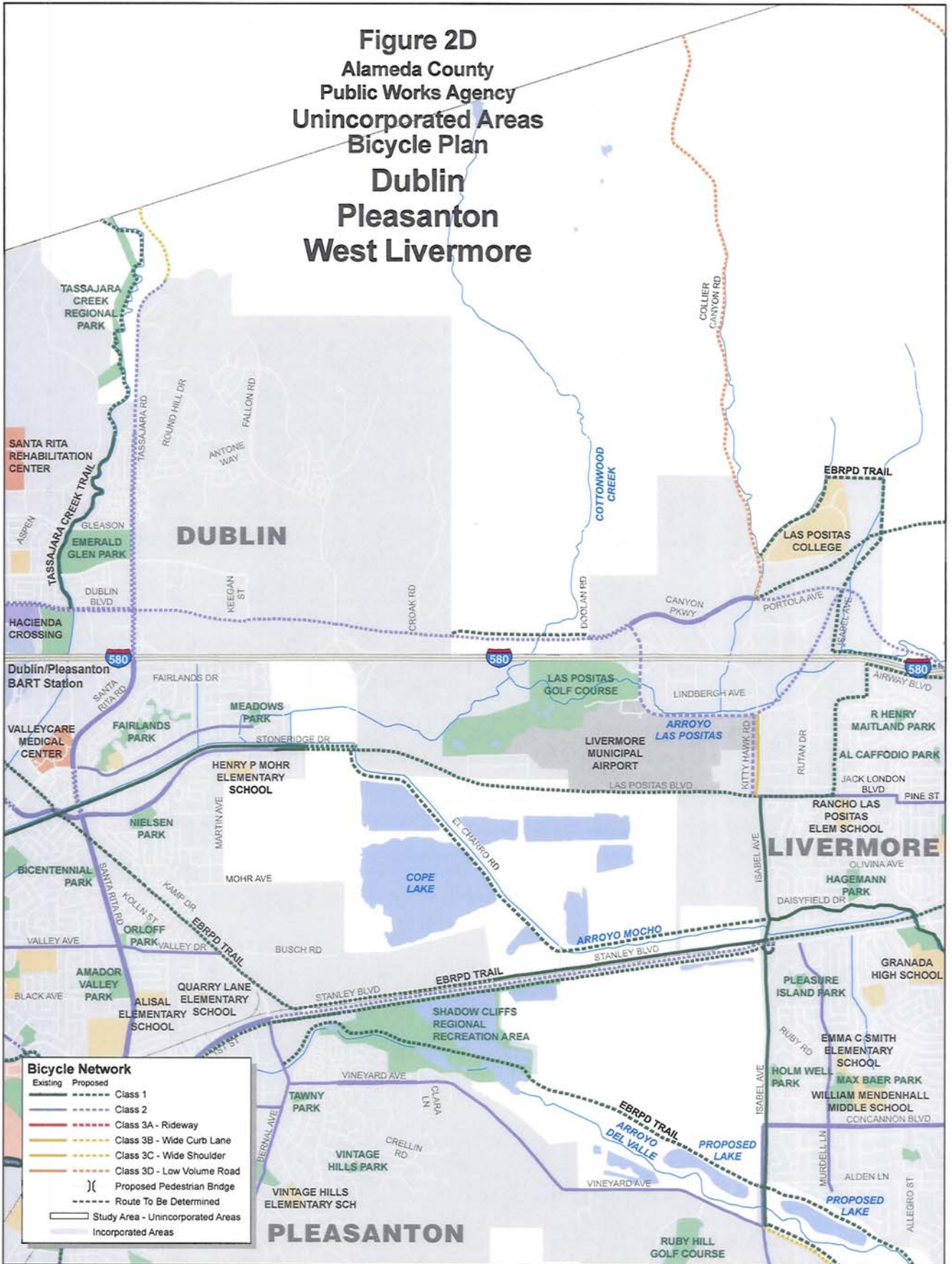
Appendix G

Recommended Bicycle Route Map

APPENDIX G
RECOMMENDED BICYCLE ROUTE MAP
Bicycle Network (Sunol Area)



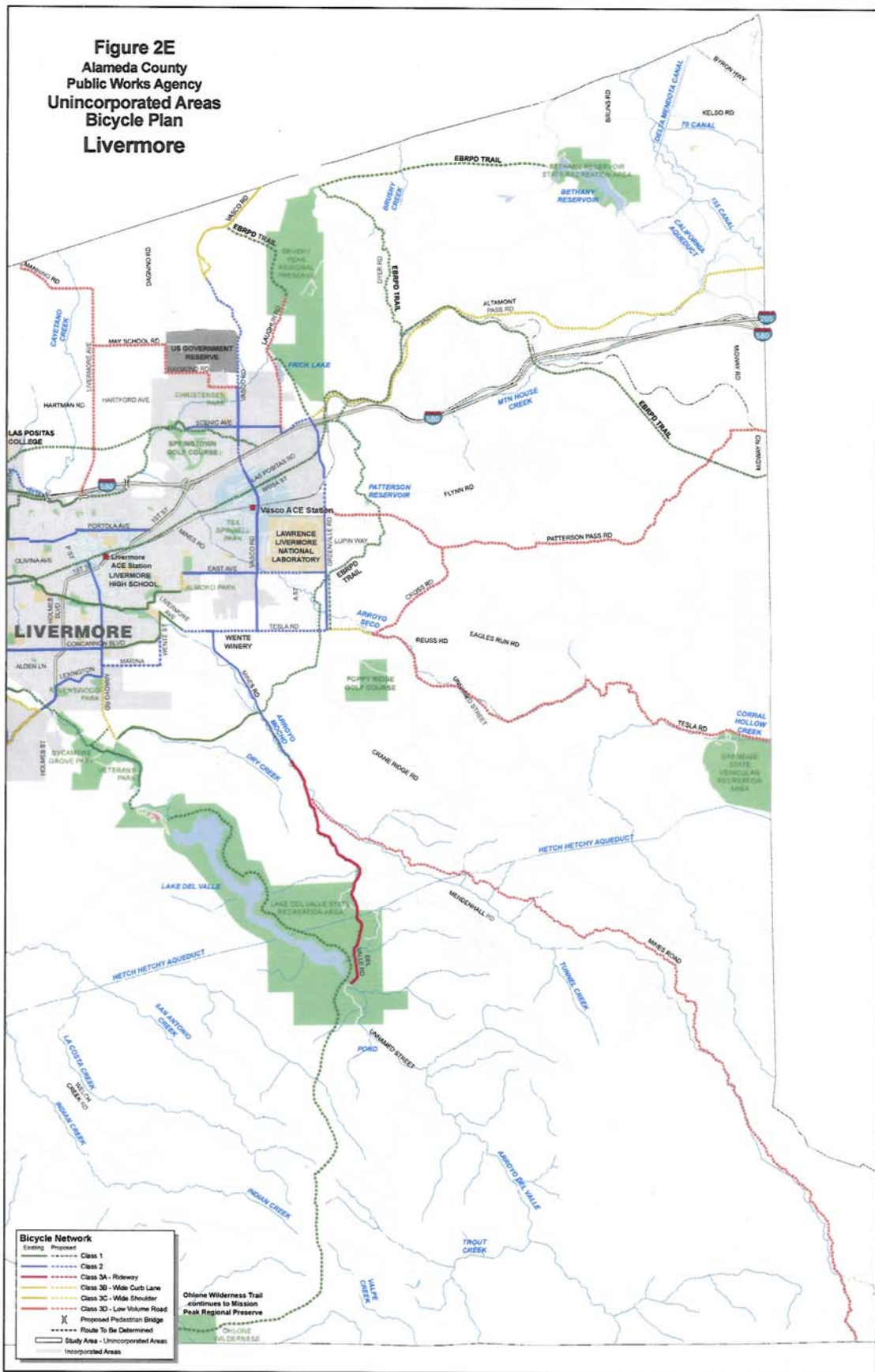
APPENDIX G
RECOMMENDED BICYCLE ROUTE MAP
Bicycle Network (Dublin, Pleasanton, West Livermore)



APPENDIX G

RECOMMENDED BICYCLE ROUTE MAP

Bicycle Network (Livermore)



Appendix H

Comparison of Shoulders vs. Bike Lanes

APPENDIX H
COMPARISON OF SHOULDERS VS. BIKE LANES

1. Part of the Roadway

Roadway is defined in CVC§530 as "that portion of a highway improved, designed, or ordinarily used for vehicular travel." Shoulders have been interpreted as not being part of the roadway, whether paved or unpaved. CVC§21208 states that bicycle lanes are established on a roadway, thus bike lanes are considered part of the roadway. This difference is important as some sections in the Vehicle Code refer specifically to roadway.

2. Legal positioning of motor vehicle with respect to the stripe and enforcement issues

- CVC§21754(e) states that a slow moving vehicle "shall be driven in the right hand lane of traffic or as close as practicable to the right-hand edge or curb" of the roadway. CVC§21650(f) states, however, that a vehicle may utilize the shoulder when "traveling so slowly as to impede the normal movement of traffic".
- Motor vehicles in a shared through/right-turn lane must enter the bike lane in order to make a right-turn (CVC §21717). However, motor vehicles are not allowed to enter a shoulder to turn right; they must do so from the edge of the roadway CVC§22100(a) which is the shoulder stripe.

3. Legal positioning of bicycle with respect to the stripe and enforcement issues

- Pursuant to CVC §21208(a), bicyclists operating "at a speed less than the normal speed of traffic" "shall ride within the bicycle lane" except when "passing another bicycle, vehicle or pedestrian in the lane," when preparing for a left-turn, or "when reasonably necessary ...to avoid debris or other hazardous conditions."
- CVC §21650(g) states that this section, which allows slow moving traffic to use the shoulder, "does not prohibit the operation of bicycles on any shoulder of the highway," implicitly giving permission for bicycles to ride in the shoulder. Thus, bikes may be operated on the shoulder even when they are not traveling slowly. However, nothing in the CVC states that when there is a shoulder, the bicyclist must use it. This would fall under the general CVC§21650(f) of slow moving traffic who may use the shoulder.
- CVC §21202 (a) states that any bicycle "at a speed less than the normal speed of traffic" "shall ride as close as practicable to the right-hand curb or edge of roadway except" when passing, making left-turns avoiding debris, substandard lane width, etc.
- CVC §21650.1 states that any bicycle operated on a shoulder must be operated in the same direction that vehicles are required to be driven.

4. Parking

Parking is allowed in shoulders unless specifically prohibited by signing. Police officers generally do not cite parked cars in the shoulder as long as they are out of the travel lane. Parked cars in a shoulder render it useless for bicycling. Conversely, in bike lanes, parking is (or should be) prohibited unless they are wide enough to accommodate both parked cars and bicycles - 12 feet minimum (11 feet with a rolled curb, 13 feet if parking demand is heavy).

5. Signing and Striping

- A shoulder stripe is 4 inches wide; a bike lane stripe is 6 inches wide.
- The striping of a shoulder at the approach to intersections is different than for a bike lane. Shoulder striping follows the curb return around the corner or serves as the curb return. Bike lane striping is either dashed or terminated completely 100 - 200 feet in advance of the intersection.
- Shoulder stripes remain to the right side of right turn lanes; bike lane stripes are terminated completely or are terminated in advance and the striping resumes to the left of the right-turn lane;
- Bike lanes are signed with the R81 Bike Lane sign and marked with the BIKE LANE pavement legend; shoulders have only a stripe.

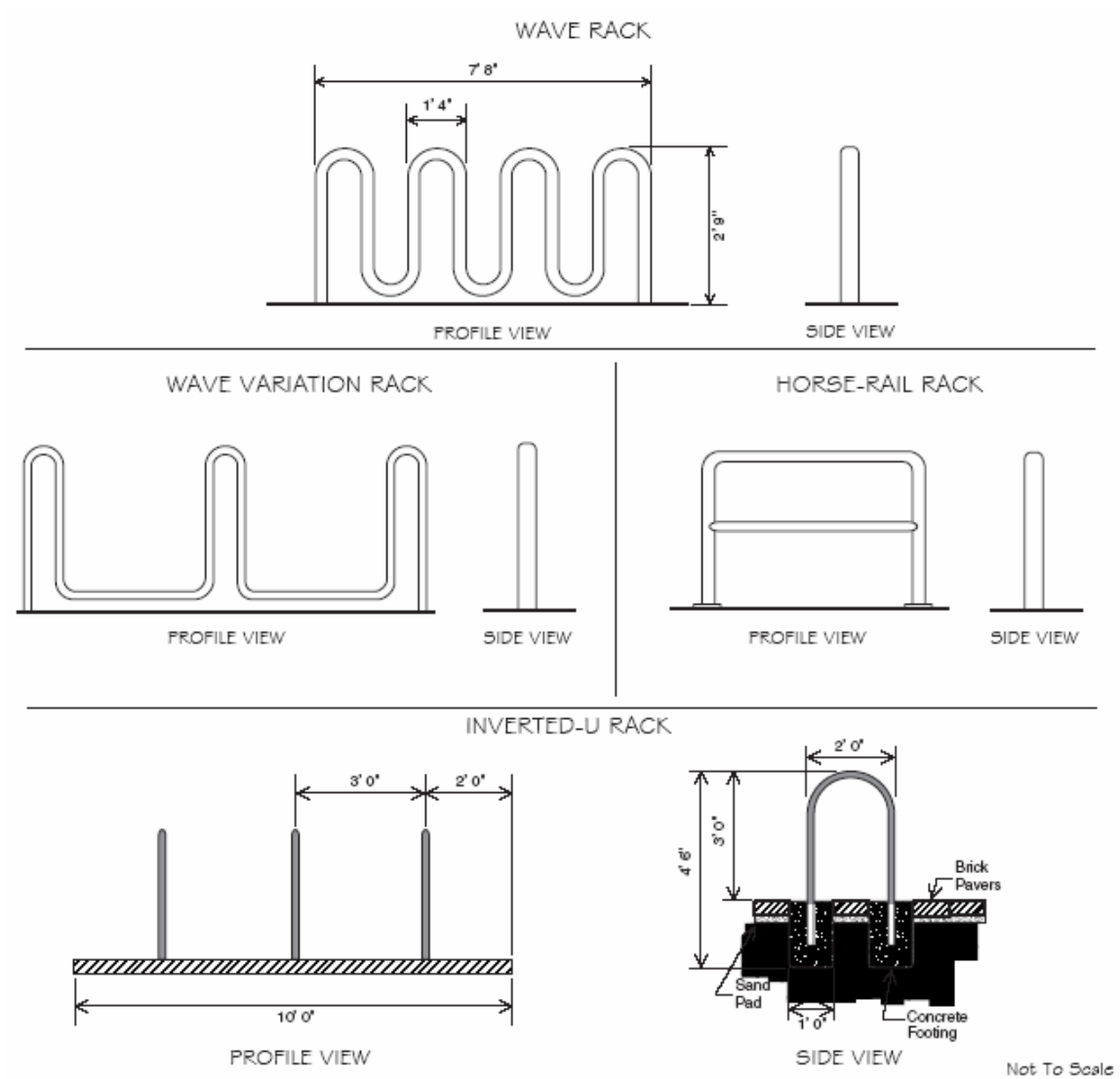
6. Pedestrians and Joggers

- Pedestrians, joggers are allowed to use the shoulder.
- Pedestrians are only allowed to use a bike lane when there is no adjacent facility (CVC§21066). This is likely to be the case in the locations where shoulders may be preferred to bike lanes.

Appendix I

Bike Racks

APPENDIX I BIKE RACKS



Appendix J

Bike Routes Signs

Appendix J



Caltrans R-81

Figure 1



G-93

Figure 2



Figure 3



R81-26

Figure 4



EBRPD SR2

Figure 5



MUTCD R4-4
ADVANCE OF
RIGHT-TURN LANES

Figure 6



EBRPD Sign

Figure 7



MUTCD W7-5

Figure 8



SW 1
Trail Crossing
Warning Sign
(Black on Yellow)

Figure 9

**APPENDIX J
BIKE ROUTE SIGNS**



Schematic Route Map Sign

Figure 10



VTA SG-2

Figure 11



SG-3

Figure 12



Route sign with destination
Caltrans SG-45
with supplementary placards

Figure 13



Route sign with route crossing
Caltrans SG-45
with supplementary placards

Figure 14



Route sign with distance
Caltrans SG-45
with supplementary placard

Figure 15