

Calaveras County Bicycle Master Plan



ADOPTED WEDNESDAY, OCTOBER 10, 2007



CALAVERAS COUNCIL
of GOVERNMENTS



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1.0 INTRODUCTION

The Calaveras County Bicycle Master Plan (CCBMP) was prepared by Alta Planning + Design under contract to the Calaveras Council of Governments (CCOG). This Bicycle Master Plan is a result of the diligent efforts of the Calaveras Council of Governments, Calaveras County staff, the communities of Calaveras and citizens interested in improving the bicycling environment in Calaveras County. The Plan could not have been developed without the committed efforts of these organizations and residents.

This Plan has been prepared as a countywide document, but is also intended to guide efforts to improve bicycling conditions at the local level in the various communities of Calaveras County. The Plan integrates elements of the general plan, the regional transportation plan and three other previous bicycle planning efforts.

1.1 Setting and Study Area

The study area includes all built portions of Calaveras County. The diverse topography and geography of Calaveras ranges from elevations of about 300 feet above sea level in the western end of the County to almost 9,000 feet above sea level at the eastern edge. West to east, the rolling hills of developed areas such as Angels Camp, Valley Springs, San Andreas and Copperopolis gradually give way to the more and more rugged, mountainous terrain that characterizes areas such as Arnold, West Point, Dorrington, Murphys and Railroad Flat. Although the eastern end of the County is less developed, it is host to popular year-round recreation destinations that provide opportunities for snow sports, golfing, hiking, camping, fishing and road and mountain bicycling. The County is located between two major recreational and scenic destinations. To the north is Lake Tahoe and on the south is Yosemite National Park. In addition, State Route 4 from Arnold to Markleeville was designated a National Scenic Byway in 2006. This roadway is popular for recreational road cyclists.

The majority of Calaveras County's population resides along the Highway 4, Highway 49 and Highway 12/26 corridors. The major portion of the County's employment is centered in San Andreas and Angels Camp. Calaveras' only incorporated city is Angels Camp, with a population of 3,000. The County's 15 unincorporated communities range in size from Wallace (population 230) to Arnold (4,244). Of the total population of 40,554 approximately 27,723 (68%) live in the incorporated and unincorporated communities, while 12,832 (32%) live in the other unincorporated areas of the county.¹ The estimated population in 2005 was 46,871, a 13.5% increase over the 2000 Census, substantially higher than the national rate of growth of 5%.² Calaveras County residents have an average per capita income of \$21,420 and are statistically older than average.¹

The existing transportation roadway network of Calaveras County includes 867 miles of developed paved public roads, consisting of 149 miles in the state highway system, 689 miles in the county roadway system, and 29 miles in the City roadway system.³ Travel in the County is primarily by

¹ US Census 2000

² US Census 2005 Population Estimates

³ Calaveras County 2007 Regional Transportation Plan; excludes unpaved, undeveloped roads and all state and federal parkland roads

automobile due to the rural nature of the roadway network. Long distances between towns, narrow pavement widths and a lack of shoulders and formal bicycle facilities have limited opportunities for nonmotorized travel. The network is built around four state highways, including State Routes 4, 12, 26 and 49. These routes are classified as minor arterials and connect with a system of collector and local streets.

The County is served by Calaveras Transit which operates buses equipped with front bicycle racks. Calaveras Transit serves most of the population, employment and recreation centers in the County and connects to inter-county bus service such as Greyhound. Currently bicycle parking is not available at transit stops.

1.2 Why does Calaveras County need a Bicycle Master Plan?

Calaveras County is growing at a rate higher than the overall rate of growth in the state of California. Managing traffic is a key strategy for the growing communities of Calaveras County to ensure they maintain their rural nature and community character. This Plan is one step in providing alternative modes and addressing future traffic congestion in the County.

In addition to traffic congestion, others reasons are enjoyment, health and recreation for the residents of Calaveras County. Bicycling is among the most popular forms of recreational activity in the United States (with 46 percent of Americans bicycling for pleasure). When bicycling is available as a daily mode of transportation or recreation, substantial health benefits can result. This is especially true for the older segment of the population who benefit most from such low-impact forms of exercise.

Safety concerns are one of the primary reasons to improve bicycling conditions in Calaveras County. Although the incidence of collisions involving bicycles may be low, concerns about safety have been identified through the local user survey as an important reason people do not bicycle. Addressing these concerns for bicyclists through physical and program improvements is another major objective of this Plan.

1.2.1 Funding Requirements

In order to qualify for State of California Bicycle Transportation Account (BTA) funding, local bicycle plans must meet the criteria of California Streets and Highways Code Sec 891.2, detailed in **Table 1-1** below. As of 2006, the amount of funding available to California communities through the BTA is only \$5 million statewide. Most communities will need to seek additional funding to implement the elements of their bicycle plan. There are no specific requirements for most other state and federal funding sources that this Plan must meet.

However, having an adopted bicycle plan substantially improves the chances of securing funding for any project that is a part of this planning process.

Table 1-1: California Streets and Highways Code Section 891-2

Required Plan Element	Location of Element in CCBMP
(a) The estimated number of existing bicycle commuters in the plan area and the estimated increase in the number of bicycle commuters resulting from implementation of the plan.	Section 3 - Needs Analysis; Table 3-4, pages 28-29.
(b) A map and description of existing and proposed land use and settlement patterns which shall include, but not be limited to, locations of residential neighborhoods, schools, shopping centers, public buildings, and major employment centers.	Section 3 - Needs Analysis, Figure 3-1, page 17; Text, page 16.
(c) A map and description of existing and proposed bikeways.	Section 4 - Bicycle Facilities, Text, pages 42-65; Figures 4-2 through 4-9, pages 45-64.
(d) A map and description of existing and proposed end-of-trip bicycle parking facilities. These shall include, but not be limited to, parking at schools, shopping centers, public buildings, and major employment centers.	Section 4 - Bicycle Facilities, Text, pages 42-65.
(e) A map and description of existing and proposed bicycle transport and parking facilities for connections with and use of other transportation modes. These shall include, but not be limited to, parking facilities at transit stops, rail and transit terminals, ferry docks and landings, park and ride lots, and provisions for transporting bicyclists and bicycles on transit or rail vehicles or ferry vessels.	Section 3 - Needs Analysis, Text, pages 19-20. Section 4 - Bicycle Facilities, Text, pages 42-65; Figures 4-2 through 4-9, pages 45-64.
(f) A map and description of existing and proposed facilities for changing and storing clothes and equipment. These shall include, but not be limited to, locker, restroom, and shower facilities near bicycle parking facilities.	Section 3 - Needs Analysis, Text, pages 15-16.
(g) A description of bicycle safety and education programs conducted in the area included within the plan, efforts by the law enforcement agency having primary traffic law enforcement responsibility in the area to enforce provisions of the Vehicle Code pertaining to bicycle operation, and the resulting effect on accidents involving bicyclists.	Section 5 - Programs, Text, pages 69-74.
(h) A description of the extent of citizen and community involvement in development of the plan, including, but not limited to, letters of support.	Section 1 - Introduction, Text, page 5.
(i) A description of how the bicycle transportation plan has been coordinated and is consistent with other local or regional transportation, air quality, or energy conservation plans, including, but not limited to, programs that provide incentives for bicycle commuting.	Section 1 - Introduction, Text, page 4. Section 2 - Goals, Objectives and Policy Actions, Text, pages 7-14.
(j) A description of the projects proposed in the plan and a listing of their priorities for implementation.	Section 4 - Bicycle Facilities, Text, pages 42-65.
(k) A description of past expenditures for bicycle facilities and future financial needs for projects that improve safety and convenience for bicycle commuters in the plan area.	Section 2 - Goals, Objectives and Policy Actions, Text, pages 7-9. Section 4 - Bicycle Facilities, Text, pages 42-65. Section 5 - Programs, Text, pages 69-74.

1.3 Role of the Bicycle Plan

The Calaveras County Bicycle Plan is primarily a coordinating and resource document for the county unincorporated areas and Angels Camp, with a focus on developing a primary network of bikeways, enhancements, programs, and specific policies and enhancements. The Plan helps to promote good access to popular destinations countywide and ensure the development and application of consistent design standards. Key goals of the Plan are to provide consistency with other plans as well as to promote the critical aspect of policy integration and coordination with the County Department of Public Works and the County Planning Department. This will help to ensure that projects proposed in this Plan can be funded and implemented in a timely fashion.

To the extent feasible, this Plan has incorporated existing local plans as part of its recommendations. Plans reviewed include:

- *Arnold Rural Livable Community-Based Mobility Plan* (draft materials), 2007
- 2006 TE application for “Cosgrove pedestrian and bicycle corridor”
- 2006 Cowell Creek Corridor Project
- 2005 Calaveras County Bikeway Plan Supplement, CCOG
- *Development Manual Part 2: Road Templates*, Calaveras County Public Works Department, 2005
- *West Point Bike Lane Study*, Calaveras County Department of Public Works, 2003
- 2002 Caltrans SR2S Grant Funding Application, Albert Michelson Elementary bicycle improvements
- Calaveras County Regional Transportation Plan Update, CCOG, 2001
- Calaveras County Bikeway Plan Update, CCOG, 1998
- Arnold Community Plan, 1998
- Circulation Element, *Calaveras County General Plan*, CCOG, 1996
- Arnold Community Plan, 1981
- Calaveras County *Bike Plan*, 1980

A more detailed review of past planning efforts is found in Chapter 2: Goals, Objectives, and Policy Actions.

By adopting this document, the County and Angels Camp will meet State and Federal requirements for the projects identified in this Plan. All projects in this Plan will require additional feasibility, design, environmental documentation, and/or public input prior to being funded and constructed. All projects and plans would need to conform with the adopted General Plan.

1.4 Bicycle Plan Process

This Plan was developed during 2006/2007 under the purview of the Calaveras Council of Governments (CCOG). CCOG is the Regional Transportation Planning Agency (RTPA) for the County of Calaveras and the City of Angels. CCOG's initial public outreach included an online user survey of bicycle conditions and needs. To engage residents in the production of this Plan, CCOG hosted three public meetings – one with the Calaveras County Board of Supervisors and two before CCOG. In addition, CCOG convened a Steering Committee to guide development of the Plan. The committee was composed of representatives from:

- Each Supervisorial District
- Arnold – Golden Chain Bicycle Club
- Angels Camp – Mt. Peddler Bicycle Shop
- Copperopolis – local bicyclist/pedestrian
- Copperopolis – local bicyclist
- West Point – local bicyclist
- Railroad Flat – local bicyclist/pedestrian
- Valley Springs – local bicyclist/pedestrian
- Forest Service, Calaveras Ranger District – District Ranger
- Caltrans – District 10 Transportation Planner
- County Public Works – Transportation Planner
- Calaveras COG – Transportation Planner

1.5 Overview of the Plan Structure

This report is divided into sections, detailed below:

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

Section 2 - Goals and Objectives: Summarizes the goals, policies, and objectives guiding the implementation of the Master Plan, incorporating previous planning efforts.

Section 3 – Needs Analysis: This chapter reviews the relationship between existing conditions and facilities, bicycle activity, commute patterns, demographics, land use and collisions.

Section 4 – Bicycle Facilities: Describes existing physical conditions for bicycling and outlines the recommended bikeway improvements and associated costs and implementation strategies, including bike paths, lanes and routes and bicycle parking.

Section 5 – Programs: Provides information on existing education, enforcement and other programs as well as describing all proposed non-infrastructure activities.

Section 6 – Funding: A description of the available funding sources that can be used to build the improvements described in this Plan.

Appendix A – Supplemental Design Guidelines

2.0 GOALS, OBJECTIVES, AND POLICY ACTIONS

2.1 Relationship to Other Plans and Policies

This section summarizes past planning efforts and establishes a policy framework to guide future transportation decisions and capital improvement programming for both the unincorporated communities of Calaveras County and Angels Camp. This undertaking is intended to promote regional planning, offer opportunities to coordinate infrastructure improvements and to incorporate past planning efforts into the current Plan.

2.1.1 Previous Calaveras County Plans

The Bicycle Master Plan is intended to coordinate and guide the provision of all bicycle-related plans, programs, and projects in the County. The studies or planning efforts listed below have been reviewed and studied for consistency, and where appropriate, folded into the Calaveras County Bicycle Master Plan. Each plan summary contains a list of relevant goals, objectives and policies as well as a summary of previous infrastructure and program proposals.

Arnold Rural Livable Community-Based Mobility Plan, 2007

This study plans to produce 30% level of design concepts for pedestrian and bicycle facilities, connections to transit and possible in-fill development options for the downtown area of Arnold. Recommended improvements from the current countywide Plan will be incorporated into the Arnold area effort as applicable.

Cosgrove Pedestrian and Bicycle Corridor Project, 2006

This project proposes to construct a 6,000 foot, 10 foot wide pedestrian and bicycle pathway along Cosgrove Creek in Valley Springs. The path will connect residential, commercial, schools and public agencies as an alternative to vehicular means. CCOG has received \$350,000 of Transportation Enhancements funding for Phase I the pathway which as of this writing was in the design phase. The project has been folded into the proposed projects of the Bicycle Plan, which identifies the remaining funding needed.

Cowell Creek Corridor Project, 2006

This project proposes to connect destinations within the towns of Arnold and White Pines via a combination of pathways and on-street routes traveling parallel to but away from the main corridor of Highway 4. The project details have been analyzed and folded into the proposed improvements as appropriate.

2005 Calaveras County Bikeway Plan Supplement, CCOG

This plan was completed as a required update to the 1998 Calaveras County Bikeway Plan Update (CCBP). The document provides current information required to maintain eligibility for Bicycle Transportation Account funding, including current and future usage, existing and proposed facilities and programs and updated cost estimates. Elements of this plan folded into the current Plan update include safety and education programs and proposed programs and projects.

Development Manual Part 2: Road Templates, Calaveras County Public Works Department, 2005

This internal design document establishes consistent guidelines for roadway geometry by providing cross-sections of common roadway configurations and right of way widths. The manual describes design guidance for different roadway classifications, including two, three and four lane community and regional roads, emergency access roads, hillside roads and partial width roads. Specifications include facilities for bicycles and pedestrians on selected roadway types. Design guidelines proposed in the current planning effort were dovetailed with these proposed specifications.

West Point Bike Lane Study, Calaveras County Department of Public Works, 2003

This local plan, which draws on the 2005 and 1998 bike plan updates, proposes to develop and construct bicycle lanes in and around the West Point Community focusing on State Highway 26, Main Street, Pine Street, Bald Mountain Road and Winton Road as primary corridors. Although the plan emphasizes school access it also provides routes for local residents' inter-community travel and regional bicycle travelers. The study provides cost estimates for Class II and Class III facilities composing a local non-motorized network.

Albert Michelson Elementary School Safe Routes to Schools Improvement Project, 2001

This project proposes to install new sidewalks, curb and gutter, ramps, crosswalks and bicycle lanes in the area of Murphys on Highway 4 and Pennsylvania Gulch Road near the school. Improvements to this area, originally estimated at \$420,000 have been folded into the proposed projects for the current Plan.

Calaveras County Regional Transportation Plan Update, CCOG, 2001

This plan was adopted to bring Calaveras County into compliance with California Transportation Commission 1999 Regional Transportation Plan guidelines. Its purpose is to guide development of the County's transportation system and lays out policies and actions intended to address all modes, including roadways, public transit, goods movement, bicycle and pedestrian needs, aviation and transportation system management. Proposed projects for each mode are prioritized, including Class I, II and III bikeways and sidewalks. The plan includes a number of goals pertaining to non-motorized transportation designed to promote safety on local roads and state highways and encourage a multi-modal transportation system including bicycling, walking and transit as integral elements.

At the time of writing, the CCOG was in the process of working with a consultant to update the 2001 RTP.

Calaveras County Bikeway Plan Update, CCOG, 1998

The 1998 Bikeway Plan Update was created to bring Calaveras County into compliance with the State of California Bicycle Transportation Act (1994). This plan incorporates the previous *Calaveras County Bike Plan* (1980) into a blueprint for developing a bikeway system that includes both on-street and off-street facilities as well as support facilities and programs throughout the County. The goals, objectives and policies contained in this plan are the starting point for the current Plan goals described at the end of this chapter.

Calaveras County General Plan, 1996

The purpose of this plan is to meet state planning requirements and to assist decision makers in coordinating land use and infrastructure decisions. Both the Circulation and Open Space elements contain policies relevant to the CCBMP update.

The Circulation Element incorporates goals, policies and implementations measures from the County's September 1980 Bike Plan, which specifically address bicycle travel as an integral part of the transportation system. The local Bike Plan includes state and local routes as well as equestrian and student user needs.

The Open Space Element describes efforts to develop local and regional trails to provide bicycle and pedestrian access to open space and recreation. It incorporates the efforts to create the Mokelumne Coast to Crest Trail by securing a permanent, public trail access along the North Fork of the Mokelumne River which would connect from the San Francisco Bay to the Sierra Nevada Range just south of Lake Tahoe.

Calaveras County Bike Plan, 1980

Calaveras County adopted a "Bike Plan" in September 1980. The Plan includes goals, policies and implementation measures which specifically address bicycle travel as an integral part of the transportation system. The local Bike Plan includes a portion of the state-wide network as well as complimentary local routes. The special needs of students, particularly in the Arnold, Murphys and San Andreas areas are addressed in the Bike Plan.

2.1.2 Relevant State Legislation and Policies

The California Bicycle Transportation Act (1994) requires that all cities and counties should have an adopted bicycle master plan to be eligible for BTA funding. The *Caltrans Highway Design Manual* contains specific, mandatory design requirements for construction of facilities described in bicycle master plans. The Caltrans requirements – and how this Plan complies with them for Calaveras County – are detailed in Table 1-1. 'Chapter 1000: Bikeway Planning and Design' of the Manual sets the basic design parameters of on-street and off-street bicycle facilities and is summarized in Appendix A - Design Guidelines.

In addition, Caltrans has two other policies that impact the bicycling environment in Calaveras County. Caltrans Deputy Directive 64 (DD-64) states that all projects “fully consider the needs of non-motorized travelers (including pedestrians, bicyclists and persons with disabilities) in all programming, planning, maintenance, construction, operations and project development activities and products”. This policy establishes a multi-modal goal for all Caltrans projects. The Caltrans “Context Sensitive Solutions” policy states that the department seeks to use innovative solutions that “integrate and balance community, aesthetic, historic and environmental values with transportation safety, maintenance, and performance goals”. The policy directs that all Caltrans projects consider the impact of these factors at the local level in project development.

2.2 Goals, Objectives and Policy Actions

Goals provide the context for the specific objectives and policy actions discussed in the bicycle plan. The goals provide the long-term vision and serve as the foundation of the plan. Goals are broad statements of purpose that do not provide specific descriptions of the goal, while policy actions provide a bridge between general policies and actual implementation guidelines, which are provided in the proposed projects and programs.

2.2.1 Goals, Objectives and Policies

The following goals, objectives and policies are proposed for adoption as a part of the 2007 Calaveras County Bicycle Master Plan. These goals are based on those presented in the 1998 Calaveras County Bicycle Master Plan Update and have been revised for the current plan update.

Goal 1: Provide safe and efficient bikeways in Calaveras County

Objective: Construct bikeways identified in the Calaveras County Bikeway Master Plan and provide for the maintenance of both existing and new facilities.

Policies

- 1.1 Prepare and maintain a bicycle master plan that identifies existing and future needs, and provides specific recommendations for facilities and programs including adequate provisions for bicycle use and bikeways in all new developments.
- 1.2 Create a bikeway system that is cost-effective to construct and maintain; respects landowners, utilities, and special districts’ property rights; and minimizes the potential for conflicts with other types of vehicles and users.
- 1.3 Require all bikeways to conform to design standards contained in the latest version of the Caltrans Highway Design Manual and CA MUTCD
- 1.4 Coordinate with agencies such as Caltrans, Amador County, Alpine County, San Joaquin County, Stanislaus County, and Tuolumne County regarding the implementation of the proposed system.

Goal 2: **Include bikeway facilities in all appropriate future development projects to facilitate on-site circulation for bicycle travel, on-site bicycle parking, and connections to the proposed system.**

Objective: Maximize the number of daily trips made by bicycling in future development areas.

Policies

- 2.1 Require future development to construct bikeway facilities included in the proposed system as a condition of development.
- 2.2 Require future commercial development to provide bicycle access to surrounding residential areas.
- 2.3 Require future commercial development to place bike racks near entrances for employees and customers.
- 2.4 Consider landowner concerns when planning and acquiring off-street bikeway easements.
- 2.5 Meet the requirements of the Americans with Disabilities Act when constructing facilities contained in the proposed system, where applicable.
- 2.6 Require future development to consider schools as important destinations for bicyclists when designing circulation systems within new developments.

Goal 3: **Develop a bikeway system that enhances safety and convenience of bicycling to work and school.**

Objective: Increase bicycle trips to work and school to reduce vehicle congestion and maintain air quality.

Policies

- 3.1 Provide connections to the proposed system from all existing and future transit facilities, stations, and terminals in Calaveras County.
- 3.2 Provide support facilities such as bicycle racks and personal lockers at appropriate locations such as “park and ride” facilities, employment centers, schools, and commercial centers.

Goal 4: **Educate and inform all residents and visitors of Calaveras County about how to use bikeway facilities safely.**

Objective: Improve bicycle conditions in Calaveras County by reducing accidents and increasing the number of bikeway system users.

Policies

- 4.1 Incorporate standard signing and traffic controls as established by Caltrans to ensure a high level of safety for the bicyclist and motorist.

- 4.2 Use available accident data to monitor bicycle-related accident levels annually, and target a 10 percent reduction on a per capita basis over the next twenty (20) years.
- 4.3 Encourage local law enforcement agencies and local school districts to cooperatively develop a comprehensive bicycle education program that is taught to all school children in Calaveras County.

Goal 5: Avoid adverse environmental impacts associated with the implementation of the proposed system.

Objective: Mitigate potentially significant impacts to a level of less than significant.

Policies

- 5.1 Conduct environmental review consistent with the California Environmental Quality Act for individual projects as they advance to the implementation stage of development.
- 5.2 Avoid areas of sensitive habitats for plants and wildlife when constructing facilities contained in the proposed system.
- 5.3 Solicit and consider community input in the design and location of bikeway facilities.
- 5.4 Consider the effect on other transportation facilities such as travel lane widths, turn lanes, on-street parking and on-site circulation when planning and designing on-street bikeways

Goal 6: Pursue the timely funding and construction of the bicycle improvements described in this plan

Objective The County should work to fund construction of the bicycle improvements in this plan and maximize the amount of local, state, and federal funding for bikeway facilities that can be received by agencies in Calaveras County.

Policies

- 6.1 Continue to require that any Local Transportation Funds remaining after funding of local transit needs be spent to construct improvements described in this plan.
- 6.2 Maintain current information regarding regional, state, and federal funding programs for bikeway facilities along with specific funding requirements and deadlines.
- 6.3 Partner with other agencies to pursue funding for bicycle projects as stand-alone grant applications or as part of larger transportation improvements.

Objective: The County should develop and construct the improvements in this plan in accordance with the priorities established herein and as funding allows

Policies

- 6.5 Environmental documentation, right of way acquisition and plans, specifications and detail cost estimates should be developed as soon as adequate funding is available
- 6.6 Projects should be constructed as soon as adequate funding is available

Goal 7: Ensure the effectiveness and longevity of the plan policies, projects and programs

Objective: The County should require that the policies, programs and projects of the Bicycle Master Plan be integrated into all ongoing and future planning and design documents and guidelines

Policies

- 7.1 Update local roadway design standards to include sufficient pavement sections to accommodate bikeway facilities
- 7.2 Require inclusion of all bicycle improvements from this plan in upcoming capital projects, where appropriate
- 7.3 Require inclusion of Bicycle Plan policies, programs and improvements in all ongoing and future planning efforts, as applicable

3.0 NEEDS ANALYSIS

This section summarizes the needs of bicyclists in Calaveras County that have been identified by staff, the steering committee, the public and during field inspections. Existing bicycle facilities and specific bicycle facility recommendations are addressed in Chapter 4. Existing education, safety and encouragement programs as well as specific program recommendations are addressed in Chapter 5.

According to a May 1991 Lou Harris Poll, it was reported that “...nearly three million adults—about one in 60—already commute by bike. This number could rise to 35 million if more bicycle friendly transportation systems existed.” In short, there is a reservoir of potential bicyclists who do not ride (or ride more often) simply because they do not feel comfortable using the existing street system and/or don’t have appropriate bicycle facilities at their destination.

3.1 Commuter and Utilitarian Bicycling Needs

One focus of this Plan is commuter and utilitarian cyclists—those riding to work or school, or for shopping, errands, and other trip purposes—in short any type of trip that might otherwise be accomplished by automobile. It is important to understand the specific needs of these users.

Commuter bicyclists in Calaveras County range from employees who ride to work to a child who rides to school to people riding to shops. Bicycling requires shorter commutes, typically less than three miles, which runs counter to most land use and transportation policies that encourage people to live farther and farther from where they work. Access to transit helps extend the commute range of cyclists, but transit systems also face an increasingly dispersed live-work pattern that is difficult to serve. Despite these facts, Calaveras County has a great potential to increase the number of people who ride to work or school because of (a) the small size of many of the communities, (b) moderate density residential neighborhoods near downtown areas, (c) a favorable climate, and (d) a culture that values fitness and experience of the outdoors and nature as a part of daily life.

Major commuter concerns include traffic congestion, changes in weather (rain), riding in darkness, personal safety and security. Commuters typically seek the most direct and fastest route available, with regular adult commuters often preferring to ride on arterials with bike lanes, wide curb lanes or shoulders, rather than side streets or off-street facilities. They generally prefer routes where they are required to stop as few times as possible, thereby minimizing delay. Commute periods typically coincide with peak traffic volumes and congestion, increasing the exposure to potential conflicts with motor vehicles. Places to safely store bicycles are of paramount importance to all bicycle commuters.

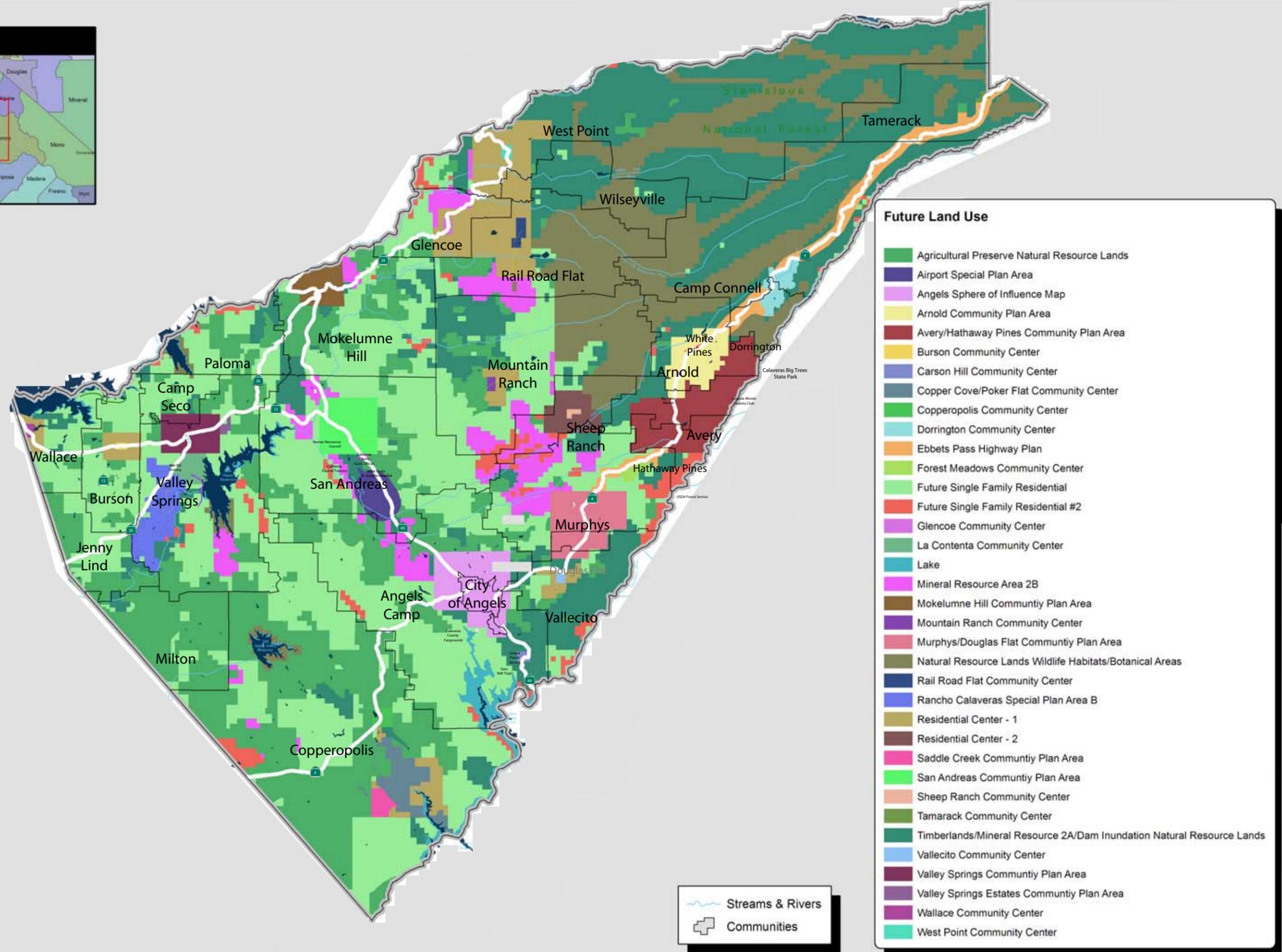
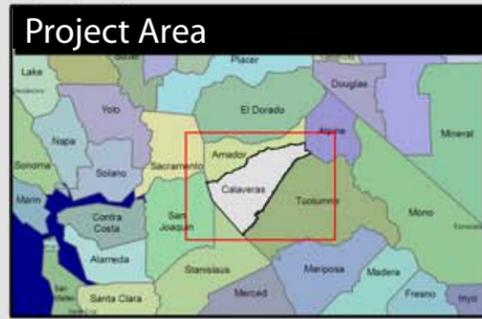
Many younger students (ages seven to 11) use sidewalks for riding to schools or parks, which is acceptable in areas where pedestrian volumes are low and driveway visibility is high. Where on-street parking and/or landscaping obscures visibility, sidewalk riders may be exposed to a higher incidence of accidents. Older students (12 years or older) who consistently ride at speeds over 10 miles per hour (mph) should be directed to riding on-street wherever possible. Students riding the wrong-way

on-street are common and account for the greatest number of recorded accidents in California, pointing to the need for safety education.

Commuter and utilitarian cyclists need improvements in the commercial and downtown areas of Calaveras County, as well as access to work sites outside those areas, in order to reach their destinations. **Table 3-1** provides details on major employers within Calaveras County which are addressed as destinations in the project recommendations in Chapter 4. **Figure 3-1** illustrates destinations by land use type for the county.

Table 3-1: Major Employers in Calaveras County

Rank	Company	Address	City/Town	Employees
1	County Office of Education	185 S. Main St.	Altaville, CA 95221	946
2	County Government	891 Mountain Ranch Road	San Andreas, CA 95249	380
3	Mark Twain St. Joseph's Hospital	768 Mountain Ranch Road	San Andreas, 95249	248
4	Oars Raft Trips (seasonal)	2687 Highway 49	Angels Camp, 95222	35-500
5	CA Depart. of Forestry (seasonal)	785 Mtn. Ranch Road	San Andreas CA 95249	138-258
6	39th District Agricultural Assn. (seasonal)	South Highway 49	Angels Camp, CA 95222	4-150
7	Human Resources Council, Inc.	593 W. St. Charles St.	San Andreas, CA 95249	150
8	U.S. Forest Service (seasonal)	5314 Highway 4	Hathaway Pines, CA 95233	49-99
9	Greenhorn Creek Golf Resort	711 McCauley Ranch Rd	Angels Camp, 95222	75-80
10	Kautz Ironstone Vineyards	1894 Six Mile Road	Murphys, CA 95247	80
11	Sequoia Woods Country Club	1000 Cypress Point Drive	Arnold, CA 95223	35-75
12	United Parcel Service	2342 Gun Club Road	Angels Camp, CA 95222	65
13	Big Trees Market	2182 Highway 4	Arnold, CA	63
14	Mar Val Grocery	55 S Highway 26	Valley Springs	51



3.2 Recreational Bicycling Needs

Although this plan is primarily focused on bicycle transportation, recreation has been identified as a key reason for bicycling in Calaveras County (see section 3.7 Public Outreach). Many of the improvements in this plan are designed to serve both transportation and recreation cyclists who share the same routes on local paths and roadways. Specifically, needs for safer rural recreational road cycling routes and access to mountain bike opportunities have been identified. This plan addresses those needs through countywide and local bikeway improvements as well as the Nonmotorized Open Space Access Program, both detailed in Chapter 4.

3.3 Bicycling and Development Projects

Several steering committee members and members of the public have noted the opportunity for improving the bicycling environment through new development occurring in the growth areas of Calaveras County:

- Designs of new and retrofitted developments need to provide equal accommodation for automobiles, bicycles and pedestrians.
- Mixed-use developments with integrated land uses are needed, since they can foster more bicycle-friendly environments, generate less vehicle trips and create interesting places.
- In line with encouraging new approaches to development, codes need to reflect that bikeways (bicycle lanes, routes or pathways) should be automatically required as a condition of new development or when it is anticipated that a road will attain a particular threshold with respect to either speeds or vehicle trips per day.
- A “park once” policy, in which centralized public parking facilities would be built to serve a given area, is needed in core areas so as to reduce trips, conflicts between motor vehicles and bicycles and the overall number of parking spaces required.

These concerns are addressed through the policies in Chapter 2 as well as the implementation strategies for specific improvements described in Chapter 4.

3.4 Transit and Multi-Modal Connections

Improving nonmotorized access to transit is an important part of making bicycling a part of daily life in Calaveras County. Linking bicycles with public transit overcomes barriers such as trip distance, personal safety and security concerns, and riding at night, in poor weather, or up hills. Bicycling and transit can work together to provide regional transportation options to single-occupancy vehicle trips areas for both transportation and recreation. Bicycling to transit instead of driving benefits communities by reducing air pollution, demand for park-and-ride land, energy consumption and traffic congestion with relatively low cost investments.

There are four main components of bicycle-transit integration:

- allowing bicycles on transit;
- offering bicycle parking at transit locations;
- improving bikeways to transit within a three mile “catchment zone” radius
- encouraging usage of bicycle and transit programs.

About 0.3 percent of commuters use public transit in Calaveras County. Calaveras Transit is operated by the Calaveras County Department of Public Works and funded through the Transportation Development Act. Existing public transit service in Calaveras County provides deviated fixed-route service to most County communities including Angels Camp, Arnold, Avery, Mokelumne Hill, Murphys, San Andreas, Railroad Flat, Valley Springs, and West Point. In addition, Calaveras Transit provides a seasonal Ski Bus that runs on a fixed route between San Andreas and Bear Valley Resort.

Currently, the entire fleet of transit vehicles are equipped with one bike rack each carrying up to two bicycles at a time. Racks are usable at any time at the same fare rate as a regular passenger. Overflow bicycles are not allowed inside Calaveras Transit vehicles. Bicycle parking facilities do not exist at bus stops along the transit routes. Multi-modal transfer points typically include park-and-ride lots. Calaveras County has one Caltrans operated park-and-ride lot in Murphys on Algiers Street. This location does not provide bicycle parking.

Additional needs for bike-to-transit access identified by the steering committee, Calaveras County staff and members of the public include:

- Additional capacity for bicycle racks on buses. This would enable groups of three cyclists to travel together to access recreational riding opportunities, reducing the need for parking near popular riding areas and at trailheads.
- Bicycle racks at route transfer hubs and selected bus stop locations.
- Wayfinding for cyclists to be able to find bus stops.

Improvements to address Calaveras County’s multi-modal services needs are integrated into the project descriptions in Chapter 4. Improvement maps in that chapter include Calaveras Transit Routes as well as existing bus stop multi-modal transfer locations.

3.6 Safety Needs

Safety is a major concern of both current and potential bicyclists. For those who currently ride a bicycle, safety is typically an on-going concern that affects when and where residents chose to bike and under what conditions (weather, lighting, etc.). For those who do not bike, safety is one of the most compelling reasons not to choose these modes.

Data for reported bicycle collisions in Calaveras County were collected from the Statewide Integrated Traffic Records System (SWITRS) for the years 2001-2006, and are presented in **Table 3-2** below. Note that data for 2006 extends only through October, the last month it was available at the time of this writing.

During this five-year period there were no bicyclist fatalities. Although the reports indicate that just over half of collisions were the bicyclist's fault, there is no clear pattern of collision types among typical causes such as losing control of the bicycle, riding the wrong way, running a stop sign or signal or darting out into traffic. Likewise, no clear pattern emerges for the motorist-caused collisions aside from common types such as "cutting off" the bicyclist by making a left or right-hand turn by the motorist, overtaking from behind or speeding.

Nationwide, the total number of reported cyclist fatalities has dropped dramatically since 1994, with 802 fatalities reported in 1994 and 725 fatalities reported in 2004. In comparison, total traffic fatalities have increased by 5% over this ten-year period.⁴

The same study shows that in 2004, of all California traffic fatalities 2.7% were cyclist fatalities (110). This is higher than the nationwide average of 2%, but doesn't take into account the higher rates of cycling found in California. Cyclist fatalities in California represent a fatality rate of just over 3 per million population.

Table 3-2: Collisions Involving Bicyclists in Calaveras County, 2001-2006

Total Number Cyclist Collisions	Number Injuries	Number Fatalities	Number Property Damage Only	Motorist at Fault	Cyclist at Fault	Unknown Fault
27	20	0	7	30%	63%	7%

SOURCE: SWITRS, STATE OF CALIFORNIA

3.7 Public Outreach

3.7.1 Survey

A bicycle user survey was developed to assess the level, type and distribution of bicycle use in Calaveras County. The survey was distributed to area bike shops and posted on the Calaveras County Council of Government website and through local websites such as myvalleysprings.com and thepinetree.net. In addition, Steering Committee members distributed the survey to locals.

193 respondents returned bicycle surveys. The results were as follows and are summarized in **Figures 3-2** through **3-8**.

- Respondents to the survey were fairly evenly distributed across the county, with larger respondent groups from Valley Springs, Murphys, Copperopolis, Angels Camp and Mokelumne Hill. Nearly 1/4 of the respondents are from the community of Valley Springs.

⁴ Traffic Safety Facts, 2004 Data. "Pedalcyclists" NHTSA, DOT # HS 809 912

- According to respondents, most bicycling in Calaveras County takes place for recreational purposes, with almost twice as many reporting road riding versus mountain biking as the primary discipline. However, a significant number of respondents indicated that they bicycle for errands or to work.
- The respondents are frequent riders, with nearly a third reporting one to two rides per week and a quarter reporting 3-4 rides per week. The average ride distances were fairly evenly distributed between under two miles to 24 miles. Note that ride distance may be skewed lower by inclusion of mountain bike use in this data.
- Most respondents cited concerns with on-street bikeway and off-street pathway facilities as the main reason for not riding – either facilities are lacking or are in need of maintenance. Second to this was driver-related safety concerns associated with traffic volumes, speeds and failure to yield/”share the road”.
- In terms of facility preference over 40% of respondents ranked separated bike paths as the preferred facility type, with almost 30% ranking bike lanes as preferred and 15% preferring off-street unpaved / dirt bike paths.
- Almost no respondents indicated bicycling as a school commute mode, reflecting the serious need for bicycle improvements in school areas.

3.7.2 Identified Needs

Members of the Steering Committee, County staff and survey respondents suggested the needs listed below. The top priorities will be considered in more detail in Chapter 4.

- Safe bicycle connections within communities (example: downtown Angels Camp) and between the communities of Calaveras County (example: Highway 49 corridor between Angels Camp and Arnold)
- Safety improvements to popular recreational rural routes such as Murphy’s Grade Road and Dogtown Road
- Safety improvements, particularly to the shoulders of State Highway Routes 4 and 49
- Safer access to recreational opportunities (example: Angels Camp to New Melones Reservoir along Highway 49 corridor)
- A designated space for bicycles, whether that be a pathway, bicycle lane or wider shoulder.
- Regular maintenance and repaving of bicycle facilities, including shoulder areas on bicycle route roads.

Figure 3-2: Place of Residence

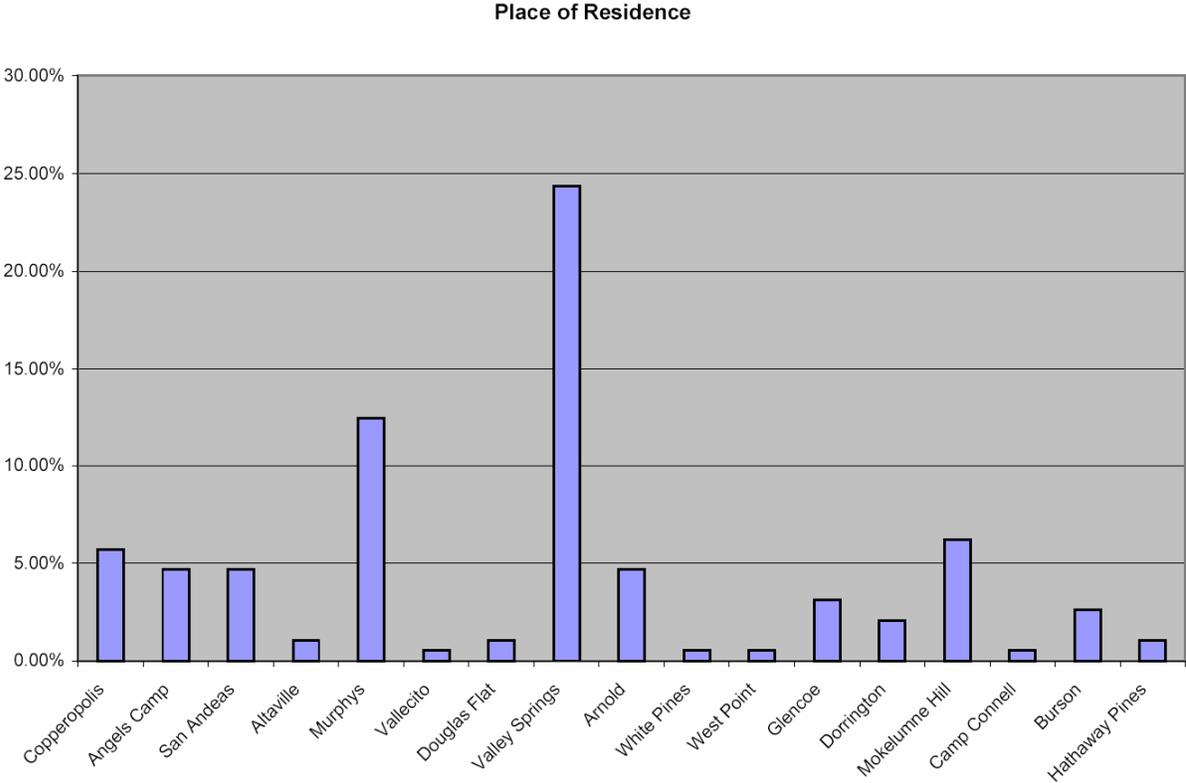


Figure 3-3: Reasons for Bicycling

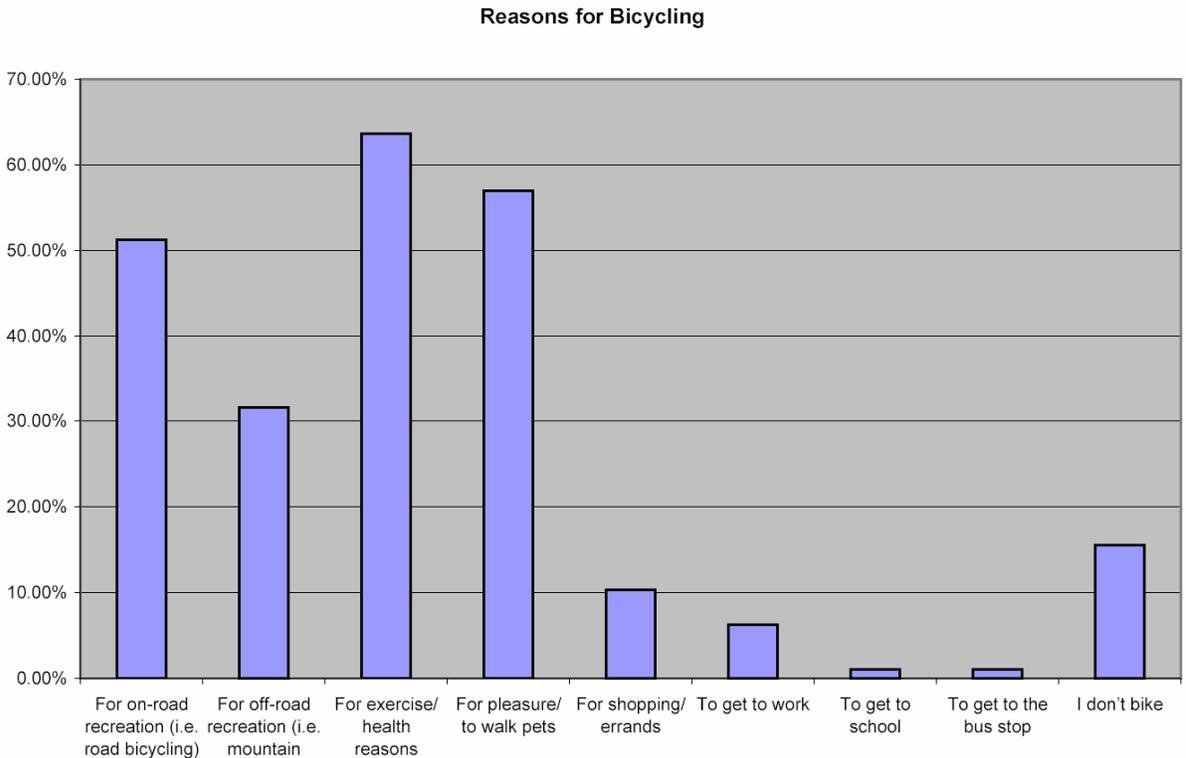


Figure 3-4: Number Days Riding Per Week

Number Days Riding Per Week

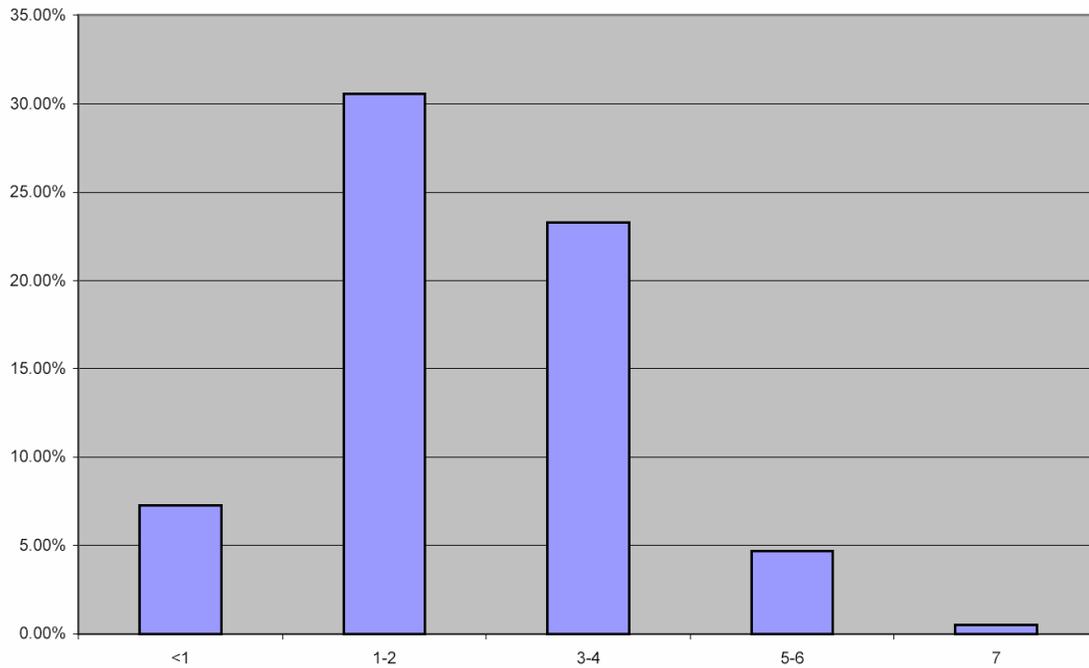


Figure 3-5: Average Ride Distance

Average Ride Distance

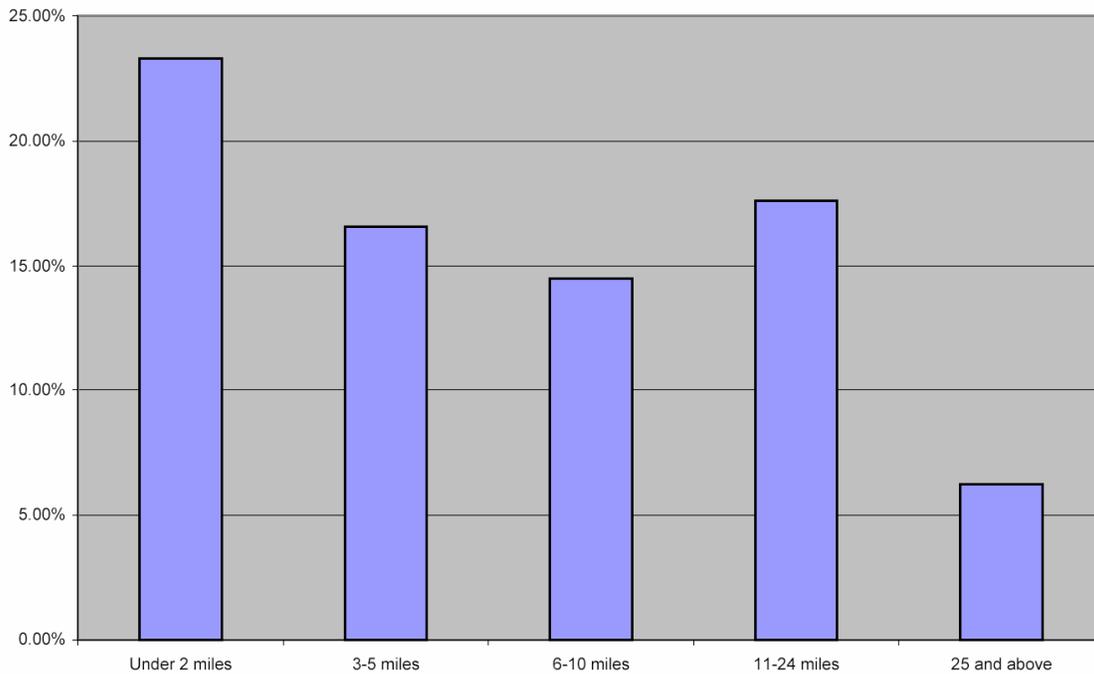


Figure 3-6: Obstacles to Bicycling

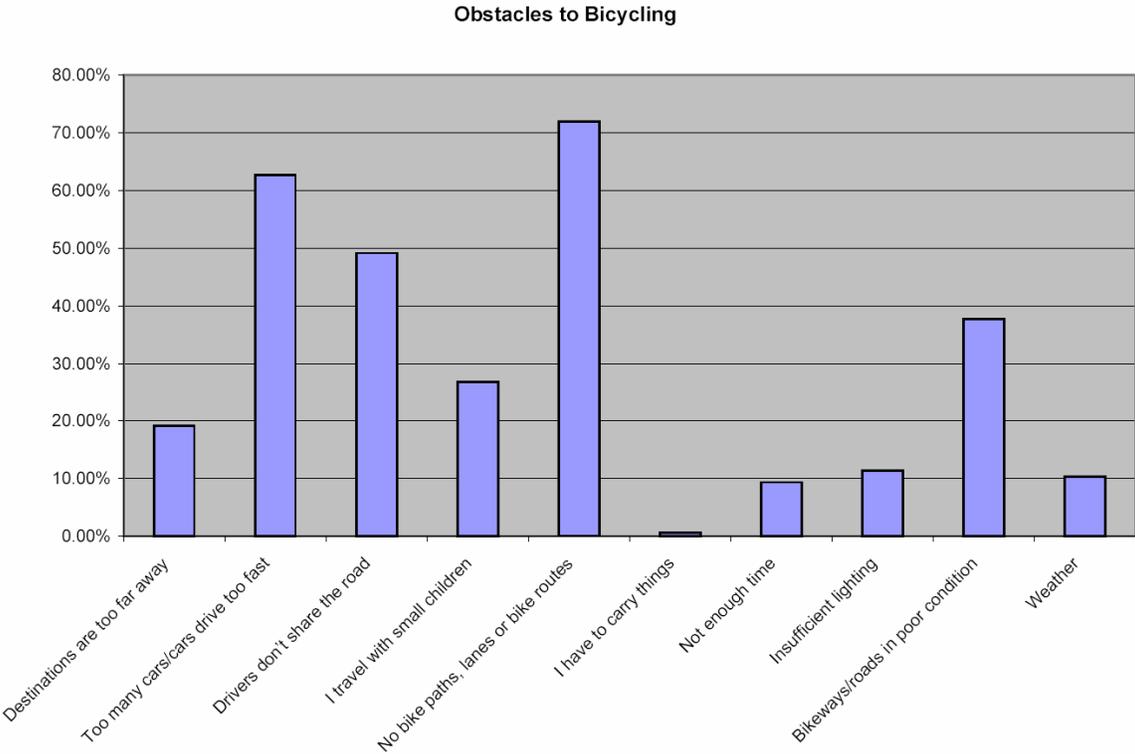


Figure 3-7: Most Preferred Facility Type

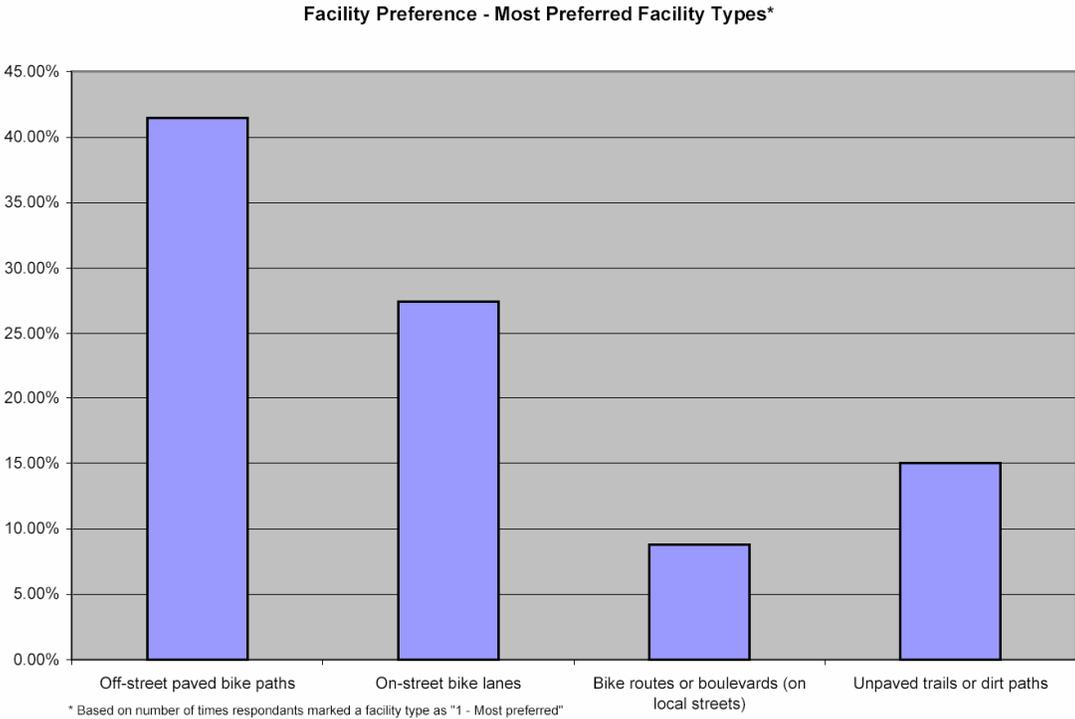
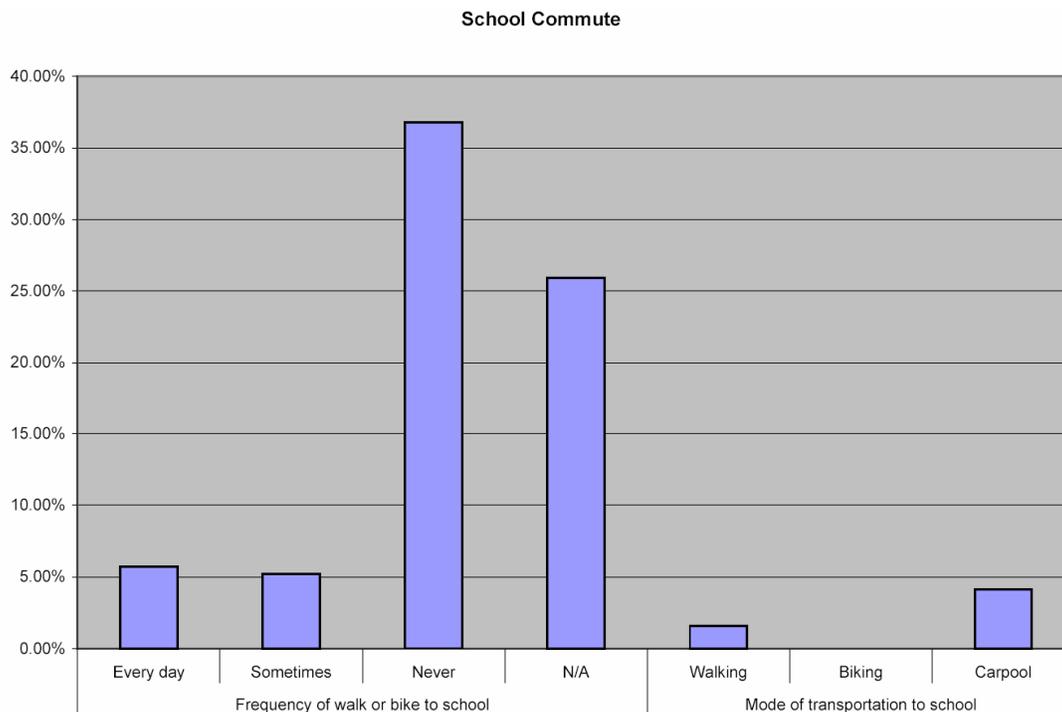


Figure 3-8: School Commute

3.8 Current Usage and Future Benefits

3.8.1 Bicycle Usage Data

Journey to work data was obtained from the 2000 US Census for Calaveras County, California, and the United States. Journey to work data are shown in **Table 3-3**.

Table 3-3: Journey to Work Data

Mode	Calaveras County			
	United States	California	%	Number of People
Bicycle	0.4%	0.9%	0.3 %	51
Walked	3.0%	3.0%	2.9 %	422
Drove Alone	78.3%	74.7%	79.4 %	11,718
Carpool	12.6%	15.1%	16.3 %	2,408
Public Transit	4.9%	5.3%	0.3 %	42
Other	0.5%	1.1%	0.8 %	102

Source: U.S. Census 2000

As shown, approximately 0.3% of Calaveras County journey-to-work trips are made by bicycle. 51% of home-based work trips for Calaveras County residents are made by bicycle. This number is similar to the 1990 census data reported in the 1998 bicycle plan. This is not surprising given the overall lack of funding available to implement the proposed bikeway system described in the 1998

plan and the 2005 update. However, in the last six years additional bikeways have been constructed in Calaveras which may have increased bicycle use above levels reported in the 2000 Census data, in part due to new funding sources such as the Board of Supervisors commitment to use residual Local Transportation Funds to build bicycle improvements.

In addition, the data above is likely to be an underestimate of the true amount of biking in the County. Census data does not include the number of people who bicycle for recreation or for utilitarian purposes, students traveling to school, or commuters who travel from outside Calaveras County. Census data also reflects only a person's dominant commute mode and does not count non-motorized trips that are part of another trip, for example a person who walks or bicycles to a transit station.

3.8.2 Future Usage and Benefits

A key goal of the Bicycle Master Plan is to maximize the number of local bicycle commuters in order to help reduce traffic congestion, maintain air quality and increase healthy lifestyles. In order to set the framework for these benefits, national statistics and policies are used as a basis for determining the benefits to Calaveras County. The latent “need” for bicycle facilities—versus actual bicyclists—is difficult to quantify.

Bicycling is one of the most popular forms of recreational activity in the United States, with 46 percent of Americans bicycling for pleasure. If nothing else, this indicates a latent demand for facilities and a potential constituency to push for better facilities. Another way of saying this is, “if you build it, they will come.”

Mode split refers to the choice of transportation people make whether for work or non-work trips. Currently, the average household in the U.S. generates about 10 vehicle trips per day. Work trips account for less than 30 percent of these trips on average. Using the available 2000 Census data, there are about 751 bicycle trips in Calaveras County for utilitarian reasons on an average day.

Alta has developed a state-of-the-art bicycle demand model that also estimates future usage and cost benefits. This is the first model of its type to be based on empirical data. The model includes inputs from Census 2000 Journey to Work current bicycle use data and develops an adjusted bicycle mode share based on an estimated number of college student and bike-to-transit users. This model produces estimated future use numbers based on shifting a portion of existing auto trips less than 15 minutes in length to bicycle trips. As shown on the following tables, completion of the Countywide system could result in an estimated 1,232 daily bicyclists trips, saving approximately 896 vehicle miles daily. It is important to note that this is simply an order-of-magnitude estimate, based on available data.

Table 3-4 provides a detailed summary of bicycle demand and benefits, including estimated air quality savings from the increased bicycling.

Table 3-4: Estimated Bicycle Demand and Air Quality Benefits

Current Commuting Statistics		Source
Calaveras County Population	40,554	2000 US Census
Number of Commuters	14,760	2000 US Census (Employed persons minus those working at home)
Number of Bicycle-to-Work Commuters	51	2000 US Census
Bicycle-to-Work Mode Share	0.35%	Mode share percentage of Bicycle to Work Commuters
School Children Grades K-8	5,041	2000 US Census, population ages 5-14
Estimated School Bicycle Commuters	252	Lamorinda School Commute Study (Fehr & Peers Associates, 1995) and San Diego County School Commute Study (1990). (5%)
Number of College Students	1,426	2000 US Census
Estimated College Bicycle Commuters	71	National Bicycling & Walking Study, FHWA, Case Study No. 1, 1995. Review of bicycle commute share in seven university communities (5%)
Average Daily Transit Boardings	158	Average of daily system-wide Calaveras Transit boardings on bus routes serving Calaveras County. Source: Annual 2005/2006 Calaveras Transit Report
Number of Daily Bike-Golden Gate Transit Users	1	GGT Existing Conditions System Levels Analysis Report 2005, Page 4-24
Estimated Total Number of Bicycle Commuters and Utilitarian Riders	375	Total of bike-to-work, transit, school, college and utilitarian bicycle commuters Does not include recreation.
Estimated Adjusted Mode Share	0.9%	Estimated Bicycle Commuters divided by population
Estimated Current Bicycle Trips		
Total Daily Bicycle Trips	751	Total bicycle commuters x 2 (for round trips) plus total number of utilitarian bicycle trips
Reduced Vehicle Trips per Weekday	314	Assumes 73% of bicycle trips replace vehicle trips for adults/college students and 53% for school children
Reduced Vehicle Miles per Weekday	896	Assumes average one-way trip travel length of 4.6 miles for adults/college students and 0.5 mile for schoolchildren
Potential Future Bicycle Commuters		
Number of workers with commutes nine minutes or less	2,878	US Census 2000
Number of workers who already bicycle or walk to work	473	US Census 2000
Number of potential bicycle commuters	2,405	Calculated by subtracting number of workers who already bicycle or walk from the number of workers who have commutes 9 minutes or less
Future number of new bicycle commuters	241	Based on capture rate goal of 10% of potential bicycle riders
Total Future Daily Bicycle Commuters	616	Current daily bicycle commuters plus future bicycle commuters
Future Total Daily Bicycle Trips	1,232	Total bicycle commuters x 2 (for round trips)
Future Reduced Vehicle Trips per Weekday	899	Assumes 73% of bicycle trips replace vehicle trips

Future Reduced Vehicle Miles per Weekday	4,137	<i>Assumes average one-way trip travel length of 4.6 miles for adults. Assumes 12 mph average bicycle speed; 23 minute average travel time. Travel time data from NHTS 2001 Trends, Table 26.</i>
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Future Reduced Vehicle Miles per Year	1,096,242	<i>256 weekdays per year</i>
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Future Air Quality Benefits		
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Reduced HC (kg/weekday)	12	<i>(0.0028 kg/mile)</i>
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Reduced CO (kg/weekday)	86	<i>(0.0209 kg/mile)</i>
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Reduced NOX (kg/weekday)	6	<i>(0.00139 kg/mile)</i>
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Reduced CO2 (kg/weekday)	455,488	<i>(.4155 kg/mile)</i>
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Reduced HC (metric tons/year)	3	<i>1000 kg per metric ton; 256 weekdays/year</i>
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Reduced CO (metric tons/year)	22	<i>1000 kg per metric ton; 256 weekdays/year</i>
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Reduced NOX (metric tons/year)	1	<i>1000 kg per metric ton; 256 weekdays/year</i>
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Reduced CO2 (metric tons/year)	116,605	<i>1000 kg per metric ton; 256 weekdays/year</i>
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Emissions rates from EPA report 420-F-00-013 "Emission Facts: Average Annual Emissions and Fuel Consumption for Passenger Cars and Light Trucks." 2000.

4.0 BICYCLE FACILITIES

This section describes the existing physical conditions for bicycling in Calaveras County and makes recommendations for bicycle facility improvements to address the needs identified in Chapter 3: Needs Analysis. Descriptions of the different types of facility improvements, including prioritization, cost estimates, implementation strategies and project phasing are also provided.

4.1 Creating a Bikeway Network

A bikeway ‘network’ is a system of bicycle facilities that, along with other physical improvements such as bicycle parking, provide a superior level of service for bicyclists. It is important to state that, by law, bicyclists are allowed on all streets and roads (except where specifically prohibited) regardless of whether these streets and roads are a part of the bikeway system. **The bikeway network is a tool that allows the County and Angels Camp to focus and prioritize implementation efforts where they will provide the greatest community benefit.**

There is an established methodology for selecting a bikeway system for any community. As a Countywide Plan, one of the major goals of the Plan is to build on local bikeway networks already approved or proposed by communities. Thus, local plans provide the basis for some of the bikeway system. Another important criteria is input from the local bicycling community and local staff familiar with the best routes and existing constraints and opportunities. Input was received through a public survey, multiple meetings with the Steering Committee, from staff and via an extensive field survey and analysis process.

In addition, the consultant team considered some of the following criteria in selecting projects:

1. Existing Bicycling Patterns based on reports from surveys and users
2. Traffic volumes and travel speeds on streets
3. Amount of side friction (driveways, side streets)
4. Curb-to-curb width, available right of way and shoulder conditions
5. Number of destinations served, including schools, parks and employment centers
6. Topography and gradients
7. Integration into the regional system
8. Presence of reasonable alternatives for bicyclists
9. Directness and connectivity to destinations
10. Accident data and safety concerns

It is important to remember that the bikeway system and the top projects serve as guidelines to those responsible for implementation. The system and segments themselves may change over time as a result of changing bicycling patterns and implementation constraints and opportunities.

4.2 Existing Bicycling Conditions Summary and the Proposed Calaveras Bikeway Network

Existing Calaveras County bikeway facilities consist of an incomplete system of just over 4.1 miles of bikeways, including over 1 mile of Class I multi-use pathways, .12 miles of Class II bicycle lanes, and almost 3 miles of Class III signed bicycle routes. The existing facilities in Calaveras County are not continuous and do not provide direct access to most major destinations. As described in the introduction to this Plan, Calaveras is primarily a rural County with few existing facilities for bicycling but with a growing demand for safe recreational and transportation bicycling opportunities. CCOG and County staff and the public have identified the lack of facilities including pathways, wide road shoulders, safe routes and bicycle parking as a key concern.

An anecdotal survey and cursory field review revealed an overall lack of bike racks for bicyclists throughout the county in public areas. Bicyclists visiting stores, restaurants, places of employment, and community facilities are largely left to their own devices to temporarily store their bicycles. Approximately 75% of the County's elementary schools provide bicycle racks but Calaveras County's two high schools do not provide bike racks. Calaveras County does not currently have a program to offer bicycle racks for placement on the public right of way.

No official shower or locker facility for bicycle commuters is known to exist in Calaveras County. It is possible that some employers provide these facilities or that some bicycle commuters use facilities in health clubs or other establishments. At this time no standards or policies are in place that require or encourage employers to provide such facilities.

To address these existing conditions, the recommended bicycle circulation strategy described in the following sections consists of a comprehensive network of utilitarian and recreational bikeways connecting residential areas of Calaveras County with schools, parks, community centers, downtowns, and other destinations. It focuses around a countywide system of bicycle routes with local bike lanes, pathways and routes in each community as well as support facilities such as bicycle parking. The fully built-out Calaveras Bikeway Network would consist of approximately 10 miles of Class I Pathways, 8 miles of Class II Bicycle Lanes and 241 miles of Class III Bicycle Routes.

A, B and C implementation priorities described in this chapter were selected by the following criteria:

- input from staff from Calaveras County and CCOG,
- the Steering Committee,
- the public (through surveys),
- previous priority projects (from existing planning efforts),
- and the consultant team based on their local knowledge and cycling experience, the orientation of funding programs, and the planning criteria outlined below.

Additional prioritization criteria specific to different types of projects is provided in the following sections.

4.3 Types of Bicycle Improvements

The following section describes the different types of bicycle improvements recommended in this chapter. Project phasing and a basis for the cost estimates detailed later in this chapter are also provided.

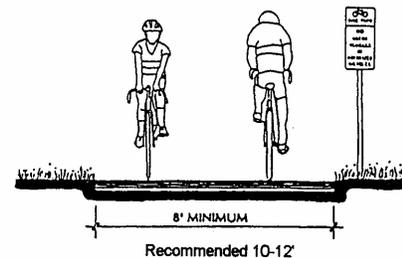
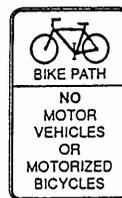
4.3.1 Class I Pathways

Typically called a bike path, this facility provides for bicycle travel on a paved right of way completely separated from any street or highway. If a pathway is to be used primarily for recreation use and not with transportation funding, it may be constructed to reflect local conditions and needs.

The locations for these pathway segments were determined using the previously-identified planning criteria, with the addition of the following factors:

- Need to make a connection through an area with limited or no on-street opportunity to install bikeways but opportunity to build a parallel pathway
- High bicycle or school use, recreational activity or economic and/or housing development

Class I Bike Path



It should be noted that of all the projects proposed in this plan, the pathways will require a higher level of environmental scrutiny compared to bicycle lanes and routes which typically have no environmental impact unless travel lanes are removed.

Project Phasing and Prioritization

Because of the expense involved with construction of Class I pathways, prioritization, phasing and alternate funding strategies such as public-private partnerships are critical to eventual implementation.

First Phase Pathways: Costs for all pathways that can be constructed as a part of planned development or upcoming roadway construction project should be folded into those larger projects. This strategy will save substantial materials and project administration costs. The first step in this phase is adoption of the policies in Chapter 2 requiring the construction of improvements from this plan as a condition of private development.

Second Phase Pathways: The remaining pathway projects should be funded as monies are available, with the County and other applicable agencies proactively seeking funding for these stand-alone projects.

Basis for Cost Estimates

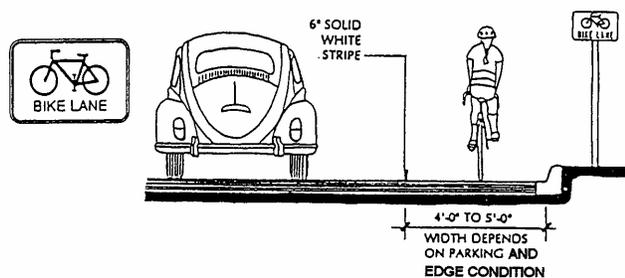
Cost estimates provided later in this chapter are calculated on a per-mile basis for pathways built to Caltrans Chapter 1000 specifications. Estimates include materials such as asphalt pavement, aggregate, signing and striping as well as labor for site preparation and excavation and grading. Contingency and design and administrative costs are also included.

4.3.2 Class II Bicycle Lanes

Typically referred to as a bike lane, these facilities provide a striped and stenciled lane for one-way travel on a street or highway. Bicycle lanes are typically used in developed areas where traffic volumes require channelization of motorized and non-motorized users in order to achieve safe operations.

Many of the important roads for bicycling in Calaveras County have insufficient width to accommodate Class II bike lanes. The majority of these are narrow rural roads or State Highways are striped at minimum lane widths with no paved shoulders and little room for continuous widening. In many cases this is due to topography, limited public right-of-way or existing drainage alongside the road. In addition, bicycle lanes have striping, stenciling and signing requirements that, when installed in rural areas, may not be consistent with the local character of the roadway and surrounding environment. The Rural Roads Improvement Project described later in this chapter was created to address the unique challenges of these segments of Calaveras County’s bikeway system.

Class II Bike Lane



Project Phasing and Prioritization

Although construction costs for Class II bike lanes are less than those for pathways, prioritization, phasing and alternate funding strategies are still vitally important to implementation. To make the best use of the funding sources identified in Chapter 6, this plan recommends the following phasing strategy. Bicycle lane priorities found later in this chapter were based primarily on availability of existing paved right of way and anticipated usage.

First Phase: Implement Class II Bicycle Lanes as a Part of Scheduled Roadway Repaving or Reconstruction:

Bikeways listed above that require lane striping and/or stenciling that are proposed on roads scheduled to be repaved in the next five years can be installed as a part of scheduled roadway maintenance. Cost estimates for those projects should be adjusted to reflect the costs of including the bicycle improvements in the project.

Second Phase: Implement Remaining Class II Bicycle Lanes as a Stand-alone Project:

Bikeways listed above that require repaving, lane striping and/or stenciling that are proposed on roads not scheduled to be repaved in the next five years can be installed as a part of a stand-alone project, funded as monies are available, with the County and other agencies proactively seeking funding. Depending on

segment length and cost, those projects may be approached on a road-by-road basis or shorter, high-priority segments could be bundled together as a Countywide bicycle lane project.

Basis for Cost Estimates

Cost estimates provided later in this chapter are calculated on a per-mile basis for bicycle lanes built to Caltrans Chapter 1000 specifications. Estimates include materials such as signing and striping as well as labor for traffic management. Contingency and design and administrative costs are also included.

4.3.3 Class III Bicycle Routes - Rural Roads Bicycle Improvements

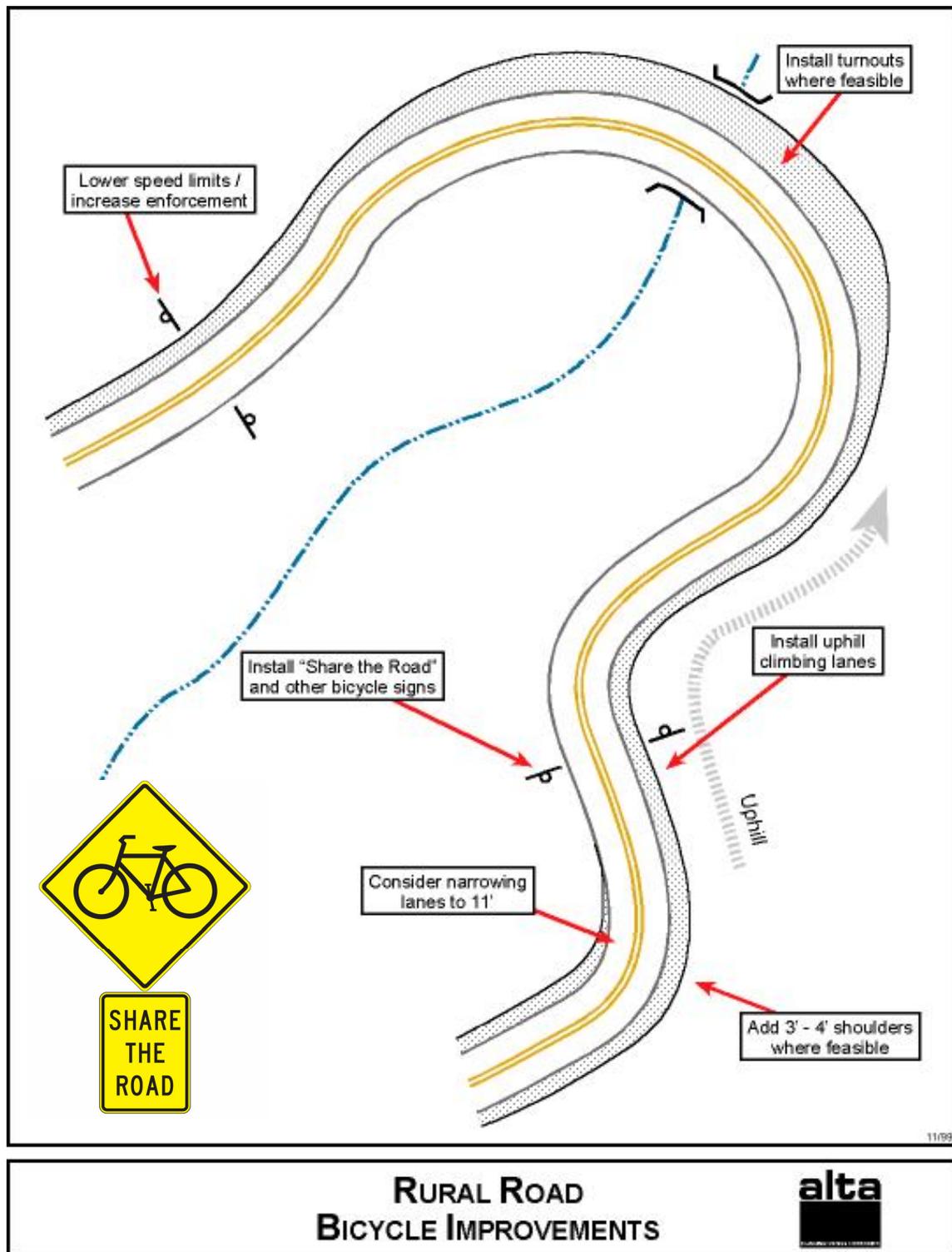
A Class III Bikeway, also referred to as a bike route, provides for shared use with pedestrian or motor vehicle traffic and is typically identified only by signing. However, many rural bicycling roads in Calaveras County are narrow and winding and some have high seasonal traffic volumes, shoulders of varying width, and some steep grades. As noted in the previous section on Class II Bicycle Lanes, application of Caltrans bikeway designs in these areas is difficult due to limited right of way and issues with difficulty of construction.

As a long-term goal all Class III routes should provide a safe and consistent operating space for bicycles, with a goal of 4' of paved width outside the travel lane on either side of the roadway. The goal of the Rural Roads Bicycle Improvement Project is to identify and construct spot improvements along specific priority segments of these rural roads located outside developed areas and have no (or limited) curbs, gutters, or sidewalks. The segments identified later in this chapter were identified from the larger list of proposed Class III bike route facilities, based on public input, right-of-way opportunities for widening, connectivity between communities and popularity as recreational routes.

This project would provide a mechanism to address specific concerns through a combination of any of the following treatments:

- Bike Route wayfinding signs (minimum treatment)
- Advisory and warning signs, including, where appropriate, “Share the Road” signs
- Shoulder, repair, widening or new shoulders equal to an average of 2' of additional paved width on each side of the road for approximately 50% of the total segment length, resulting in intermittent but functional bikeway shoulder areas
- Travel lane re-striping where excess width available
- New or improved turnouts

Figure 4-1: Rural Road Improvements and Share the Road Signage



Needed improvements for selected segments were based on a “windshield” analysis of roadway conditions categorizing segments in the following way.

- Moderate – Paving width is not adequate; right-of-way and adequate space and terrain is available to intermittently add 2’ of additional shoulder width; also includes Bike Route and Share the Road signage; lane re-striping as necessary.
- Major – Paving width is inadequate and adjacent existing drainage or grades require new culverts or grading in order to intermittently add 2’ of additional shoulder width. In addition to Bike Route signs, spot improvements would include turnouts, paved shoulder passing areas and Share the Road and warning signage on dangerous segments with winding turns or limited sightlines; lane re-striping as necessary.

Project Phasing and Prioritization

As this project is developed, areas for wider shoulders should be prioritized according to a variety of factors with use and safety as key considerations. Locations such as blind corners or where sight distances are compromised would be priority locations for turnouts. Long segments of narrow roadway/narrow lanes would be prioritized for installation of periodic shoulder paving and widening. In addition, because these projects do not provide for consistent additional roadway width, Share the Road signs are recommended at key locations such as the uphill side of long climbs or before any blind corner or location where sight distance is compromised.

First Phase: Implement Class III “Rural Roads Improvements” Bikeways as a Part of Scheduled Roadway Repaving or Reconstruction: Bikeways listed above that require repaving, lane striping and/or stenciling that are proposed on roads scheduled to be repaved in the next five years can be installed as a part of scheduled roadway maintenance. Cost estimates for those projects should be adjusted to reflect the costs of including the bicycle improvements in the project.

Second Phase II: Implement Remaining Class III “Rural Roads Improvements” as a Stand-alone Project: Bikeways listed above that require repaving, lane striping and/or stenciling that are proposed on roads not scheduled to be repaved in the next five years can be installed as a part of a stand-alone project, funded as monies are available, with the County and other agencies proactively seeking funding. Depending on segment length and cost, those projects may be approached on a road-by-road basis or shorter high-priority segments could be bundled together as a rural roads bikeway improvement project.

Basis for Cost Estimates

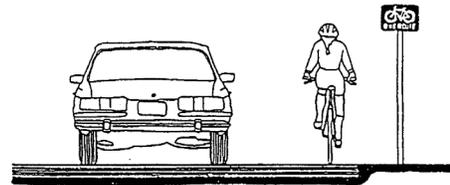
The cost estimates provided later in this chapter are based on the “Moderate” and “Major” categories above, calculated on a per-mile basis with the assumption that an average of 4’ of additional paved width would be added equal to approximately 50% of the length of each roadway segment. Estimates include materials such as asphalt pavement, aggregate, signing and striping per California MUTCD specifications as well as labor for site preparation, excavation, grading and traffic management. Contingency and design and administrative costs are also included.

4.3.4 Class III Routes “Signage Only”

These important routes also have limited opportunity for widening and have been determined to be of a lower priority than those segments in the Rural Roads Improvement Project. In addition, because these projects do not provide for any additional roadway width, Share the Road signs are recommended at key locations such as the uphill side of long climbs or before any blind corner or location where sight distance is compromised. As a long-term goal all Class III routes should provide a safe and consistent operating space for bicycles, with a goal of 4’ of paved width outside the travel lane on either side of the roadway.

In addition to the criteria established earlier in this chapter, priorities for these routes are based primarily on connectivity to destinations and estimated recreational use, since there are assumed to be no other implementation challenges associated with signage installation.

Class III Bike Route



Project Phasing and Prioritization

In addition to the criteria established earlier in this chapter, priorities for these routes are based primarily on estimated use, since there are assumed to be no other implementation challenges associated with signage installation.

First Phase: Implement Class III “Signage Only” Bikeways with other Class I, II and III Bikeways: Because these routes require signage only, substantial cost savings may be achieved by implementing them concurrently with other Class I, II and III bikeways that require similar signage.

Second Phase: Implement Class III “Signage Only” Bikeways: Because these bikeways do not require repaving, they have little relationship to the County’s or Caltrans’ planned Capital Improvements Projects schedule or other projects. Remaining segments should be bundled as a stand-alone bike route signage project.

Basis for Cost Estimates

The cost estimates provided later in this chapter were calculated per-mile based on the recommended number in the California MUTCD. Labor, contingency and design and administrative costs are also included.

4.3.5 Wayfinding and Share the Road Signage

A wayfinding system is a “map on the street” that overlays the bike network. It requires additional signage along Class I pathways and Class II bicycle lanes. All Class III bike routes already have such signage. Wayfinding enhances a bikeway network by providing bicyclists directional assistance to facilities and significant local and regional destinations. All bikeway signage and striping on public roadways in Calaveras County should conform to the signage identified in the 2006 California

MUTCD, which provides specific information on the type and location of signing for bicycle facilities in California. All signs should convey the “Three Ds”: Direction, Destination and Distance.

In addition, the County should integrate installation of Share the Road signs into the wayfinding system as needed on rural “Class III” roads. A Share the Road sign should be placed immediately adjacent to all “Welcome to Calaveras County” signage on any bikeway to alert visitors that they should expect to see cyclists on the roadway. Other locations such as narrow and/or winding sections of road or corners with poor sightlines should also be prioritized for Share the Road sign placement.



Example Bike Route Signs

Wayfinding and Signage Project Phasing

Wayfinding signage should be implemented simultaneously with development of Class I, II and III bicycle facilities. Project development for these facilities should identify nearby destinations and determine exact sign content and placement to direct riders to those destinations. “Share the Road” signs should be installed as needed with the development of all Class III facility types.

Basis for Cost Estimates

Concept-level cost estimates for wayfinding and Share the Road signage have been factored into the per-mile cost for all types of Class I, II and III bikeways. The exact number and design of signs to be installed would be determined during the design phase of each bikeway project.

4.3.6 Long-term Bikeways

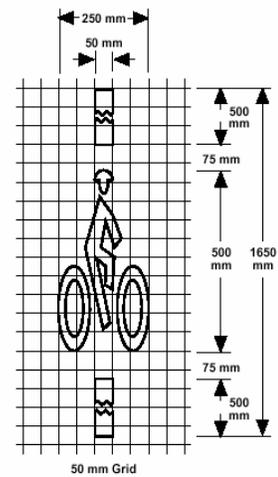
These routes were identified through a past public process or by the current Steering Committee as important to the countywide bicycle network but are a much lower priority than the segments classified as Class I, II or III. In some cases these are roads which are in need of major maintenance, are unpaved but passable by all-terrain bicycle or have not yet been developed as a paved roadway. Because these projects require further development no cost estimates are possible at this time. They are included for future planning purposes only.

Long-term Bicycle Routes Project Phasing

The County should evaluate and reprioritize these routes at a future time, possibly when the bicycle plan is next updated. If these routes are developed into paved roadways prior to the next update, the need for a specific type of bicycle accommodation should be addressed at that time.

4.3.7 Bicycle Detection

Bicycle detection at signalized intersections can provide a substantial safety improvement for both cyclists and motorists. This is particularly true in rural areas where there are few signalized intersections but signals are found at crossings of state highways and other major roads. The following recommendations are intended to expand typical induction loop detection to include bicycles along designated routes and at key intersections by providing calibration of existing detectors, installation of new detectors and installation of stencils. Especially important for developing areas of Calaveras County, these recommendations should be incorporated into new development requirements wherever signalized intersections are proposed.



Caltrans Standard Plan 24C bicycle detection marking

General Recommendations

Regularly Calibrate Loop Detectors

While detector loops facilitate faster and more convenient motorist trips, if they aren't calibrated properly or stop functioning, they can frustrate cyclists waiting for signals to change, unaware that the loop is not detecting their bicycle. Where appropriate, the County should ensure that all existing loops are tested annually and are calibrated and operable for bicycle users.

Develop Policy of Installing Bicycle-Calibrated Loop Detectors at Signalized Intersections

The County should develop a policy of installing bicycle-calibrated loop detectors at intersections along designated bike routes as they are repaved. For new installation it is recommended that the County use Type D for lead loops in all regular travel lanes shared with bicycles. Within bike lanes it is recommended that the County install Bicycle Loop Detectors (BLDs) using narrow Type C loops. Types A (6' square) and E (unmodified circle) are not bike-sensitive in their center. More details regarding bicycle loop detectors can be found in Appendix A.

Apply Pavement Stenciling Above All Bicycle Loop Detectors

Since most cyclists, as well as motorists, do not know how loop detectors work, all detector loops expected to be used by cyclists should be marked by a pavement stencil that shows cyclists where to stop to activate the loop. Educational materials distributed by the County should describe how to activate bicycle loop detectors. Stencils should be repainted when needed.

Basis for Cost Estimates

Cost estimates provided for these improvements were developed using **Table 4-1** and are based on the assumption that 50% of the locations have functional loop detectors that can be recalibrated to detect bicycles that such improvements would be implemented as a stand-alone project. An assessment of existing conditions either through a field visit or review of available maintenance records would be required to develop specific cost estimates. Cost savings may be available if implemented as a part of a larger roadway improvement project.

Table 4-1: Bicycle Detection Estimated Costs*

Item	Approximate Cost Per Leg of Intersection
Calibrate existing loops	\$300
Calibrate or re-zone existing video detection	\$150
Install new detection loops	\$3,000
Install new zoned video detection	\$5,000
Install stencils	\$100

* Costs based on US DOT information available as of April 2007.

Project Phasing

First Phase: Recalibrate Existing Loop Detectors and Install Stencils as a Part of Routine Roadway and Signal Maintenance: Many of the intersections listed in this project may already have detection in the form of existing induction loops. By taking advantage of this existing infrastructure and adding inexpensive bicycle stencils per Caltrans Chapter 1000 design guidelines in the detection zones, Calaveras County can achieve a cost-effective near-term bicycle improvement.

Second Phase: Install New Loop Detectors and Stencils as a Part of Roadway Maintenance or Other Repair Projects: Some bikeway intersections may not have existing detection, or detection on bike lane streets may exist in the motorized travel lane but not in the bike lane or outside edge of the curb lane. In these cases, additional detection devices may be required. Cost savings may be possible if these improvements are coordinated with routine repaving or with pavement excavation such as scheduled utility work.

Third Phase: Install Stencils and Either Recalibrate Existing Detectors or Install New Detectors as a Stand-alone Project: The final phase of this project consists of remaining locations which cannot be addressed in Phases I and II above.

4.3.8 Bicycle Parking

The goal of the bicycle parking project is to provide a cost-effective way to procure racks in bulk for distribution to the entire County and to provide bicycle rack specification and guidelines for installation that will ensure quality control for bicycle parking. More detailed information regarding bicycle parking is provided in the Design Guidelines appendix. This project provides for improved bike parking based on destinations already identified in the plan.

Basis for Cost Estimates

Costs for bicycle parking provided in this report were developed using **Table 4-2** are based on anticipated minimum needs for bicycle parking. These estimates include racks only. Further assessment of proposed bicycle parking sites would be necessary to determine the need for concrete pads, shelters or lockers.

Table 4-2: Estimated Bicycle Parking Unit Costs

Item	Unit	Estimated Cost*
Inverted "U" Bicycle Rack (capacity 2 bicycles)	EA	\$250
Concrete Pad (6'X7' pad anchors two racks)	EA	\$840
Shelter (protects 3 Inverted U racks)	SF	\$2000
Bicycle Locker (capacity 2 bicycles)	SF	\$1200

*includes installation

Project Phasing

Phase I: Install Bicycle Parking as a Part of Larger Project: Many of the locations described in this Plan may be able to be installed as a part of streetscape, roadway or redevelopment projects.

Phase II: Install Bicycle Parking as a Stand-alone Project: Remaining locations and additional locations identified by staff and the community can be installed as a stand-alone project using grant funding eligible for bicycle project expenditures.

4.4 Countywide Bicycling Conditions and Specific Recommended Improvements

The following section describes existing conditions and specific improvements that address countywide needs for bicycling.

4.4.1 Nonmotorized Open Space Access Project

With Big Trees State Park, Stanislaus National Forest, public lands such as New Hogan and New Melones Reservoirs, Bear Valley Ski Resort and numerous local parks and open space areas, Calaveras is a major open space and outdoor recreation destination. While a great natural resource, these lands also attract increased seasonal traffic flows resulting in congestion and degradation of the experience for residents and visitors alike. A key strategy being pursued at the national level by entities such as the National Park Service are measures to eliminate or minimize the use of vehicles to access these destinations.

Public surveys and the Steering Committee have identified access to open space by bicycle as a high priority. Scenic road cycling routes throughout the County include Sheep Ranch Road, Mountain Ranch Road, Highway 4 and Murphys Grade Road. Specific trailhead access areas for off-road mountain biking are found south of Angels Camp at New Melones Reservoir, along the northern boundary of the County at the Pardee and Comanche Reservoirs along the Mokelumne River, in Avery and west of Arnold along Highway 4 within Stanislaus National Forest. In addition, numerous other opportunities exist within Calaveras County for hiking and other forms of outdoor recreation.

This project would encourage access by bicycle to nonmotorized trails (i.e. hiking, bicycling or horseback riding) through two main components: identifying roadway improvements needed to encourage safe bicycling to open space and bicycle parking at trailheads. As of this writing, existing conditions for bicycle parking at trailheads in Calaveras County are unknown. Cost estimates in

Table 4-3 are based on the estimated bicycle parking costs given above, assuming parking for four bicycles at each trailhead. Cost estimates do not include routes to access trailheads, since those are already included in the bikeway network cost estimates above. Costs given are preliminary and could change based on evaluation of trailheads and need for additional locations.

Table 4-3: Nonmotorized Open Space Access Bicycle Parking Cost Estimates

Jurisdiction	Trailhead Name	Location	Users Allowed	Bicycle Parking Needed	Cost per location*
East Bay Municipal Utilities District	Camanche South Shore Staging Area	Pardee Watershed, north of Valley Springs	Hikers, Equestrians	Yes	\$1,200
East Bay Municipal Utilities District	Campo Seco Staging Area	Comanche South Shore Reservoir, Northwest of Valley Springs	Hikers, Equestrians	Yes	\$1,200
East Bay Municipal Utilities District	Glory Whole/Angels Creek	New Melones Reservoir	Hikers, Cyclists, Equestrians	Yes, at hiking trailheads only	\$1,200
East Bay Municipal Utilities District	New Hogan Mountain Bike trailheads	New Hogan Reservoir, SE of Valley Springs	All users	Yes, at hiking trailheads only	\$1,200
CA State Parks	Big Trees State Park (various trails)	Dorrington	Hikers	Yes	\$1,200
US Forest Service	Stanislaus National Forest (various trailheads)	Avery/Arnold; Highway 4 corridor between Avery and County Line	Hikers, Mountain Bikers	Yes, at hiking trailheads only	\$1,200
Total Estimated Cost					\$7,200

*Costs assume one location with two racks anchored to one concrete pad.

4.4.2 Countywide Bikeway Facilities

As described earlier in this chapter, currently there are few existing facilities outside the developed areas of Calaveras County. One of the County's established Class I Pathways is found in the Mountain Ranch area, along Mountain Ranch Road. **Table 4-4** details this existing segment and proposed bikeways improvement for this and other areas. These improvements address the need for travel between communities or for longer recreational routes.

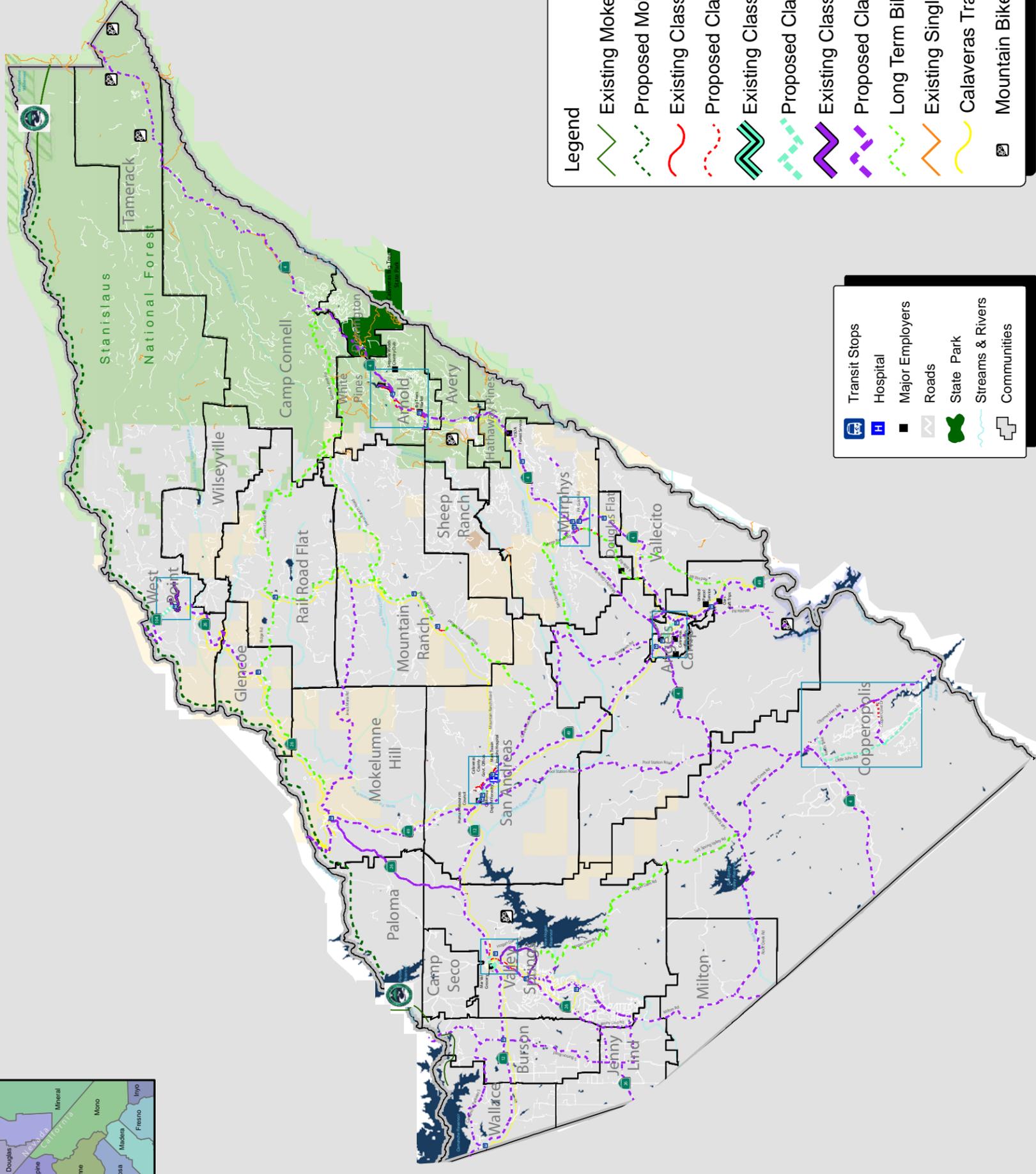
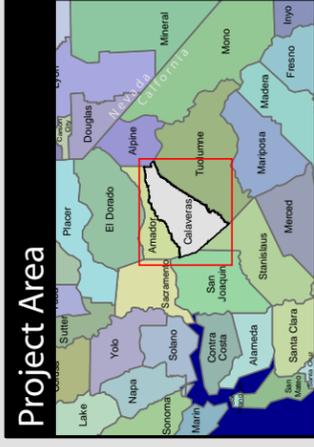
A, B and C priorities are based on a number of factors including Steering Committee input, input from the public and an analysis of number of users served, feasibility, availability of funding through various sources and connectivity needs based on existing conditions. Additional prioritization criteria specific to each project type was provided in the improvement type descriptions in the previous section.

Table 4-4: Countywide Existing and Proposed Bikeway Facilities

Segment Name	Improvement Type	From	To	Community	Length (Miles)	Cost	Priority
Mountain Ranch Road Pathway	Existing Class I - Pathway	Michel Street	Garibaldi Street	Mountain Ranch	0.45	N/A	N/A
Murphy's Grade Rd.	Class III - Rural Roads Imp Maj	City Limits	Main St. (Murphys)	A.C./Murphys	6.27	\$999,400	B
Highway 4	Class III - Rural Roads Imp Maj	Murphy's Grade Rd.	Blagen Rd.	Murphys/White Pines	12.07	\$1,923,700	B
Calaveritas Road	Class III - Rural Roads Imp Maj	San Andreas	Dogtown	San Andreas/Dogtown	0.88	\$139,500	C
Dogtown Rd.	Class III - Rural Roads Imp Maj	San Domingo Rd.	Calaveritas Rd.	Murphys/Dogtown	5.25	\$837,600	C
Dogtown Rd.	Class III - Rural Roads Imp Maj	City Limits	San Domingo Rd.	Dogtown	5.30	\$844,200	C
Highway 4	Class III - Rural Roads Imp Mod	Rolleri Bypass Rd.	Murphy's Grade Rd.	A.C/ Murphys	7.22	\$737,600	A
Camanche Pkwy.	Class III - Signage Only	Burson Rd.	Camanche Res.	Burson	2.67	\$4,800	A
Burson Rd.	Class III - Signage Only	Highway 12	Camanche Pkwy.	Burson	1.12	\$2,000	A
Burson Rd.	Class III - Signage Only	Highway 26	Highway 12	Burson / Jenny Lind	5.69	\$10,200	A
Jenny Lind Rd.	Class III - Signage Only	Milton Rd.	Highway 26	Jenny Lind	1.67	\$3,000	A
Highway 12	Class III - Signage Only	Camanche Pkwy.	Burson Rd.	Burson/Wallace	5.69	\$10,200	B
Pool Station Rd.	Class III - Signage Only	Highway 4	Highway 49	Copper / S.A.	12.38	\$22,200	B
Highway 26	Class III - Signage Only	Highway 12	Highway 49	Mokelumne Hill	7.73	\$13,900	B
Highway 49	Class III - Signage Only	Pool Station Road	Highway 26	SA/ValSprgs	7.26	\$13,000	B
Highway 4	Class III - Signage Only	Dorrington	County Line East	Dorrington/Camp Connell	23.36	\$42,000	B
Highway 26	Class III - Signage Only	Jenny Lind Road	County Line	Jenny Lind	4.71	\$8,400	B
Jesus Maria Road	Class III - Signage Only	Highway 26	Railroad Flat Road	M Hill/Mountain Ranch	5.96	\$10,700	B
Highway 49	Class III - Signage Only	San Andreas	Angels Camp	SA/AC	9.29	\$16,700	B
Rock Creek Rd.	Class III - Signage Only	Salt Spring Valley Rd.	Milton Rd.	Copper / Milton	8.42	\$15,100	C
Milton Rd.	Class III - Signage Only	Rock Creek Rd.	Stanislaus County	Jenny Lind	1.39	\$2,500	C
Milton Rd.	Class III - Signage Only	Rock Creek Rd.	Baldwin St.	Jenny Lind	5.59	\$10,000	C
Milton Rd.	Class III - Signage Only	Jenny Lind Rd.	Highway 26	Jenny Lind	2.26	\$4,000	C
Milton Rd.	Class III - Signage Only	Baldwin St.	Jenny Lind Rd.	Jenny Lind	0.29	\$500	C
Highway 49	Class III - Signage Only	Highway 26	Amador County Line	Moke Hill/Amador	3.06	\$5,500	C
Totals					145.95	\$5,677,500	

Calaveras County Bicycle Plan - Existing & Proposed Facilities

FIGURE 4-2



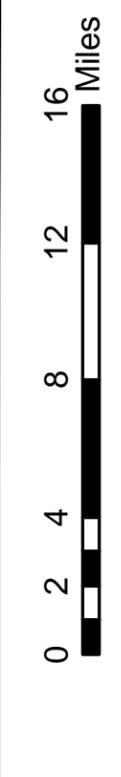
Legend

- Existing Mokelumne Coast to Crest Trail
- Proposed Mokelumne Coast to Crest Trail
- Existing Class I/Multi-use Pathway
- Proposed Class I/Multi-use Pathway
- Existing Class II Bike Lanes
- Proposed Class II Bike Lanes
- Existing Class III Bike Routes
- Proposed Class III Bike Routes
- Long Term Bikeway
- Existing Single Track Trails
- Calaveras Transit Routes
- Mountain Bike Trail Areas

- Transit Stops
- Hospital
- Major Employers
- Roads
- State Park
- Streams & Rivers
- Communities



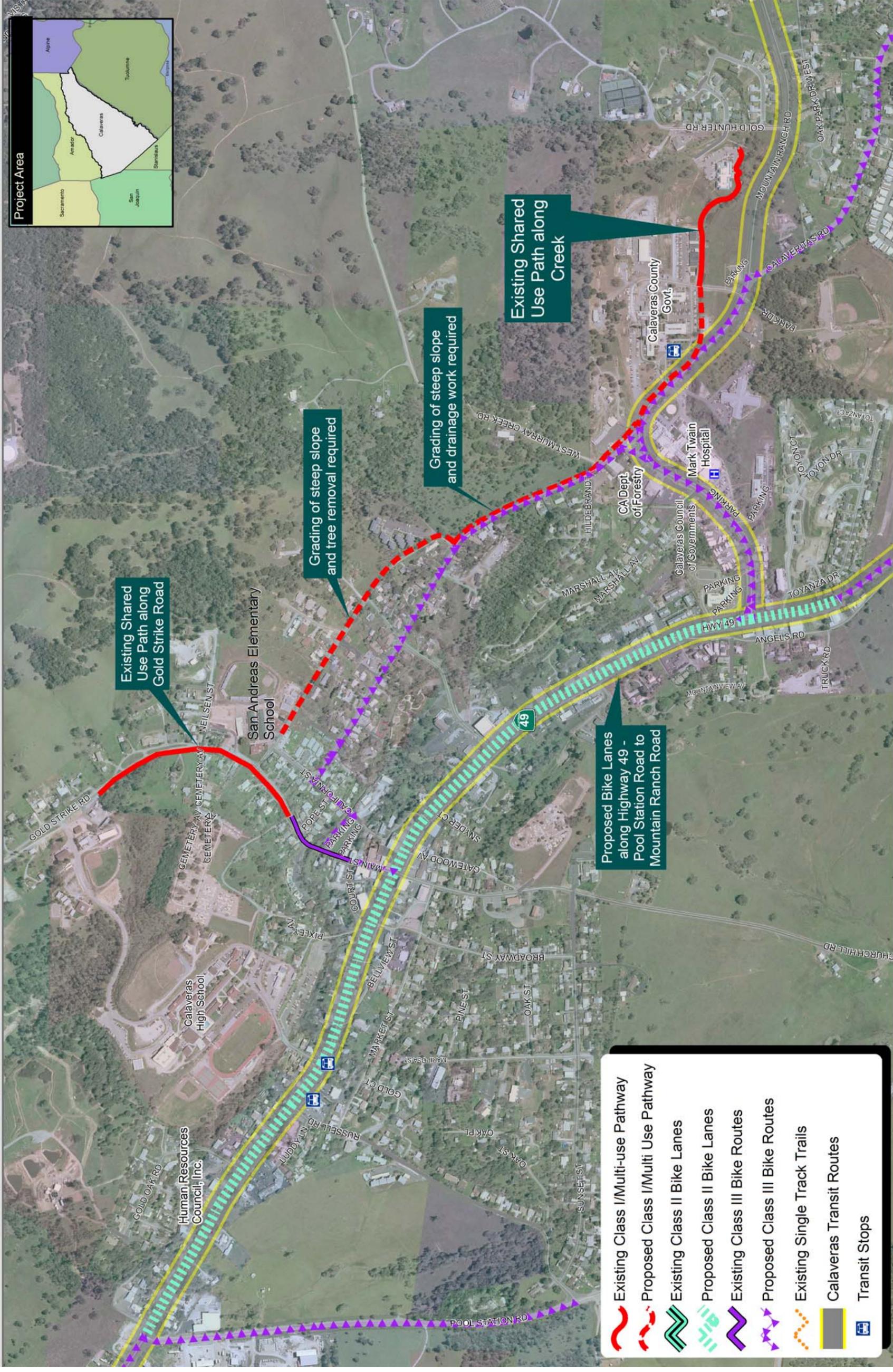
Map
Final



Data Provided by: Calaveras County, California
Map Prepared by: Alta Planning+Design, June 2007

Calaveras County Bicycle Plan - San Andreas

FIGURE 4-3



4.5 Local Bicycling Conditions and Specific Recommended Improvements

The following section describes improvements with some of the local community areas of Calaveras County. These improvements address the need for travel within communities to destinations such as work, school, shopping or recreation and are examples of the types of improvements that could be implemented in any developed or developing area of the County. A, B and C priorities are based on a number of factors including Steering Committee input, input from the public and an analysis of number of users served, feasibility, availability of funding through various sources and connectivity needs based on existing conditions. Additional prioritization criteria specific to each project type was provided in the improvement type descriptions in the previous section.

4.5.1 San Andreas

Located along Highway 49 (Main Street), San Andreas is home to the Calaveras County government offices. Four of Calaveras' top 14 major employment locations are in San Andreas including the Calaveras County Government offices, Mark Twain St. Joseph's Hospital, the California Department of Forestry office and the Human Resources Council office. Other destinations include San Andreas Elementary School and Calaveras High School as well as businesses located in the commercial and retail areas along Highway 49. Existing facilities include pathways along San Andreas Creek and Gold Strike Road and bicycle parking at the County Government offices.

Proposed bicycle improvements include:

- San Andreas Creek Class I Pathway Extension: The existing pathway along the creek near downtown San Andreas would be extended as a sidepath along Pope Street and Lewis Avenue to provide access to both the Calaveras County Government buildings and San Andreas Elementary School. The pathway would also provide important recreation and commuting opportunities for those residents living in the neighborhood along this corridor. Construction of the pathway would require some right-of-way acquisition as well as grading and drainage in key areas. Proximity to the roadway would likely require installation of a solid barrier between the path and road along some segments.
- Class II Bicycle Lanes and Class III Bicycle Routes: Other proposed bicycle improvements include Class II Bike Lanes on Highway 49 from Pool Station Road to Mountain Ranch Road and a Class III Bicycle Route on Highway 49 north from the proposed bicycle lanes.
- Bicycle Parking: Destinations such as the commercial area of Highway 49, schools, the hospital, major employers and transit stops.

Table 4-5: San Andreas Existing and Proposed Bikeway Facilities

Segment Name	Improvement Type	From	To	Length (Miles)	Cost	Priority
Gold Strike Road/HS Pathway	Existing Class I - Pathway	Gold Strike HS	Court Street	0.43	N/A	N/A
San Andreas Creek Pathway	Existing Class I - Pathway	Govt Center Roads	County Govt Offices	0.22	N/A	N/A

Segment Name	Improvement Type	From	To	Length (Miles)	Cost	Priority
SA Creek- Elem Sch Pathway	Class I Pathway	Gold Hunter Road	East End Existing Pathway	0.10	\$64,100	B
SA Creek- Elem Sch Pathway	Class I Pathway	Lewis Avenue	Pope Street	0.30	\$192,400	B
SA Creek- Elem Sch Pathway	Class I Pathway	Pope Street	Govt Center Rd	0.20	\$128,300	B
SA Creek- Elem Sch Pathway	Class I Pathway	Pope Street	California	0.40	\$256,500	B
Highway 49	Class II Bicycle Lanes	Pool Station Road	Mountain Ranch Road	1.40	\$24,600	A
Highway 49	Class III - Signage Only	Pool Station Road	San Andreas	3.70	\$6,700	C
Totals				6.75	\$672,600	

Table 4-6: San Andreas Proposed Bicycle Parking

Location	Recommended Number Inverted "U" Type Racks	Cost Per Location
Elementary School	4	\$1,000
High School	4	\$1,000
CCOG Offices	1	\$250
Mark Twain Hospital	2	\$500
Transit Stops (1 rack per stop)	3	\$750
Highway 49 Commercial destinations (TBD)	7	\$1,750
Baseball fields	2	\$500
Total	8	\$5,750

4.5.2 Angels Camp

Located south of San Andreas on Highway 49 (Main Street) Angels Camp is Calaveras County’s only incorporated city. The County Office of Education is located here as well as three schools: Bret Harte Union High School, Mark Twain Union Elementary School and Angels Creek Community Day School. Other retail and commercial destinations are found along Highway 49. Recreational destinations within and near Angels Camp include Utica Park, the Greenhorn Creek Golf Resort, the Calaveras County Fairgrounds and New Melones Reservoir. Existing facilities include a Class II Bicycle Lane on Stanislaus Avenue.

Proposed improvements include:

- Class II Bicycle Lanes and Class III Bicycle Routes: Class II Bike Lanes on Highway 49 from Highway 4 (on the north) to Highway 4 (on the south) through the commercial and downtown area of Angels Camp. Class III Rural Roads Improvement Project Bicycle Route on Highway 49 extending south to New Melones Reservoir access along Glory Hole Road, including shoulder improvements where feasible to improve safe recreational access.
- Bicycle Parking: Parking would be provided at key destinations such as the commercial area of Highway 49, schools, parks and transit stops.
- Bicycle Detection: Existing facilities should be upgraded as necessary based on further feasibility and project development.

Table 4-7: Angels Camp Existing and Proposed Bikeway Facilities

Segment Name	Improvement Type	From	To	Length (Miles)	Cost	Priority
Stanislaus Avenue Bike Lanes	Existing Class II - Bicycle Lane	Main Street (Highway 49)	San Joaquin Ave	0.12	N/A	N/A
Highway 49	Class III - Rural Roads Imp Maj	Glory Hole Rd.	City Limits	0.98	\$156,100	A
Murphy's Grade Rd.	Class III - Rural Roads Imp Maj	Highway 49	City Limits	0.32	\$51,300	B
Glory Hole Rd.	Class III - Rural Roads Imp Mod	Highway 49	Campground	2.12	\$216,200	A
Rolleri Bypass Rd.	Class III - Signage Only	Highway 4	City Limits	0.66	\$1,100	B
Highway 4	Class III - Signage Only	Pool Station Rd.	City Limits	5.69	\$10,200	B
Whittle Road	Class III - Signage Only	Highway 49	County Line	0.46	\$800	C
Highway 49	Class III - Signage Only	New Melones Res.	Glory Hole Rd.	4.10	\$7,300	C
Totals				14.46	\$443,300	

Table 4-8: Angels Camp Candidate Bicycle Detection Locations

Intersections	Community	Number of Legs of Intersection with Bikeway on Approach
Highway 4 and Highway 49 (north)	Angels Camp	3
Highway 4 and Murphys Grade Road	Angels Camp	3
Total Number of Legs		6

Table 4-9: Angels Camp Proposed Bicycle Parking

Location	Recommended Number Inverted "U" Type Racks	Cost Per Location
Brett Hart Union High School	4	\$1,000
Mark Twain Union Elementary School	4	\$1,000
Longs Shopping Center	1	\$250
Historic Downtown Area	2	\$500
Highway 49 Commercial destinations (TBD)	3	\$750
Transit Stops (1 rack per stop)	3	\$750
Angels Camp Memorial Veterans District Pool	2	\$500
Utica Park	2	\$500
Angels Creek Community Day School	1	\$250
Total	9	\$5,500

Calaveras County Bicycle Plan - Angels Camp

FIGURE 4-4





PLANNING + DESIGN



CALAVERAS COUNCIL
of GOVERNMENTS



0 0.2 0.4 0.8 Mile

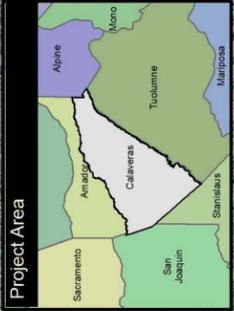
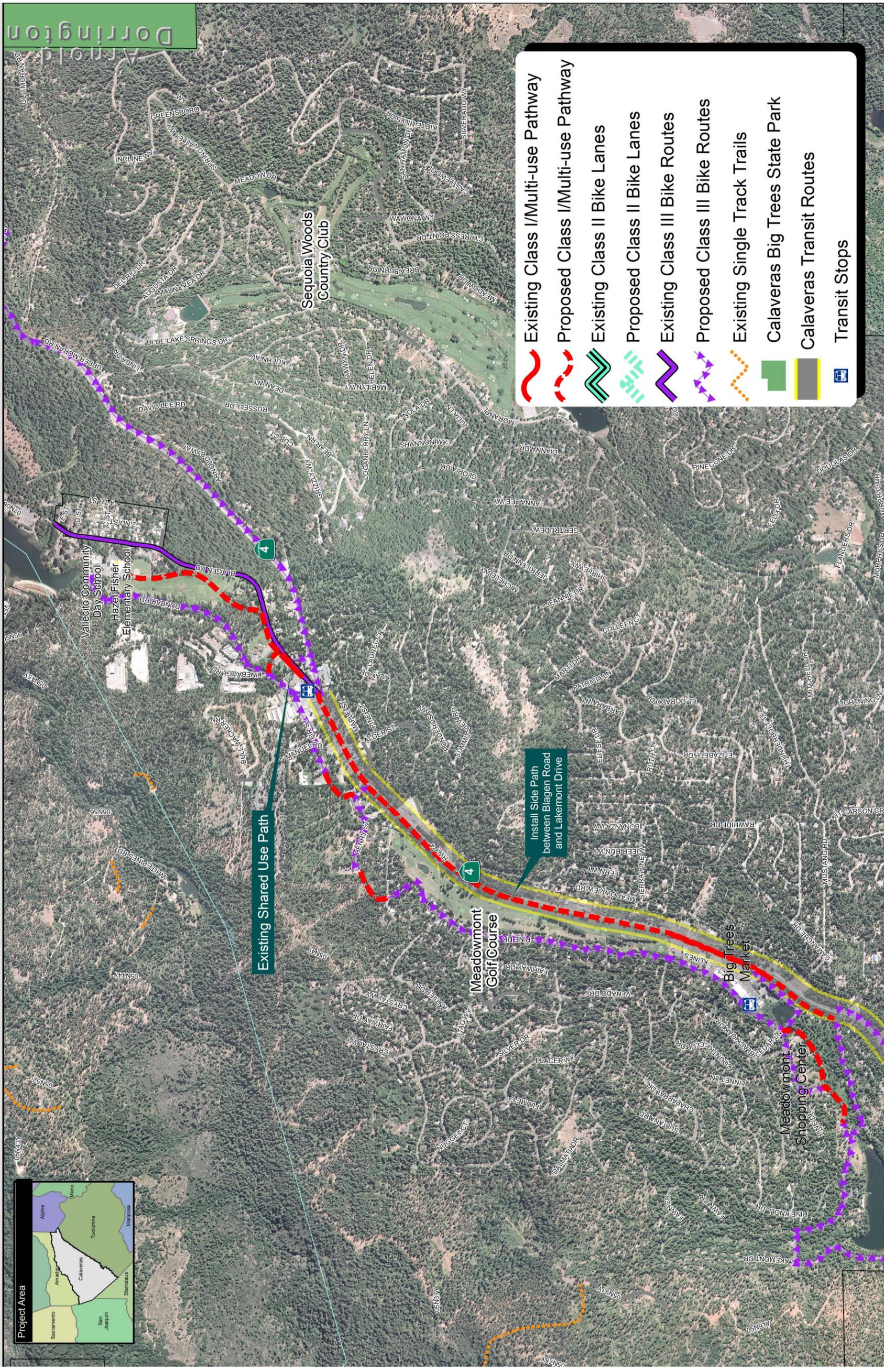


Aerial Photo
AUSA

Data Provided by: Calaveras County
Map Prepared by: Alta Planning+Design, June, 2007

Calaveras County Bicycle Plan - Arnold

FIGURE 4-5



Arnold



Data Provided by: Calaveras County
Map Prepared by: Alta Planning+Design, June, 2007

4.5.3 Arnold

Located along the Highway 4 corridor near the eastern end of the county, the greater Arnold area encompasses White Pines, Hathaway Pines, Avery and Blue Lake Springs. Arnold offers many outdoor recreation opportunities for bicycling, is the gateway to Big Trees State Park and provides access to the Stanislaus River and features other destinations such as the Meadowmont Golf Course and the Railroad Museum. The area has a number of important local destinations such as Hazel Fischer School, the Big Trees Market and many other businesses along Highway 4 in downtown and the library/post office area. Arnold is a major destination for visitors from outside the county, with many seasonal and vacation homes in the area. Existing facilities include a short segment of Class I pathway in front of the post office and bike route signage, both along Blagen Road.

Proposed improvements include:

- **Cowell Creek Corridor Project:** Short pathway segments connect together longer segments of on-street bike route to form a continuous facility that connects the Big Trees Shopping Center at the South to Hazel Fischer Elementary School at the North along quiet residential back roads. This project was a top priority among survey respondents as well as members of the steering committee.
- **Highway 4 Sidepath:** A multi-use sidepath is proposed to connect the two commercial areas of Arnold along Highway 4, providing accommodation for bicycles and pedestrians. While this connection is a high priority for local residents, the priority for this project is lower due to implementation challenges working with Caltrans and constructing a pathway within the potentially constrained highway right of way.
- **Bicycle Parking:** Parking is proposed at major destinations including the shopping and commercial areas, schools, post office, library and transit stops.

Table 4-10: Arnold Existing and Proposed Bikeway Facilities

Segment Name	Improvement Type	From	To	Length (Miles)	Cost	Priority
Blagen Rd/Arnold Post Office Pathway	Existing Class I - Pathway	Arnold Post Office	Henry Street	0.04	N/A	N/A
Blagen Rd Bike Route	Existing Class III - Signage Only	Highway 4	E Street	0.78	N/A	N/A
Cowell Creek Pathway	Class I Pathway	Green Meadow Court	Cedar Lane	0.30	\$192,400	A
Cowell Creek Pathway	Class I Pathway	Willow Street	Oak Circle	0.10	\$64,100	A
Cowell Creek Pathway	Class I Pathway	Oak Court	Pine Drive	0.10	\$64,100	A
Vallecito School Pathway	Class I Pathway	Henry Street	Vallecito Day School	0.60	\$384,800	B
Sidepath Along Highway 4	Class I Pathway	Blagen Road	Country Club Drive	1.20	\$769,600	C
Lakemont Drive	Class III - Signage Only	Lakewood Drive	End	1.05	\$1,800	A
Fir Street	Class III - Signage Only	Willow Street	Dunbar Road	0.15	\$200	A
Cedar Lane	Class III - Signage Only	Pine Drive	Highway 4	0.25	\$400	A
Sequoia Street/Stagg Drive	Class III - Signage Only	Willow Street	Manual Road	0.17	\$300	B
Highway 4	Class III - Signage Only	Blagen Road	Dorrington	5.57	\$10,000	B
Dunbar Rd.	Class III - Signage Only	Hazel Fischer	Fir St.	0.61	\$1,000	B

Segment Name	Improvement Type	From	To	Length (Miles)	Cost	Priority
		School				
Pine Drive	Class III - Signage Only	Henry Street Connector	Lakewood Drive	1.27	\$2,200	B
Henry Street	Class III - Signage Only	Henry Street Connector	Highway 4	0.06	\$100	C
Dunbar Road	Class III - Signage Only	Henry Street Connector	Linebaugh Road	0.07	\$100	C
Avery Hotel Road	Class III - Signage Only	Highway 4	Moran Road	0.13	\$200	A
Totals				12.44	\$1,491,700	

Table 4-11: Arnold Proposed Bicycle Parking

Location	Recommended Number Inverted "U" Type Racks	Cost Per Location
Highway 4 Commercial destinations (TBD)	3	\$750
Transit Stops (1 rack per stop)	3	\$750
Big Trees Market	2	\$500
Arnold Post Office	1	\$250
Library	2	\$500
Hazel Fisher Elementary School	3	\$750
Vallecito Community Day School	1	\$250
Avery Post Office	1	\$250
Avery Middle School	3	\$750
Total	8	\$4,750

4.5.4 Murphys

Located between Arnold and Angels Camp on Highway 4, Murphys is an important crossroads for countywide bicycle travel. The historic downtown Main Street has numerous businesses and restaurants. Adjacent to Highway 4 is the Albert Michelson School as well as a large residential area. Nearby Ironstone Vineyards is an important destination for locals as well as visitors from outside the community and the county. In addition to a myriad of other vineyards, other destinations include Feeney Park, the skate park and Mercer Caverns.

Proposed improvements include:

- **Murphys-Ironstone Vineyard Pathway:** This pathway was requested by the steering committee as one way to reduce congestion in the busy downtown Murphys area and surrounding highways on the weekend. This pathway would allow visitors to the vineyard to park near downtown Murphys, enabling them to patronize local businesses and walk or bike to the Vineyard through a scenic area. Funding for the pathway could be accomplished in partnership with the vineyard, due to the business this facility would generate as an attraction to surrounding communities and counties. Similar successes have been achieved in the Napa County wine region with on-road wine tours by bicycle.
- **Class II Bicycle Lanes and Class III Bicycle Routes:** Class II Bike Lanes on Highway 4 from Pennsylvania Gulch Road to Tom Bell as part of a Safe Routes to Schools project. Class III

Bike routes on key roads including those that provide access to the school and the downtown area.

- **Bicycle Parking:** Parking would be provided for destinations such as the downtown area, the school and transit stops. A “bicycle parking lot” area is planned at the eastern end of Main Street, to discourage bicyclists from riding or parking along busy downtown sidewalks.
- **Bicycle Detection:** Existing facilities should be upgraded as necessary based on further feasibility and project development.

Table 4-12: Murphys Proposed Bikeway Facilities

Segment Name	Improvement Type	From	To	Length (Miles)	Cost	Priority
Ironstone Pathway	Class I Pathway	Main Street	Ironstone Vineyards	1.50	\$962,000	B
Highway 4	Class II Bicycle Lanes	Pennsylvania Gulch Road	Tom Bell Road	0.40	\$7,030	A
Scott St.	Class III - Signage Only	Six Mile Rd.	Main St. (Murphys)	0.50	\$900	A
Main St. (Murphy's)	Class III - Signage Only	Murphy's Grade Rd.	Highway 4	0.50	\$900	A
Skunk Ranch Road	Class III - Signage Only	Pennsylvania Gulch	Vineyard Terrace	0.40	\$700	B
Six Mile Road	Class III - Signage Only	Algiers St	Vallecito Bluffs Rd.	2.00	\$3,600	B
Algiers St.	Class III - Signage Only	Main St. (Murphys)	Six Mile Rd.	0.50	\$900	C
Pennsylvania Gulch Rd.	Class III - Signage Only	Highway 4	Skunk Ranch Road	1.21	\$2,100	C
Totals				7.01	\$978,200	

Table 4-13: Murphys Candidate Bicycle Detection Locations

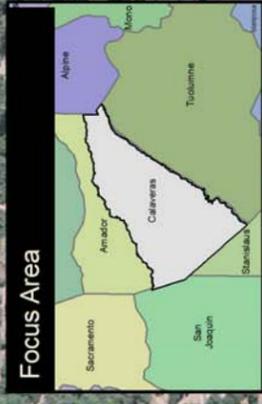
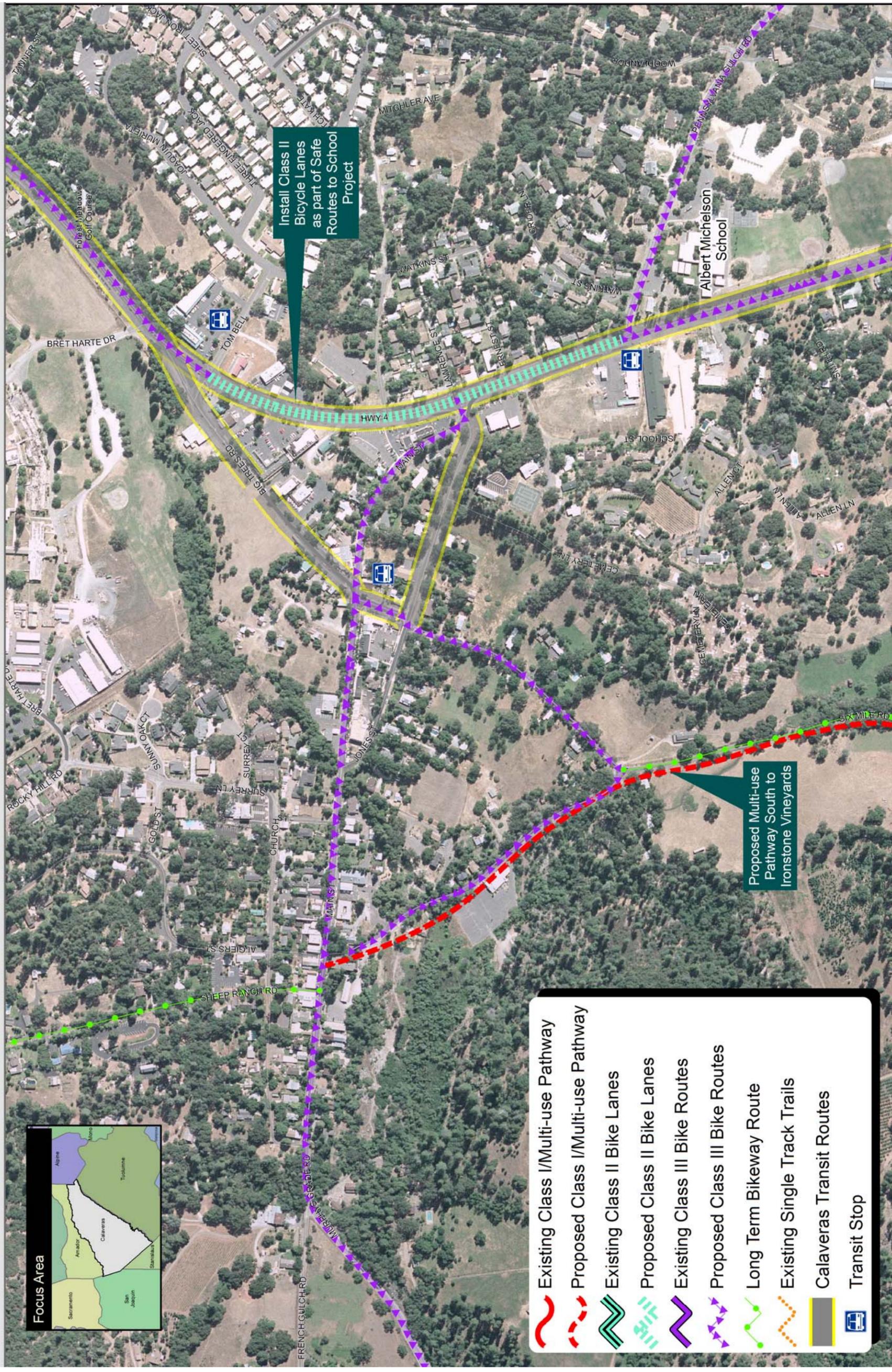
Intersections	Community	Number of Legs of Intersection with Bikeway on Approach
Highway 4 and Tom Bell Road	Murphys	4
Total Number of Legs		4

Table 4-14: Murphys Proposed Bicycle Parking

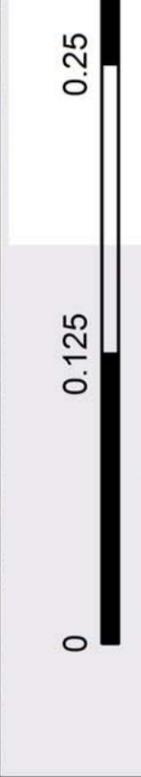
Location	Recommended Number Inverted “U” Type Racks	Cost Per Location
Albert Michelson School	3	\$750
Main Street Area Commercial destinations (TBD)	5	\$1,250
Transit Stops (1 rack per stop)	3	\$750
Total	11	\$2,750

Calaveras County Bicycle Plan - Murphys

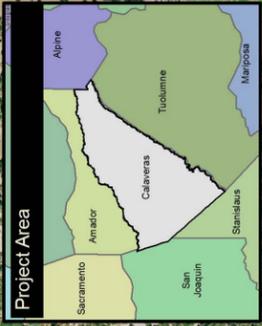
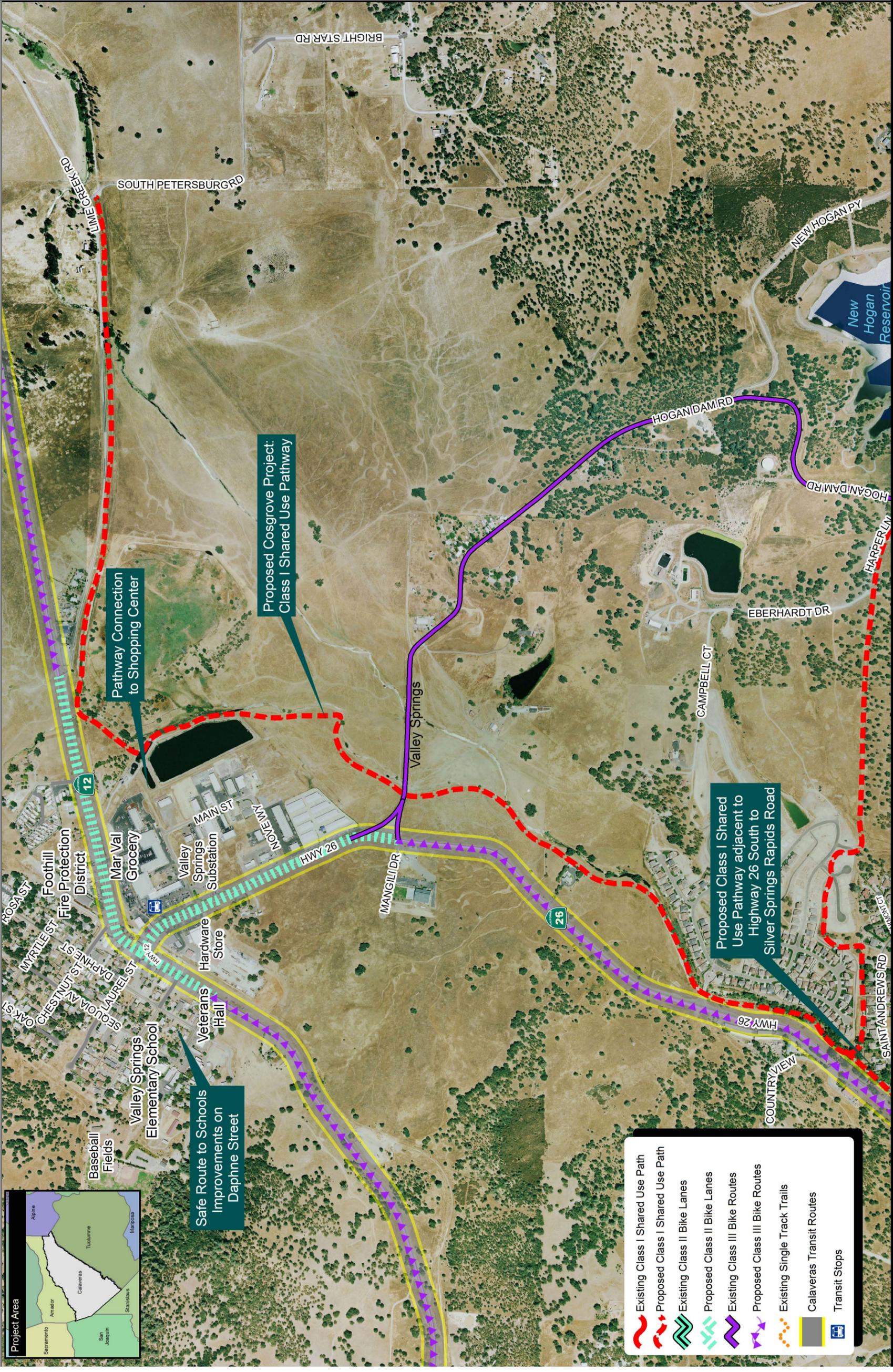
FIGURE 4-6



- Existing Class I/Multi-use Pathway
- Proposed Class I/Multi-use Pathway
- Existing Class II Bike Lanes
- Proposed Class II Bike Lanes
- Existing Class III Bike Routes
- Proposed Class III Bike Routes
- Long Term Bikeway Route
- Existing Single Track Trails
- Calaveras Transit Routes
- Transit Stop



Calaveras County Bicycle Plan - Valley Springs Commercial District FIGURE 4-7



4.5.5 Valley Springs

Located at the intersection of Highways 12 and 26, historic Valley Springs has a small commercial/residential district including the Mar Val Grocery and Valley Springs Elementary School. The greater Valley Springs area includes some of the most quickly developing areas of housing, such as those around Rancho Calaveras. The Cosgrove pathway project, a key opportunity corridor for nonmotorized recreation and travel passes through this area. Nearby destinations include La Contenta Golf Course and New Hogan Reservoir.

Proposed improvements include:

- **Cosgrove Bicycle and Pedestrian Pathway:** This pathway project in the Valley Springs area will ultimately connect the existing downtown shopping area to existing and proposed new development as well as providing important access opportunities to nonmotorized recreation at Hogan Dam Reservoir. As a result of the Steering Committee and survey process, a spur of this pathway has also been proposed to run parallel to Highway 26 for school access purposes.
- **Class II Bicycle Lanes and Class III Bicycle Routes:** Class II Bike Lanes on Highway 26 from Highway 12 to Hogan Dam Road and on Highway 12 from Lime Creek Road to Pine Street through the downtown commercial area. Class III Bicycle Routes with shoulder improvements as feasible along Highways 12 and 26, providing access from the existing and expanding housing developments in these areas.
- **Bicycle Parking:** Parking would be provided at destinations such as shopping centers, the post office, the school and transit stops.

Table 4-15: Valley Springs Proposed Bikeway Facilities

Segment Name	Improvement Type	From	To	Length (Miles)	Cost	Priority
Cosgrove Pathway	Class I Pathway	Hogan Dam Road	South Petersburg Road	3.40	\$2,180,600	A
Cosgrove Highway 26 Spur	Class I Pathway	South Petersburg Road	Silver Springs Rapid Road	1.40	\$897,900	B
Highway 12	Class II Bicycle Lanes	Lime Creek Road	Pine Street	0.60	\$10,500	A
Highway 26	Class II Bicycle Lanes	Highway 12	Hogan Dam Road	0.50	\$8,700	B
Highway 12	Class III - Rural Roads Imp Maj	Burson Rd.	Highway 26	3.66	\$583,000	B
Highway 26	Class III - Rural Roads Imp Mod	Baldwin Road	Highway 12	4.60	\$469,800	A
Highway 26	Class III - Rural Roads Imp Mod	Garner Pl.	Baldwin Rd.	3.38	\$345,000	A
Highway 26	Class III - Rural Roads Imp Mod	Jenny Lind Rd.	Garner Pl.	0.56	\$57,500	B
Highway 12	Class III - Signage Only	Valley Springs	Highway 49	7.90	\$14,200	C
Totals				25.99	\$4,567,500	

Table 4-16: Valley Springs Proposed Bicycle Parking

Location	Recommended Number Inverted “U” Type Racks	Cost Per Location
Mar Val Grocery Shopping Center	2	\$500
Transit Stops (1 rack per stop)	1	\$250
Hardware Store Shopping Center	1	\$250
Highway 12/26 Commercial destinations (TBD)	2	\$500
Valley Springs Elementary School	3	\$750
Post Office	1	\$250
Total	10	\$2500

4.5.6 Copperopolis

Located south of the intersection of Highway 4 and OByrnes Ferry Road, this area is one of the most quickly developing communities in Calaveras County. Historic Copperopolis has several destinations such as the Copperopolis Elementary School, McCarty’s Copper Inn general store and the Community Center. The majority of new development is focused outside the area of historic Copperopolis. Other area destinations include shopping centers at the intersection of Copper Cove Drive and OByrnes Ferry Road as well as the future Copper Cove High School location, Saddle Creek Golf Course and Lake Tulloch.

Proposed improvements include:

- **Copperopolis Sidepaths:** These pathways would connect the existing and planned developments along Copper Cove Road to the existing shopping centers and developments near the intersection of Copper Cove and OByrnes Ferry Road. A sidepath would allow users to walk or bicycle for recreation or to restaurants and shops. Some right-of-way acquisition may be necessary, although construction of the pathway could be financed through future development.
- **Class II Bicycle Lanes and Class III Bicycle Routes:** Class II Bike Lanes are proposed on Little John Road where paved width exists to sign, stripe and stencil such facilities. Class II is proposed as a part of planned reconstruction of Reed’s Turnpike. A Class III bike routes with shoulder improvements is proposed along Copper Cove Drive to provide access to the future High School site as well as connect with other Class I and II facilities.
- **Bicycle Parking:** Parking would be provided for destinations such as shopping centers, schools and recreational destinations.
- **Bicycle Detection:** Bicycle detection should be provided with the development of new traffic signals in the area, as indicated.

Table 4-17: Copperopolis Proposed Bikeway Facilities

Segment Name	Improvement Type	From	To	Length (Miles)	Cost	Priority
Copper Cove Drive Pathway	Class I Pathway	Black Creek Drive	OByrnes Ferry Road	0.90	\$577,200	A
OByrnes Ferry Road Pathway	Class I Pathway	Copper Cove Drive	Spangler Lane	0.20	\$128,300	B
Little John Rd	Class II Bicycle Lanes	Kiva Drive	Reeds Turnpike Rd	5.32	\$93,400	A
Reeds Turnpike Rd	Class II Bicycle Lanes	Little John Road	OByrnes Ferry Rd	1.26	\$22,100	C
Copper Cove Drive	Class III - Rural Roads Imp Maj	Little John Rd.	Black Creek Dr.	1.65	\$263,200	B
OByrnes Ferry Rd.	Class III - Signage Only	Copper Cove Drive	Highway 4	3.87	\$6,900	A
Highway 4	Class III - Signage Only	OByrnes Ferry Rd.	Salt Spring Valley Rd.	3.99	\$7,100	A
OByrnes Ferry Rd.	Class III - Signage Only	Tulloch Res.	Copper Cove Drive	4.06	\$7,300	B
Highway 4	Class III - Signage Only	Salt Spring Valley Rd.	Pool Station Rd.	0.86	\$1,500	B
Salt Springs Valley Rd.	Class III - Signage Only	Rock Creek Rd.	Highway 4	5.76	\$10,300	C
Rock Creek Rd.	Class III - Signage Only	Highway 4	Salt Spring Valley Rd.	5.96	\$10,700	C
Highway 4	Class III - Signage Only	OByrnes Ferry Rd.	Stanislaus County	8.10	\$14,500	C
Totals				41.93	\$1,143,000	

Table 4-18: Copperopolis Candidate Bicycle Detection Locations

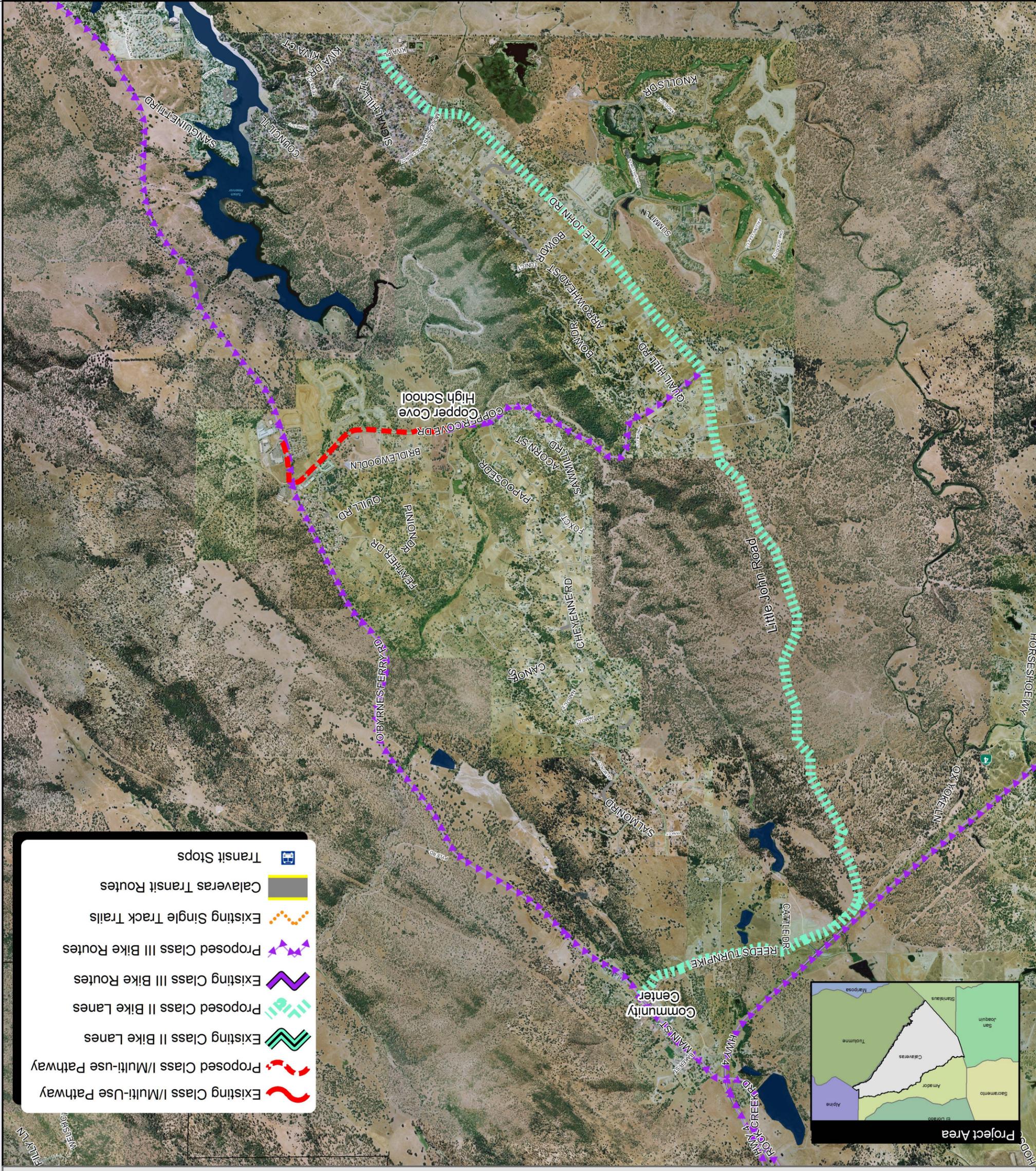
Intersections	Community	Number of Legs of Intersection with Bikeway on Approach
OByrnes Ferry Road and Copper Cove Drive (future signalization)	Copperopolis	3
Total Number of Legs		3

Table 4-19: Copperopolis Proposed Bicycle Parking

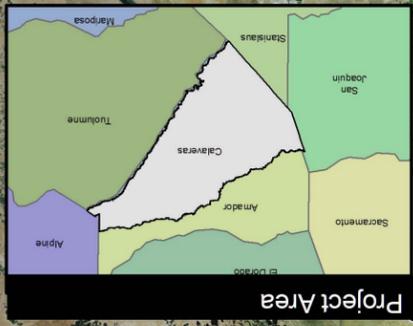
Location	Recommended Number Inverted "U" Type Racks	Cost Per Location
Elementary School	3	\$750
Community Center	2	\$500
McCarty's Copper Inn	1	\$250
Lake Tulloch	2	\$500
Copper Cove High School (future site)	3	\$750
OByrnes Ferry Rd/Copper Cove Dr Shopping Centers	4	\$1,000
Total	15	\$3,750

Calaveras County Bicycle Plan - Copperopolis

FIGURE 4-8



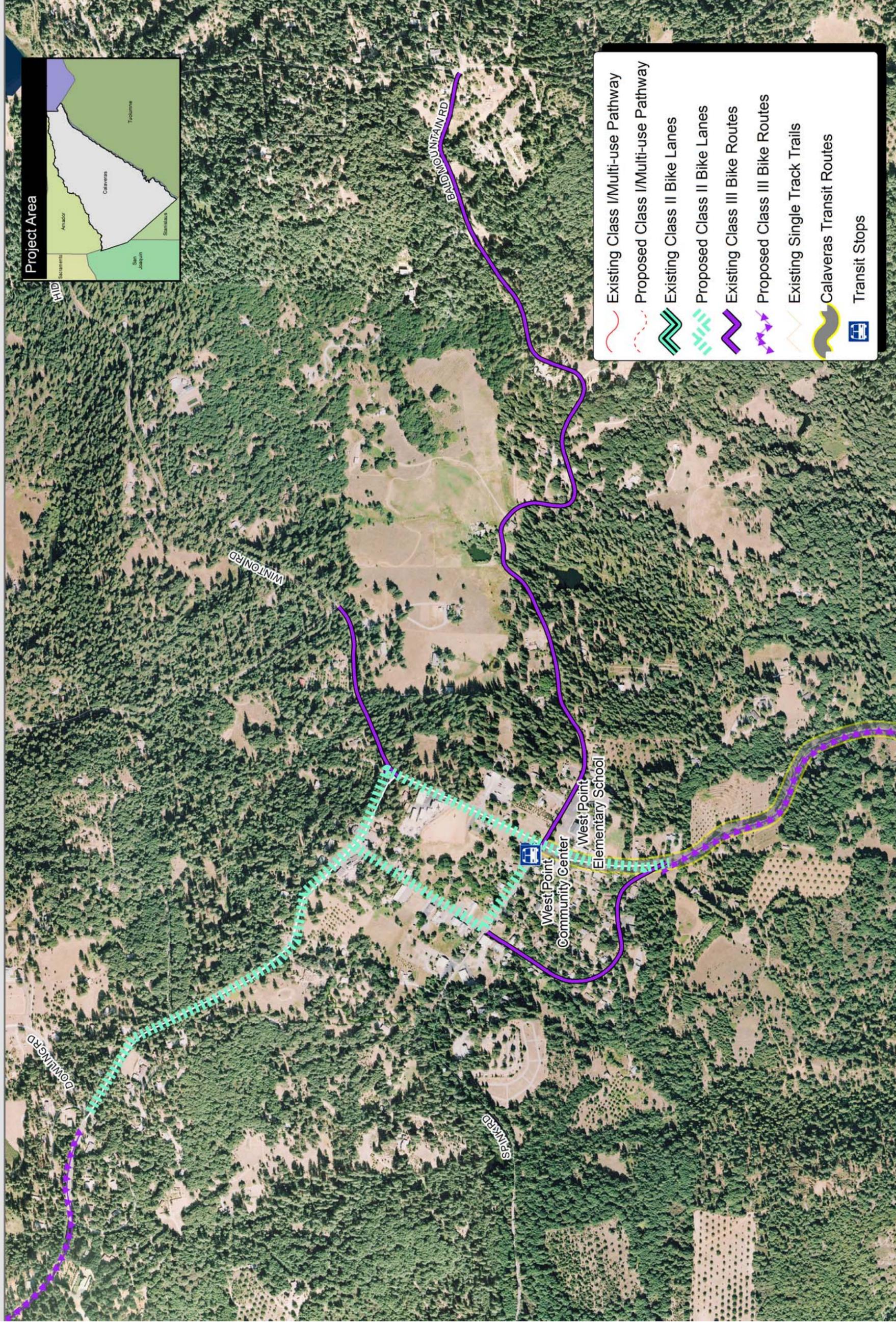
- Existing Class I/Multi-Use Pathway
- Existing Class II Bike Lanes
- Proposed Class II Bike Lanes
- Existing Class III Bike Routes
- Proposed Class III Bike Routes
- Existing Single Track Trails
- Calaveras Transit Routes
- Transit Stops



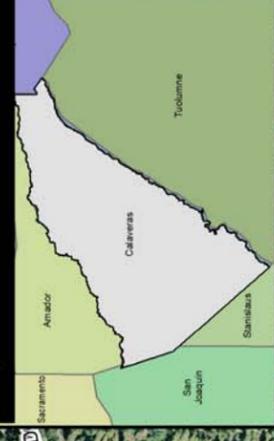
Data Provided by: Calaveras County
 Alta Planning + Design, June, 2007

Calaveras County Bicycle Plan - West Point

FIGURE 4-9



Project Area



4.5.7 West Point

Located along Highway 26 in the northeast section of the County is scenic, coniferous West Point. Downtown West Point serves as host to most of the community and is the site of West Point Elementary School, the Community Town Hall, Library, Veterans Hall and County Clinic. Two forks of the Mokelumne River are also located very near to West Point, the north and middle. The Tiger Creek section of the Mokelumne is becoming a popular seasonal destination for whitewater kayakers. Mountain biking is also popular on the many logging and back roads in this part of the County although few are formally designated as biking facilities. There is little commercial activity in the area and the State Highway lacks shoulders to accommodate safe bicycle travel. West Point has three existing bicycle route streets connecting to the developed area of the community.

Proposed improvements include:

- Class II Bicycle Lanes and Class III Bicycle Routes: Class II Bike Lanes are proposed on Highway 26/104 from Snead Road to Railroad Flat Road and on Main Street from Highway 26/104 to Pine Street to access Main Street and other central destinations more safely. A Class III leading north from town provides an important regional connection.
- Bicycle Parking: Parking would be provided for destinations such as shopping, the community center, the school and transit stops.

Table 4-20: West Point Existing and Proposed Bikeway Facilities

Segment Name	Improvement Type	From	To	Length (Miles)	Cost	Priority
Bald Mountain Road Bike Route	Existing Class III - Signage Only	Highway 26	Jurs Road	1.36	N/A	N/A
Main Street Bike Route	Existing Class III - Signage Only	Highway 26	Smith Lane	0.37	N/A	N/A
Winton Road/Highway 26 Bike Route	Existing Class III - Signage Only	Skull Flat Road	Highway 26	0.33	N/A	N/A
Highway 26/104	Class II Bicycle Lanes	Snead Road	Railroad Flat Road	1.90	\$33,300	A
Main Street	Class II Bicycle Lanes	Highway 26/104	Pine Street	0.30	\$5,200	B
Highway 26	Class III - Signage Only	West Point	North County Line	2.70	\$4,800	C
Totals				6.96	\$43,500	

Table 4-21: West Point Proposed Bicycle Parking

Location	Recommended Number Inverted "U" Type Racks	Cost Per Location
Community Center	2	\$500
Transit Stops (1 rack per stop)	1	\$250
West Point Elementary School	4	\$1,000
Main St. Commercial destinations (TBD)	2	\$500
Total	9	\$2,250

4.6 Implementation

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

1. Adoption of this Plan by the Board of Supervisors, Planning Commission, City of Angels and CCOG.
2. Completion of a Feasibility Study, which typically includes preliminary design, environmental analysis, alternatives analysis, related agency coordination, local staff, or by consultants. The final product should yield a preferred design alternative, environmental clearance, and an accurate cost estimate. At this stage any project involving a State Highway or Caltrans right-of-way should have appropriate encroachment permits and maintenance agreements in place, prior to funding, final design and construction.
3. Approval of the preferred project by the local governing board, including acceptance of any environmental documentation. Local agency typically must commit to providing 10% of the project cost, and assume responsibility for the cost, operation, and liability for the project.
4. Funding applied for and obtained for the project. Typically, all environmental work must be completed, local approval obtained, and the right-of-way in public control.
5. Completion of final Plans, Specifications, and Estimates (P,S&E). Once completed, bids for construction services can be obtained.
6. Construction of the Project.

4.6.1 Implementation Liability

Liability whether for damage to property or personal injury is a legitimate concern for any public agency considering installation of bicycle facilities. As with any transportation improvement, the best way to ensure against the threat of lawsuits is to maintain a reasonable level of “design immunity” by installing facilities that meet accepted design guidelines, in this case Caltrans Chapter 1000. For more information, see the following resources:

Course On Bicycle And Pedestrian Transportation, “Section 8 Tort Liability And Risk Management”.
Washington, DC: US DOT Federal Highway Administration;
http://safety.fhwa.dot.gov/ped_bike/univcourse/swless08.htm

English, J.W. (1986). *Liability Aspects of Bikeway Designation*. Washington, DC: Bicycle Federation of America

4.6.2 Environmental Protection

Bicycling is one of the most environmentally sound forms of travel possible, and directly helps reduce problems associated with motor vehicle use such as air, noise, and water pollution, over-development, and ground covering by asphalt. At the same time, some of the more ambitious pathway proposals in this Plan may have environmental impacts of their own. Some of these may be

direct, such as impacts to local biological or geological resources, and others may be indirect, such as impacts of unleashed dogs in habitat areas. All of the projects in this Plan will require additional feasibility analysis, which will include environmental analysis as needed once the project is deemed feasible and a preliminary design developed. Once completed, the bicycle improvements in this Plan will help to make Calaveras one of the most environmentally sound communities in the country.

5.0 PROGRAMS

This chapter describes the existing safety, education and encouragement efforts currently taking place in Calaveras County and proposes new and expanded education and promotion activities.

5.1 Existing Bicycle Safety Education Programs

Education is an important element in increasing bicycling while also improving safety. Although the most effective way to improve the safety of cycling is simply to improve the quality of Calaveras County's bikeway facilities, bikeways cannot do it alone. There is also a need for proper education of both youth and adult cyclists and motorists. Education of all roadway user groups can address specific collision types common for bicycles. Among others, safety and education programs can take the form of Safe Routes to Schools in-class instruction, adult "Street Skills" classes that teach safe bicycle operation and "Share the Road" outreach that targets both motorists and cyclists equally. More details about proposed programs can be found in subsequent chapters.

The following table summarizes bicycle safety and education programs that are currently offered in Calaveras County.

Table 5-1: Bicycle Safety Education Programs

Agency	Contact Person	Program Functions
CHP - San Andreas	Mike Maddox Public Affairs Officer 209-754-3541	The Program organizes safety courses that include roadways and bicycle safety. The safety courses are mainly offered at grade schools (K-8) upon request.
Angels Camp Police Department	Sergeant Chris Villegas 209-754-6500	The Explorers group, which consists of students 18 years or younger and interested in law enforcement, organized a 2005 Child Safety Fair. The program will sell bike helmets at a reduced rate and distribute coloring books and pamphlets related to bicycle safety. The department is hoping that this will be an annual event.

5.2 Existing Encouragement and Support Activities

5.2.1 Encouragement and Support Groups

Calaveras County is home to at least one bicycle repair, supply and rental shop, the Mountain Peddler, located in Angels Camp. The Golden Chain bicycle club is also based in Calaveras County.

5.2.2 Events

Events are an excellent way to promote awareness of bicycling for transportation and recreation. The following events have been held locally in Calaveras County.

- The Sierra Century Bicycle Ride, sponsored by the Sacramento Wheelmen, was held in Calaveras County for the first time on June 2, 2007. The Ironstone Winery was the base, with routes that followed County roads from the start point in Murphys to the community of West Point and back. Over 1,800 riders participated, following either a 50-mile or 104-mile route.
- The Death Ride course covers the traditional five mountain passes which include both sides of Monitor Pass, both sides of Ebbetts Pass, and the final climb up the east side of Carson Pass. Cyclists will start and finish at Turtle Rock Park, two miles north of Markleeville, and pass through Calaveras County on Highway 4. The ride covers 129 miles and 15,000+ feet of climbing.
- The “Party Pardee” Ride is a 100K metric century (65 mile) or 50K event through the rolling foothills of Amador and Calaveras Counties, passing Lake Camanche and Pardee Reservoir, through Campo Seco, and Valley Springs. The ride is organized by the Sacramento Bike Hikers and promoted with the Sacramento Wheelmen.

5.3 Proposed Education, Enforcement and Encouragement Programs

The Calaveras County Bicycle Plan provides both physical recommendations (such as bike lanes) and program recommendations. Some of the program recommendations, such as changes in zoning requirements for bicycle parking, have already been covered by policies recommended in Chapter 2. This section covers future efforts to educate bicyclists and motorists, and efforts to increase the use of bicycles as a form of transportation and recreation.

5.3.1 Safe Routes to Schools

Safe Routes to Schools (SR2S) is a program designed to reduce local congestion around schools by increasing the number of children walking and biking to school. A SR2S program can integrate health, fitness, traffic relief, environmental awareness and safety under one program. It is an opportunity for parents to work closely with their children’s school, the community and the local government to create a healthy lifestyle for children and a safer and cleaner environment for all

residents. Details about SR2S funding opportunities are found in the funding section of this report. A typical program has four components:

Encouragement - Events, contests and promotional materials are incentives that encourage children and parents to try walking and biking.

Education - Classroom lessons teach children the skills necessary to navigate through busy streets and persuade them to be active participants in the program. Safe Routes Instructors have developed curriculum which includes an on the bike instruction, walking instruction and lessons on health and the environment.

Engineering - A Certified Traffic Engineer typically assists schools in developing a plan to provide a safer environment for children to walk and bike to school. This plan includes engineering improvements, enforcement enhancements and outreach to drivers.

Enforcement – Working with local law enforcement, the program increases police presence around the schools while developing public education efforts that increase drivers' awareness of the behaviors that endanger children. This type of program can be funded through either outside grants or local funding sources.

Walking or biking to school gives children a taste of freedom and responsibility, allows them to enjoy the fresh air and the opportunity to get to know their neighborhood, while arriving at school alert, refreshed and ready to start their day. However, only 13% of America's children walk or bike to school (US Centers for Disease Control and Prevention). A successful Safe Routes to Schools program improves the health and safety of pupils and the surrounding neighborhood. Students increase their physical activity, potentially improving their alertness and behavior. California studies have shown that children who are physically active perform better academically (California Department of Education, December 2002)

Communities elsewhere in California have experienced reduced traffic congestion, reduced collision in and around schools, and decreased speed in residential neighborhoods. Children learn valuable traffic safety skills and responsibility and more people of all ages are able to walk and bike in the neighborhood as a result of improved access.

5.3.2 Adult Education

Many less-experienced adult bicyclists are unsure how to negotiate intersections and ride with traffic on streets and roads. Adult education efforts, such as those described in Table 5-1, which are sponsored by government agencies, major employers, local bike enthusiasts or other volunteer groups, can help address this need. An annual or semi-annual class could be offered free of charge to provide information on how to avoid collisions and citations, how to ride safely, improve visibility and the legal rights of cyclists. Instructors from elsewhere in the state or qualified local instructors or volunteers could teach this class to cyclists, tailored to local needs and issues. Future expansion ideas could include adding on-the-bike training.

5.3.3 Share the Road Outreach Program

Public agencies such as the National Highway Traffic Safety Administration have begun to address the lack of safety education targeting both bicyclists and motorists. Many cyclists are not aware of basic road etiquette when sharing the road with drivers. Many motorists mistakenly believe that bicyclists do not have a right to ride in travel lanes and that they should be riding on sidewalks. Many motorists also do not understand the concept of ‘sharing the road’ with bicyclists, or why a bicyclist may need to ride in a travel lane if there is no shoulder or it is full of gravel or potholes.

It is recommended that Calaveras County develop a Share the Road outreach program to benefit both motorists and cyclists. The Share the Road program could be a partnership between local cycling groups and Calaveras County Law Enforcement. Calaveras County or CCOG could seek annual funding to develop the following elements of the Share the Road Program, implemented in a phased approach:

Share the Road Presentation: In development by NHTSA, this PowerPoint presentation is being developed as a part of a national toolkit for public outreach and includes information on the rights and responsibilities of cyclists and drivers and focuses on ways each group can behave courteously to avoid collisions. The presentation will be available from NHTSA for presentation to the public and as a training device, for example, for law enforcement or transit drivers. The presentation is designed to be used by volunteer presenters who are not experts in the field of bicycle safety.

Checkpoints: At checkpoints, uniformed police, highway patrol officers and volunteers from local cycling groups stop drivers and cyclists and provide them with share the road safety flyers. These checkpoints are usually targeted at areas with high cycling use or a high number of collisions or reports of close calls and perceived danger to cyclists. Checkpoints, while coordinated with County law enforcement, are typically implemented at a local level.

5.3.4 Other Support Programs and Activities

Without community support, a bicycle plan lacks the key resources that are needed to ensure implementation over time. While the County Public Works Department may be responsible for designing and constructing physical improvements, strategies for community involvement will be important to ensure broad-based support--which translates into political support--which can help secure financial resources. This may require involvement by the private sector in raising awareness of the benefits of bicycling and walking range from small incremental activities by non-profit groups, to efforts by the largest employers in the County. Specific programs are described below.

Earn-a-Bike Program

Sponsored by local cycling groups and bicycle shops in partnership with schools and other public agencies, this program could be modeled on the existing national ‘Trips for Kids’ program. The program’s dual mission is to train young people (ages 12 to 18) how to repair bicycles as part of a summer jobs training effort or after-school program. Bicycles are an excellent medium to teach young people the fundamentals of mechanics, safety, and operation. Young people can use these skills to maintain their own bicycles, or to build on related interests. The program is should be staffed by volunteers from local cycling organizations and bicycle shops, who can help build an

interest in bicycling as an alternative to driving. The seed money to begin this program often comes from a local private funding source. The proposal submitted to this source should clearly outline the project objectives, operating details, costs, effectiveness evaluation, and other details. The bicycles themselves could be derived from unclaimed stolen bicycles from the police or sheriff's departments, or from donated bicycles. The program would need to qualify as a Section 501c(3) non-profit organization to offer tax deductions.

Community Adoption

Programs to have local businesses and organizations 'adopt' a Class I pathway similar to the adoption of segments of the Interstate Highway system are emerging across the country. Small signs located along the pathway would identify supporters, acknowledging their contribution. Support would be in the form of an annual commitment to pay for the routine maintenance of the pathway, which in general costs about \$8,500 per mile. Parks & Recreation or other groups may administer this program.

Bicycle Events

Events are an excellent way to encourage increased bicycling. Events would need to be sponsored by local businesses, and involve some promotion, insurance, and development of adequate circuits for all levels of riders. It is not unusual for these events to draw up to 1,000 riders, which could bring some additional revenue into the area. The County can assist in developing these events by acting as a co-sponsor, and expediting and possibly underwriting some of the expense of—for example—police time. The County should also encourage these events to have races and tours that appeal to the less experienced cyclist. For example, in exchange for local governments underwriting part of the costs of a race, the event promoters could hold a bicycle repair and maintenance workshop for kids, short fun races for kids, and/or a tour of the route lead by experienced cyclists who could show less experienced riders how to safely negotiate County streets.

Examples of possible events in Calaveras County include:

- Bicycling booth at Calaveras Jumping Frog Festival
- Sierra Century ride promotion
- Glory Hole Mountain Bike Race promotion

Employer Incentives

Incentives to encourage employees to try bicycling to work include providing bicycle lockers and shower facilities, providing convenient and safe bicycle parking for employees and customers, and offering incentives to employees who commute by bicycle by allowing for more flexible arrival and departure times. The County may offer incentives to employers to institute these improvements through air quality credits, lowered parking requirements, reduced traffic mitigation fees, or other means.

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

County, possibly in conjunction with local cycling groups and with California Bike to Work Week (May 14-18 2007), could help promote a local bike-to-work day. Bike-to-school days could be jointly sponsored with the School District, possibly in conjunction with bicycle education programs that are a part of Safe Routes to Schools.

6.0 FUNDING

There are a variety of potential funding sources including local, state, regional, and federal funding programs as well as private sector funding that can be used to construct the proposed bicycle improvements. Most of the federal, state, and regional programs are competitive and involve the completion of extensive applications with clear documentation of the project need, costs, and benefits. Local funding for bicycle projects typically comes from Transportation Development Act (TDA) funding, which is prorated to each County based on the return of gasoline taxes, population and roadway miles.

6.1 Federal Funds

The primary federal source of surface transportation funding—including bicycle facilities—is SAFETEA-LU, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users. SAFETEA-LU is the fourth appropriation in a series of Federal transportation funding bills. The \$286.5 billion SAFETEA-LU bill, passed in 2005, authorizes federal surface transportation programs for the five-year period between 2005 and 2009. SAFETEA-LU information can be found at: www.fhwa.dot.gov/safetealu/index.htm

Federal funding is administered through the California Department of Transportation (Caltrans) and the Regional Transportation Planning Agency (RTPA). Most, but not all, of the funding programs are transportation (versus recreation) oriented, with an emphasis on (a) reducing auto trips and (b) providing inter-modal connections. Funding criteria often requires quantification of the costs and benefits of the system (such as saved vehicle trips and reduced air pollution), proof of public involvement and support, California Environmental Quality Act (CEQA) compliance, and commitment of some local resources. In most cases, SAFETEA-LU provides matching grants of 80 to 90 percent – but prefers to leverage other funds at a lower rate.

Specific federal funding programs under SAFETEA-LU include:

Congestion Mitigation and Air Quality (CMAQ) — Funds projects that are likely to contribute to the attainment of national ambient air quality standards. Funds are available for projects and programs in areas that have been designated in non-attainment or maintenance for ozone, carbon monoxide or particulate matter.

Recreational Trails Program — \$370 million nationally through 2009 for non-motorized trail projects, administered by the California Department of Conservation.

Safe Routes to School Program — \$612 million nationally through 2009, administered by the State of California.

Transportation, Community and System Preservation Program — \$270 million nationally over five years (2006-2011) reserved for transit oriented development, traffic calming and other projects that

improve the efficiency of the transportation system, reduce the impact on the environment, and provide efficient access to jobs, services and trade centers.

Federal Lands Highway Funds — Federal Lands Highway funds may be used to build bicycle facilities in conjunction with roads and parkways at the discretion of the agency charged with administration of the funds. The projects must be transportation-related and tied to a plan adopted by the State and MPO. Approximately \$1 billion dollars are available nationally for Federal Lands Highway Projects through 2009.

The following FHWA funding sources can also be used for bicycle activities:

Surface Transportation Program (STP) (23 USC 133) — Construction, reconstruction, rehabilitation, resurfacing, restoration, and operational improvements for highways and bridges including construction or reconstruction necessary to accommodate other transportation modes. Construction of pedestrian walkways and bicycle transportation facilities; nonconstruction projects for safe bicycle use; modify public sidewalks to comply with the Americans with Disabilities Act. Projects do not have to be within the right-of-way of a Federal-aid highway.

Surface Transportation Program Transportation Enhancements Set-aside (TE) (23 USC 133(d)(2)) — 12 specific activities included in the definition of Transportation Enhancement Activities in 23 USC 101(a)(35). 3 of the 12 eligible categories are pedestrian and bicycle facilities, safety and education for pedestrians and bicyclists, and rail-trails.

Highway Safety Improvement Program (HSIP) (23 USC 148) — To achieve a significant reduction in traffic fatalities and serious injuries on public roads. Improvements for pedestrian or bicyclist safety. Construction and yellow-green signs at pedestrian-bicycle crossings and in school zones. Identification of and correction of hazardous locations, sections, and elements (including roadside obstacles, railway-highway crossing needs, and unmarked or poorly marked roads) that constitute a danger to bicyclists and pedestrians. Highway safety improvement projects on publicly owned bicycle or pedestrian pathways or trails.

Transportation, Community, and System Preservation Program (TCSP) (S-LU Sec. 1117, formerly TEA-21 Sec. 1221) — Provides funding for a comprehensive program including planning grants, implementation grants, and research to investigate and address the relationships among transportation and community and system preservation plans and practices and examine private sector based initiatives. Pedestrian and bicycle projects meet several TCSP goals, are generally eligible for the TCSP program and are included in many TCSP projects.

6.2 Statewide Funding Sources

The State of California uses both federal sources (such as the Recreational Trails Program) and its own budget to fund projects and programs. In some cases, such as Safe Routes to School, Office of Traffic Safety, and Environmental Justice grants, project sponsors apply directly to the State for funding. In others, sponsors apply to a regional agency.

6.2.1 Bicycle Transportation Account

<http://www.dot.ca.gov/hq/LocalPrograms/bta/btaweb%20page.htm>

The State Bicycle Transportation Account (BTA) is an annual statewide discretionary program that is available through the Caltrans Bicycle Facilities Unit for funding bicycle projects. Available as grants to local jurisdictions, the emphasis is on projects that benefit bicycling for commuting purposes. Due to the passage of AB1772 in the year 2000, the BTA had \$7.2 million available between 2000 and 2005. Following the year 2005, the fund dropped to \$5 million per year. In funding cycle 2007/2008, there are \$5 million in statewide BTA funds available. The local match must be a minimum of 10% of the total project cost.

6.2.2 Recreational Trails Program (RTP)

www.fhwa.dot.gov/environment/rectrails/index.htm

<http://www.parks.ca.gov/pages/1008/files/rtpguide.pdf>

In California, RTP funds are administered by the California State Parks Department. Recreational Trails Program funds may be used for the following:

- Maintenance and restoration of existing trails;
- Purchase and lease of trail construction and maintenance equipment;
- Construction of new trails;
- Acquisition of easements or property for trails; and
- Operation of educational programs to promote safety and environmental protection related to trails (limited to five percent of a State's funds).

\$3.3 million statewide was available in fiscal year 2006.

6.2.3 Land and Water Conservation Fund

www.parks.ca.gov/?page_id=21360

The Land and Water Conservation Fund is a federal program that provides grants for planning and acquiring outdoor recreation areas and facilities, including trails. The Fund is administered by the California State Parks Department and has been reauthorized until 2015. Cities, counties and districts authorized to acquire, develop, operate and maintain park and recreation facilities are eligible to apply. Applicants must fund the entire project, and will be reimbursed for 50 percent of costs. Property acquired or developed under the program must be retained in perpetuity for public recreational use.

6.2.4 Safe Routes to School (SR2S)

www.dot.ca.gov/hq/LocalPrograms/saferoute2.htm

This program is meant to improve the safety of walking and cycling to school and encourage students to walk and bicycle to school through identification of existing and new routes to school and construction of bicycle safety and traffic calming projects. Caltrans will be discontinuing California's SR2S program, in light of the new federal SR2S program. The last funding cycle for State-sponsored SR2S programs will be in 2007. After 2007, the SR2S program will be federally funded.

6.2.5 Environmental Justice: Context Sensitive Planning Grants

www.dot.ca.gov/hq/tpp/offices/epar/titleVIand%20EJ.htm

The Caltrans-administered Environmental Justice: Context Sensitive Planning Grants Program funds planning activities that assist low-income, minority, and Native American communities in becoming active participants in transportation planning and project development. Grants are available to transit districts, cities, counties, and tribal governments. This grant is funded by the State Highway Account at \$1.5 million annually statewide. Grants are capped at \$250,000.

6.2.6 Office of Traffic Safety (OTS) Grants

www.ots.ca.gov/grants/default.asp

The California Office of Traffic Safety distributes federal funding apportioned to California under the National Highway Safety Act and SAFETEA-LU. Grants are used to establish new traffic safety programs, expand ongoing programs to address deficiencies in current programs. Bicycle safety is included in the list of traffic safety priority areas. Eligible grantees include governmental agencies, state colleges and universities, local city and County government agencies, school districts, fire departments, and public emergency services providers. Grant funding cannot replace existing program expenditures, nor can traffic safety funds be used for program maintenance, research, rehabilitation, or construction. Grants are awarded on a competitive basis, and priority is given to agencies with the greatest need. Evaluation criteria to assess these needs include potential traffic safety impact, collision statistics and rankings, seriousness of problems, and performance on previous OTS grants. OTS expects to have \$56 million in funding available statewide for FY 2006/07.

6.2.7 California Center for Physical Activity Grant Program

www.caphysicalactivity.org/our_projects.html

The California Center for Physical Activity runs several programs related to walking and offers small grants to public health departments. Grants are in the amount of \$4,999 dollars or less and are offered intermittently.

6.3 Regional Funding Sources

Regional bicycle grant programs come from a variety of sources, including SAFETEA-LU, the State budget, and sales taxes. Regional funds are administered by the local MPO or RTPA.

6.3.1 TDA Article 3

www.mtc.ca.gov/funding/STA-TDA/index.htm

Transportation Development Act (TDA) Article 3 funds are available for transit, bicycle projects in California. According to the Act, bicycle projects are allocated two percent of the revenue from a ¼ cent of the general state sales tax, which is dedicated to local transportation. These funds are collected by the State, returned to each County based on sales tax revenues, and typically apportioned to areas within the County based on population. Eligible bicycle projects include construction and engineering for capital projects; maintenance of bikeways; bicycle safety education programs; and development of comprehensive bicycle facilities plans. A city or County is allowed to apply for funding for bicycle plans not more than once every five years. These funds may be used to meet local match requirements for federal funding sources.

In Calaveras County the amount of these Local Transportation Funds (LTF) varies but is usually between \$700,000-\$900,000 per year with the primary expenditure for these funds being the Public Transit system. The funds are used on an annual basis, but can be rolled over or applied to various projects according to TDA guidelines. Calaveras County has had an informal policy based on direction from the Board of Supervisors that once transit needs are funded unused LTF monies can be directed toward bicycle projects. Chapter 2 includes a recommendation to formalize this practice into an adopted policy.

6.4 Non-Traditional Funding Sources

6.4.1 Integration into Larger Projects

http://www.dot.ca.gov/hq/tpp/offices/bike/guidelines_manuals_policies.htm

California State's "routine accommodation" policies require Caltrans to design, construct, operate, and maintain transportation facilities using best practices for bicyclists. Local jurisdictions can begin to expect that some portion of bicycle project costs, when they are built as part of larger transportation projects, will be covered in project construction budgets. This applies to Caltrans and other transportation facilities funded through Caltrans.

6.4.2 Community Development Block Grants

www.hud.gov/offices/cpd/communitydevelopment/programs/index.cfm

The CDBG program provides money for streetscape revitalization, which may be largely comprised of bicycle improvements. Federal Community Development Block Grant Grantees may use CDBG funds for activities that include (but are not limited to) acquiring real property; building public facilities and improvements, such as streets, sidewalks, and recreational facilities; and planning and administrative expenses, such as costs related to developing a consolidated Plan and managing CDBG funds. For example, in Oakland, CDBG funds have also been used to fund crossing guards, called “Safe Walk to School Monitors.” CDBG funds totaling \$526 million were distributed statewide in 2004/05.

6.4.3 Requirements for New Development

With the increasing support for “routine accommodation” and “complete streets,” requirements for new development, road widening, and new commercial development provide opportunities to construct facilities more efficiently. Specific policies for this are provided in Chapter 2.

6.4.4 Impact Fees

One potential local source of funding is developer impact fees, typically tied to trip generation rates and traffic impacts produced by a proposed project. Bridge and thoroughfare fees and transit impact fees from developers are strategies to provide necessary infrastructure and transit-related improvements.

6.4.5 Mello-Roos Community Facilities Act

<http://mello-roos.com/pdf/mrpdf.pdf>

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

APPENDIX A: SUPPLEMENTAL DESIGN GUIDELINES

This appendix provides basic bikeway planning and design guidelines for use in developing the Calaveras County bikeway system and support facilities. All recommendations in this appendix satisfy Caltrans Chapter 1000 “Bikeway Planning and Design” requirements. However, as noted below only the “Design Requirements” sections for Class I, II and III facilities contain elements required by Caltrans for compliance with their design guidelines. The balance of the information is for reference only and although it meets Caltrans requirements is not intended to state a minimum or maximum accommodation or to replace any existing Calaveras County roadway design guidelines. All facility designs are subject to engineering design review.

Bikeway Facility Classifications

According to Caltrans, the term “bikeway” encompasses all facilities that provide primarily for bicycle travel. Caltrans has defined three types of bikeways in Chapter 1000 of the Highway Design Manual: Class I, Class II, and Class III. For each type of bikeway facility both “Design Requirements” and “Additional Design Recommendations” are provided. “Design Requirements” contain requirements established by Caltrans Chapter 1000 “Bikeway Planning and Design”. “Additional Design Recommendations” are provided as guidelines to assist with design and implementation of facilities and include alternate treatments approved or recommended by not required by Caltrans.

Figure A-1 provides an illustration of the three types of bicycle facilities.

Class I Bikeway - Design Requirements

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

8’ (2.4 m) is the minimum width for Class I facilities

8’ (2.4 m) may be used for short neighborhood connector paths (generally less than one mile in length) due to low anticipated volumes of use

10’ (3.0 m) is the recommended minimum width for a typical two-way bicycle path

12’ (3.6 m) is the preferred minimum width if more than 300 users per peak hour are anticipated, and/or if there is heavy mixed bicycle and pedestrian use

A minimum 2’ (0.6 m) wide graded area must be provided adjacent to the path to provide clearance from trees, poles, walls, guardrails, etc. On facilities with expected heavy use, a yellow centerline

stripe is recommended to separate travel in opposite directions. **Figure A-2** illustrates a typical cross-section of a Class I multi-use path.

Figure A-1: Bicycle Facility Types

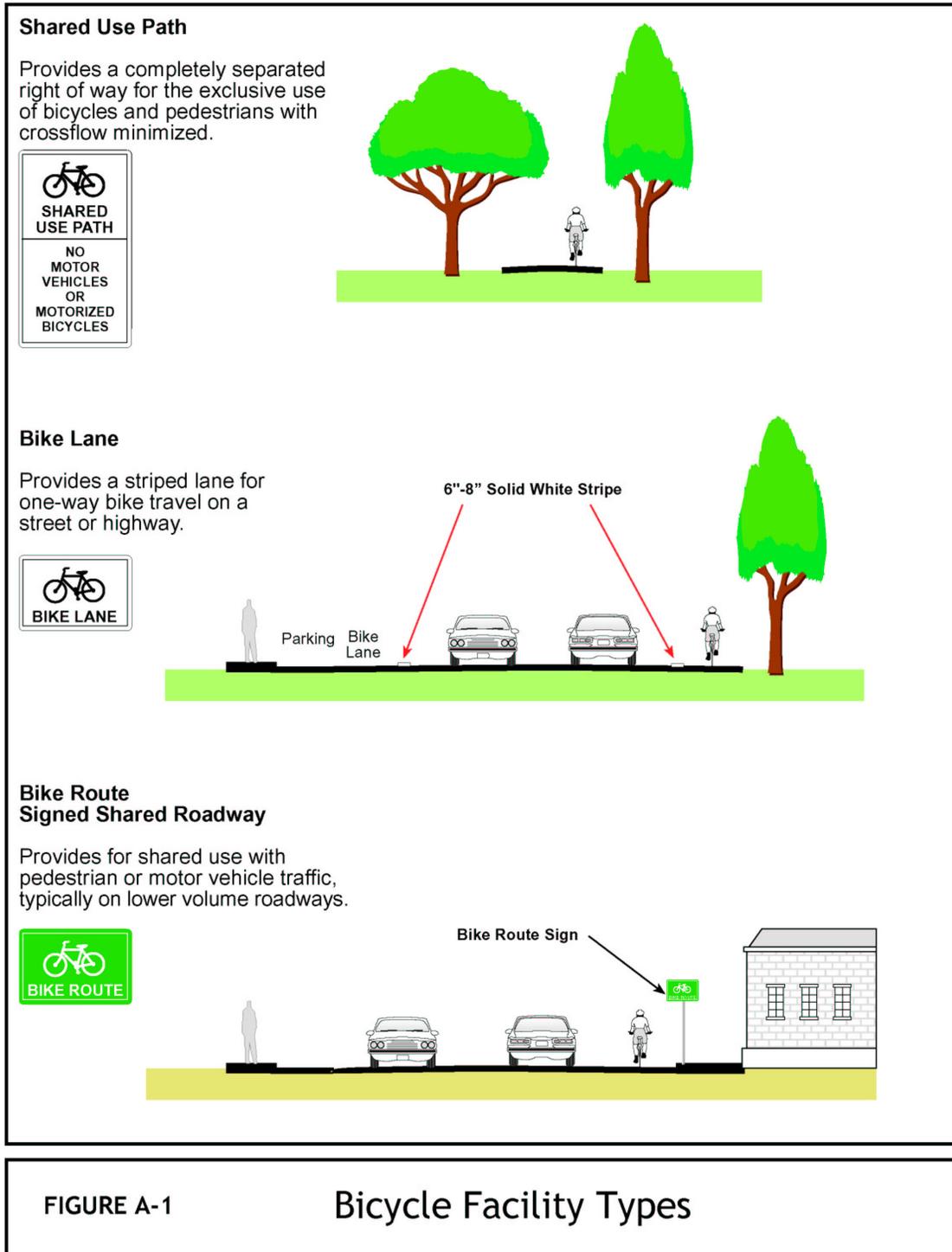


Figure A-2: Class I Facility Cross-Section

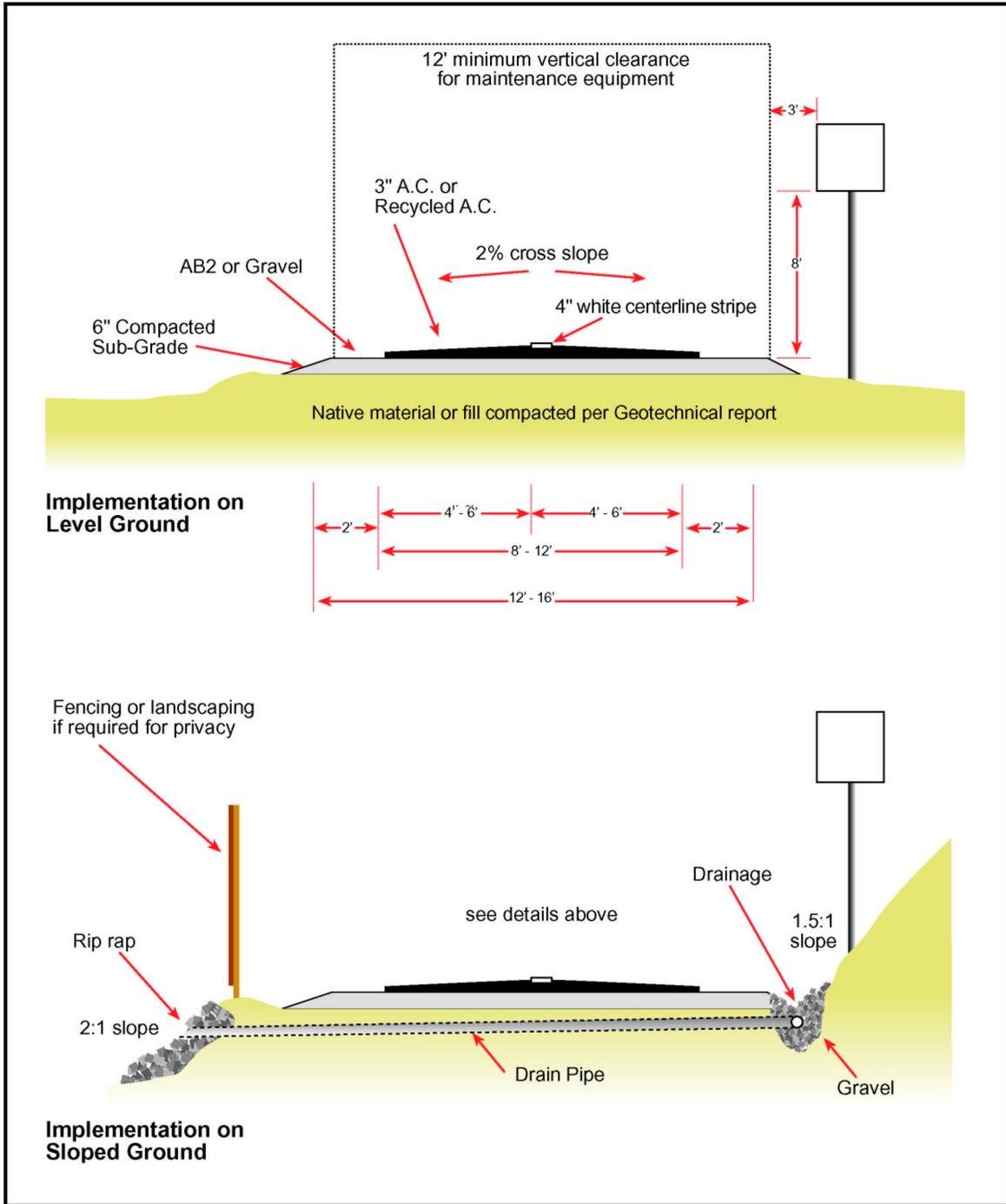


FIGURE A-2 Class I Facility Cross-Section

Class I Bikeway - Additional Design Recommendations:

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

Class II Bikeway - Design requirements

Often referred to as a “bike lane,” a Class II bikeway provides a striped and stenciled lane for one-way travel on either side of a street or highway. **Figure A-3** shows a typical Class II cross-section. To provide bike lanes along corridors where insufficient space is currently available, extra room can be provided by removing a traffic lane, narrowing traffic lanes, or prohibiting parking. The width of the bike lanes vary according to parking and street conditions. Note that these dimensions are for reference only, may not meet Calaveras County Standards and are subject to engineering design review.

4' (1.2 m) minimum if no gutter exists, measured from edge of pavement

5' (1.5 m) minimum with normal gutter, measured from curb face; or 3' (0.9 m) measured from the gutter pan seam

5' (1.5 m) minimum when parking stalls are marked

11' (3.3 m) minimum for a shared bike/parking lane where parking is permitted but not marked on streets without curbs; or 12' (3.6 m) for a shared lane adjacent to a curb face.

Figure A-3: Typical Class II Facility Cross-Section

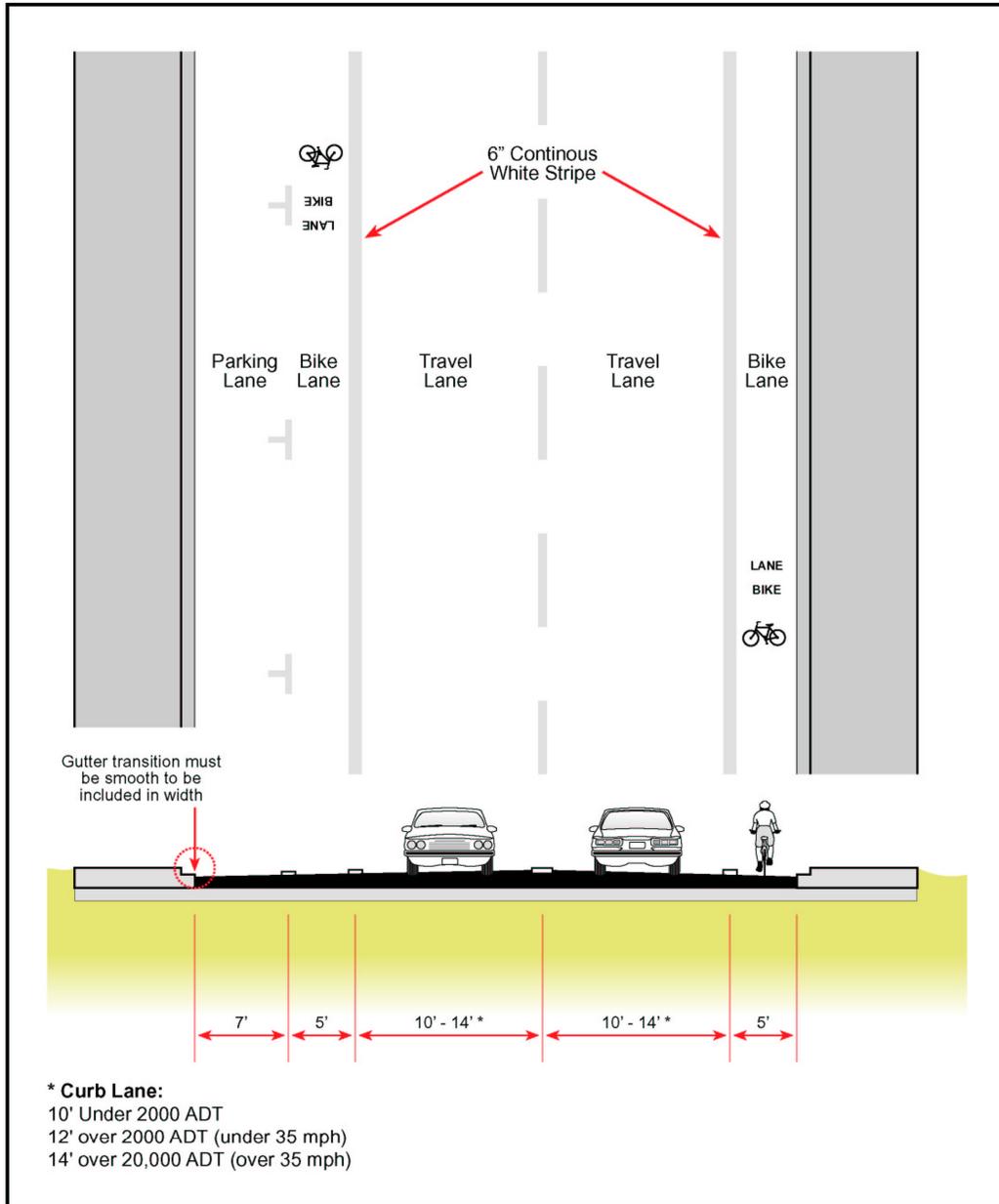


FIGURE A-3 Class II Facility Cross-Section

Class II Bikeway - Additional Design Recommendations:

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

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

Poorly designed or placed drainage grates can often hazardous to bicyclists. Drainage grates with large slits can catch bicycle tires. Poorly placed drainage grates may also be hazardous, and can cause bicyclists to veer into the auto travel lane.

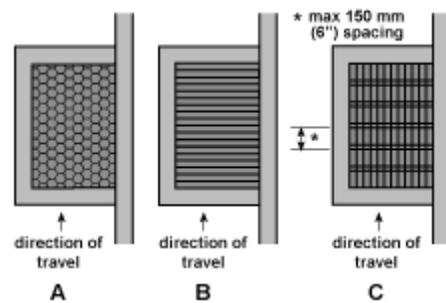


Figure A-4 Examples of bicycle friendly drainage grates

Class III Bikeway - Design Requirements

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

Class III facilities can be shared with either motorists on roadways or pedestrians on a sidewalk (not advisable) and is identified only by signing. There are no recommended minimum widths for Class III facilities, but when encouraging bicyclists to travel along selected routes, traffic speed and volume, parking, traffic control devices, and surface quality should be acceptable for bicycle travel. Although it is not a requirement, a wide outside traffic lane (14') is typically preferable to enable cars to safely pass bicyclists without crossing the centerline. Caltrans Chapter 1000 provides details regarding the design requirements for placement and spacing of bicycle route signage.

Class III Bikeway - Additional Design Recommendations

Shared Roadway Bicycle Marking

Recently, Shared Lane Marking stencils (also called “Sharrows”), have been introduced for use in California as an additional treatment for Class III facilities. The stencil can serve a number of purposes, such as making motorists aware of bicycles potentially in their lane, showing bicyclists the direction of travel, and, with proper placement, reminding bicyclists to bike further from parked cars to prevent “dooring” collisions. **Figure A-5** illustrates recommended on-street Shared Lane Marking stencil placement. The “Chevron” marking design recommended by Caltrans is shown below in **Figure A-6**. The following pavement markings were adopted for official use by Caltrans on 9/12/2005 as part of the California MUTCD.

Guidance language provided by Caltrans for use of the Shared Lane Marking is as follows:

Section 9C.103 Shared Roadway Bicycle Marking

Option:

The Shared Roadway Bicycle Marking shown in Figure 9C-107 may be used to assist bicyclists with positioning on a shared roadway with on-street parallel parking and to alert road users of the location a bicyclist may occupy within the traveled way.

Standard:

The Shared Roadway Bicycle Marking shall only be used on a roadway which has on-street parallel parking. If used, Shared Roadway Bicycle Markings shall be placed so that the centers of the markings are a minimum of 3.3 m (11 ft) from the curb face or edge of paved shoulder. On State Highways, the Shared Roadway Bicycle Marking shall be used only in urban areas.

Option:

For rural areas, the SHARE THE ROAD (W16-1) plaque may be used in conjunction with the W11-1 bicycle warning sign (see Sections 2C.51 and 9B.18). Information for the practitioner regarding classification of rural versus urban roadways can be found at the following California Department of Transportation website: <http://www.dot.ca.gov/hq/tsip/hpms/Page1.php>

Guidance:

If used, the Shared Roadway Bicycle Marking should be placed immediately after an intersection and spaced at intervals of 75 m (250 ft) thereafter. If used, the Shared Roadway Bicycle Marking should not be placed on roadways with a speed limit at or above 60 km/h, (40 mph).

Option:

Where a Shared Roadway Bicycle Marking is used, the distance from the curb or edge of paved shoulder may be increased beyond 3.3 m (11 ft). The longitudinal spacing of the markings may be increased or reduced as needed for roadway and traffic conditions. Where used, bicycle guide or warning signs may supplement the Shared Roadway Bicycle Marking.

Support:

The Shared Roadway Bicycle Marking is intended to:

- * Reduce the chance of bicyclists impacting open doors of parked vehicles on a shared roadway with on-street parallel parking.
- * Alert road users within a narrow traveled way of the lateral location where bicyclists ride.
- * Be used only on roadways without striped bicycle lanes or shoulders.

Figure A-5: Shared Lane Marking Placement

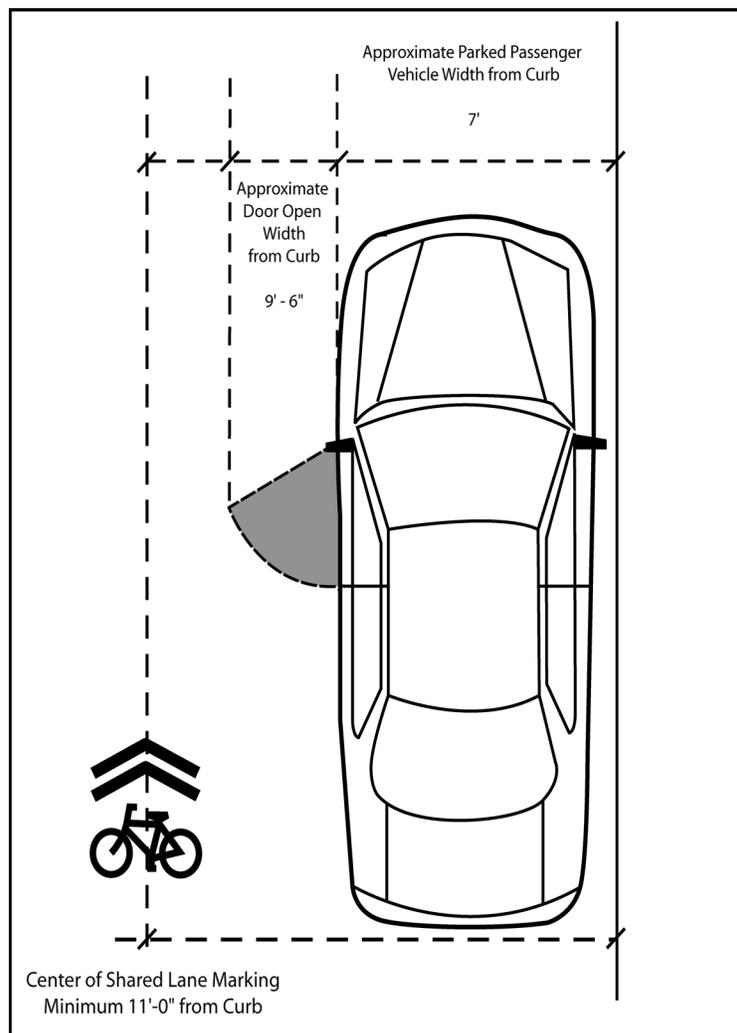
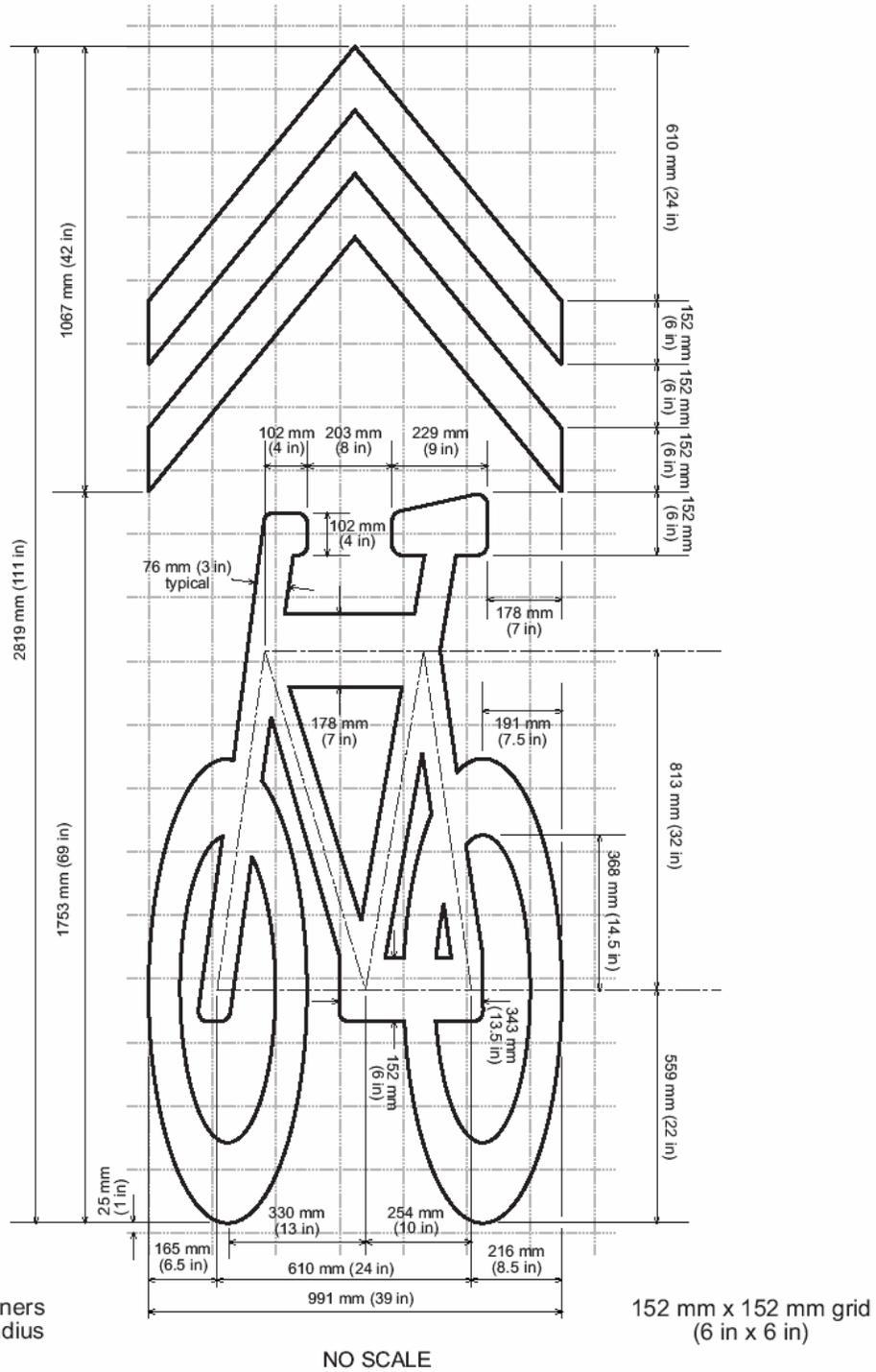


Figure A-6: Shared Lane Marking

Figure 9C-107. Shared Roadway Bicycle Marking



Bicycle Boulevard

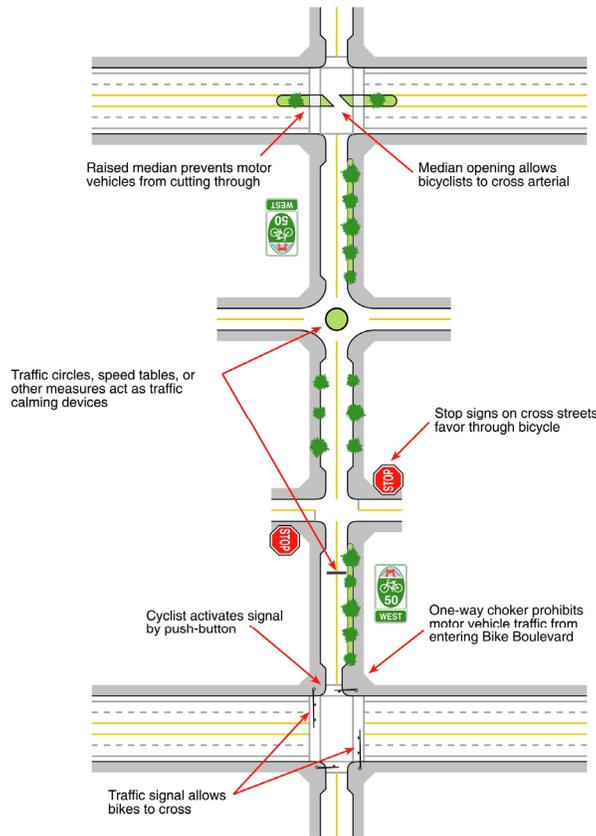
A bicycle boulevard treatment is typically a lower volume street with traffic calming treatments that parallels a higher volume arterial. Traffic calming typically includes a set of improvements to slow traffic and prevent cut-through traffic such as: traffic circles, chokers, and medians. In addition, stop signs favor bicyclists by stopping perpendicular traffic. Sensor loops activate traffic signals to allow safe crossings of higher volume roadways. The following design considerations apply to a bicycle boulevard:

- Typically used on low volume streets
- Traffic-calmed streets located within 1/4 mile of parallel arterials
- Allows access to key destinations
- Provides safe arterial street crossing for cyclists
- Possible Speed Limit reduction from 25 MPH to 20 MPH

Figure A-7 illustrates a typical bicycle boulevard street configuration.

For more information, see the City of Berkeley Bicycle Boulevard *Design Tools and Guidelines* at <http://www.ci.berkeley.ca.us/transportation/Bicycling/BB/Guidelines/linkpag.htm>

Figure A-7: Example Bicycle Boulevard



Bikeway Support Facilities

In a nationwide Harris Poll conducted in 1991, almost half the respondents stated that they would sometimes commute to work by bicycle, or commute more often, if there were showers, lockers, and secure bicycle storage at work. Cyclists' needs for bicycle parking range from simply a convenient piece of street furniture, to storage in a bicycle locker that affords weather, theft and vandalism protection, gear storage space, and 24-hour personal access. Most bicycles today cost 350 dollars to over 2,000 dollars and are one of the top stolen items in all communities, with components being stolen even when a bicycle is securely locked. Theft can be a serious deterrent to riding, especially for low-income riders or those with particularly expensive or rare bicycles. Where a cyclist's needs falls on this spectrum is determined by several factors:

- **Type of trip being made:** whether or not the bicycle will be left unattended all day or just for a few minutes.
- **Security of area:** determined by the cyclist's perception
- **Value of the bicycle:** the more a cyclist has invested in a bicycle, the more concern she or he will show for theft protection or how prone a given area is to bicycle theft.

A final need for some potential commuting cyclists are shower, locker, and changing rooms at trip destinations. For those cyclists needing to dress more formally, travel longer distances, or cycle during wet or hot weather, the ability to shower and change clothing can be as critical as bicycle storage.

Types of Bicycle Parking

Bicycle parking facilities in California are classified as follows:

Class I: Class I bicycle parking facilities (see **Figure A-8**) accommodate employees, students, residents, commuters, and others expected to park more than two hours. This parking is to be provided in a secure, weather-protected manner and location. Class I bicycle parking will be either a bicycle locker, or a secure area like a 'bike corral' that may be accessed only by bicyclists.

Bike lockers are covered storage units that typically accommodate one or two bicycles per locker, and provide additional security and protection from the elements. These are typically located at large employment center, colleges, and transit stations.

Bike corrals can be found at schools, stadiums, special events, and other locations, and typically involve a movable fencing system that can safely store numerous bicycles. Either locking the enclosure or locating it near other activities so that it can be supervised provides security.

Class II: Class II bicycle parking facilities (see **Figure A-9**) are best used to accommodate visitors, customers, messengers and others expected to depart within two hours. Bicycle racks provide support for the bicycle but do not have locking mechanisms. Racks are relatively low-cost devices that typically hold between two and eight bicycles, allow bicyclists to securely lock their frames and

wheels, are secured to the ground, and are located in highly visible areas. They are usually located at schools, commercial locations, and activity centers such as parks, libraries, retail locations, and civic centers.

Figure A-8: Class I Bike Lockers

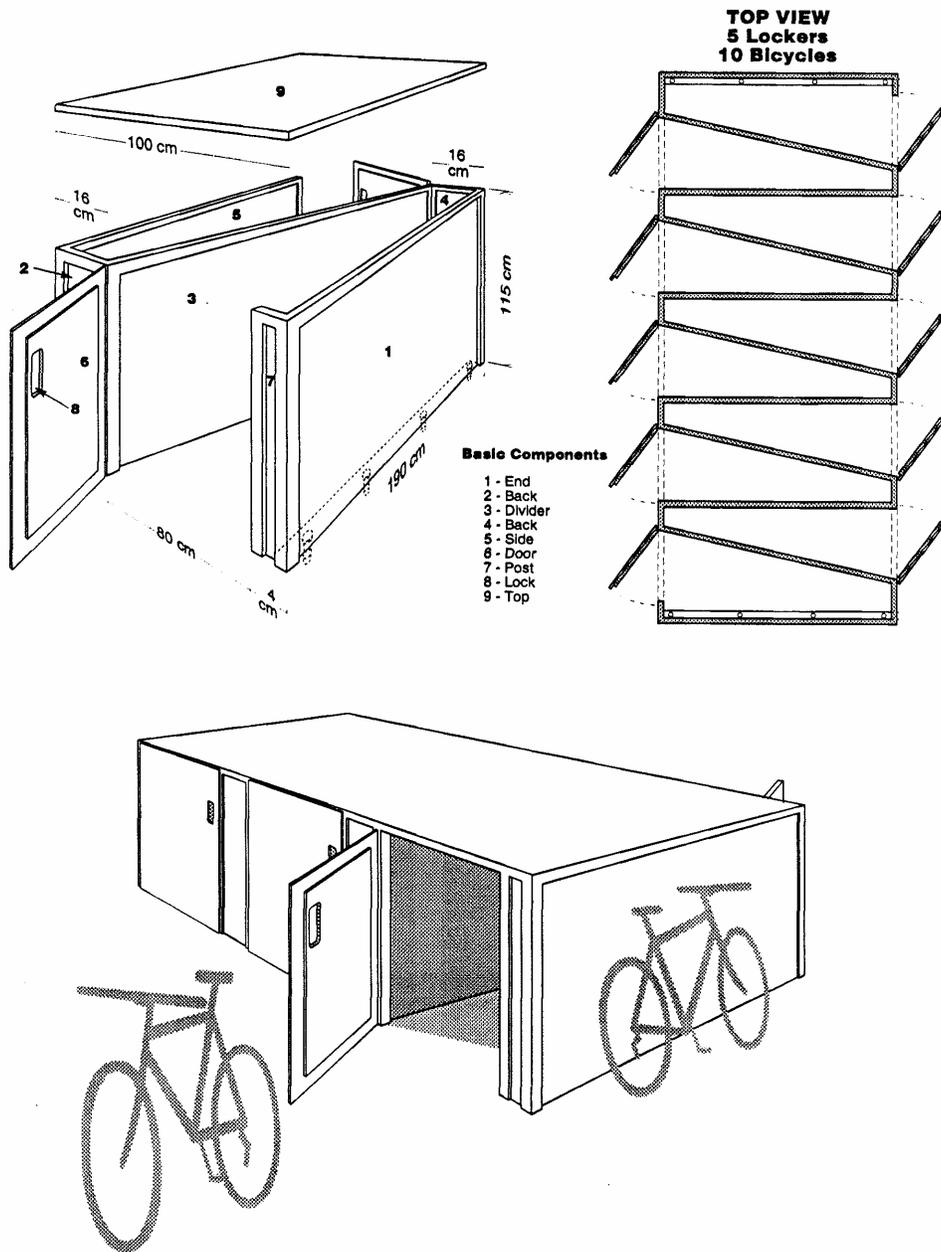


Figure A-9: Class II Racks

