Sierra County 2012 Bicycle Plan

Prepared for the

Sierra County Transportation Commission

Prepared by

TRANSPORTATION CONSULTANTS, INC.

LSC Transportation Consultants, Inc.

Sierra County 2012
Bicycle Plan

Final Report

Prepared for the

Sierra County Transportation Commission
101 Courthouse Square
Post Office Box 98
Downieville, CA 95936

Prepared by

LSC Transportation Consultants, Inc.
2690 Lake Forest Road
P.O. Box 5875
Tahoe City, California 96145
530-583-4053

October 16, 2012

TABLE OF CONTENTS

CHAPTER PAGE

1 INTRODUCTION 1
Introduction 1
Bicycle Plan Purpose and Intent 1
Bicycle Plan Process.....2
Regional Setting.....4
Completed Bicycle Projects.....7

2 GOALS, OBJECTIVES AND POLICIES 9

3 NEEDS ANALYSIS 11
Land Uses 11
Regional Bicycle Demand and Needs 16
Existing Facilities 17
Bicycle Needs Summary 19

4 REGIONAL BICYCLE POTENTIAL IMPROVEMENTS.....23
Types of Bicycle Facilities 25
Project Prioritization Criteria.....23
Sierra County Potential Bicycle Improvements 25
Bicycle Safety Education and Encouragement Programs.....25

5 POTENTIAL FUNDING SOURCES 31
Bicycle Transportation Funding 31

APPENDICES

A Public Comments
B Caltrans Bicycle Transportation Design Guidelines

LIST OF TABLES

TABLE PAGE

1 Population Characteristics 16
2 Journey to Work Mode Split 16
3 Bicycle Facility Potential Improvements 26

LIST OF FIGURES

FIGURE PAGE

1 Site Map 5
2 Loyalton Land Uses.....12
3 Sierra City Land Uses 14
4 Downieville Land Uses 15
5 Proposed Bicycle Facilities.....27

Chapter 1
Introduction

Introduction

The Sierra County Bicycle Transportation Plan was last prepared in 1994. This document serves as an update to the 1994 plan and reviews the needs for bicycle facilities in Sierra County for all types of bicycle users. Sierra County has a need for both recreational bicycle facilities and utilitarian bicycle facilities. Utilitarian bicyclists use the bicycle for the purpose of making a trip for work, school, shopping, and appointments whereas; recreational cyclists' sole purpose of the trip is the enjoyment of the ride. Although certain funding sources such as the Bicycle Transportation Account (BTA) are only available for utilitarian bike facilities, this Bicycle Transportation Plan will address both utilitarian and recreational bicycle needs.

Bicycle Plan Purpose and Intent

Bicycling is a scenic and active alternative to the private vehicle. Bicycling also serves as an important mode of transportation for Sierra County residents without a vehicle or who are unable to drive. Recreational bicyclists travel from other counties to take advantage of Sierra County's scenic rural highways and mountain biking trails. These visiting bicyclists contribute to the Sierra County economy. Additionally, increasing bicycle trips and thereby reducing vehicle trips will assist with the statewide goal of reducing greenhouse gas emissions.

Safety issues such as bicycle/vehicle conflicts can deter Sierra County residents and visitors from bicycling in and through the region. Although there are trailhead facilities and dirt paths available for recreational cyclists, there are essentially no public facilities for utilitarian bicyclists in Sierra County. The purpose of this document is to review existing bicycling conditions in Sierra County, determine the need and potential demand for both utilitarian and recreational bicycle facilities, and recommend a series of bicycle facilities improvements which address those needs. It should be noted that this plan is a general planning document and more visionary in scope. Each of the bicycle improvements identified in this document will undergo more detailed planning, engineering and environmental review prior to construction.

The intent of this plan is twofold: to increase safety and mobility for bicyclists and to increase safety and mobility for motorists sharing the roadway with bicyclists. As such, an integral part of this bicycle plan is an education and outreach component for both bicyclists and motorists.

The Sierra County Bicycle Plan will be the foundation upon which grant applications and further planning efforts will build. This document meets the requirements of *California Streets and Highway Code* Section 891.2, making Sierra County eligible for Bicycle Transportation Account funding. The plan will also serve as an important reference document for the Sierra County Transportation Commission (SCTC), Caltrans, regional planners and Sierra County residents.

Bicycle Plan Process

Coordination with Regional Transportation Planning Documents

The first step in the bicycle plan process is to ensure that the plan is consistent with other transportation planning documents in the region: the Sierra County 2012 Regional Transportation Plan, Sierra County 2012 General Plan and the City of Loyalton 2028 General Plan.

Sierra County 2010 Regional Transportation Plan (RTP)

The following RTP objectives, policies and implementation measures are specific to bicycle facilities in Sierra County:

> **Objective 1.1.6** – Increase the total mileage of safe bike routes, trails, and pedestrian walkways. ***Performance Measure: Regional multi-use route mileage.***
>
> > **Policy** – Support creation of new trails and sidewalks and encourage linkages to public trails and Community Areas as new development is proposed. **Implementation – Review of individual projects and acceptance of trail easements when appropriate. Adopt a street improvement standard that includes sidewalk and pedestrian facilities.**
> >
> > **Policy** – Provide long-range plans for bicycle use. **Implementation – Develop a Bicycle Master Plan.**
> >
> > **Policy** – Study the provision, where warranted, of new multi-purpose non-motorized trails within and between communities, such as along levees and old right-of-way segments. **Implementation – Develop specific study of potential facilities.**
> >
> > **Policy** – Where warranted by bicycle activity and where feasible given financial and physical constraints, provide paved shoulders along roadways for bicycle use as part of roadway reconstruction or new construction projects. **Implementation – Ongoing consideration as part of roadway design processes.**
> >
> > **Policy** – Reduce conflicts generated by bicycle events on county and state routes. **Implementation – Coordination with the Sheriff's Department, CHP, Emergency Response Agencies, and bicycle interests. Construction of "trailhead to downtown" connector trails.**

The RTP also includes goals, objectives and policies addressing climate change. Bicycle projects will have a positive impact on greenhouse gas emissions in Sierra County.

Sierra County 2012 General Plan

The Sierra County General Plan is in the process of being updated. The following policies in the Sierra County 2012 General Plan are relevant to the Bicycle Transportation Plan and very similar to the RTP goals.

Trails/sidewalks

Support creation of new trails and sidewalks and encourage linkages to public trails and Community Areas as new development is proposed.

Bicycle facilities

Provide long range plans for bicycle use.

Reduce conflicts that occur in bicycle events on County and State routes.

City of Loyalton General Plan

The City of Loyalton General Plan was last updated in 2008. The Circulation Element contains the following bicycle related policies:

Street Design

SI-1 – Incorporate provisions for bicycle, pedestrian, and public transit modes during the planning and development review processes for new development and new roadways.

SI – 4 – Design residential streets to balance bicyclist and pedestrian safety with vehicular movement and safety to avoid creating hazards.

Bicycle and Pedestrian Circulation

A Bicycle and Pedestrian Circulation Policies

BP-1 Strive to provide bicycle and pedestrian transportation facilities on all arterial and collector streets.

BP-2 Bicycle and pedestrian routes shall lead to schools, shopping centers, recreational areas and connect with regional bikeway systems. (Health and Safety Element)

BP-3 Provide maximum opportunities for bicycle and pedestrian circulation on existing and new roadway facilities. (Health and Safety Element)

BP-4 Enhance opportunities for bicycle and pedestrian activity in new public and private development projects. (Health and Safety Element)

BP-5 Create a bicycle and pedestrian system that provides connections throughout Loyalton and with neighboring areas, and serves both recreational and commuter users. (Open Space and Conservation Element)

BP-6 Design new roadway facilities to accommodate bicycle and pedestrian traffic. Include Class I, II or III bicycle facilities as appropriate. Through the Design Review process, provide sidewalks to all roads, except in cases where very low pedestrian volumes and/or safety considerations preclude sidewalks.

B Bicycle and Pedestrian Circulation Implementation Programs

Bl-1 Plan bicycle and pedestrian routes to form a continuous system to connect as many parts of the City as possible. Avoid dead-end trails. (Health and Safety Element)

Bl-2 Coordinate City bicycle routes with Sierra County and State bicycle routes.

Bl-3 Encourage greater support and use of bikeways and trails.

Bl-4 Design trails to avoid unnecessary impacts to wetlands, drainages and sensitive species. (Open Space and Conservation Element)

Bl-5 Develop a strategic approach to pursuing State and Federal funding for bicycle and pedestrian improvement projects, working closely with neighboring jurisdictions.

Bl-6 Coordinate with local schools to create well-designed safe Routes to Schools, maps for bicyclists and pedestrians, and to provide adequate facilities to park bicycles.

Public/Stakeholder Outreach

As part of the bicycle planning process, input was solicited from a variety of groups as well as the general public. A project kick-off meeting was held at the outset of the project. Representatives from SCTC, US Forest Service, Caltrans District 3 and Sierra County attended. The meeting included an overview of the planning process, a good discussion of bicycle needs throughout the county and provided a focus for the bicycle plan update.

Sierra County has a small number of recreational bicyclist organizations. The Plumas Sierra Bicycling Club organizes and provides information on recreational road riding in the Sierra Valley and Gold Lakes area. Members of the club were contacted to provide input on which roadways are most commonly used by the club and how bicycle facilities could be improved. The club's response is included in (Appendix A) and summarized below:

- The least safe roadways for biking are: SR 49 from Yuba County to Sierra City and SR 89 from Sierraville south to Nevada County. These roadways have little to no shoulder, high traffic speeds/volumes and blind corners.
- Moderately safe roadways for biking are: SR 49 between Sierra City and Sierraville, SR 89 between Sierraville and the Plumas County line, Henness Pass Road between Weber Lake and SR 89 and on Stampede Meadows Road.
- Advised bicycle routes include Ridge Road, Gold Lake Road, A-23, Heriot Lane, A-24, SR 49 between Sierraville and Loyalton as far as county line, Smithneck Road, Henness Pass Road between Jackson Meadows Reservoir and Weber Lake and Henness Pass Road going in to Verdi.

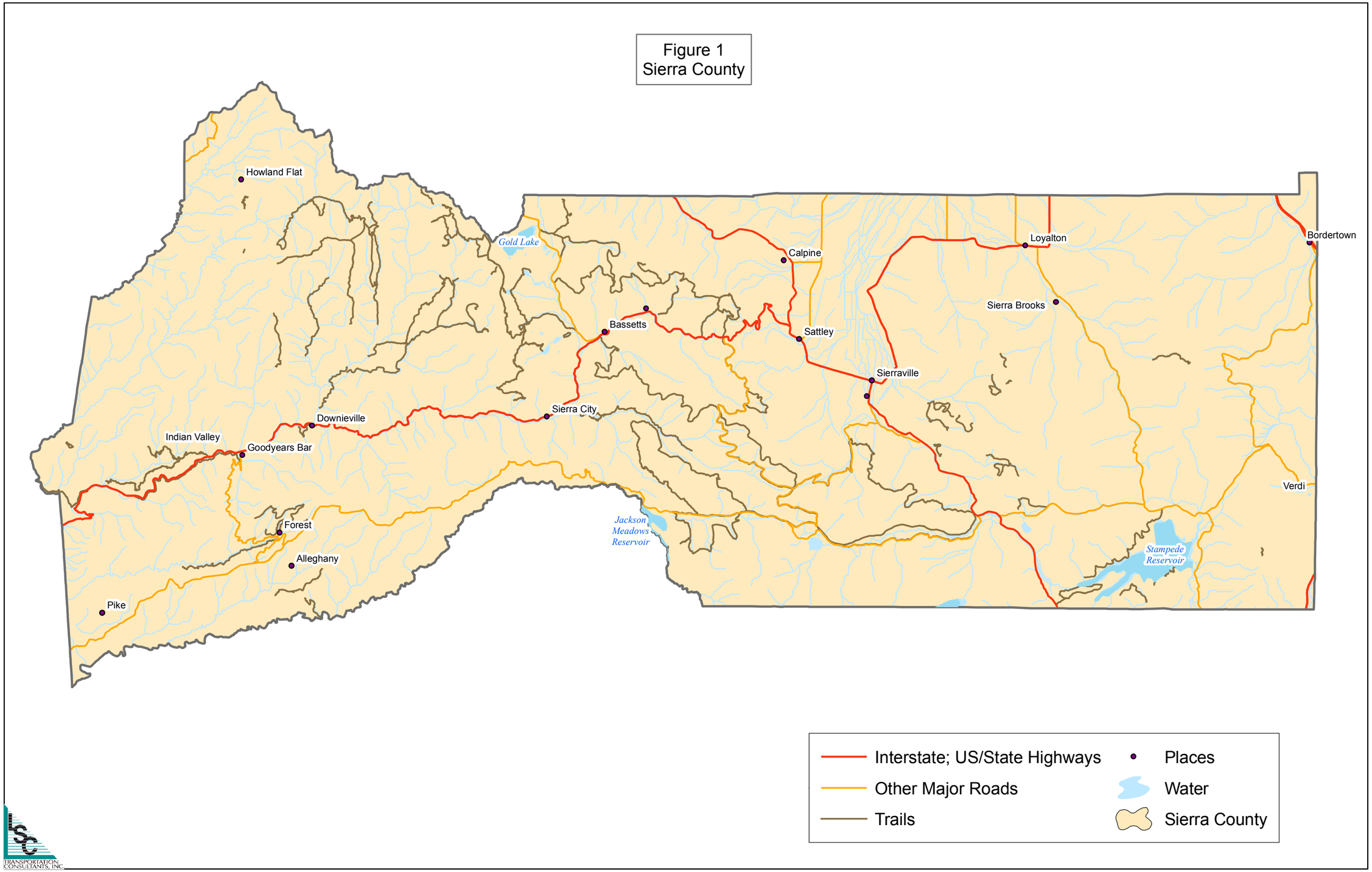
The Sierra Buttes Trail Stewardship (SBTS) is a non-profit organization with the primary goal of enhancing and maintaining the trail network in Sierra and Plumas counties for mountain biking, hiking, motorcycle riding and equestrian use. Over the years, SBTS has obtained grant funding, designed and constructed numerous trails. SBTS representatives did not have input regarding bicycle use on paved roads; however, maps and descriptions of proposed hiking/mountain biking trails were provided and included in Appendix A.

Additional specific improvement suggestions from other interested members of the public were also submitted and incorporated in to *Chapter 3 Needs Analysis*. Copies of comments are presented in Appendix A.

Regional Setting

Sierra County is located in the heart of the northern section of the Sierra Nevada in northern California. Elevation ranges from 1,800 feet in the western foothills to over 8,000 feet in the eastern portion of the county. As shown in Figure 1, the county extends from the Nevada - California border west to Yuba

Figure 1
Sierra County



This page left intentionally blank.

County and is bordered by Plumas and Lassen Counties to the north and Nevada County to the south. The county is located roughly 100 miles northeast of Sacramento, California and 50 miles west of Reno, Nevada. Two major highways traverse the county: SR 49, running generally east-west and SR 89 running generally north-south. In addition, a 1.6-mile section of I-80 passes through the southeastern tip of the county and a 3.1-mile segment of US 395 crosses the county's northeastern corner. While Loyalton is the only incorporated city in the county, other community cores consist of Sierra Brooks, a portion of Verdi, Sierraville, Calpine, Sattley, Alleghany, Sierra City, Bassetts, Downieville, Goodyears Bar, Pike, Indian Valley and Forest City.

Sierra County is primarily mountainous and heavily forested, with the exception of Sierra Valley in the eastern portion of the county. Sierra Valley is the largest alpine valley in North America. The Plumas, Tahoe, and Toiyabe National Forests as well as the Lakes Basin Recreation area are located in Sierra County and offer year-round recreation and scenic opportunities to residents and visitors. At the higher elevations, summers are cool and mild, while winters bring cold weather and heavy snow. Low temperatures in January average 28 degrees Fahrenheit, while the high temperatures in July average 88 degrees Fahrenheit. Average annual precipitation in Downieville is over 60 inches. A significant portion of the county is within the Tahoe National Forest.

Completed Bicycle Projects

In recent years, improvements have been made to facilities for recreational bicyclists in Downieville. The North Yuba River Trailhead parking lot and restrooms were constructed on the south side of the river at the end of Durgan Flat Way. In addition to providing trailhead parking for the North Yuba Trail, other trail users are directed to use this facility in an effort to reduce parking congestion in downtown Downieville. A bicycle wash-station and bike racks were recently constructed in downtown Downieville near the Visitors Center. The Sierra City Visitor Center also offers a place for bicyclists to stop and visit Sierra City. Restrooms have been constructed in Loganville, Bassetts, and Calpine. Several recent projects improved community parks in Sierraville, Calpine Loyalton and Smithneck Creek, providing additional opportunities for bicyclists to stop and enjoy the parks.

This page left intentionally blank.

Chapter 2
Goals, Objectives and Policies

Goal

Plan and implement a bikeway system in Sierra County which will promote the safe, convenient and efficient use of bicycles on appropriate sections of the Sierra County road system as a portion of the total transportation network.

Objective 1

Plan, construct and maintain the projects listed in the Sierra County Bicycle Transportation Plan.

Policies

1) Develop a region-wide cycling system that will minimize cyclist/motorist conflicts. Design bicycle lanes on street right-of-ways that optimize safety of cyclists while continuing to meet the needs of motor vehicles.
2) Create a bikeway system that links principal trip destinations such as schools, parks, community centers, recreation points of interest and shopping areas to residential areas.
3) Provide bicycle support facilities such as bike racks at appropriate bicycle destinations, parking and staging areas.
4) Support bicycle projects both on and off road that meet the needs of both utilitarian and recreational bicyclists.
5) Specify that off-street bicycle trails should use open space corridors, flood control and utility easements where possible. Such trails should minimize automobile cross traffic.

Objective 2

Implement a public information program to address the following issues:

- Increase public awareness of bicycle lanes and paths and how to reduce conflict between motorists and bicyclists.
- Educate bicyclists on how to travel safely and increase bicyclists' awareness of community needs and issues with respect to bicycle travel.

Policies

1) Incorporate standard signing and traffic controls as established by Caltrans to reduce conflicts between bicyclists and motorists.
2) Encourage local law enforcement agencies and local school districts to cooperatively develop a bicycle education program for school children, residents and visitors.
3) Establish outreach programs for visiting recreational bicyclists with the purpose of decreasing overall impact on Sierra County communities.

Objective 3

Interconnect communities and neighborhoods, to access recreational opportunities, and to promote economic stimulation by improving and increasing recreational opportunities in the County's communities.

Land Uses

The primary purpose of this plan is to designate a regional bikeway system for Sierra County. The development of a system of safe and convenient regional bikeways would facilitate and encourage the use of bicycles as an alternative form of regional transportation. Bikeways should provide connections between population centers, connection to other forms of transportation and access to major trip generators and attractors, such as regional recreation areas, employment centers, residential areas and county government centers.

Sierra County has one incorporated city, Loyalton and several small communities. The eastern and western portions of the county are separated by Yuba Pass on the Sierra Crest at an elevation of 6,700 feet. This makes bicycle commuting between the two portions of the county difficult. However, this is an attractive feature for recreational cyclists. Below describes land use settlements and activity generators for the communities of the eastern and western portions of the county. Maps displaying land use settlement patterns for major Sierra County communities are displayed in Figures 2 – 4.

Eastern Sierra County

Verdi – A small portion of the Nevada based community of Verdi lies within the Sierra County borders. Verdi can be accessed from Interstate 80 in Nevada or unpaved Henness Pass Road in Sierra County. With respect to bicycle circulation, the community of Verdi is located adjacent to the Tahoe Pyramid Bikeway which is a partially constructed paved/dirt trail from Lake Tahoe to Pyramid Lake.

Loyalton (Figure 2) – The only incorporated city in the county, Loyalton is located on SR 49 in the northeastern portion of the county. The state highway acts as Main Street and is the location of commercial businesses and facilities. The Loyalton Social Hall, Loyalton Park and the schools are located off of Beckwith Road north of the highway. The residential subdivision of Sierra Brooks is located about two miles south of Loyalton off of County Route S860 (Smithneck Road).

Sierraville – The small community of Sierraville is located at the intersection of SR 49 and SR 89. There are limited commercial establishments within walking distance of the intersection. Sierra Hot Springs Resort and the county owned Dearwater Airport are located roughly two miles from the intersection off of Lemon Canyon Road.

Sattley – This tiny community located on SR 49 at the intersection with Westside Road includes a general store and scattered residences.

Calpine – Calpine consists of residences, post office, a restaurant and a park on SR 89 going north to Plumas County.

Figure 2
Loyalton Land Uses

Western Sierra County

Bassetts – Located just west of Yuba Pass on SR 49 and the intersection with Gold Lake Highway, Bassetts consists of a general store/restaurant, motel units, a bed and breakfast, a few residences and the Greene Acres sub-division. The community acts as a gateway to both winter and summer recreation in the Lakes Basin.

Sierra City (Figure 3) – SR 49 acts as Main Street through Sierra City which includes lodging, restaurants and stores surrounded by residences. Sierra City has good access to recreation trails and the North Yuba River. Nearby points of interest include Wild Plum Campground, Loganville Campground, Kentucky Mine and access to the Pacific Crest Trail.

Downieville (Figure 4) – Downieville is located 12.5 miles west of Sierra City on SR 49 at the confluence of the North Fork Yuba and Downie rivers. Downieville is the Sierra County seat. Government offices are located on the south side of the Yuba River just across the Nevada Street Bridge. The core downtown area has several restaurants and shops including the two bicycle shops: Yuba Expeditions and Downieville Outfitters. The Western Sierra Medical Clinic is located on Nevada Street, Sierra County Welfare on Maiden Lane and Downieville School on School Street. All are within a short walking or biking distance of each other.

Indian Valley – Located on SR 49 near the western entrance of Sierra County. Indian Valley has a small store and restaurant open seasonally along with several residences and multiple USFS campgrounds. This area acts as the staging area for several popular trailheads such as the North Yuba and Halls Ranch trails as well as the Cal Ida and Brandy City areas.

Pike – Located on Ridge Road in the south western portion of Sierra County, Pike is a small bedroom community with no businesses.

Alleghany – Alleghany is an historic mining community located in the southern portion of Sierra County. It is a unique mining town with a small business district including a bar, post office, museum and mine.

Forest – Forest is an historic mining town, now basically a ghost town. There are several residences and no operating businesses. The town is situated within the Tahoe National Forest and has several popular mountain bike trails including the Plumb Valley Ditch and Truckee Ditch trails.

Each of the communities listed above are relatively compact, making bicycling within the community to school or shopping attractive. However, travel between the communities is more difficult. Elevation gain, severe weather conditions, limited shoulders and distance reduce the appeal of inter-community commuting.

The US Census Bureau Longitudinal Employer- Household Dynamics tracks the number of jobs by location. The most current data available is for 2010. Per the census data, Loyalton has the greatest number of jobs in one community (76 jobs) followed by Downieville (41 jobs). As the county seat, Sierra County government offices are located here with some larger departments such as Human Services in Loyalton. Other major employers are Eastern Plumas Health Care in Loyalton, Tahoe National Forest in Sierraville, schools, fire departments (all volunteer) and resorts along the Yuba River and in the Lakes Basin.

Future Development

Other than possible expansion of facilities and new commercial development at the Sierra Hot Springs, there are no significant land use developments planned in Sierra County at this time.

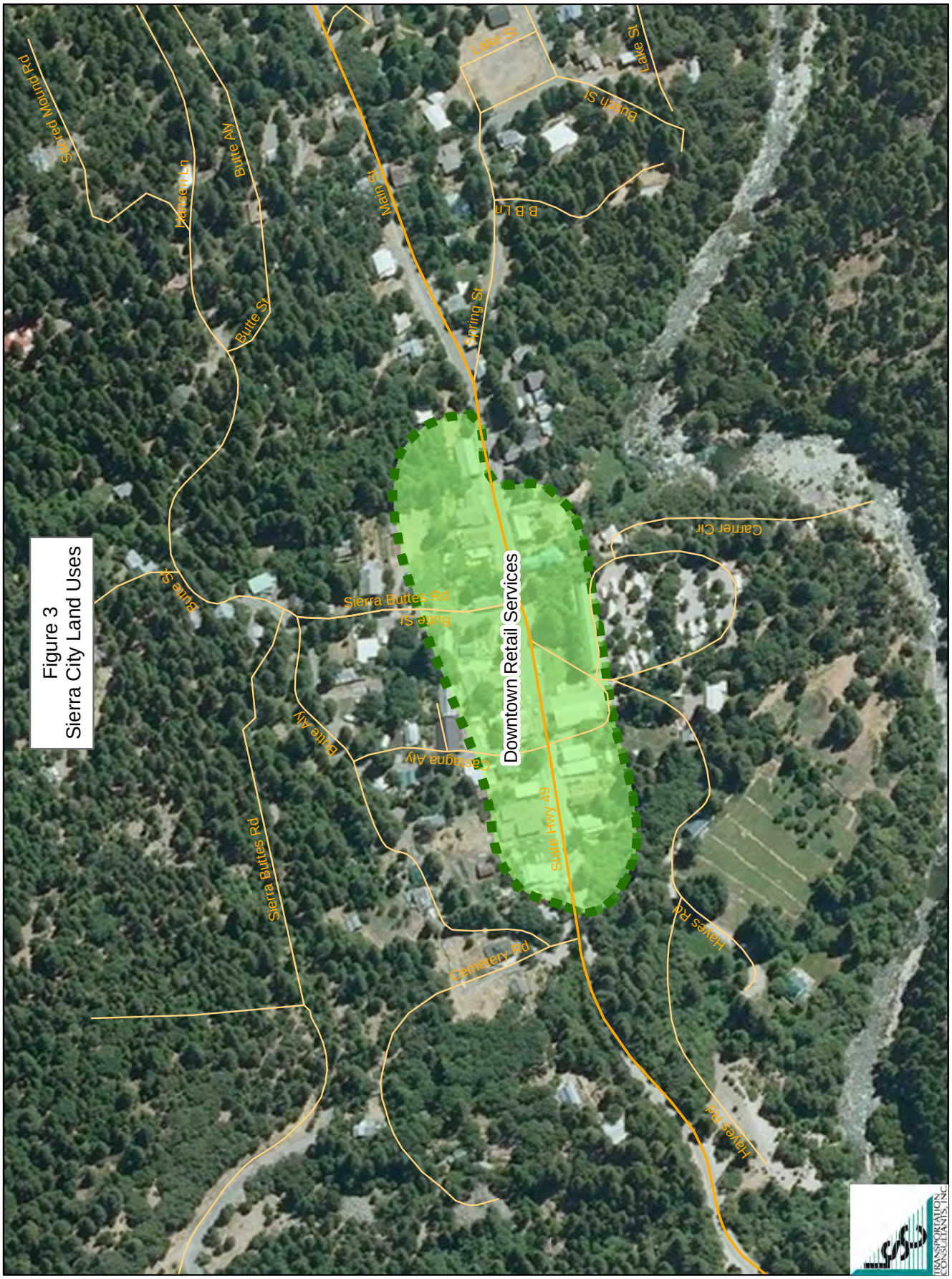


Figure 3
Sierra City Land Uses

Figure 4
Downieville Land Uses

Regional Bicycle Demand and Needs

Population

The US Census American Community Survey 2006-2010 five year estimates indicate the current total population of Sierra County to be 3,366 persons, of which 892 reside in Loyalton (Table 1). Approximately 4.5 percent of the population in Sierra County is between the ages of 10 and 17. Another 10.8 percent of the countywide population has been living below the poverty level for a 12-month period between 2006 and 2010. These two demographic groups are more likely to travel by bicycle than private vehicle. The California Department of Finance projects that the population of Sierra County will decrease approximately 3.3 percent between 2012 and 2020.

TABLE 1: Population Characteristics in Sierra County

		Youth(1)		Low Income(2)	
	Total	#	%	#	%
Countywide	3,366	150	4.5%	365	10.8%
Loyalton	892	59	6.6%	70	7.8%

Note 1: Persons age 10 to 17

Note 2: Persons below the poverty level the past 12 months

Source: American Community Survey 2006-2010 5 Year Estimates

Commute Patterns

Table 2 displays Sierra County resident's travel mode to work according to the American Community Survey 2006-2010 five year estimates. The vast majority drive to work alone (64.4 percent countywide, 73.9 percent Loyalton). A few Sierra County residents (7.6 percent countywide, 8.1 percent Loyalton) walk to work and a smaller proportion of residents bicycle to work (1.8 percent countywide, 6.9 percent Loyalton). Table 2 demonstrates that all reported bicycle commuters live in Loyalton.

TABLE 2: Sierra County Journey to Work Mode Split

	Total Workers Age 16+	Drove Alone	Carpool	Public Transportation	Bicycle	Walked	Taxi, Motorcycle, Other Means
			Number				
Countywide	1,566	1,009	194	0	28	119	11
Loyalton	406	300	34	0	28	33	11
			Percentage				
Countywide	1,566	64.4%	12.4%	0.0%	1.8%	7.6%	0.7%
Loyalton	406	73.9%	8.4%	0.0%	6.9%	8.1%	2.7%

Source: American Community Survey 2006-2010 5 Year Estimates.

Existing Facilities

Bicycle Facilities

On-Road

No formal bicycle paths or designated bicycle lanes exist on Sierra County roadways. However, Sierra County roadways are a popular destination for recreational cyclists and cycling clubs such as the Plumas-Sierra Bicycling Club. Common on-road recreational bicycle routes include:

- Loyalton-Beckwourth Loop – Bicyclists generally travel a loop between Loyalton and Beckwourth (Plumas County) along SR 49, Heriot Lane, A-24 (Plumas County), SR 70 (Plumas County) and Beckwith Road.

- Lakes Basin Loop – From the community of Sattley, bicyclists travel north on Westside Road (County Road A-23) to SR 70 in Plumas County, west on Rock Point Road to Portola, then along A-15 to SR 89 north until Gold Lake Highway. This road loops around the scenic Gold Lakes Basin area back to the Sierra County community of Bassetts where bicyclists return to Sattley.

- Sierraville to Sierra Brooks – A common utilitarian route is to travel between the communities of Sierraville, Loyalton and the residential subdivision of Sierra Brooks along SR 49 and Smithneck Road (County Road S860).

- SR 49 between Nevada City and Yuba Pass – This section of SR 49 is popular among cyclists.

Sierra County is also home to Tour de Manure metric century road race benefitting the Sierraville Fire and Rescue Department. The ride travels 62 miles through the Sierra Valley communities of Sierraville, Beckwourth, Loyalton and Sierra Brooks in mid-June. Other major bicycling events include the Agony Ride, Northern California Nevada Cycling Association (NCNCA) District Championship time trials, and the MS Feather River Scenic ride.

Off-Road

The communities of Downieville and Sierra City are known for an extensive network of off-road hiking, mountain bike and OHV trails. The annual Downieville Classic Mountain Bike festival brings over 4,000 mountain bikers and spectators (800 acres) to the small community for one weekend. Trails are generally located on US Forest Service land north of SR 49 between Downieville and Sierra City. The North Yuba Trail follows the south banks of the North Yuba River between Indian Valley and Downieville. A designated trailhead parking area with restrooms and running water is located at the beginning of the North Yuba trail in Downieville. Private companies shuttle mountain bikers to the top of the Downieville trail network at Packer Saddle. Most mountain bikers finish their ride on the north side of SR 49 at the east end of Downieville and therefore must ride on local streets through town to return to their vehicles.

Bicycle Parking

There is limited bicycle parking or rack facilities in Sierra County other than at the bike shops. However, there is a bicycle wash station near the Visitors Center in Downieville. Bicycle racks have recently been installed at the Sierra City Visitor Center and Sierraville Recreation Complex.

Connections to Transit

There is no scheduled fixed-route bus service for the general public within the county, nor is there local taxi service. However, prioritized public transportation for the west and east sides of the county is provided by nonprofit providers: Golden Rays of Sierra County, Inc. and Incorporated Senior Citizens of Sierra County. The transit vehicles are not equipped with bike racks; however Incorporated Senior Citizens indicated that they have accommodated bikes inside the vehicle at times. As there are no fixed bus stops, and there are no bicycle storage or parking facilities at transit stops.

Trailhead Facilities

Bicycle trailheads with various facilities such as parking areas, restrooms and maps have been constructed at various locations around the county. Trailhead facilities for the North Yuba Trail, Halls Ranch Trail and Fiddler Creek Trail exist in Downieville, Goodyears Bar and Indian Valley. Other recreational trailheads exist in Bassets and off of SR 89 for Jackson Meadows Reservoir.

Current Usage and Demand

Bicycle Usage

There is little data available regarding bicycle counts in Sierra County. As stated in Table 2, roughly 28 persons or 1.8 percent of employed residents in Sierra County (all living in Loyalton) commute to work via bicycle. Given the limited bicycle facilities available, it is unlikely that many more residents bicycle for other non-work related utilitarian purposes.

Anecdotal evidence suggests that 50 to 100 recreational bicyclists ride in the Gold Lakes Basin area on a busy summer weekend. A similar number of mountain bikers are riding the dirt trails in and around Downieville on a peak weekend.

Local and Regional Bicycle Demand

Bicycling demand in Sierra County is greatly influenced by regional trails, facilities and bicycle advocacy groups in neighboring counties. Additionally, as Sierra County has very limited commercial facilities, there is a need for residents to access communities outside Sierra County by all modes of transportation. Bicycle facilities could also provide and alternative form of emergency egress for remote communities. For these reasons, regional bicycle demand, facilities and usage is of particular importance. There are several notable organizations promoting, building and maintaining trails in and around Sierra County:

- Western Nevada County – An advocacy group based in Western Nevada County is building new recreational trails around the communities of Forest City and Pike in Sierra County, two very remote communities.

- Sierra Buttes Trail Stewardship (SBTS) – Referenced in the public input section, SBTS has planned, constructed and maintained a significant number of multi-use recreational trails in Sierra and Plumas counties. SBTS is a well-known advocacy organization among bicyclists which has been successful in obtaining grants as well as leveraging federal ARRA funds with volunteer labor. SBTS is growing in membership and continually planning and constructing new trails in both Sierra and Plumas counties. Visiting bicyclists who travel to Sierra County to volunteer with SBTS and/or ride the trails constructed by SBTS are a major economic driver for western Sierra County communities. The Downieville Classic mountain bike festival sponsored by SBTS brings 600 racers and their families to

Sierra County for one weekend. This organization has a significant effect on bicycle demand and usage in Sierra County currently and will continue to in the future.

- Lake Tahoe Pyramid Bikeway – When completed this bicycle/pedestrian facility will follow the Truckee River from its source at Lake Tahoe to its terminus, Pyramid Lake in Nevada. The route will use a combination of existing dirt and paved roads, plus some sections of new trail and bridges. Currently the trail connects Verdi, NV residents to Reno and in the future will provide a connection to Truckee. There is the potential to increase connectivity for eastern Sierra County residents in Verdi, CA and other areas by creating a bicycle connection to the Lake Tahoe Pyramid Bikeway along Henness Pass Road.

- Beckwourth Ranger District (Plumas County) – There is a significant trail building program in the Lake Davis, Lakes Basin and Plumas Eureka-Graeagle areas. There are numerous opportunities to link Sierra County to these areas via Gold Lake Road, Butcher Ranch Trail, Lake Davis Trail and Mills Peak Trail.

- Truckee Ranger District (Nevada County) - There is also potential for trail connections near the Sierra/Nevada County line at Sagehen where existing trails feed into Russell Valley, and Prosser/Lakeview estates on the outskirts of Truckee. This type of bicycle connection would be beneficial for residents of the Sierra Valley.

Projected Future Bicycling Usage and Demand

Without existing hard data it is difficult to project future use. As highway shoulders are widened and separated facilities are constructed, the proportion of residents travelling by bicycle for work, shopping, medical or school purposes is likely to increase. The proposed Sierra Brooks Class I bicycle path will have the greatest effect on mode split as it will connect a residential subdivision to schools and facilities in Loyalton.

Continuing efforts to build trails and trailhead facilities in neighboring counties will also have a significant effect on future bicycle demand in Sierra County. This regional recreational bicycling will spill over into Sierra County while better trail connections to Nevada County and Washoe County will increase connectivity for many Sierra County communities.

Bicycling Needs Summary

The following summarizes needs and issues associated with bicyclists in Sierra County which were obtained though public/stakeholder input and a review of previous transportation plans. Needs are categorized as commuter/utilitarian or recreational; however, often the two categories overlap. Generally, bicycling needs are focused on safety, connectivity between activity centers, emergency access and economic vitality. In general, all the state highways in Sierra County have narrow shoulders which increase the potential for bicycle/vehicle conflict particularly with high profile vehicles and trucks.

- **Loyalton – Sierra Brooks Class I Bike Path** - An important need for utilitarian bicyclists is a safer bicycle connection between Loyalton and the Sierra Brooks residential subdivision. Currently, bicyclists must travel on County Road S860 (Smithneck Road) which has limited shoulders and often high vehicle speeds. A separated Class I bike trail would provide a safe connection between the largest residential subdivision in Sierra County and services and schools in Loyalton. There are two options for this path: Option one would be roughly two miles in length and generally follow Smithneck Creek; Option two would be a new separated path which would follow County Road S860 (Smithneck Road) and SR 49 from Sierra Brooks into Loyalton.

- **Narrow Shoulders** – The roadway shoulders are quite narrow on all state highways and many local roads in Sierra County. This increases the potential for bicycle/pedestrian/vehicle conflict. Much of the limited shoulders that do exist are gravel and provide hazardous conditions when bicycles move back and forth between gravel and pavement. Wider shoulders would increase safety and encourage increased bicycle use. The following lists roadway segments which receive a relatively high amount of utilitarian and recreational bicycle use and have the greatest need for wider shoulders and/or designated bicycle lanes:

  - **SR 49 in the vicinity of Loyalton –** Wider shoulders would increase safety for residents bicycling through the city and those living just outside.

  - **Sierra Valley Loop -** County Route A-23 (Westside Road) from the Plumas County line to Sattley; SR 49 between Sattley and Sierraville; a short spur in Sierraville as far south as Old Truckee Road; SR 49 between Sierraville and Loyalton; and SR 49 from Loyalton to Plumas County line. Combined with shoulder improvements in Plumas County improving these roadways creates a safe bicycle route around the Sierra Valley for both utilitarian and recreational cyclists.

  - **Calpine Loop**– Calpine Road between Westside Road and SR 89; SR 89 south until the intersection with SR 49; SR 49/89 between the SR 49/89 intersection and Sattley. This route is popular among recreational cyclists; however it also connects two Sierra County communities.

  - **Gold Lake Loop** – This scenic and popular cycling route includes Gold Lakes Road, SR 89 between Sattley and the Plumas County border and SR 49 between Bassetts and Sattley.

  - **SR 49 from Nevada City to Yuba Pass** – Despite narrow shoulders, this section of SR 49 is popular among recreational cyclists.

  Widening Sierra County roadway shoulders is a challenge both financially and environmentally. For example, the western portion of SR 49 follows the Yuba River where widening would require large cuts in the embankments with potential environmental damage and significant expense. The low traffic volumes on this section of SR 49 do not justify the cost.

- **Conflict with Goods Movement** – Both local and interregional truck traffic travel on Sierra County roadways. SR 49 and 89, Westside Road, Heriot Lane, Ridge Road and Beckwith Road are common travel routes for trucks. It is more difficult for trucks to swerve around bicyclists if there is little advance warning such as on a blind curve. This decreases safety for bicyclists on these roadways where shoulders are narrow to non-existent.

- **Safe Routes to Schools** – Schools are located in the communities of Downieville and Loyalton. Providing a safe travel route for children biking to school is a high priority for Sierra County. In Loyalton, Beckwith Road provides access to the Elementary and High School. The proposed Class I Bike Path from Sierra Brooks to Loyalton will provide an important connection to schools. Several Safe Routes to School projects have been proposed for Loyalton to construct sidewalks and gutters on three primary routes to the Loyalton Public Schools. Improvements are needed along Church Street, Beckwourth Street, Third Street and Second Street. A recent American Recovery Act project constructed sidewalk the entire length of Fourth Street.

- **Emergency Access/Exit** – Some Sierra County communities such as Alleghany and Forest City are located off of state highways in remote sections of the county. Bicycle routes (dirt or paved) with

connections to established trails such as the North Yuba Trail could provide an important secondary emergency access to/from these communities.

- **Connectivity through Forest Service Land** – A significant portion of Sierra County is on US Forest Service Land. In addition to the state highways, existing dirt roads connect the east and west portions of the county. In the future, bicycle friendly connections could be made from Jackson Meadows to Yuba Pass as far as Bullards Bar Resevoir.

- **Funding for Rural Communities -** Sierra County has a population of less than 4,000 people. Annual average traffic volumes on SR 49 generally do not exceed 2,000 vehicles per day which is significantly lower than more urbanized areas. In times of fiscal constraint, state grant funding is more likely to flow to areas with larger populations and traffic congestion. This provides a challenge for financing bicycle facility projects in Sierra County.

- **Verdi Connections to Tahoe Pyramid Bikeway –** A long-term vision of the Tahoe Pyramid Bikeway is to extend the facility into California in the community of Verdi. This could provide a bike connection between the Sierra Valley and Reno along Dog Valley Road.

- **Complete Streets -** A "Complete Streets" policy follows the idea that a roadway should be designed with all users in mind: including bicyclists, public transportation vehicles and riders, and pedestrians of all ages and abilities. As with most California roadways, state highways and county roads in Sierra County were initially designed for cars primarily.

- **Bicycle Racks -** Providing a secure location for bicycles at schools and commercial areas encourages bicycle use.

Recreational Needs Summary

Bicycle tourism (both road and dirt) is an important part of the Sierra County economy. With respect to road cycling, the section of SR 89 between Graeagle and Truckee is part of the Sierra Cascades Bicycle Route which brings a steady flow of bicycle tourists during the summer and fall months. This narrow section of highway also connects the Sierra Valley to the greater Lake Tahoe area. The Lakes Basin Loop, Sierra Valley Loop and Calpine loop are popular among recreational cyclists from nearby counties and as cited above have narrow roadway shoulders.

The small community of Downieville sees an influx of mountain biking visitors during the summer months. This increases the potential for conflict between bikers and vehicles on narrow streets and highways. Long-term improvement projects such as increasing the off-road trail network to include a connector trail from the center of town to the bottom of the "Downieville Downhill" mountain bike route and continuing to improve trailhead facilities will benefit regional bikeway and pedestrian transportation while remaining consistent with transportation goals and objectives. Another element which would improve safety and the overall experience for both mountain bikers and residents is an improved signage and education/outreach program.

Sierra County is surrounded by established and successful bicycle transportation networks and advocacy organizations. With proper planning and funding Sierra County could connect to these trail networks. This will be beneficial to Sierra County residents as it will increase connectivity between remote communities, increase connectivity to out of county destinations and will bring in tourist dollars from neighboring counties.

This page left intentionally blank.

Types of Bicycle Facilities

A bikeway is defined in the Streets and Highway Code Section 890.4 as a facility that is provided primarily for bicycle travel. Bikeways are categorized into three different classes in Chapter 1000, Bicycle Planning and Design, Caltrans Highway Design Manual:

Class I (Bike Path)

A Class I bike path is designed for the exclusive use of bicycles and pedestrians and therefore completely separated from the travel lane with cross traffic from motorists minimized. Class I bike paths are typically paved and can be located along corridors where roadway facilities are not offered or to provide a parallel option to an existing roadway for bicycles. Example locations include along rivers, canals, old railroad grades, connections to schools and between parks. Bike paths more often are used for recreational purposes, but may be used by commuters as well.

Caltrans Design Criteria for a Class I bikeway are as follows:

- Minimum width of 8 feet (two-way path)
- Minimum 2 foot graded area adjacent to path
- Minimum 2 foot clearance to horizontal obstructions adjacent to pavement
- Minimum 8 foot clearance to vertical obstructions
- For bike paths within 5 feet of highway, physical barrier
- Recommended two percent superelevation rate to encourage drainage.

More detailed guidelines are referenced in Appendix B.

Class II (Bike Lane)

A Class II bikeway provides a striped lane for one-way bike travel on a street or highway. Class II facilities should be established along roadways which have a high level of demand for bicycle travel. By striping and delineating the bikeway, movements from both motorists and bicyclists become more predictable. Rural highways such as those in Sierra County may not have sufficient existing pavement to accommodate striping a separate bike lane. As part of reconstruction projects, roadways with high bicycle demand could be widened to allow for bicycle lanes. In some areas bike lanes have been created by reducing or narrowing lanes or eliminating parking.

Design criteria for bike lanes depend on the presence of parking and curbs. For a rural highway with no on-highway parking, the bike lane must be at least four feet wide. If there is a gutter along the roadway the bike lane must be five feet wide. On roadways where parking is allowed but not marked, the minimum bike lane (including parking area) width is 11 to 12 feet. On roadways where parking stalls are marked, the minimum bike lane width (not including marked parking stall) is five feet.

Class III (Bike Route)

A Class III bikeway provides a shared use facility for bicycle, pedestrian and motorized use. Class III facilities are typically identified by signs or permanent markings. The purpose of designating a bike route is to indentify the preferred route for cyclists through corridors with high bicycle demand or to provide continuity between other facilities. Class III bike routes should have sufficient width to accommodate motorists and bicyclists. Specific design criteria have not been established. These would depend on traffic volumes, speeds, sight distance and parking availability.

New Roadways or Upgrades to Existing Roadways

A large portion of bicycle travel occurs on roadways not designated as bikeways. Consideration should be given to bicycles on all existing and new roadways. When resurfacing roadways, bicycle safety can be increased by providing a uniform surface along the right side of the road. The construction of new roadways, turn lanes and turn pockets should include a four foot wide shoulder with a standard four inch edge line. When considering restriping of a roadway, the impact of the project on bicycle travel should be considered.

Signage

In addition to identifying bicycle routes, wayfinding signage can assist bicyclists with navigating the safest route to their destination. Wayfinding signage can also be used to identify trailhead facilities for recreational bicyclists. Signage should identify direction distance and direction**.**

One ongoing issue in the community of Downieville is the impact visiting mountain bikers have on the small downtown area. After completing their ride or in between shuttles, mountain bikers often visit the local restaurants, shops or cool off in the river. This has a positive impact on the local economy. However, stakeholders have indicated that bikers often ignore traffic laws and do not completely respect the small, quiet nature of the community. Bicycles are often laid down carelessly in the middle of public right of way or sidewalks. As many mountain bikers travel to Downieville from urban areas, they may not realize their impact on the community. Therefore one potential bicycle facility project for Sierra County is to place a number of signs throughout the community which encourage low impact by visitors. A potential sign message is “Tread Lightly in Our Town.”

Bicycle Parking Facilities

Support facilities such as bicycle parking and racks can encourage bicycle use at major activity centers and schools. With the large number of mountain bikers staging in downtown Downieville, bicycle racks or secure bicycle parking could be beneficial to riders and business owners.

Trailhead Facilities

Given the large number of visiting recreational bicyclists in Sierra County, improving bicycle trailhead facilities is important to Sierra County. Bicycle trailhead parking areas with restrooms, trash cans and potable water will not only focus impacts on one location but also provide a welcoming environment for potential new cyclists. This has an indirect effect of contributing to the local economy.

Marketing/Information

A cost effective method to encourage bicycling is to create a Regional Bicycle Map. Sierra Buttes Trail Stewards has already created a waterproof map of dirt recreational trails in Sierra and Plumas counties which is sold for $15.00 at local and regional bike shops and outdoor stores. Sierra County could partner

with Plumas County to create a similar map for road cyclists. In addition to identifying safe and scenic bicycle routes, the map could identify local stores and restaurants and outline safe bicycling practices and etiquette.

Project Prioritization Criteria

Consistent with the prior Sierra County Bicycle Plan, this plan lists project prioritization criteria for ranking bicycle facility projects.

- Connectivity – Does the project connect or create an important regional bikeway? Is the route a direct connection between activity centers?
- Cost Effectiveness – Are the benefits proportionate to the costs? What is the cost per foot of new bikeway? How many bikeway users are anticipated per dollar spent? What funding sources is the bikeway eligible for?
- Route Conditions – Does the bikeway include steep grades? Is there sufficient road width to accommodate the proposed Class II and III bikeways? Is existing pavement character suitable for bicycling? Are traffic patterns compatible with bicycle and pedestrian traffic?
- Safety – Will the project eliminate a dangerous existing situation for bicyclists? Will the project encourage increased awareness of bicycle safety issues?
- Type of Use – Will the bikeway be primarily used by commuters or recreational cyclists?

Sierra County Potential Bicycle Improvements

Table 3 and Figure 5 present a list of potential bicycle facility improvements for Sierra County which address the needs and issues identified above. This list was formulated based on input from the public, stakeholders and a review of existing conditions. Cost estimates for the improvements are based on costs in similar California counties and represent conceptual construction costs. Potential funding sources have been identified for each improvement. A total of $15.8 million in bicycle facility improvements have been proposed. It should be noted that each improvement listed in Table 3 will require additional engineering, planning and environmental study and approvals prior to actual construction.

Bicycle Safety Education and Encouragement Programs

Constructing bikeway projects is only one part of the increase bicycle activity and safety. Improper bicyclist and motorist behavior can jeopardize bicycle safety despite the availability of regional bikeway facilities. Effective education, encourage and enforcement programs are an essential part of bicycle transportation.

Safe Routes to Schools

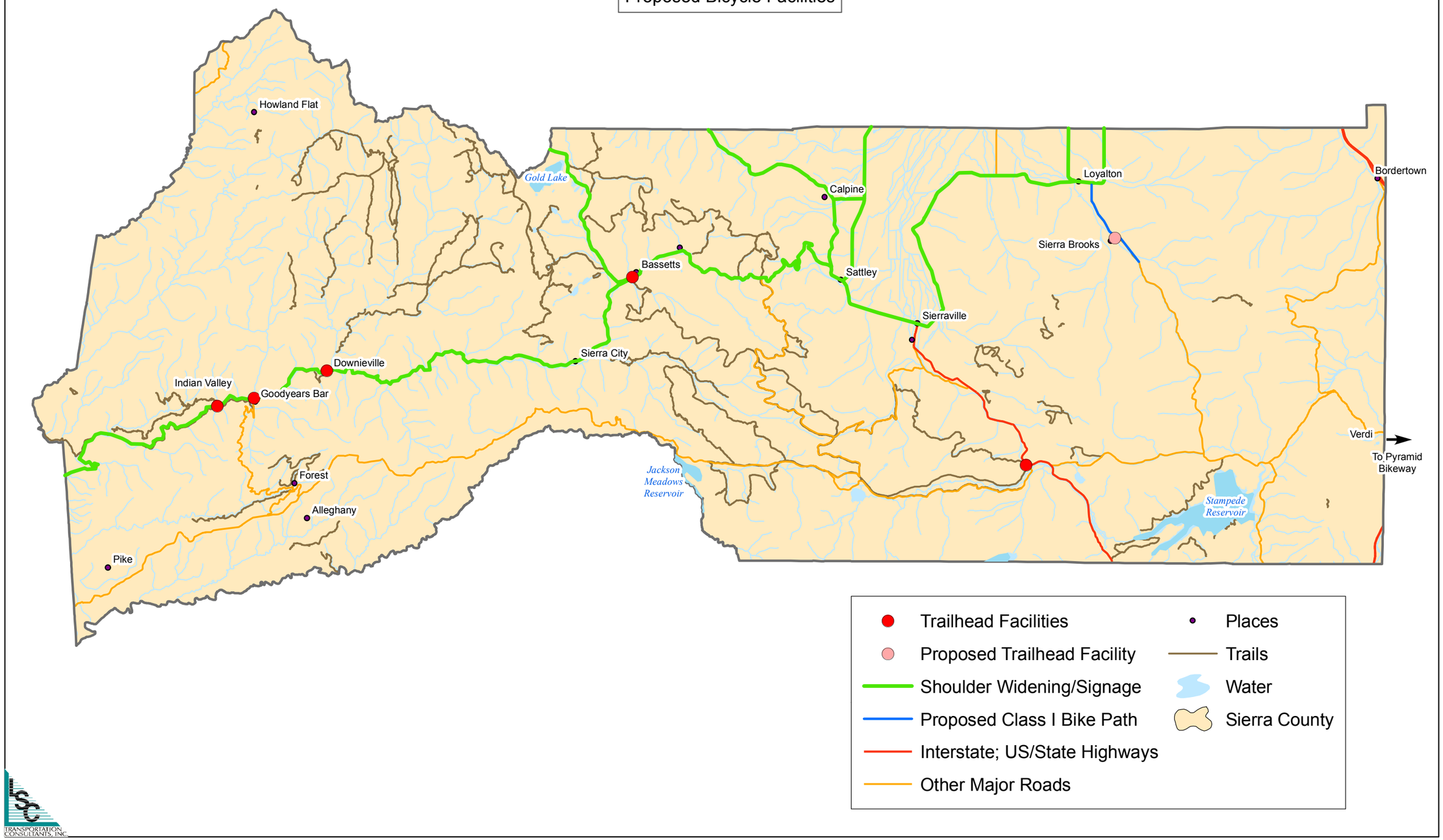
The state and federal Safe Routes to Schools grant programs (outlined in the next chapter) are available to fund construction projects which improve the safety of students walking or biking to school. An important part of establishing safe bicycle routes to schools is education and encouragement. Resources for developing an education program are available through the state Safe Routes to School website. An education/ encouragement plan should reach out to children, parents, drivers near the school and neighbors. The schools could partner with local law enforcement to organize bicycle safety courses and bicycle rodeos. Safety incentive programs can also be established such as handing out gift certificates to school children wearing helmets. For the encouragement portion of the program, school children should

TABLE 3: Sierra County Bicycle Facility Potential Improvements

Community Area	Description	Type	Mileage	Estimated Cost ($1,000's)	Potential Funding Source
Loyalton	Loyalton to Sierra Brooks Bicycle/Pedestrian Path (Options include following Smithneck Road or Smithneck creek)	Class I	2.3	$920	BTA/TE/SR2S
Sierra Valley	Sierraville Downtown Pathway to Old Truckee Road, Landscaping	Class II, Landscaping	1.06	$318	BTA/TA
Sierra Valley	Beckwith Road (A-24)	Widen Shoulders/Signage	2.5	$375	BTA/RSTP
Loyalton	SR 49 Loyalton Vicinity	Widen Shoulders/Signage	2	$300	BTA/TA
Sierra Valley	SR 49 Sattley to Sierraville	Widen Shoulders/Signage	4	$600	BTA/RSTP
Sierra Valley	Westside Road (A-23)	Widen Shoulders/Signage	7	$1,050	BTA/RSTP
Sierra Valley	SR 49 Sierraville to Loyalton	Widen Shoulders/Signage	12.4	$1,860	BTA/RSTP
Sierra Valley	SR 49 Loyalton to Plumas County Line	Widen Shoulders/Signage	2.3	$345	BTA/RSTP
Sierra Valley	Calpine Road	Widen Shoulders/Signage	1.27	$191	BTA/RSTP
Sierra Valley	SR 89 from Calpine Road to SR 49	Widen Shoulders/Signage	3	$450	BTA/RSTP
Sierra Valley	SR 49/89 from SR 89 intersection to Sattley	Widen Shoulders/Signage	0.9	$135	BTA/RSTP
West County	SR 49 from Yuba County line to Yuba Pass	Widen Shoulders/Signage	34	$5,100	BTA/RSTP
Sierra Valley	SR 89 from Plumas County Line to Calpine	Widen Shoulders/Signage	6.8	$1,020	BTA/RSTP
Yuba Pass	SR 49 from Bassets to SR 89 junction	Widen Shoulders/Signage	13	$1,950	BTA/RSTP
Gold Lakes	Gold Lake Hwy from Bassetts to Plumas County line	Widen Shoulders/Signage	7.8	$1,170	BTA/RSTP
Downieville	Downieville - Downhill trailhead to parking area	New Multi-Use	1	TBD	RTP
County	Countywide Wayfinding and informational signage	Signage	--	$10	TDA
Downieville	Downieville Visitors Center and Merchants	Bicycle Racks	--	$6	TDA
County	Schools	Bicycle Racks		$6	
County	Bicycle Map	Marketing/Information	--	$2	TDA
	Total			**$15,808**	

Source: LSC, Sierra County RTP.

Figure 5
Proposed Bicycle Facilities



This page left intentionally blank.

be made aware of the health and environmental benefits of bicycling to school. Costs for programs or activities related to education, enforcement or encouragement activities are eligible for reimbursement under the Safe Routes to Schools grant program.

Outreach

Outreach to both bicyclists and motorists are an important part of a well-rounded bicycle plan. Efforts could include distributing Sierra County bicycle maps and educating both bicyclists and motorists on how to safely navigate Sierra County. Potential topics include:

- Bicyclists sharing the road safely with large trucks
- Motorists sharing the road safely with bicyclists
- Riding single file
- Roadways with the best shoulders
- Popular cycling routes
- Reminder that mountain bikers and cyclists are subject to California Vehicle Code regulations. (Caltrans District 3 has prepared an informative pocket bicycling guide).

The bicycling events held in Sierra County are good opportunities for bicycle education/ outreach. Establishing a booth at the Downieville Classic and the Tour De Manure would provide an opportunity to reach a large number of recreational cyclists in a short period of time.

Bike to Work/School Days

Employers or the SCTC could sponsor a “Bike to Work/School” day. The Tahoe Regional Planning Agency has had success in sponsoring a Bike to Work/School competition. As part of the event, local businesses have donated raffle prizes to participants. A smaller version of the competition could be put on in Sierra County.

This page left intentionally blank.

Chapter 5
Potential Funding Sources

Bicycle Transportation Funding

The following provides a summary of the federal, state, and local funding sources and programs available to the Sierra County region for bicycle transportation facility improvements.

Federal Sources

Moving Ahead for Progress in the 21st Century (MAP-21)

MAP-21 is the successor to Safe, Accountable, Flexible, and Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU), which provided $286.4 billion in guaranteed funding for federal surface transportation programs over six years through Fiscal Year (FY) 2009. SAFETEA-LU expired in 2009; however Congress has passed several temporary extensions to the bill with the most recent ending on June 30, 2012. On July 6, 2012, Obama signed into law MAP-21. Traditionally, the federal transportation bill has been funded through federal gas taxes. As vehicles have become more efficient, there is less revenue to draw from and an increase in the tax is politically unpopular in these hard economic times. MAP-21 funds the Transportation Trust Fund for the next two years. MAP-21 includes the following elements:

- Generally reauthorizes the federal-aid highway programs at current funding levels plus inflation for two fiscal years.
- Consolidates more than 80 Federal Highway Administration (FHWA) programs into a handful of broad core programs.
- Provides states with more flexibility to fund programs within the core programs.
- The bill establishes an outcome-driven approach that tracks performance and will hold states and metropolitan planning organizations accountable for improving the conditions and performance of their transportation assets.

Transportation Alternatives Program

SAFETEA-LU included several programs that provided funding for bicycle projects: Safe Routes to Schools, Transportation Enhancements and Recreation Trails. These programs have been reorganized and consolidated with other uses into a new program called Transportation Alternatives (TA). Funding levels for TA programs represent a 33 percent reduction in funding from FY 2011 levels. Additionally, states have the option to transfer up to 50 percent of TA funding to any other use without explanation. In the case of an emergency, states can transfer up to 100 percent of TA to rebuild damaged transportation infrastructure.

- **Safe Routes to Schools (SRTS)** – This federal funding program emphasizes community collaboration in the development of projects, and projects that incorporate elements of the 5 E's – education, encouragement, engineering, enforcement, and evaluation. No local match is required for improvement projects that will make it easier and safer for children K-8 to walk or bike to school. This program will become eligible uses under the TA program. No significant changes otherwise.

- **Recreational Trails Program (RTP)** – The Recreational Trails Program (RTP) provides funds to the states to develop and maintain recreational trails and trail-related facilities for both non-motorized and motorized recreational trail uses. In California, the program is administered through the California State Parks Department. Eligible applicants include public entities and non-profit organizations with management authority over public lands. Eligible projects include acquisition for easements for recreational trails, construction of new trails, and development of trailside and trailhead facilities. A 12 percent local match is required. With MAP-21, states have the option to "opt out" each year from this program. Program will remain relatively unchanged otherwise.

- **Transportation Enhancements (TE)** projects must be related to surface transportation, but are intended to be enhancements that go beyond the normal transportation project functions. Projects eligible for TE funding include acquisition of scenic easements, landscaping, rehabilitation of historic transportation buildings, preservation of existing and abandoned railway corridors for conversion to pedestrian/bicycle trails and pedestrian/ bikeway improvements, Under MAP-21 safety education activities for pedestrians and bicyclists are no longer an eligible activity; however a new safe routes for non-drivers project component may allow some of those uses. Environmental mitigation uses were expanded and construction of turnouts, overlooks, and viewing areas became eligible uses to make up for the loss of the Scenic Byway program.

Surface Transportation Program

As with SAFETEA-LU this program allows states and regions to fund a broad set of projects: highways, transit, freight rail, bicycle/pedestrian facilities and travel demand management projects.

Highway Safety Improvement Program

This program was established as part of the federal transportation bill for the purpose of achieving a significant reduction in traffic fatalities and serious injuries on all public roads. Improvements for pedestrian and bicycle safety, and installation and maintenance of signs at pedestrian and bicycle crossings and school zones are eligible uses under this program. A state may be eligible to use up to 10 percent of its Highway Safety Improvement Funds for other safety projects, such as education and encouragement programs.

Secure Rural Schools and Community Self-Determination Act

Since 1908, 25 percent of Forest Service revenues, such as those from timber sales, mineral resources and grazing fees, have been returned to states in which national forest lands are located. Originally enacted in January 2001 as S1608/HR2389, this program restores the stability and predictability of annual funds to counties with National Forest system lands that were impacted by reductions in timber receipts, due to changes in legislation. This program is also referred to as the Federal Forest Reserve Program. This program was reauthorized in October of 2008 with a new formula for distribution through 2011. These funds have been an important source of revenue available to the Sierra County Road Department and schools, allowing much-needed road maintenance on several roads. A one year reauthorization to the Secure Rural Schools Act was included in the Federal Transportation Bill.

State Sources

Bicycle Transportation Account (BTA) Program – This state program provides funding for projects that improve safety and convenience of bicycle commuters. To be eligible for funding, local jurisdictions must have an adopted Bicycle Transportation Plan approved by Caltrans. Projects must conform to the

requirements of Caltrans' Highway Design Manual, Chapter 1000. Only commuter bikeway projects are eligible. Maximum project award is $500,000.

AB 57 - Safe Routes to School (SR2S) – This state legislated program allocates funds for projects that improve school commuter routes. Fundable projects include the construction of bicycle and pedestrian safety and traffic calming projects such as sidewalk improvements, traffic calming and speed reduction, pedestrian/bicycle crossing improvements, on-street bicycle facilities, traffic control devices, and traffic diversion improvements. AB 57 extended this program indefinitely. Approximately $45 million will be available for projects through Cycle 10 of SR2S and will be funded through the FY 2011-12 and 2012-13 State Budgets. Applications for Cycle 10 were due March 30, 2012. This is a competitive funding source and a 10 percent local match is required.

Community Based Transportation Planning Grants (CBTP) – As part of the Caltrans Transportation Planning Grant package, the CBTP Grant Program funds coordinated transportation and land use planning projects that encourage community involvement and partnership. Projects should support livable community concepts with transportation or mobility objectives and promote community identity and quality of life. Examples of projects include the following studies/plans:

- Long-term sustainable community/economic development growth
- Safe, innovative, and complete pedestrian/bicycle/transit linkage
- Community to school linkage
- Jobs and affordable housing proximity
- Transit oriented/adjacent development or "transit village"
- Community transit facility/infrastructure
- Mixed-land use development
- Form-based or smart code development

MPOs, RTPAs, cities, counties, transit districts and federally-recognized Native American tribal governments may apply for this grant program directly. A 10 percent local match is required and the grant maximum is $300,000.

Environmental Justice – Also part of the Caltrans Transportation Planning Package, Environmental Justice grants are intended to promote the involvement of low-income and minority communities, and Native American Tribal Governments, in the planning for transportation projects. Example projects are similar to those of CBTP grants but must address the interests of under-represented communities. A 10 percent local match is required and the grant maximum is $250,000.

APPENDIX A

Comments

PLUMAS-SIERRA BICYCLE CLUB
PO Box 270
Clio, CA 96106
www.facebook.com/PlumasSierraBicycleClub

Genevieve Evans
Planner
LSC Transportation Consultants, Inc.
2690 Lake Forest Road., Suite C
PO Box 5875
Tahoe City, CA 96145

Genevieve,

Finally had a chance to do an overview of paved roads in Sierra County. Here are our thoughts.

The enclosed map has highlights in green, yellow, and orange.

Green – means the road is generally safe to ride on because it has bike lanes, acceptable shoulders or minimal traffic.

Yellow – Rideable with some caution. Road may have road hazards (freeze cracks, potholes, uneven surfaces or has a heavier volume of traffic.

Orange – Use extreme caution. These roads have little or no shoulder, High volume or high-speed traffic, blind corners, and (subjectively – drivers who tend not to yield to cyclists). The PSBC almost never rides these roads.

Areas Roads Critiqued

Gold Lakes Highway
This is the signature ride of the Plumas Sierra Bicycle Club. Gold Lake Road has a shoulder for much of it and is generally. The loop, which includes Highway 89 through Calpine and then Highway 49 over Yuba Pass varied in terms of road widths but is a well maintained road and very rideable. Caution to beginning riders because of some traffic.

Wider shoulders and an occasional "Watch for Bicyclists" or "Share the Road" signs might help. This road get hundreds of bicyclists over a weekend.

Highway 49 Vinton to North San Juan
Vinton through Sierraville is an enjoyable ride. Shoulders exist from Vinton to Loyalton and traffic from Loyalton all the way to Bassetts is moderate.

Bassetts to Sierra City is dangerous because of numerous potholes, but the road is being repaved so this will change

We generally do not ride anywhere from Sierra City to North San Juan on road bikes. The road has no shoulder for much of it and weekend traffic more hostile to cyclists.

Highway 89 Graeagle to Truckee

Graeagle to Sierraville has an occasional shoulder and is generally safe but caution advised on weekends. Sierraville to Truckee is part of the Sierra Cascades bicycle route and sees a steady flow of touring cyclists during the summer and fall. (See this link) www.adventurecycling.org/routes/sierracascades.cfm However, in our opinion this road is not safe. The PSBC never rides it past the outskirts of Sierraville because the road has little or no shoulder and many curves. If the road is scheduled for repaving and a shoulder were included, it would create one of the most gorgeous bicycling corridors in the area and truly open up Truckee to Sierravale and the Sierra Valley to safe cycling and more tourism.

Henness Pass Road (east to west)
This is a gorgeous road to Jackson Meadows Reservoir, however deep freeze cracks from Highway 89 to Webber Lake make this road a little dangerous. The road from Webber Lake to Jackson Meadows Res. makes for a scenic ride.

If crack filling and chip seal were done to the first half of the road it could be a designated bike trip route.

Ridge Road to Alleghany
A fun back road to moderate traffic with OK surface.

Wider shoulders would improve any future plans for this road.

Verdi
Roads in this area are extremely popular with Reno area riders. The main roads have shoulders the side roads have little traffic.

Stampede/Boca
Bocca Reservoir is generally safe but gets a good share of weekend traffic. A shoulder in the future, where there is none, would be a big improvement.

County Road A23, Heriot, A24
These roads are all generally good roads to ride on.

A23 – has 65mph traffic, but has a shoulder about the entire way. A repaving project a few years ago removed some nasty freeze cracks. Good road with caution needed.

Heriot Lane – scenic with minimal traffic. Plumas County portion of the road has deteriorated and is rideable only with caution.

A24 – good pavement and moderate traffic.

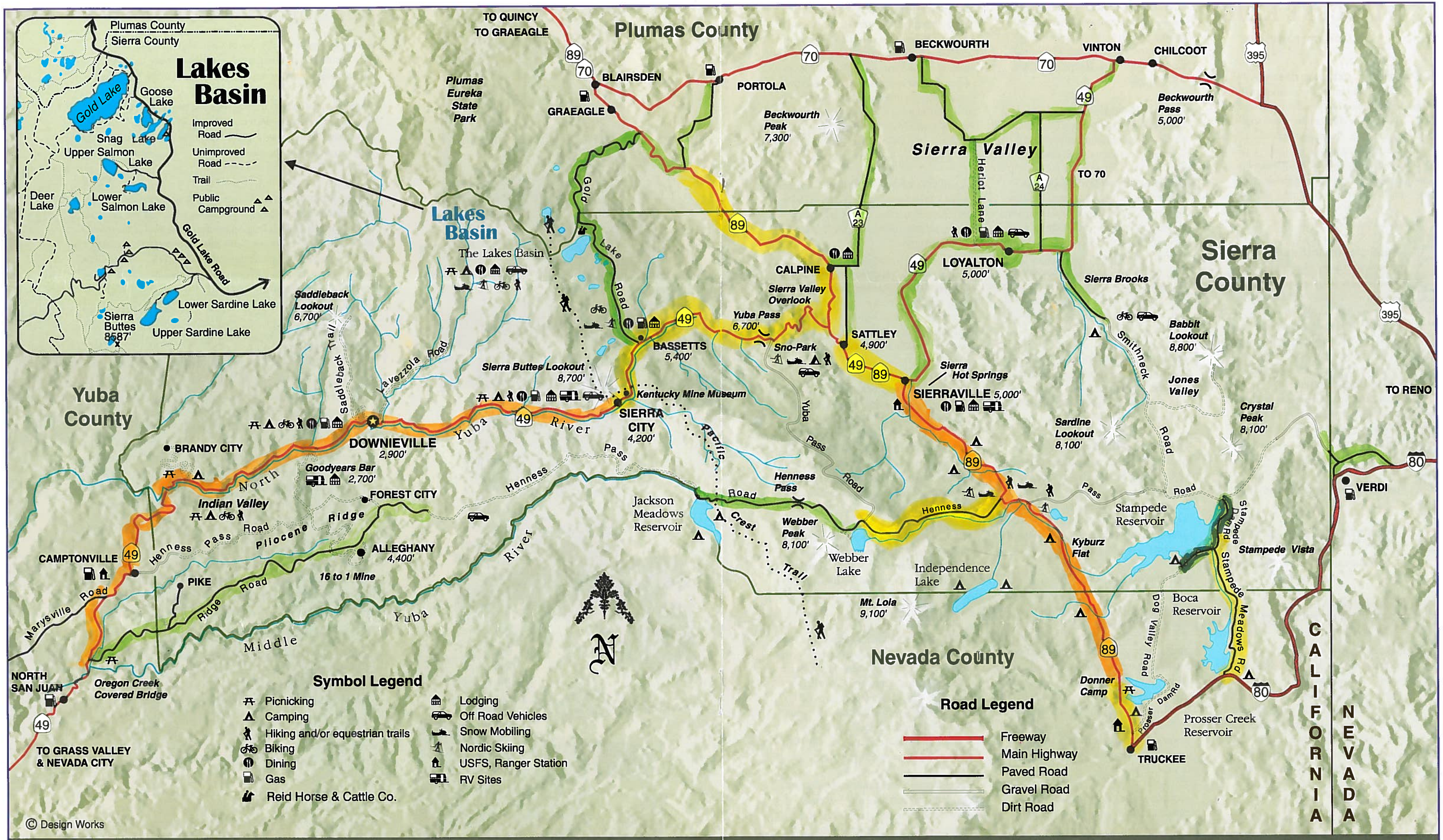
Sierra County Communities
Loyalton is the only community that has a network of paved roads. The roads tend to be wider than typical and provide easy and relatively safe access to the schools and businesses. As always bike routes to the schools might help and encourage more ridership.

Our area has some of the best scenery in the Sierras and spectacular fall colors. Bike lanes or shoulders and designated bike routes such as Truckee that connect communities could turn this area into a bicycling destination and boost the local economies of the small towns who thrive on tourist dollars.

Hope this helps,

Len Fernandes
President – Plumas Sierra Bicycle Club
PO Box 270
Clio, CA 96106

530-832-1613
fernandes@digitalpath.net



www.sierracountychamber.com

SIERRA COUNTY, CA.

Sierra County Chamber of Commerce 1-800-200-4949

Who We Are

Formed in 2003, the Sierra Buttes Trail Stewardship is a volunteer driven non-profit whose primary goal is the maintenance and enhancement of the trail systems in and around Downieville, the Lakes Basin, Graeagle and Quincy.This small group has donated over 32,000 hours of volunteer labor to both the Plumas and Tahoe National Forests, maintaining over 30 trails, including the creation of 25 miles of new trails. While these trails see over 200,000 users per year, they continue to maintain a level "A" standing due to all the hard work of the Stewardship volunteers. This organization is not only a shining example of what a small group of dedicated, passionate people can do for an area, it is a demonstration of economic efficiency when no alternatives exist. All our product sponsors' and volunteer monies go directly to trail maintenance and development. We multiply all donations by over 1500% through organized volunteer labor and in-kind contributions.

Sierra Buttes Trail Stewardship PO Box 268 Clio, CA 96106 www.sierratrails.org

North Yuba River Trail

Yuba Pass to Bullards Bar Reservoir
Tahoe National Forest, Sierra County, California

The North Yuba River Trail serpentines through the river canyon for more than 17 miles, connecting Downieville to Indian Valley

The North Yuba River Trail (NYRT) is etched into the steep and ruggedly beautiful North Yuba River Canyon of Sierra County, California. Its route follows pre-historic, historic, and newly constructed pathways, linking gold-rush era towns, Forest Service campgrounds, and some of California's most stunning backcountry.

Planning and construction of the NYRT has taken nearly 20 years, and has cost well over a million dollars. But this is just the beginning, as much of the route still needs to be built. Once complete, the NYRT will be approximately 70 miles in length and will connect the river's headwaters at Yuba Pass (elevation 6,700'), to the nation's fourth highest dam at Bullards Bar Reservoir (elevation 2,000').

To better explain the NYRT project, the trail is split into 6 sections, each with an approximate budget and estimated timeline for construction. Construction costs are $8 per foot ($42,240 per mile). Total construction cost estimate: $1,943,040. Cost estimates do not include necessary footbridges or specially engineered sections of tread. Total construction jobs created from the NYRT project = 15-20.

Section 1- Yuba Pass to Bassetts. $422,400 / 24 months
10 miles. Not complete.
The route follows a historic pathway between the towns of Bassetts and Calpine. Some new construction is required.

Section 2- Bassetts to Sierra City. $337,920 / 24 months
8 miles. Not complete.
The route follows a portion of the Sardine Lake Flume, which runs along the south face of the Sierra Buttes Mountain, connecting Sardine Lake and the historic Colombo Mine. Some new construction is required.

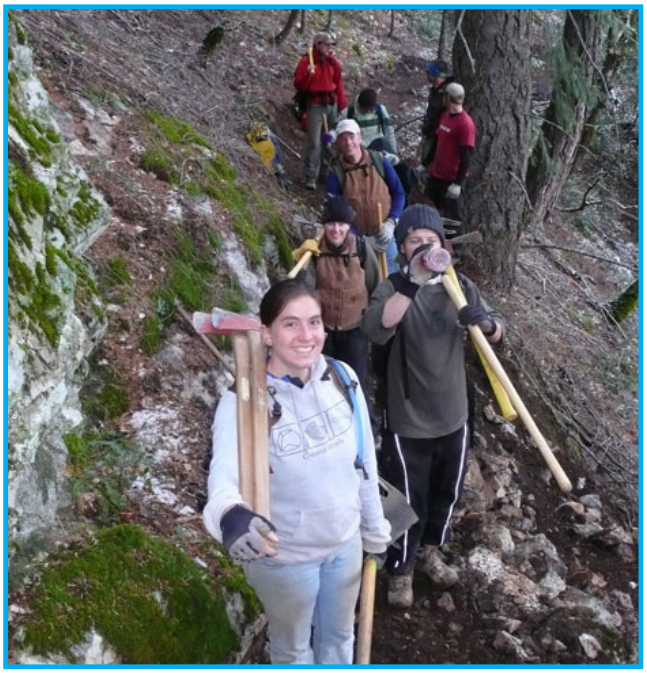
North Yuba River Trail volunteer work days in action

Section 3- Sierra City to Downieville. $633,600 / 36 months
15 miles. Not complete.
The route follows the historic High Commission Route, which was the original pathway between Sierra City and Downieville. Some new construction is required.

Section 4- Downieville to Goodyears Bar.$0 / 0
7 miles. Complete.
Maintenance provided by SBTS through trail adoption program.

Section 5- Goodyears Bar to Indian Valley. $0 / 0
9 miles. Complete.
Maintenance provided by SBTS through trail adoption program.

Section 6- Indian Valley to Bullards Bar Dam. $549,120 / 24 months
21 miles. Partially complete with 13 miles of construction needed.
The route follows a portion of Shenanigan Flat Road and then becomes the Canyon Creek Trail, which connects to the Canyon Creek confluence. From Canyon Creek the route follows the existing Kelly Bar and Wambo Bar Trails to the existing Bullards Bar Trail System.



Listed below are some of the NYRT highlights, and the project's community benefits:

- links the historic towns of Bassetts, Sierra City, Downieville, Goodyears Bar and Camptonville.

- provides connectivity to existing Forest Service system trails, including: Pacific Crest Trail, Lakes Basin Recreation Area, Yuba River OHV Area, Forest City Trail System, and Bullards Bar Trail System.

- creates jobs by hiring local workers, who are responsible for doing the work, leading volunteer crews, and educating our youth.

- improves Sierra County's recreation-based economy, by attracting trail enthusiasts from around the world, who are likely to spend money at area motels, restaurants and retail shops.

- allows for multiple-day outings, by connecting over 20 Forest Service campgrounds along the route.

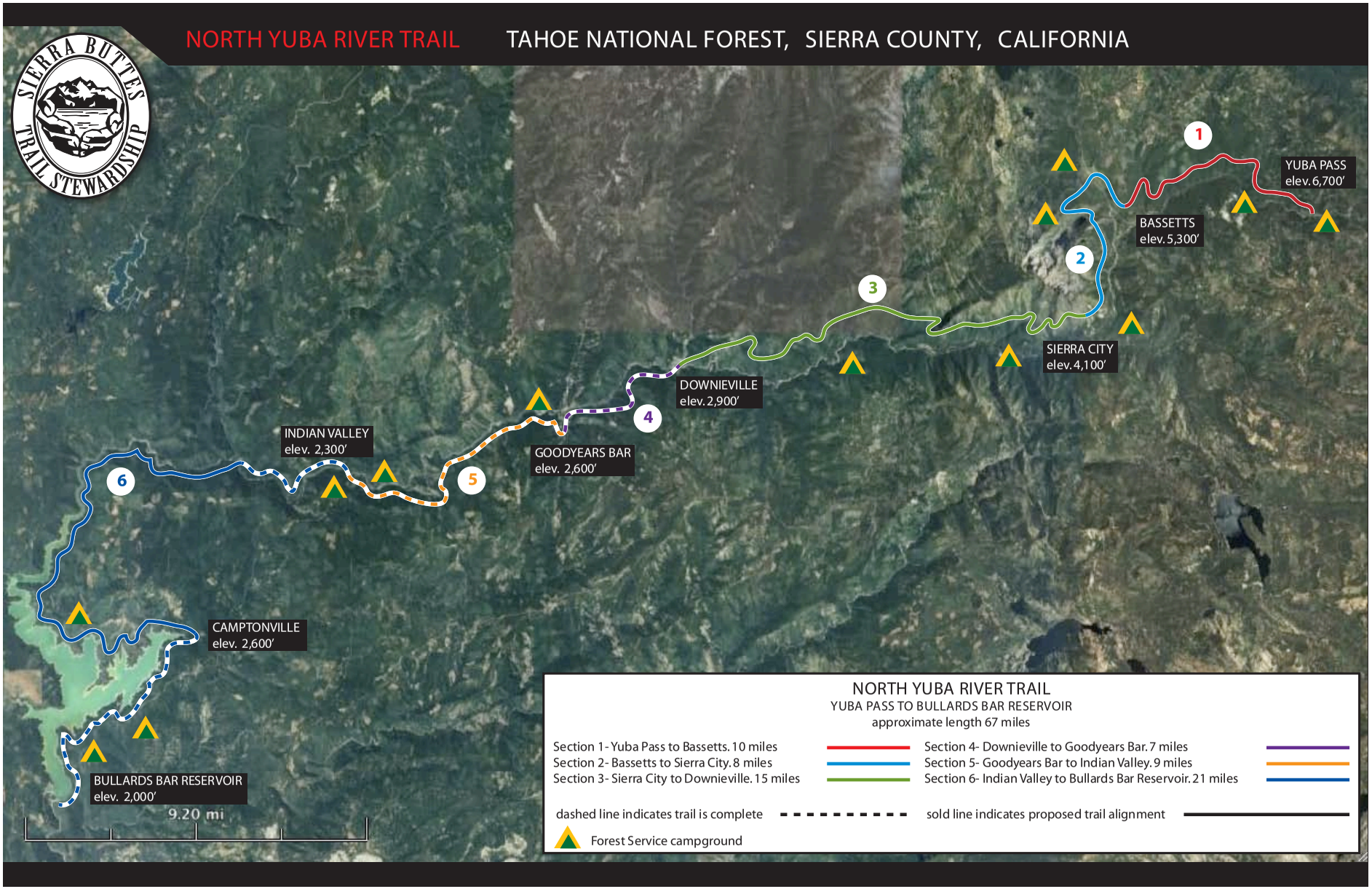
- reduces watershed contamination and improve air quality by providing for alternative, non-motorized routes of transportation.

- increases public safety, by providing a non-motorized alternative to traveling Highway 49.

- encourages an active and healthy lifestyle for residents and visitors by enhancing recreational opportunities in the area.

- increases area property values by providing an integrated trail system with "backdoor" access points.

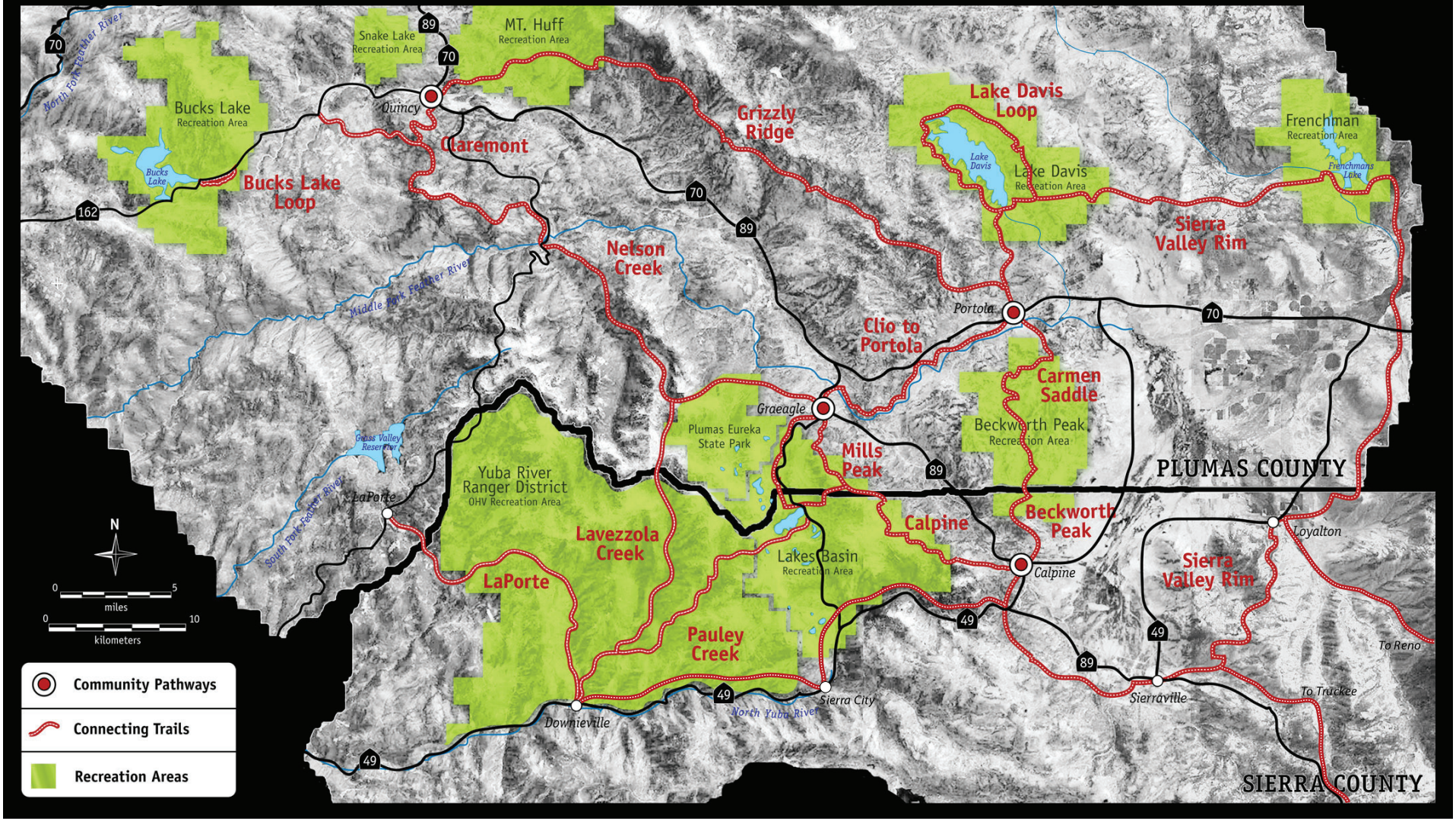
- helps to sustain greater year-round residency by offering recreational opportunities for outdoor oriented residents.

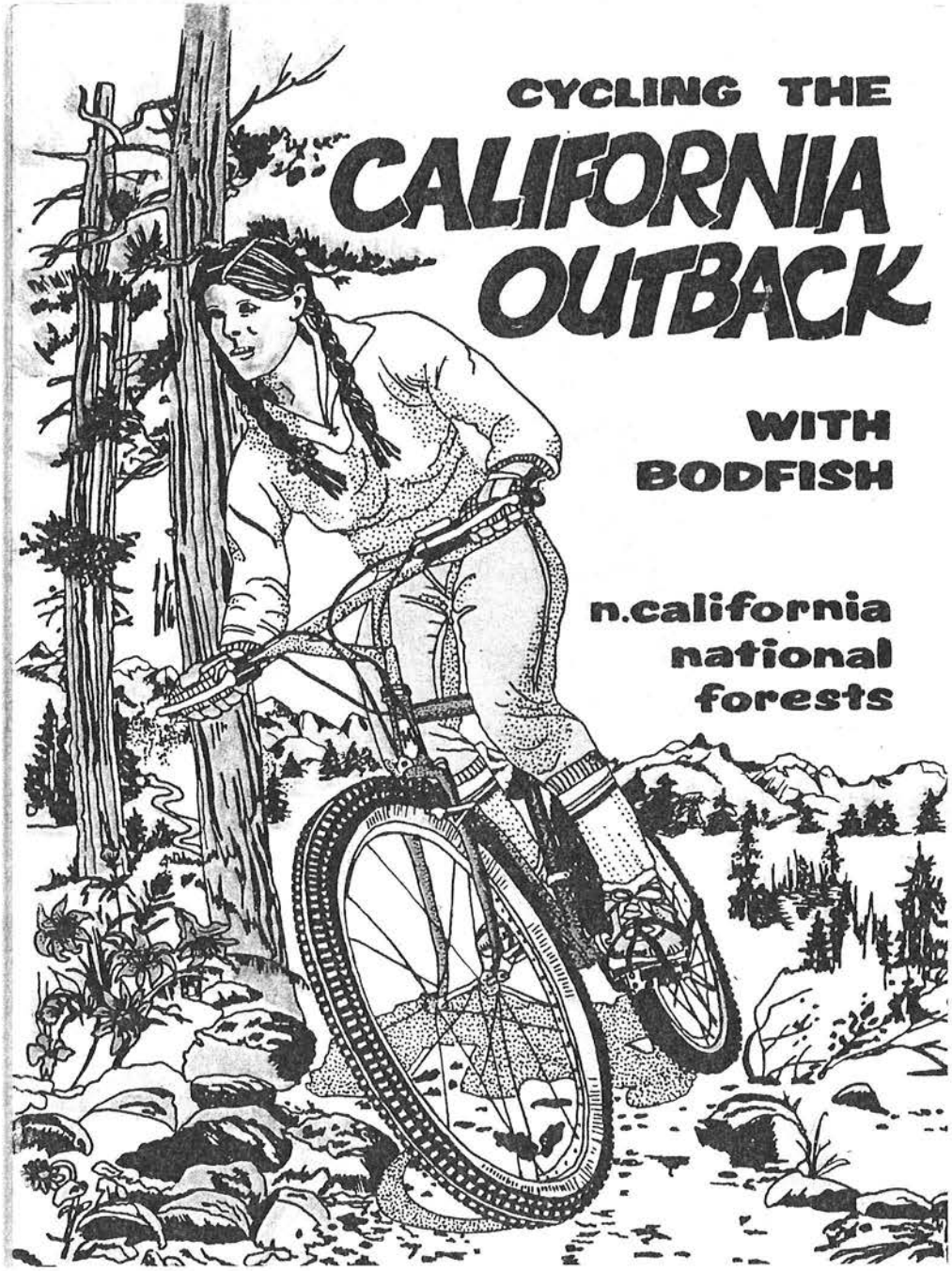

NORTH YUBA RIVER TRAIL
TAHOE NATIONAL FOREST, SIERRA COUNTY, CALIFORNIA
SIERRA BUTTES TRAIL STEWARDSHIP
YUBA PASS elev. 6,700'
BASSETTS elev. 5,300'
SIERRA CITY elev. 4,100'
DOWNIEVILLE elev. 2,900'
GOODYEARS BAR elev. 2,600'
INDIAN VALLEY elev. 2,300'
CAMPTONVILLE elev. 2,600'
BULLARDS BAR RESERVOIR elev. 2,000'
9.20 mi
1
2
3
4
5
6
NORTH YUBA RIVER TRAIL
YUBA PASS TO BULLARDS BAR RESERVOIR
approximate length 67 miles
Section 1- Yuba Pass to Bassetts. 10 miles
Section 2- Bassetts to Sierra City. 8 miles
Section 3- Sierra City to Downieville. 15 miles
Section 4- Downieville to Goodyears Bar. 7 miles
Section 5- Goodyears Bar to Indian Valley. 9 miles
Section 6- Indian Valley to Bullards Bar Reservoir. 21 miles
dashed line indicates trail is complete
sold line indicates proposed trail alignment
Forest Service campground

SIERRA BUTTES TRAIL STEWARDSHIP

Master Plan

for Plumas and Sierra Counties





CYCLING THE CALIFORNIA OUTBACK

WITH BODFISH

n.california national forests

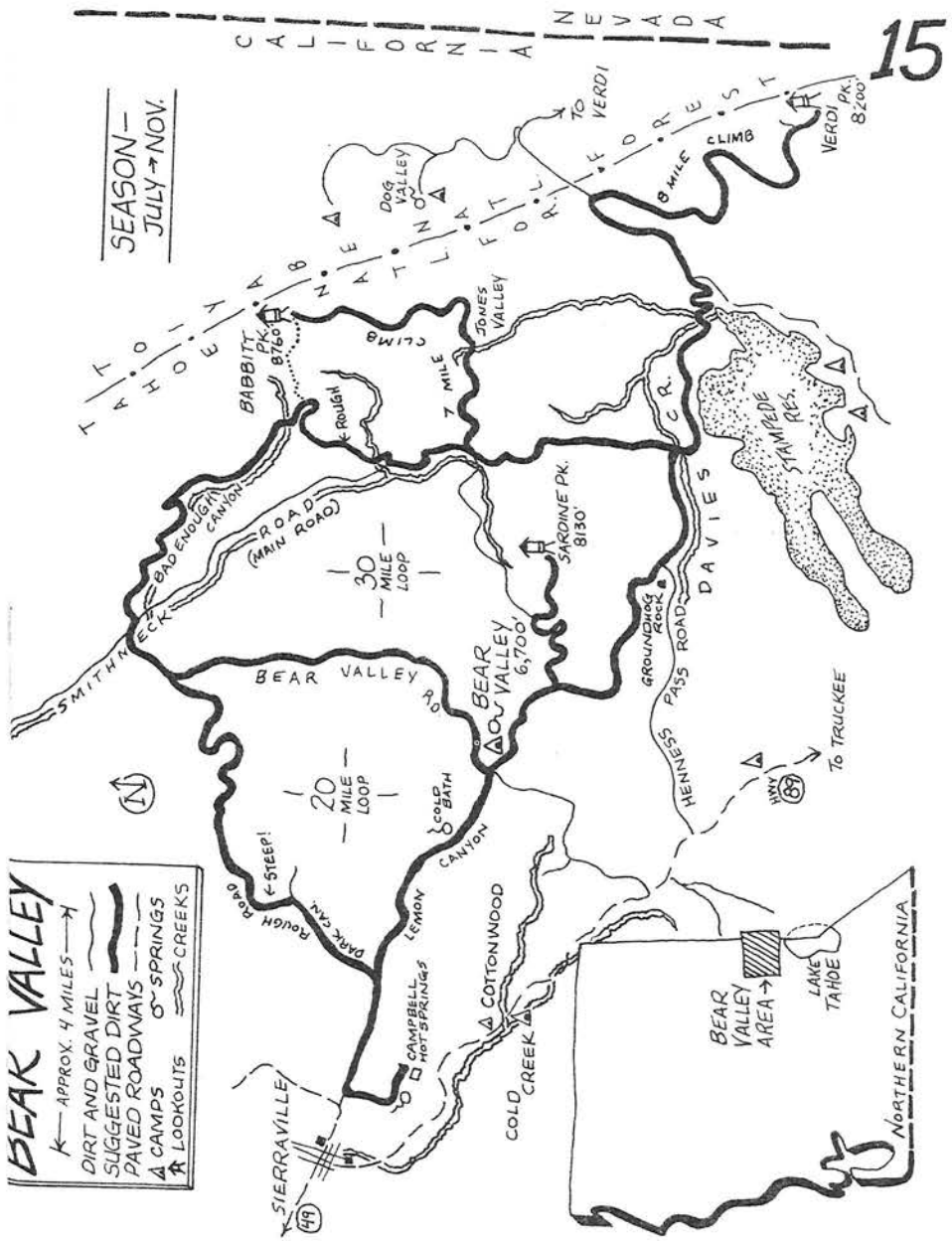
TAHOE NATIONAL FOREST

BEAR VALLEY

ONCE ESTABLISHED AT THE BEAR VALLEY BASECAMP YOU'RE IN THE HEART OF A FULL WEEKEND'S WORTH OF MOUNTAIN BICYCLING LOOPS AND LOOKOUT TOWER HILL-CLIMBS. CARRY PLENTY OF FOOD, WATER, A TAHOE NATL. FOREST MAP AND SOME EMERGENCY SUPPLIES (TOOLS, MATCHES, BIVY SAC, FLASHLIGHT, FIRST AID, ETC.) FOR THE OUTINGS THAT TAKE YOU MORE THAN A FEW MILES FROM YOUR BASECAMP. ALSO, ALWAYS LET YOUR BASE-CAMP BUDDIES KNOW WHERE YOU PLAN TO EXPLORE IF YOU ARE GOING SOLO. OF COURSE, IT'S WISER TO RIDE WITH A FRIEND... SOMEONE WHO'LL PICK YOU UP AND DUST YOU OFF WHEN YOU TUMBLE, OR RETURN TO CAMP FOR HELP IF YOUR BIKE OR BODY SUFFER A SERIOUS BREAKDOWN. MANY TIMES YOU'LL FIND IT TAKES MORE THAN ONE PAIR OF EYES TO READ THE LAND AND INTER-PRET THE MAPS.

I STARTED "BAGGING" HIGH MOUNTAIN PASSES AND LOOKOUTS ON A FAT TIRE ONE-SPEED BACK IN THE MID-70'S, SEARCHING FOR THE ENDLESS DOWNHILL AND COMMANDING VISTAS MANY TIMES MEANT PUSHING UP STEEP PITCHES AND RESTING ON DESCENTS TO SLAP BLOOD BACK INTO MY KNUCKLES AND LET THE REAR HUB COOL. SARDINE AND BABBITT PEAKS ARE ON THE SPINE OF THE DIVIDE BET-WEEN THE FEATHER RIVER AND THE TRUCKEE RIVER, WHILE VERDI LOOKOUT TOWERS 4000' DIRECTLY ABOVE THE TRUCKEE RIVER CANYON AND I-80, WEST OF RENO.

CLIMBING THESE PEAKS MAY BE ABIT MORE GUNG-HO, (SWEATY, GRIMY, GUT-WRENCHING HARD WORK) THAN YOU'D HOPE TO ENCOUNTER. IF SO, BUT YOU'RE STILL ITCHING TO GET AN EAGLE'S VIEW OF THE BEAR VALLEY AREA, ATTEMPT THE 4 MILE RIDE TO SARDINE POINT. STILL FEELING SPUNKY? CONTINUE ANOTHER 2 MILES UP TO SARDINE LOOKOUT.



Sierra County Bicycle Plan Recommendations
Road Cycling – outlined in red

Gold Lake Loop
Graeagle – Gold Lake Highway- Bassetts – Highway 49
Entire Loop – "Share the Road" signs
Highway 49 add "Class II" shoulder when funding is available, 1 to 2 foot of shoulder space for cyclists is needed for safe travel
Highway 89 to Graeagle, add "Class II" shoulder, very narrow dangerous road

County Road A23
Sattley – Portola – Highway 70 – Blairsden – Graeagle
Entire Loop – "Share the Road" signs
Improve Highway 89 from Graeagle to Sattley; add "Class II" shoulder

Sierraville to Jackson Meadows Reservoir
Sierraville – Highway 89 – Henness Pass Road to Jackson Meadows Reservoir
Highway 89 needs shoulder upgrade to "Class II"
Entire Loop – "Share the Road" signs
Route leads to camping opportunities on TNF @ Jackson Meadows Reservoir

Sierraville to Sierra Brooks Loop
Sierraville to Loyalton, Sierra Brooks development loop
Highway 49 add Class II shoulder
Entire Loop – "Share the Road" signs

Downieville/Lavezzola
Lavezzola Road
"Share the Road" signs

Pliocene Ridge Route
Downieville – Highway 49 – Goodyear Bar – Mountain House Road
Pliocene Ridge Road – East and West to Pike City Road to Camptonville Road
"Share the Road" signs

Dirt Cycling- outlined in green
Yuba Pass – Forest Service (FS) Road 12, FS 54, Gold Lake Highway FS 09, FS 52 to Highway 49 and back

There is another alternative that is mostly dirt; I am not sure the condition of the road. From Yuba Pass Campground – FS 09, Chapman Saddle to Haskell Peak to Howard Creek Road FS 28, to Mills Peak Lookout (peak bagging experience)

Sardine Peak/ Babbitt Peak/Verdi Peak
A variety of rides from Sierraville, see" Cycling the Outback" with Bodfish, Bear Valley TNF map #15

Opportunities worth exploring: outlined in yellow
Henness Pass Road – FS 88 – FS 07 – FS 70 – Pass Creek Camp

Treasure Mountain Loop
Little Truckee Summit - Treasure Mountain Road (FS 05) 20N07, Nichols Mills Road (FS 15), Yuba Pass Road (FS 12) to Weber Lake to Jackson Meadow Road 19N07 to Little Truckee Summit

Explore Railroad Grades (Rail to Trail options), on the east side of the Sierra Valley.

APPENDIX B

Caltrans Bicycle Transportation Design Guidelines

CHAPTER 1000
BICYCLE TRANSPORTATION DESIGN

Topic 1001 - Introduction

Index 1001.1 – Bicycle Transportation

The needs of non motorized transportation are an essential part of all highway projects. Mobility for all travel modes is recognized as an integral element of the transportation system. Therefore, the guidance provided in this manual complies with Deputy Directive 64-Revision #1: Complete Streets: Integrating the Transportation System. See AASHTO, "Guide For The Development Of Bicycle Facilities".

Design guidance for Class I bikeways (bike paths), Class II bikeways (bike routes) and Trails are provided in this chapter. Design guidance that addresses the mobility needs of bicyclists on all roads as well as on Class II bikeways (bike lanes) is distributed throughout this manual where appropriate.

See Topic 116 for guidance regarding bikes on freeways.

1001.2 Streets and Highways Code References

The Streets and Highways Code Section 890.4 defines a "bikeway" as a facility that is provided primarily for bicycle travel. Following are other related definitions, found in Chapter 8 Nonmotorized Transportation, from the Streets and Highway Code:

(a) Section 887 -- Definition of nonmotorized facility.

(b) Section 887.6 -- Agreements with local agencies to construct and maintain nonmotorized facilities.

(c) Section 887.8 -- Payment for construction and maintenance of nonmotorized facilities approximately paralleling State highways.

(d) Section 888 -- Severance of existing major non motorized route by freeway construction.

(e) Section 888.2 -- Incorporation of non motorized facilities in the design of freeways.

(f) Section 888.4 -- Requires Caltrans to budget not less than $360,000 annually for non motorized facilities used in conjunction with the State highway system.

(g) Section 890.4 -- Class I, II, and III bikeway definitions.

(h) Section 890.6 - 890.8 -- Caltrans and local agencies to develop design criteria and symbols for signs, markers, and traffic control devices for bikeways and roadways where bicycle travel is permitted.

(i) Section 891 -- Local agencies must comply with design criteria and uniform symbols.

(j) Section 892 -- Use of abandoned right-of-way as a nonmotorized facility.

1001.3 Vehicle Code References

(a) Section 21200 -- Bicyclist's rights and responsibilities for traveling on highways.

(b) Section 21202 -- Bicyclist's position on roadways when traveling slower than the normal traffic speed.

(c) Section 21206 -- Allows local agencies to regulate operation of bicycles on pedestrian or bicycle facilities.

(d) Section 21207 -- Allows local agencies to establish bike lanes on non-State highways.

(e) Section 21207.5 -- Prohibits motorized bicycles on bike paths or bike lanes.

(f) Section 21208 -- Specifies permitted movements by bicyclists from bike lanes.

(g) Section 21209 -- Specifies permitted movements by vehicles in bike lanes.

(h) Section 21210 -- Prohibits bicycle parking on sidewalks unless pedestrians have an adequate path.

(i) Section 21211 -- Prohibits impeding or obstruction of bicyclists on bike paths.

(j) Section 21400 – Adopt rules and regulations for signs, markings, and traffic control devices for roadways user.

(k) Section 21401 -- Only those official traffic control devices that conform to the uniform standards and specifications promulgated by the Department of Transportation shall be placed upon a street or highway.

(k) Section 21717 -- Requires a motorist to drive in a bike lane prior to making a turn.

(m) Section 21960 -- Use of freeways by bicyclists.

(n) Section 21966.-- No pedestrian shall proceed along a bicycle path or lane where there is an adjacent adequate pedestrian facility.

1001.4 Bikeways

(1) Role of Bikeways

Bikeways are one element of an effort to improve bicycling safety and convenience - either to help accommodate motor vehicle and bicycle traffic on the roadway system, or as a complement to the road system to meet the needs of the bicyclist.

Off-street bikeways in exclusive corridors can be effective in providing new recreational opportunities, and desirable transportation/commuter routes. Off-street bikeways can also provide access with bridges and tunnels which cross barriers to bicycle travel (e.g., freeway or river crossing). Likewise, on-street bikeways can serve to enhance safety and convenience, especially if other commitments are made in conjunction with establishment of bikeways, such as: elimination of parking or increased roadway width, elimination of surface irregularities and roadway obstacles, frequent street sweeping, established intersection priority on the bike route street as compared with the majority of cross streets, and installation of bicycle-sensitive loop detectors at signalized intersections.

(2) Decision to Develop Bikeways

Providing an interconnected network of bikeways will improve safety for all users and access for bicycles. The development of well conceived bikeways can have a positive effect on bicyclist and motorist behavior. In addition, providing an interconnected network of bikeways along with education and enforcement can improve safety and access for bicyclists. The decision to develop bikeways should be made in coordination with the local agencies.

Topic 1002 - Bikeway Facilities

1002.1 Selection of the Type of Facility

The type of facility to select in meeting the bicyclist's need is dependent on many factors, but the following applications are the most common for each type.

(1) Shared Roadway (No Bikeway Designation). Most bicycle travel in the State now occurs on streets and highways without bikeway designations and this may continue to be true in the future as well. In some instances, entire street systems may be fully adequate for safe and efficient bicycle travel, where signing and pavement marking for bicycle use may be unnecessary. In other cases, prior to designation as a bikeway, routes may need improvements for bicycle travel.

Many rural highways are used by touring bicyclists for intercity and recreational travel. It might be inappropriate to designate the highways as bikeways because of the limited use and the lack of continuity with other bike routes. However, the development and maintenance of 4-foot paved roadway shoulders with a standard 4 inch edge line can significantly improve the safety and convenience for bicyclists and motorists along such routes.

(2) Class I Bikeway (Bike Path). Generally, bike paths should be used to serve corridors not served by streets and highways or where wide right of way exists, permitting such facilities to be constructed away from the influence of parallel streets. Bike paths should offer opportunities not provided by the road system. They can either provide a recreational opportunity, or in some instances, can serve as direct high-speed commute routes if cross flow by motor vehicles and pedestrian conflicts can be minimized. The most common applications are along rivers, ocean fronts, canals, utility right of way, abandoned railroad right of way, within school campuses, or within and between parks. There may also be situations where such

facilities can be provided as part of planned developments. Another common application of Class I facilities is to close gaps to bicycle travel caused by construction of freeways or because of the existence of natural barriers (rivers, mountains, etc.).

(3) *Class II Bikeway (Bike Lane).* Bike lanes are established along streets in corridors where there is significant bicycle demand, and where there are distinct needs that can be served by them. The purpose should be to improve conditions for bicyclists in the corridors. Bike lanes are intended to delineate the right of way assigned to bicyclists and motorists and to provide for more predictable movements by each. But a more important reason for constructing bike lanes is to better accommodate bicyclists through corridors where insufficient room exists for side-by-side sharing of existing streets by motorists and bicyclists. This can be accomplished by reducing the number of lanes, reducing lane width, or prohibiting or reconfiguring parking on given streets in order to delineate bike lanes. In addition, other things can be done on bike lane streets to improve the situation for bicyclists that might not be possible on all streets (e.g., improvements to the surface, augmented sweeping programs, special signal facilities, etc.). Generally, pavement markings alone will not measurably enhance bicycling.

If bicycle travel is to be provided by delineation, attention should be made to assure that high levels of service are provided with these lanes. It is important to meet bicyclist expectations and increase bicyclist perception of service quality, where capacity analysis demonstrates service quality measures are improved from the bicyclist's point of view.

Design guidance that addresses the mobility needs of bicyclists on Class II bikeways (bike lanes) is also distributed throughout this manual where appropriate.

(4) *Class III Bikeway (Bike Route).* Bike routes are shared facilities which serve either to:

(a) Provide continuity to other bicycle facilities (usually Class II bikeways); or

(b) Designate preferred routes through high demand corridors.

As with bike lanes, designation of bike routes should indicate to bicyclists that there are particular advantages to using these routes as compared with alternative routes. This means that responsible agencies have taken actions to assure that these routes are suitable as shared routes and will be maintained in a manner consistent with the needs of bicyclists. Normally, bike routes are shared with motor vehicles. The use of sidewalks as Class III bikeways is strongly discouraged.

It is emphasized that the designation of bikeways as Class I, II and III should not be construed as a hierarchy of bikeways; that one is better than the other. Each class of bikeway has its appropriate application.

In selecting the proper facility, an overriding concern is to assure that the proposed facility will not encourage or require bicyclists or motorists to operate in a manner that is inconsistent with the rules of the road.

An important consideration in selecting the type of facility is continuity. Alternating segments of Class I and Class II (or Class III) bikeways along a route are generally incompatible, as street crossings by bicyclists is required when the route changes character. Also, wrong-way bicycle travel will occur on the street beyond the ends of bike paths because of the inconvenience of having to cross the street.

Topic 1003 - Bikeway Design Criteria

1003.1 Class I Bikeways (Bike Paths)

Class I bikeways (bike paths) are facilities with exclusive right of way, with cross flows by vehicles minimized. Class I bikeways, unless adjacent to an adequate pedestrian facility, (see Index 1001.3(n)) are for the exclusive use of bicycles and pedestrians, therefore any facility serving pedestrians must meet accessibility requirements, see DIB 82. However, experience has shown that if regular pedestrian use is anticipated, separate facilities for pedestrians may be beneficial to minimize conflicts. Please note, sidewalks are not Class I bikeways because they are

primarily intended to serve pedestrians, generally cannot meet the design standards for Class I bikeways, and do not minimize vehicle cross flows. See Index 1003.3 for discussion of the issues associated with sidewalk bikeways.

Motor vehicles are prohibited from bike paths per the CVC. These prohibitions can be reinforced by signing.

(1) *Widths and Cross Slopes.* **The minimum paved width of travel way for a two-way bike path shall be 8 feet,** 10-foot preferred. **The minimum paved width for a one-way bike path shall be 5 feet.** It should be assumed that bicycle paths will be used for two-way travel. Development of a one-way bike path should be undertaken only in rare situations where there is a need for only one-direction of travel. Two-way use of paths designed for one-way travel increases the risk of head-on collisions, as it is difficult to enforce one-way operation. This is not meant to apply to two one-way paths that are parallel and adjacent to each other within a wider right of way. See Index 1003.1(15) Drainage, for cross slope information.

A minimum 2-foot wide shoulder, composed of the same pavement material as the path or all weather surface, free of vegetation, shall be provided adjacent to the traveled way of the path when not on a structure. See Figure 1003.1A. If all or part of the shoulder is paved with the same material as the path, it is to be delineated from the traveled way of the path with an edge line. A shoulder width of 3 feet should be provided where feasible. See Index 1003.1(15), Drainage, for cross slope information. A wider shoulder can reduce bicycle conflicts with pedestrians. Where the paved path width is wider than the minimum required, the unpaved shoulder area may be reduced proportionately.

If there is an adjacent pedestrian walkway, the edge of the traveled way of the bicycle path is to be separated from the pedestrian walkway by a minimum width of 5 feet of unpaved material. The 5-foot area of unpaved material may include landscaping or other features that provide a continuous obstacle to deter path and walkway users from using both paths as a single facility. These obstacles may be fences, railings, solid walls, or dense shrubbery. Flexible delineators, poles, curbs, or pavement markers are not to be used because they will not deter users from using both paths as a single facility. These obstacles between the pedestrian walkways and bicycle paths are not to obstruct stopping sight distance in curves or corner sight distance at intersections with roadways or other paths.

Where heavy bicycle volumes are anticipated and/or significant pedestrian traffic is expected, the paved width of a two-way path should be greater than 10 feet, preferably 12 feet or more. Another important factor to consider in determining the appropriate width is that bicyclists will tend to ride side by side on bike paths, and bicyclists may need adequate passing clearance next to pedestrians and slower moving bicyclists.

Experience has shown that paved paths less than 12 feet wide can break up along the edge as a result of loads from maintenance vehicles.

See Figure 1003.1A for two-way Class I bikeway (bike path) width, cross slope, and side slope details.

(2) *Clearance to Obstructions.* **A minimum 2-foot horizontal clearance from the paved edge of a bike path to obstructions shall be provided.** See Figure 1003.1A. 3 feet should be provided. Adequate clearance from fixed objects is needed regardless of the paved width. If a path is paved contiguous with a continuous fixed object (e.g., fence, wall, and building), a 4-inch white edge line, 2 feet from the fixed object, is recommended to minimize the likelihood of a bicyclist hitting it. **The clear width of a bicycle path on structures between railings shall be not less than 10 feet.** It is desirable that the clear width of structures be equal to the minimum clear width of the path plus shoulders (i.e., 14 feet).

The vertical clearance to obstructions across the width of a bike path shall be a minimum of 8 feet and 7 feet over shoulder. Where practical, a vertical clearance of 10 feet is desirable.

(3) *Signing and Delineation.* For application and placement of signs, see the California MUTCD,

Section 9B. For pavement marking guidance, see the California MUTCD, Section 9C.

(4) *Intersections with Highways.* Intersections are an important consideration in bike path design. Bicycle path intersection design should address both cross-traffic and turning movements. If alternate locations for a bike path are available, the one with the most beneficial intersection characteristics should be selected.

Where motor vehicle cross traffic and bicycle traffic is heavy, grade separations are desirable to eliminate intersection conflicts. Where grade separations are not feasible, assignment of right of way by traffic signals should be considered. Where traffic is not heavy, "STOP" or "YIELD" signs for either the path or the cross street (depending on volumes) may suffice.

Bicycle path intersections and their approaches should be on relatively flat grades. Stopping sight distances at intersections should be checked and adequate warning should be given to permit bicyclists to stop before reaching the intersection, especially on downgrades. When contemplating the placement of signs the designer is to discuss the proposed sign details with their Traffic Liaison so that conflicts may be minimized. Bicycle versus motor vehicle collisions may occur more often at intersections, where bicyclists misuse pedestrian crosswalks; thus, this should be avoided.

When crossing an arterial street, the crossing should either occur at the pedestrian crossing, where vehicles can be expected to stop, or at a location completely out of the influence of any intersection to permit adequate opportunity for bicyclists to see turning vehicles. When crossing at midblock locations, right of way should be assigned by devices such as "YIELD" signs, "STOP" signs, or traffic signals which can be activated by bicyclists. Even when crossing within or adjacent to the pedestrian crossing, "STOP" or "YIELD" signs for bicyclists should be placed to minimize potential for conflict resulting from turning autos. Where bike path "STOP" or "YIELD" signs are visible to approaching motor vehicle traffic, they should be shielded to avoid confusion. In some cases, Bike Xing signs may be placed in advance of the crossing to alert motorists. Ramps should be installed in the curbs, to preserve the utility of the bike path. Ramps should be the same width as the bicycle paths. Curb cuts and ramps should provide a smooth transition between the bicycle paths and the roadway.

Assignment of rights of way is necessary where bicycle paths intersect roadways or other bicycle paths. See the California MUTCD, Section 9B.03 and Figure 9B-7 for guidance on signals and signs for rights of way assignment at bicycle path intersections.

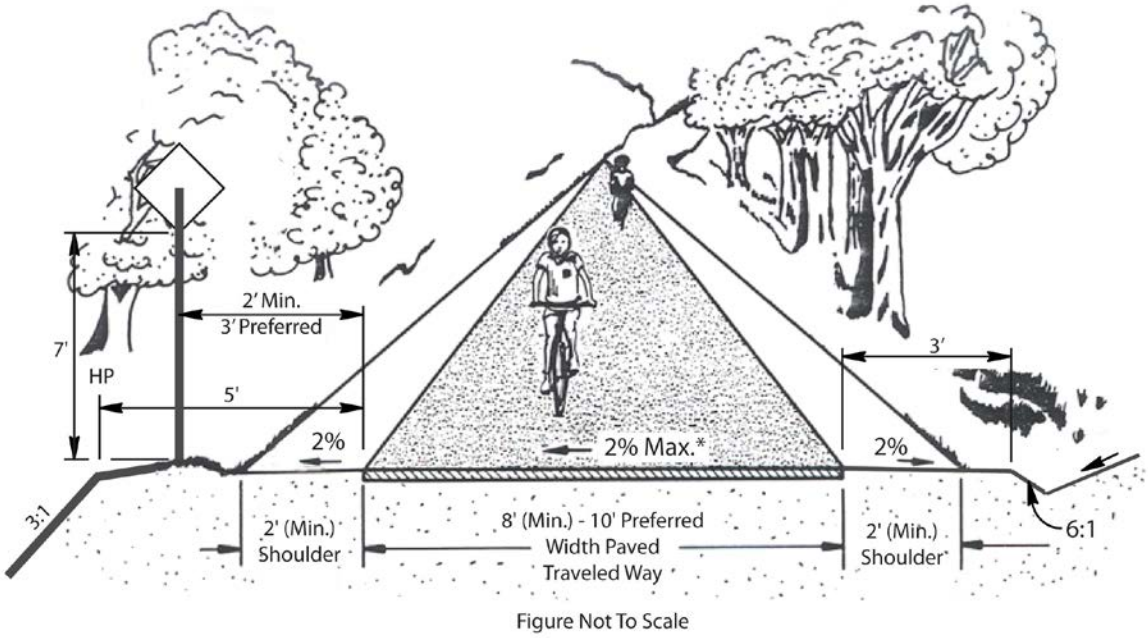
(5) *Paving at Crossings.* At unpaved roadway or driveway crossings, including bike paths or pedestrian walkways, the crossing roadway or driveway shall be paved a minimum of 15 feet to minimize or eliminate gravel intrusion on the path. The pavement structure at the crossing should be adequate to sustain the expected loading at that location

(6) *Bike Paths Parallel and Adjacent to Streets and Highways.* A wide separation is recommended between bike paths and adjacent highways (see Figure 1003.1B). **The minimum separation between the edge of pavement of a one-way or a two-way bicycle path and the edge of travel way of a parallel road or street shall be 5 feet plus the standard shoulder width. Bike paths within the clear recovery zone of freeways shall include a physical barrier separation.** The separation is unpaved and does not include curbs or sidewalks. Separations less than 10 feet from the edge of the shoulder shall include landscaping or other features that provide a continuous obstacle to prevent bicyclists from encroaching onto the highway. Suitable obstacles may include fences or dense shrubs if speeds are less than 45 miles per hour. Low obstacles or intermittent obstacles (e.g., curbs, dikes, raised traffic bars, posts connected by cable or wire, flexible channelizers, etc.) shall not be used because bicyclists could fall over them into the roadway.

Bike paths immediately adjacent to streets and highways are not recommended. While they can provide separation between vehicles and non-motorized traffic, they typically introduce significant conflicts at intersections. In addition, they can create conflicts with

Figure 1003.1A

Two-Way Class I Bikeway (Bike Path)



NOTES:

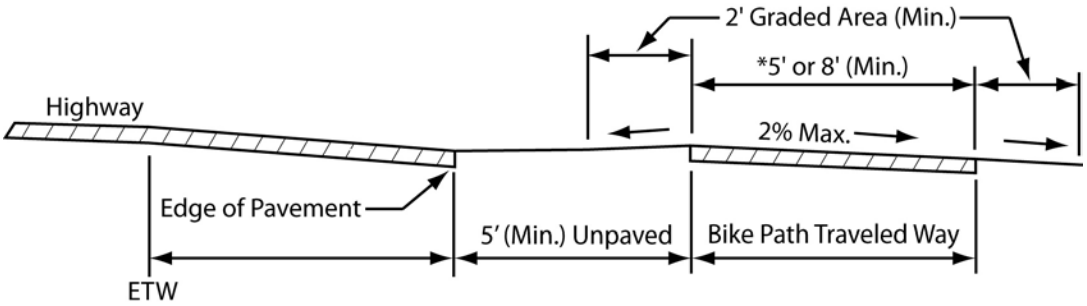
(1) See Index 1003.1(13) for pavement structure guidance of bike path.

(2) For sign clearances, see California MUTCD, Figure 9B-1.

* 1% cross-slope minimum.

Figure 1003.1B

Typical Cross Section of Class I Bikeway (Bike Path) Parallel to Highway



NOTE:

(1) See Index 1003.1(6) for guidance on separation between bike paths and highways.

* One-Way: 5' Minimum Width

Two-Way: 8' Minimum Width

passengers at public transit facilities, and with vehicle occupants crossing the path. They are not a substitute for designing the road to meet bicyclist's mobility needs. Use of bicycle paths adjacent to roads is not mandatory in California, and many bicyclists will perceive these paths as offering a lower level of mobility compared with traveling on the road, particularly for utility trips. Careful consideration regarding how to address the above points needs to be weighed against the perceived benefits of providing a bike path adjacent to a street or highway. Factors such as urban density, the number of conflict points, the presence or absence of a sidewalk, speed and volume should be considered.

(7) *Bike Paths in the Median of Highway or Roadway*. **Bike paths shall not be placed in the medians of State highways or roadways, especially freeways or expressways.** Bike paths in the median of highways are not recommended because they require movements contrary to normal rules of the road. Specific problems with such facilities include:

(a) Right-turns from the center of roadways for bicyclists are unnatural and unexpected by motorists.

(b) Devoting separate phases to bicyclist movements to and from a median path at signalized intersections increases intersection delay.

(c) Left-turning motorists must cross one direction of motor vehicle traffic and two directions of bicycle traffic, which increases conflicts.

(d) Where intersections are infrequent, bicyclists will enter or exit bike paths at midblock.

(e) Where medians are landscaped, visibility between bicyclists on the path and motorists at intersections may be diminished. See Chapter 900 for planting guidance.

(8) *Bicycle Path Design Speed*. The design speed of bicycle paths is established using the same principles as those applied to highway design speeds. **The design speed given in Table 1003.1 shall be the minimum.**

Table 1003.1
Bike Path Design Speeds

Type of Facility	Design Speed (mph)[1]
Bike Paths with Mopeds Prohibited	20
Bike Paths with Mopeds Permitted	30
Bike Paths on Long Downgrades (steeper than 4%, and longer than 500')	30

NOTE:

(1) On bike paths with mopeds prohibited, a lower design speed can be used for the crest vertical curve, equivalent to 1 mile per hour per percent grade for grades exceeding a vertical rise of 10 feet, when at a crest in path.

Installation of "speed bumps", gates, obstacles, posts, fences or other similar features intended to cause bicyclists to slow down are not to be used.

(9) *Horizontal Alignment and Superelevation*. The minimum radius of curvature negotiable by a bicycle is a function of the superelevation of the bicycle path surface, the coefficient of friction between the bicycle tires and the bicycle path surface, and the speed of the bicycle.

For all bicycle path applications the maximum superelevation rate is 2 percent.

The minimum radius of curvature should be 160 feet for 25 mile per hour and 260 feet for 30 miles per hour. When curve radii smaller than those given because of right of way, topographical or other considerations, standard curve warning signs and supplemental pavement markings should be installed. The negative effects of nonstandard curves can also be partially offset by widening the pavement through the curves.

(10) *Stopping Sight Distance*. To provide bicyclists with an opportunity to see and react to the unexpected, a bicycle path should be designed

with adequate stopping sight distances. **The minimum stopping sight distance based on design speed shall be 125 feet for 20 miles per hour, 175 feet for 25 miles per hour and 230 feet for 30 miles per hour.** The distance required to bring a bicycle to a full controlled stop is a function of the bicyclist's perception and brake reaction time, the initial speed of the bicycle, the coefficient of friction between the tires and the pavement, and the braking ability of the bicycle.

Stopping sight distance is measured from a bicyclist's eyes, which are assumed to be 4 ½ feet above the pavement surface to an object ½-foot high on the pavement surface.

(11) *Length of Crest Vertical Curves*. Figure 1003.1C indicates the minimum lengths of crest vertical curves for varying design speeds.

(12) *Lateral Clearance on Horizontal Curves*. Figure 1003.1D indicates the minimum clearances to line of sight obstructions, *m*, for horizontal curves. It is assumed that the bicyclist's eyes are 4 ½ feet above the pavement surface to an object ½-foot high on the pavement surface.

Bicyclists frequently ride abreast of each other on bicycle paths, and on narrow bicycle paths, bicyclists have a tendency to ride near the middle of the path. For these reasons, lateral clearances on horizontal curves should be calculated based on the sum of the stopping sight distances for bicyclists traveling in opposite directions around the curve. Where this is not possible or feasible, the following or combination thereof should be provided: (a) the path through the curve should be widened to a minimum paved width of 14 feet; and (b) a yellow center line curve warning sign and advisory speed limit signs should be installed.

(13) *Grades*. Bike path grades must meet DIB 82. The maximum grade rate recommended for bike paths should be 5 percent. Sustained grades should be limited to 2 percent.

(14) *Pavement Structure*. The pavement material and structure of a bike path should be designed in the same manner as a highway, with a recommendation from the District Materials Branch. It is important to construct and maintain a smooth, well drained, all-weather riding surface with skid resistant qualities, free of vegetation growth. Principal loads will normally be from maintenance and emergency vehicles.

(15) *Drainage*. For proper drainage, the surface of a bike path should have a minimum cross slope of 1 percent to reduce ponding and maximum of 2 percent Per DIB 82. Sloping of the traveled way in one direction usually simplifies longitudinal drainage design and surface construction, and accordingly is the preferred practice. However, the unpaved shoulders slope away from the path at 2 percent. Ordinarily, surface drainage from the path will be adequately dissipated as it flows down the gently sloping shoulder. However, when a bike path is constructed on the side of a hill, a drainage ditch of suitable dimensions may be necessary on the uphill side to intercept the hillside drainage. Where necessary, catch basins with drains should be provided to carry intercepted water across the path. Such ditches should be designed in such a way that no undue obstacle is presented to bicyclists.

Culverts or bridges are necessary where a bike path crosses a drainage channel.

(16) *Entry Control for Bicycle Paths*. Obstacle posts and gates are fixed objects and placement within the bicycle path traveled way can cause them to be an obstruction to bicyclists. Obstacles such as posts or gates may be considered only when other measures have failed to stop unauthorized motor vehicle entry. Also, these obstacles may be considered only where safety and other issues posed by actual unauthorized vehicle entry are more serious than the safety and access issues posed to bicyclists, pedestrians and other authorized path users by the obstacles.

The 3-step approach to prevent unauthorized vehicle entry is:

(a) Post signs identifying the entry as a bicycle path with regulatory signs prohibiting motor vehicle entry where roads and bicycle paths cross and at other path entry points.

(b) Design the path entry so it does not look like a vehicle access and makes intentional

access by unauthorized users more difficult. Dividing a path into two one-way paths prior to the intersection, separated by low plantings or other features not conducive to motor vehicle use, can discourage motorist from entering and reduce driver error.

(c) Assess whether signing and path entry design prevents or minimizes unauthorized entry to tolerable levels. If there are documented issues caused by unauthorized motor vehicle entry, and other methods have proven ineffective, assess whether the issues posed by unauthorized vehicle entry exceed the crash risks and access issues posed by obstacles.

If the decision is made to add bollards, plantings or similar obstacles, they should be:

- Yielding to minimize injury to bicyclists and pedestrians who may strike them.
- Removable or moveable (such as gates) for emergency and maintenance access must leave a flush surface when removed.
- Reflectorized for nighttime visibility and painted, coated, or manufactured of material in a bright color to enhanced daytime visibility.
- Illuminated when necessary.
- Spaced to leave a minimum of 5 feet of clearance of paved area between obstacles (measured from face of obstacle to face of adjacent obstacle). Symmetrically about the center line of the path.
- Positioned so an even number of bicycle travel lanes are created, with a minimum of two paths. Odd number of openings increases the risk of head-on collisions if traffic in both directions tries to use the same opening.
- Placed so additional, non-centerline/lane line posts are located a minimum of 2 feet from the edge of pavement.
- Delineated as shown in California MUTCD Figure 9C-2.
- Provide special advance warning signs or painted pavement markings if sight distance is limited.
- Placed 10 to 30 feet back from an intersection, and 5 to 10 feet from a bridge, so bicyclists approach the obstacle straight-on and maintenance vehicles can pull off the road.
- Placed beyond the clear zone on the crossing highway, otherwise breakaway.

When physical obstacles are needed to control unauthorized vehicle access, a single non-removable, flexible, post on the path centerline with a separate gate for emergency/maintenance vehicle access next to the path, is preferred. The gate should swinging away from the path,

Fold-down obstacle posts or bollards shall not be used within the paved area of bicycle paths. They are often left in the folded down position, which presents a crash hazard to bicyclists and pedestrians. When vehicles drive across fold-down obstacles, they can be broken from their hinges, leaving twisted and jagged obstructions that project a few inches from the path surface.

Obstacle posts or gates must not be used to force bicyclists to slow down, stop or dismount. Treatments used to reduce vehicle speeds may be used where it is desirable to reduce bicycle speeds.

For obstacle post visibility marking, and pavement markings, see the California MUTCD, Section 9C.101(CA).

(17) Lighting. Fixed-source lighting raises awareness of conflicts along paths and at intersections. In addition, lighting allows the bicyclist to see the bicycle path direction, surface conditions, and obstacles. Lighting for bicycle paths is important and should be considered where nighttime use is not prohibited, in sag curves (see Index 201.5), at intersections, at locations where nighttime security could be a problem, and where obstacles deter unauthorized vehicle entry to bicycle paths. See Index 1003.1(16). Daytime lighting should also be considered through underpasses or tunnels.

Figure 1003.1C

Minimum Length of Bicycle Path Crest Vertical Curve (L) Based on Stopping Sight Distance (S)

$$L = 2S - \frac{1600}{A} \quad \text{when } S > L$$

$$L = \frac{AS^2}{1600} \quad \text{when } S < L$$

Double line represents S = L

L = Minimum length of vertical curve – feet

A = Algebraic grade difference - %

S = Stopping sight distance – feet

Refer to Figure 1003.1D to determine "S", for a given design speed "V"

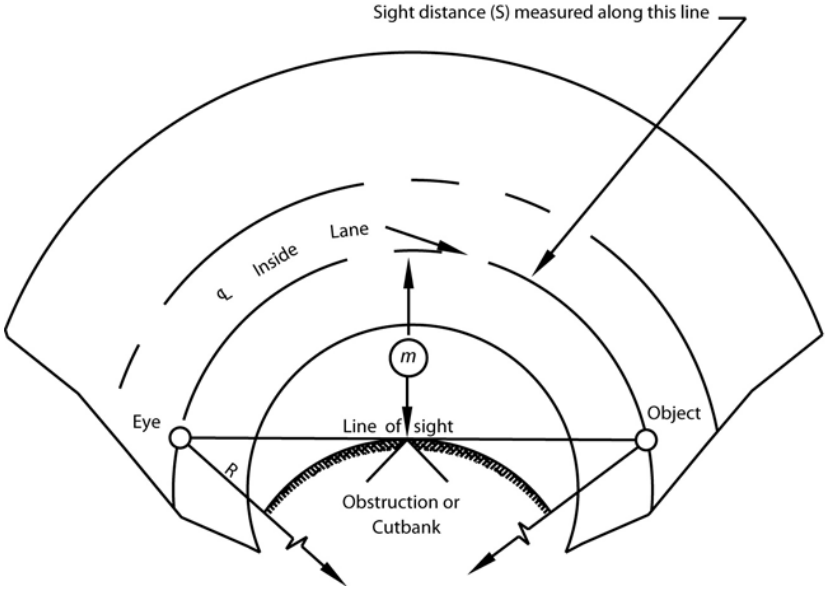
Height of cyclist eye = 4½ feet

Height of object = ½-foot

A	S = Stopping Sight Distance (ft)													
(%)	70	90	110	125	130	150	170	175	190	210	230	250	270	
3													7	
4										20	60	100	140	
5							20	30	60	100	140	180	220	
6		**S > L**				33	73	83	113	153	193	233	270	
7				21	31	71	111	121	151	191	231	273	319	
8			20	50	60	100	140	150	180	221	265	313	365	
9		2	42	72	82	122	162	172	203	248	298	352	410	
10		20	60	90	100	140	181	191	226	276	331	391	456	
11		35	75	105	115	155	199	211	248	303	364	430	501	
12	7	47	87	117	127	169	217	230	271	331	397	469	547	
13	17	57	97	127	137	183	235	249	293	358	430	508	592	**S > L**
14	26	66	106	137	148	197	253	268	316	386	463	547	638	
15	33	73	113	146	158	211	271	287	338	413	496	586	683	
16	40	80	121	156	169	225	289	306	361	441	529	625	729	
17	46	86	129	166	180	239	307	325	384	469	562	664	775	

Figure 1003.1D

Minimum Lateral Clearance (m) on Bicycle Path Horizontal Curves



S = Sight distance in feet.
R = Radius of ℄ of lane in feet.
m = Distance from ℄ of lane in feet.

See Figure 1003.1D to determine "S" for a given design speed "V".

Angle is expressed in degrees

$$m = R\left[1-\cos\left(\frac{28.65S}{R}\right)\right]$$

$$S = \frac{R}{28.65S}\left[\cos^{-1}\left(\frac{R-m}{R}\right)\right]$$

Formula applies only when S is equal to or less than length of curve.

Line of sight is 28" above ℄ inside lane at point of obstruction.

Height of bicyclist's eye is 4 ½ feet.

R (ft)	S = Stopping Sight Distance (ft)										
	60	80	100	120	140	160	180	200	220	240	260
25	15.9										
50	8.7	15.2	23.0	31.9	41.5						
75	5.9	10.4	16.1	22.8	30.4	38.8	47.8	57.4	67.2		
95	4.7	8.3	12.9	18.3	24.7	31.8	39.5	48.0	56.9	66.3	75.9
125		6.3	9.9	14.1	19.1	24.7	31.0	37.9	45.4	53.3	1.76
155		5.1	8.0	11.5	15.5	20.2	25.4	31.2	37.4	44.2	51.4
175		4.6	7.1	10.2	13.8	18.0	22.6	27.8	33.5	39.6	46.1
200		4.0	6.2	8.9	12.1	15.8	19.9	24.5	29.5	34.9	40.8
225			5.5	8.0	10.8	14.1	17.8	21.9	26.4	31.3	36.5
250			5.0	7.2	9.7	12.7	16.0	19.7	23.8	28.3	33.1
275			4.5	6.5	8.9	11.6	14.6	18.0	21.7	25.8	30.2
300			4.2	6.0	8.1	10.6	13.4	16.5	19.9	23.7	27.7
350				5.1	7.0	9.1	11.5	14.2	17.1	20.4	23.9
390				4.6	6.3	8.2	10.3	12.8	15.4	18.3	21.5
500					4.9	6.4	8.1	10.0	12.1	14.3	16.8
565					4.3	5.7	7.2	8.8	10.7	12.7	14.9
600					4.1	5.3	6.7	8.3	10.1	12.0	14.0
700						4.6	5.8	7.1	8.6	10.3	12.0
800						4.0	5.1	6.2	7.6	9.0	10.5
900							4.5	5.6	6.7	8.0	9.4
1000							4.0	5.0	6.0	7.2	8.4

Depending on the location, average maintained horizontal illumination levels of 5 lux to 22 lux should be considered. Where special security problems exist, higher illumination levels may be considered. Light standards (poles) should meet the recommended horizontal and vertical clearances. Luminaires and standards should be at a scale appropriate for a pedestrian or bicycle path. For additional guidance on lighting, consult with the District Traffic Electrical Unit.

1003.2 Class II Bikeways (Bike Lanes)

Design guidance that addresses the safety and mobility needs of bicyclists on Class II bikeways (bike lanes) is distributed throughout this manual where appropriate.

For Class II bikeway signing and lane markings, see the California MUTCD, Section 9C.04.

1003.3 Class III Bikeways (Bike Routes)

Class III bikeways (bike routes) are intended to provide continuity to the bikeway system. Bike routes are established along through routes not served by Class I or II bikeways, or to connect discontinuous segments of bikeway (normally bike lanes). Class III facilities are facilities shared with motor vehicles on the street, which are established by placing bike route signs along roadways. Additional enhancement of Class III facilities can be provided by adding shared roadway markings along the route. For application and placement of signs and pavement markings, see the California MUTCD Section 9C.

Minimum widths for Class III bikeways are represented, in the minimum standards for highway lanes and shoulder.

Since bicyclists are permitted on all highways (except prohibited freeways), the decision to designate the route as a bikeway should be based on the advisability of encouraging bicycle travel on the route and other factors listed below.

(1) *On-street Bike Route Criteria*. To be of benefit to bicyclists, bike routes should offer a higher degree of service than alternative streets. Routes should be signed only if some of the following apply:

(a) They provide for through and direct travel in bicycle-demand corridors.

(b) Connect discontinuous segments of bike lanes.

(c) They provide traffic actuated signals for bicycles and appropriate assignment of right of way at intersections to give greater priority to bicyclists, as compared with alternative streets.

(d) Street parking has been removed or restricted in areas of critical width to provide improved safety.

(e) Surface imperfections or irregularities have been corrected (e.g., utility covers adjusted to grade, potholes filled, etc.).

(f) Maintenance of the route will be at a higher standard than that of other comparable streets (e.g., more frequent street sweeping).

(2) *Sidewalk as Bikeway*. Sidewalks are not to be designated for bicycle travel. Wide sidewalks that do not meet design standards for bicycle paths or bicycle routes also may not meet the safety and mobility needs of bicyclists. Wide sidewalks can encourage higher speed bicycle use and can increase the potential for conflicts with turning traffic at intersections as well as with pedestrians and fixed objects.

In residential areas, sidewalk riding by young children too inexperienced to ride in the street is common. It is inappropriate to sign these facilities as bikeways because it may lead bicyclists to think it is designed to meet their safety and mobility needs. Bicyclists should not be encouraged (through signing) to ride their bicycles on facilities that are not designed to accommodate bicycle travel.

(3) *Shared Transit and Bikeways.* Transit lanes and bicycles are generally not compatible, and present risks to bicyclists. Therefore sharing exclusive use transit lanes for bus uses with bicycles is discouraged.

Bus and bicycle lane sharing should be considered only under special circumstances to provide bikeway continuity, such as:

(a) If bus operating speed is 25 miles per hour or below.

(b) If the grade of the facility is 5 percent or less.

1003.4 Trails

Trails are generally, unpaved multipurpose facilities suitable for recreational use by hikers, pedestrians, equestrians, and off-road bicyclists. While many Class I facilities are named as trails (e.g. Iron Horse Regional Trail, San Gabriel River Trail), trails as defined here do not meet Class I bikeways standards and should not be signed as bicycle paths. Where equestrians are expected, a separate equestrian trail should be provided. See DIB 82 for trail requirements for ADA. See Index 208.7 for equestrian undercrossing guidance.

- Pavement requirements for bicycle travel are not suitable for horses. Horses require softer surfaces to avoid leg injuries.
- Bicyclists may not be aware of the need to go slow or of the separation need when approaching or passing a horse. Horses reacting to perceived danger from predators may behave unpredictably; thus, if a bicyclist appears suddenly within their visual field, especially from behind they may bolt. To help horses not be surprised by a bicyclist, good visibility should be provided at all points on equestrian paths.
- When a corridor includes equestrian paths and Class I bikeways, the widest possible lateral separation should be provided between the two. A physical obstacle, such as an open rail fence, adjacent to the equestrian trail may be beneficial to induce horses to shy away from the bikeway, as long as the obstacle does not block visibility between the equestrian trail and bicycle path.

See FHWA-EP-01-027, Designing Sidewalks and Trails for Access and DIB 82 for additional design guidance.

1003.5 Miscellaneous Criteria

The following are miscellaneous bicycle treatment criteria. Specific application to Class I, and III bikeways are noted. Criteria that are not noted as applying only to bikeways apply to any highway, roadways and shoulders, except freeways where bicycles are prohibited), without regard to whether or not bikeways are established.

Bicycle Paths on Bridges – See Topic 208.

(1) Pavement Surface Quality. The surface to be used by bicyclists should be smooth, free of potholes, and with uniform pavement edges.

(2) Drainage Grates, Manhole Covers, and Driveways. Drainage inlet grates, manhole covers, etc., should be located out of the travel path of bicyclists whenever possible. When such items are in an area that may be used for bicycle travel, they shall be designed and installed in a manner that meets bicycle surface requirements. See Standard Plans. They shall be maintained flush with the surface when resurfacing.

If grate inlets are to be located in roadway or shoulder areas (except freeways where bicycles are prohibited) bicycle proof grates must be specified. See Index 837.2(2) for further grate guidance.

Future driveway construction should avoid construction of a vertical lip from the driveway to the gutter, as the lip may create a problem for bicyclists when entering from the edge of the roadway at a flat angle. If a lip is deemed necessary, the height should be limited to ½ inch.

(3) At-grade Railroad Crossings and Cattle Guards. Whenever it is necessary for a Class I bikeway, highway or roadway to cross railroad tracks, special care must be taken to ensure that the safety of users is protected. The crossing must be at least as wide as the traveled way of the facility. Wherever possible, the crossing should be straight and at right angles to the rails. For bikeways or highways that cross tracks and where a skew is unavoidable, the shoulder or bikeway should be widened, to permit bicyclists to cross at right angles (see Figure 1003.5). If this is not possible, special construction and materials should be considered to keep the flangeway depth and width to a minimum.

Pavement should be maintained so ridge buildup does not occur next to the rails. In

some cases, timber plank crossings can be justified and can provide for a smoother crossing.

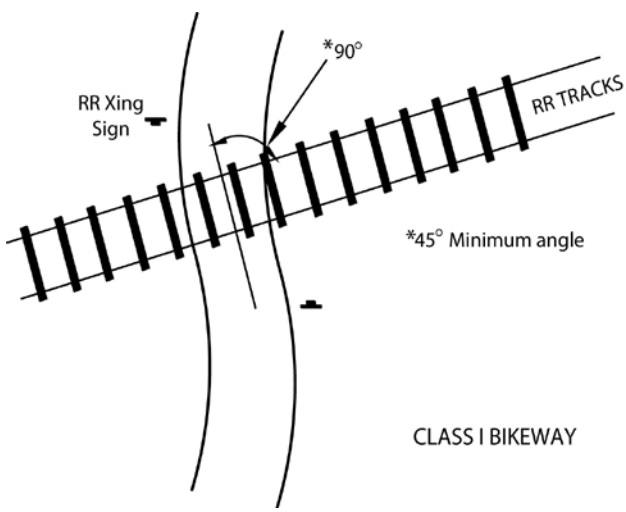
All railroad crossings are regulated by the California Public Utilities Commission (CPUC). All new bicycle path railroad crossings must be approved by the CPUC. Necessary railroad protection will be determined based on a joint field review involving the applicant, the railroad company, and the CPUC.

Cattle guards across any roadway are to be clearly marked with adequate advance warning. Cattle guards are only to be used where there is no other alternative to manage livestock

The California MUTCD has specific guidance on Rail and Light Rail crossings. See Part 8 of the California MUTCD.

Figure 1003.5

Railroad Crossing
Class I Bikeway



NOTE:

See Index 403.3 Angle of Intersection for Class II and Class III facilities.