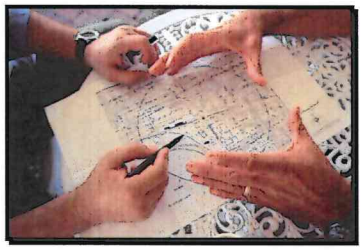
BICYCLE PLAN



CITY OF GRIDLEY

Community Development Department • Updated and Adopted January 2011

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LEGAL REQUIREMENTS

The City of Gridley Bicycle Transportation Plan has been prepared pursuant to the California Bicycle Transportation Act (BTA) and is directed towards meeting the provisions of the Act and the California Street and Highways Code Chapter 517, Article 3, Sections 890 – 894.2. The City of Gridley Bicycle Transportation Plan addresses these requirements through narrative, tables, and maps.

Streets and Highways Code 891.2:
A city or county may prepare a bicycle transportation plan, which shall include, but not be limited to, the following elements:

The estimated number of existing bicycle commuters in the plan area and the estimated increase in the number of bicycle commuters resulting from the implementation of the plan.
See Chapter 2. Existing Conditions

A map and description of existing and proposed land use and settlement patterns which shall include, but not be limited to, locations of residential neighborhoods, schools, shopping centers, public buildings, and major employment centers.
See Figure 2. Land Use Considerations

The BTA places high importance on the promotion of bicycle commuting.

A map and description of existing and proposed bikeways.
See Chapter 5. Gridley Areas Bikeways

A map and description of existing and proposed end-of-trip bicycle parking facilities. These shall include, but not be limited to, parking at schools, shopping centers, public buildings, and major employment centers.
See Chapter 2. Existing Conditions and Figure 4. Existing & Proposed Bicycle Parking Facilities.

A map and description of existing and proposed facilities for changing and storing clothes and equipment. These shall include, but not be limited to, locker, restroom, and shower facilities near bicycle parking facilities.
See Chapter 2. Existing Conditions (description only)

A description of bicycle safety and education programs conducted in the area included within the plan, efforts by the law enforcement agency having primary traffic law enforcement responsibility in the area to enforce provisions of the Vehicle Code pertaining to bicycle operation, and the resulting effect on accidents involving bicyclists.
See Chapter 2. Existing Conditions

A description of the extent of citizen and community involvement in development of the plan, including, but not limited to, letters of support.
See Chapter 3. Participation

A description of how the bicycle transportation plan has been coordinated and is consistent with other local or regional transportation, air quality, or energy conservation plans, including, but not limited to, programs that provide incentives for bicycle commuting.
See Chapter 2. Existing Conditions

A description of the projects proposed in the plan and a listing of their priorities for implementation.
See Chapter 5. Gridley Area Bikeways

A description of past expenditures for bicycle facilities and future needs for projects that improve safety and convenience for bicycle commuters in the plan area.
See Chapter 2. Existing Conditions and Chapter 5. Gridley Area Bikeways

EXECUTIVE SUMMARY

Background

Bicycles have become a significant mode of transport in towns and cities that have provided facilities, programs, and education for them. The growth and popularity of bicycling can be attributed to an increased recognition that bicycling is a viable alternative mode of transportation, particularly for short trips. Bicycling has the benefit of providing transportation opportunities for segments of the population underserved by existing transportation services; namely children, seniors, and those who can not afford car ownership.

In order to encourage the use of bicycles as a transportation mode, the City of Gridley should consider the four E's of bicycle planning: engineering, education, encouragement, and enforcement. Engineering refers to roadway design, bike parking facilities, and other infrastructure available to better support bicycle use. Education should be provided, especially to children, on the safe use of bicycles in traffic. Encouragement refers to programs, policies or events that can be implemented to encourage the use of bicycles as a transportation choice. Finally, enforcement refers to the responsibility of the police to enforce existing rules of the road, from automobile speed limits to bicycle helmet laws. Using these techniques, this Plan is intended to provide the framework for the City to improve and encourage bicycle transportation.

City of Gridley Bicycle Plan

The City of Gridley received a Community Based Transportation Grant from the California Department of Transportation (Caltrans) to develop a bicycle plan. This bicycle plan was prepared in accordance to the California Streets and Highways Code 891. 2, which allows the City to pursue State funding for projects identified herein.

Developing the City of Gridley Bicycle Plan consisted of three major tasks: data collection, developing goals and objectives (through a public outreach program), and designing a bikeways network. This Plan specifically proposes infrastructure improvements, namely building bike lanes and trails, and providing more secure bike parking. Several programs and policy improvements have also been identified in Chapter 4. Goals and Objectives. Project implementation and funding will likely be focused on priority projects identified in Chapter 5. However, programmatic and educational improvements (Implementation Measures) should be given equal consideration for project funding and implementation.

Summary of Recommendations

- Build 2.1 miles of Caltrans Class II bike lanes identified as "high priority".
- Purchase and place bike racks at key public places.

- Promote bicycling and publicize bike safety issues using a variety of methods.

- Work with school districts to train school children on safe use of bicycles.

- Continue to explore the feasibility of creating regional trailways by coordinating with Butte County, Caltrans, Union Pacific Railroad, and officials of the City of Biggs.

- Improve all City projects' "bicycle friendliness" by training staff on bicycle planning techniques, and suggesting bike parking for some projects.

- Build 4.0 miles of Class II bike lanes identified as "medium priority".

- Build 3.4 miles of Class I bike paths identified as "medium priority".

- Build 3.6 miles of Class II bike lanes identified as "low priority".

EXECUTIVE SUMMARY

Background

Bicycles have become a significant mode of transport in towns and cities that have provided facilities, programs, and education for them. The growth and popularity of bicycling can be attributed to an increased recognition that bicycling is a viable alternative mode of transportation, particularly for short trips. Bicycling has the benefit of providing transportation opportunities for segments of the population underserved by existing transportation services; namely children, seniors, and those who can not afford car ownership.

In order to encourage the use of bicycles as a transportation mode, the City of Gridley should consider the four E's of bicycle planning: engineering, education, encouragement, and enforcement. Engineering refers to roadway design, bike parking facilities, and other infrastructure available to better support bicycle use. Education should be provided, especially to children, on the safe use of bicycles in traffic. Encouragement refers to programs, policies or events that can be implemented to encourage the use of bicycles as a transportation choice. Finally, enforcement refers to the responsibility of the police to enforce existing rules of the road, from automobile speed limits to bicycle helmet laws. Using these techniques, this Plan is intended to provide the framework for the City to improve and encourage bicycle transportation.

City of Gridley Bicycle Plan

In 2003, the City of Gridley received a Community Based Transportation Grant from the California Department of Transportation (Caltrans) to develop a bicycle plan. This bicycle plan was prepared in accordance to the California Streets and Highways Code 891. 2, and is being updated in 2011 in order to allows the City to pursue State funding for projects identified herein.

Developing the City of Gridley Bicycle Plan consisted of three major tasks: data collection, developing goals and objectives (through a public outreach program), and designing a bikeways network. This Plan specifically proposes infrastructure improvements, namely building bike lanes and trails, and providing more secure bike parking. Several programs and policy improvements have also been identified in Chapter 4. Goals and Objectives. Project implementation and funding will likely be focused on priority projects identified in Chapter 5. However, programmatic and educational improvements (Implementation Measures) should be given equal consideration for project funding and implementation.

Summary of Recommendations

- Build Caltrans Class II bike lanes identified as "high priority".
- Purchase and place bike racks at key public places.

- Promote bicycling and publicize bike safety issues using a variety of methods.

- Work with school districts to train school children on safe use of bicycles.

- Continue to explore the feasibility of creating regional trailways by coordinating with Butte County, Caltrans, Union Pacific Railroad, and officials of the City of Biggs.

- Improve all City projects' "bicycle friendliness" by training staff on bicycle planning techniques, and suggesting bike parking for some projects.

- Build Class II bike lanes as identified in the Plan as "medium priority".

- Build Class I bike paths as identified in the Plan as "medium priority".

- Build Class II bike lanes as identified in the Plan as "low priority".

CHAPTER 1. INTRODUCTION

1.1 PURPOSE

Background

Bicycles have become a significant mode of transport in towns and cities that have provided facilities, programs, and education for them. The growth and popularity of bicycling can be attributed to an increased recognition that bicycling is a viable alternative mode of transportation, particularly for short trips. Bicycling has the benefit of providing transportation opportunities for segments of the population underserved by existing transportation services; namely children, seniors, and those who can not afford car ownership.

Bicycle touring and recreational riding have shown an increase in popularity due to health benefits and general well being bicycling provides. It is often difficult to distinguish recreational riders from those who bicycle as a means of transportation. Bicycling, for whatever purposes, offers fitness and enjoyment.

Bicycling can also contribute to quality of life improvements. By encouraging bicycling, communities can help reduce air and noise pollution, traffic congestion, and generally make towns more desirable and livable.

The City of Gridley is committed to improving the quality of daily life as well as the vitality of local businesses. Economic, environmental, aesthetic, and health benefits are known to reward communities that have the foresight and political will to foster the use of the full range of transportation alternatives.

There are many activities the City of Gridley and private agencies are doing to improve non-motorized transportation and promote "smart growth' pedestrian-friendly development such as improving sidewalks and installing street furniture in the downtown area. Recently, a major redesign of Highway 99 was approved that is intended to transform the corridor into a human-scaled, walkable, and aesthetically pleasing environment. The Bicycle Plan helps to meet the City's planning goals of providing a

This plan is intended to provide the framework to improve and encourage bicycle transportation in Gridley.

safe, healthy living environment.

Bicycle facilities is a general term denoting improvements and provisions made to accommodate or encourage bicycling such as bike routes, bike lanes, and bike trails, as well as bicycle parking structures. Bicycle facilities are designed to improve access, safety, and convenience for bicyclists. On-road bicycling improvements are essential if bicyclists are to access popular destinations such as schools, the post office, stores, work, parks, and

recreational destinations. Typically, bicycling has been one of the least supported modes of transportation. This Plan is intended to provide the framework to improve and encourage bicycle transportation in Gridley.

1.2 GEOGRAPHICAL SETTING

Location and Character

The City of Gridley is located approximately 60 miles north of the state capital, Sacramento, and 30 miles south of Chico in the North Sacramento Valley. The population of Gridley, about 8,000 people, is steadily growing at about 2 percent a year.

The City is characterized by its compact form, composed primarily of low-to medium density single family residences. A traditional downtown with various services and government uses is located north central in the City. Highway 99, the major auto transportation corridor in Butte County, transects Gridley on its eastern edge. The Union Pacific Railroad bisects the City running adjacent to downtown.

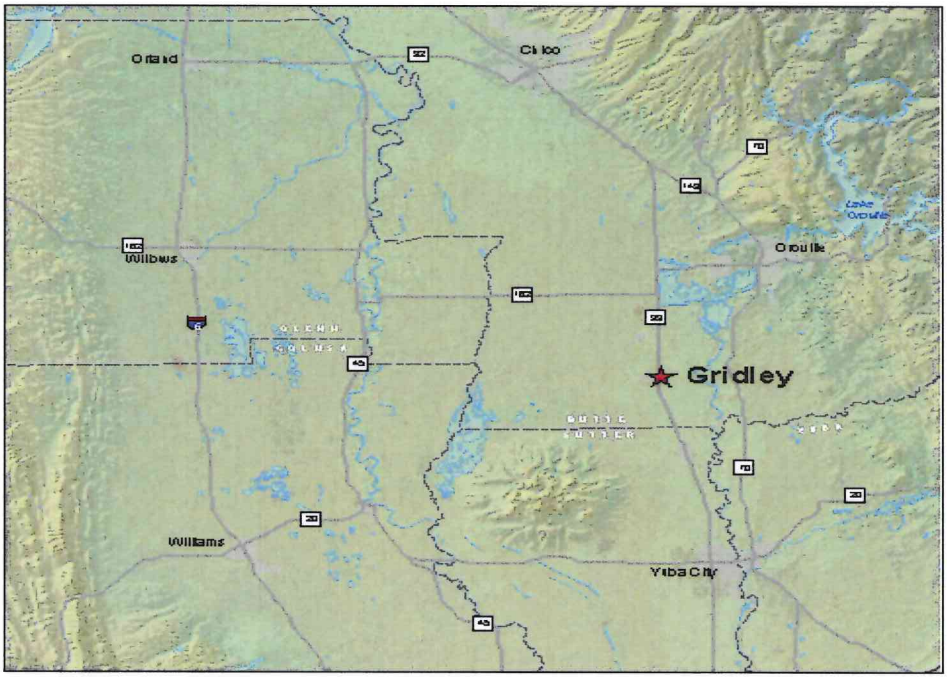


Figure 1 – Regional Location Map

Gridley is located in the agricultural heart of the Northern Sacramento Valley. Sweeping valleys views are interrupted by the Sierra Nevada foothills to the east and the Sutter Buttes, a geologic oddity, to the southwest. Gridley is a self-contained,

contiguous city that is surrounded by a variety of agriculture and open space uses. Gray Lodge Wildlife Area, a premiere wildlife preserve (and tourist destination), is located three miles to the southwest. The small town of Biggs (pop. 2,000) is located just three miles to the north and shares many similar attributes as well as the police force with the City of Gridley (see **Figure 1.** Regional Location Map).

Climate

Warm, dry summers, and cool, wet winters characterize the climate in Gridley. Most precipitation occurs from November through April. During the summer months the average maximum temperature is 95 degrees. Average annual rainfall in Gridley is 19 inches. With its location on the valley floor, near irrigated fields, Gridley typically experiences tule fog during the winter.

1.3 KEY TERMS

Bicycle Facility: A general term denoting improvements and provisions made to accommodate or encourage bicycling including bikeways, bike parking facilities, lockers, etc.

Bicycle Transportation Account (BTA) Formerly Bicycle Lane Account (BLA): A statewide (California) program that funds bicycle facility projects including bike paths, bike lanes, bike routes, bike racks on buses, bicyclist-sensitive traffic signals, planning and maintenance of bikeways, and bicycle parking facilities.

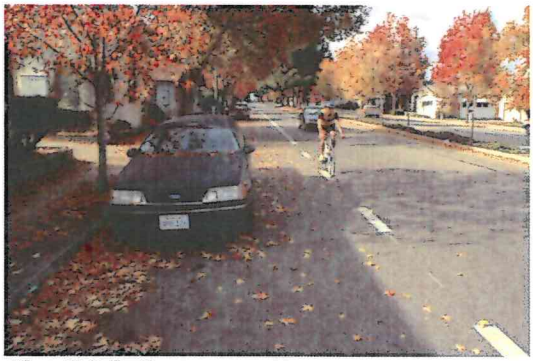
Bikeway: Any road, path, or route provided for bicycle travel.

Class I Bicycle Path: A bike facility that, provides a completely separated right of way for the exclusive use of bicycles and pedestrians with cross-flow minimized. In addition to the transportation benefits, bike paths often can provide recreational opportunities. Bike paths are excellent options for inexperienced riders.

Class II Bicycle Lane: A bicycle facility that provides a striped lane for one-way bicycle travel on a street or highway.

Class I Bike Path (www.pedbikeimages.com)

Bike lanes (usually 5 feet wide) are recommended on roads that are popular with cyclists due to their proximity to popular destinations. Bike lanes provide higher levels of riding comfort for cyclists. They also have numerous additional benefits such as calming traffic, increasing sight distance for automobiles, and increasing the distance between cars and pedestrians.



Class II Bike Lane
(www.pedbikeimages.com)

Class III Bicycle Route: A bicycle facility that provides for shared use with pedestrian or motor vehicle traffic. Class III routes are used where roadway volume or design does not allow bike lanes. Marked routes serve as connectors between other bike facilities, or provide direction to destinations. Route signage also has the effect of heightening drivers' awareness of the presence of bicycles.

Commuter cyclist: An individual who repetitively cycles over the same or similar route and uses a bicycle primarily for travel to and from work, school, or shopping.
Destination: Places where commuters travel such as schools, shopping areas, and workplaces.

Multi-use Path: A facility that allows shared use by bicycles, pedestrians, skating, in-line skaters, joggers, and the non-motorized vehicle transportation and is not a sidewalk.

Roadway: The portion of the street, including shoulders, designed for vehicle use.

Class III Bike Route

CHAPTER 2. EXISTING CONDITIONS

2.1 BICYCLE COMMUTING IN GRIDLEY

General Commuting Characteristics

Gridley is a compact rural community located along major transportation corridors - Highway 99 and the Union Pacific Railroad. The Town of Biggs, population 2,000, is the closest town at three miles away. The cities of Oroville, Chico, and Live Oak are nearby cities located 17, 30, and 7 miles away respectively.

The terrain in Gridley is flat and well suited for traveling by bicycle. Roadway conditions are generally good throughout the City, with only a few areas of degraded pavement and a handful of drainage grates unsafe for bicycles. Bicycling destinations are located downtown, along Highway 99, and clustered along Spruce, Hazel, Sycamore, and Magnolia Streets. While automobile traffic is distributed over the grid network of streets, east to west arterials such as Spruce, Sycamore, and Magnolia Streets have been identified as having higher levels of traffic and higher speeds. Traffic congestion typically occurs in the form of school related trips, at the beginning and end of each school day.

Heavy vehicular traffic and limited pedestrian amenities make Highway

Schools - a primary destination in Gridley

99 a significant barrier to east-west non-automotive travel. While the vast majority of Gridley residents live west of Highway 99, destinations including Gridley High School, the Heritage Oaks Shopping Center, and the Butte County Fairgrounds are located on the eastern side. A major redesign of Highway 99 has recently been approved by the City. This Bike Plan has taken into account

The Bike Plan can lead to increased benefits such as increased safety and health, and a reduction of noise, congestion and hazards.

the design considerations of the Highway redesign plan to provide better access across the Highway.

Estimated and Projected Number of Bicycle Commuters

Table 1 shows the estimated number of bicycle commuters in Gridley (from the 2000 Census). A separate survey was conducted for school children making

trips. Field observations in Gridley show school children as the most numerous bicycle "users" in the County. Other non-automotive transportation modes observed in Gridley include wheelchairs and motorized scooters.

A field study was conducted in Gridley to determine the number of school children who bicycle. The field study was conducted on a mild-weathered day in September, 2003. The number of bicycles at local schools was 32.

Combining the census data, school bike commuter data, and using the Department of Finance (DOF) 2003 population estimates, it is estimated that the number of bicycle commuters in Gridley in the year 2003 is 71.

Using an increase of 15 percent for bicycle commuting, assuming major implementation of this plan, the estimated total bicycle commuters in Gridley in the year 2010 will be 82.

Table 1
Bicycle Commuters
(2000 Census)

City of Gridley	39
Student Cyclists	32
Estimated # of Bicycle Commuters	71

In 2010 Gridley schools reported a lower number of student cyclist. According to school authorities, the current number of student cyclists is as follows:
McKinley School: 2
Wilson School: 20
Sycamore School: 10
Gridley High School: 8
Esperanza School: 5
Total: 45

2.2 PAST EXPENDITURES FOR BICYCLE FACILITIES

City of Gridley

The City of Gridley has made previous expenditures for bicycle facilities. During 2004-2007 the City invested in striping bicycle facilities, installation of bicycle racks and replacement of old drainage gates according to the City's previously adopted Bicycle Plan. Proposed bikeways and improvements are described in Chapter 5 and located on Figure 5. Gridley Area Bikeways.

2.3 EXISTING BICYCLE TRANSPORT AND PARKING

Old drainage grates that were replaced due to hazards to cyclists.

FACILITIES

Public transportation in Gridley is provided by Butte County Transit (BCT). All BCT buses are equipped with bicycle racks to accommodate two bicycles, and drivers are available for loading assistance. Gridley is served by BCT's Route 32 and 30, which connects directly with the towns of Oroville, Biggs, and Paradise, and indirectly (via changing buses) to Magalia, Paradise Pines, and Chico (see **Figure 2.** Land Use Considerations).

There are no bicycle parking facilities at the BCT bus stops in the City of Gridley. Caltrans bicycle plan requirements emphasize (see Table of Contents - Legal Requirements) the development of multi-modal transportation opportunities, such as providing bicycle parking at transit points. Some transit providers have found that they can extend their service area by 400 percent by including a radius of 2-3 miles from each stop. Bicyclists are typically willing to ride 2-3 miles to get to transit that is welcoming, comfortable, efficient, and convenient. Bicycle parking facilities have been recommended in the downtown area to serve these bus stops (see **Figure 4.** Existing and Proposed Bicycle Parking Facilities).

Secure bicycle parking exists throughout the City. Most of the bicycle parking "racks" are located at local schools and other destination points, such as shopping centers.

Many prime destinations however, have no secure bicycle parking. In some cases the bike parking exists but it provides little value due to improper design and aging. New bicycle parking facilities have been proposed for key destinations throughout the City (see **Figure 4.** Existing and Proposed Bicycle Parking Facilities). Please see **Appendix B.** Bicycle Parking Facilities for a detailed discussion of bicycle parking design and implementation considerations.

2.4 EXISTING AND PROPOSED FACILITIES FOR CHANGING AND STORING CLOTHES AND EQUIPMENT

Besides Gridley High School there are no existing facilities for changing and storing clothes and equipment.

Due to the population levels of the City, and the infancy of the bikeway planning process, no such facilities have been proposed.

2.5 BICYCLE SAFETY AND EDUCATION PROGRAMS

California Highway Patrol

The California Highway Patrol in Butte County has no formal bicycle education program. However, they do provide safety presentations to schools or community groups as requested. The bicycle safety presentations are geared

toward bicyclists 14 years and younger and are usually in the form of a "bicycle rodeo". Bicycle Rodeos typically involve bicycle exhibits, setting up 6 to 10 skill stations testing riders' handling skills, and guidance from law enforcement representatives to teach in-traffic riding behavior.

A State mandatory bicycle helmet enforcement program (for children under 18) went into effect in January of 1995. Citations or verbal warnings are issued as needed.

City of Gridley Police Department

The City of Gridley Police Department has no formal bicycle safety education program; however there is a school resource officer available to give presentations as requested. Citations or verbal warnings are issued as needed.

Gridley Unified School District

The school district offers no formal bicycle education programs, however it does work in conjunction with the Gridley Police Department at schools' requests, to educate young bicyclists.

2.6 RELATIONSHIP TO OTHER LAND USE PLANS

Bicycle transportation planning, as with all transportation planning, is a regional effort. County and Municipal General Plans in the region each have circulation elements pursuant to California Government Code Sections 65103 (f) and 65080 and are mandated to have no conflict with applicable State and regional transportation plans. The following section is an overview of the transportation goals set forth in relevant state, county and municipal plans.

City of Gridley General Plan

The City's General Plan contains goals and policies which encourage the development of bicycle related facilities. The Land Use Element contains overall planning goals. One of the overall goals of the City is to "provide a safe, healthy living environment, free of litter, excessive noise, congestion and safety hazards, for all residents". By adopting and implementing the goals, policies, and programs of the Bicycle Plan, the City has a greater likelihood of attaining this goal.

The *Circulation Element* of the General Plan contains specific goals that both support and dictate the development of the Bicycle Plan. The goals are:

1. To coordinate elements of the City circulation system with County, State and Federal transportation systems.
2. To minimize circulation and transportation costs to the City while providing reasonable access to and from the City as well as to facilitate efficient internal movement.
3. To provide a circulation system in and adjoining commercial areas which promote safety and minimizes traffic congestion.

4. To provide a safe and practical circulation system.
5. To provide circulation throughout the City so that it is the least disruptive to existing residential areas while assuring that all of the City has a level of access consistent with the need for public safety and general welfare.
6. To provide a circulation system that utilizes a broad range of transportation modes.

Specifically, Policy 8 of the Circulation Element encourages "the use of alternative modes of transportation, including bus, bicycle and walking, to reduce demands upon the street system." Information contained in the 2003 Bicycle Plan was incorporated into the recently adopted 2030 General Plan update.

Butte County

Countywide Bikeways Master Plan
The Countywide Bikeways Master Plan (1998) for Butte County was developed by the Butte County Association of Governments. The Countywide Bikeways Plan contains baseline information relating to bicycle parking and other supporting facilities, including maps depicting existing and planned bikeways in all incorporated cities. There is an extensive list of goals, objectives, and policies which support the development of a safe, convenient, continuous, efficient, intermodal, and adequately funded bikeways system throughout the county.

The Countywide Bikeways Plan is intended to provide direction to local governments who are ultimately responsible for the planning and development of bikeways within their incorporated limits. It also delineates planned facilities in unincorporated areas, which serves to identify connectivity between incorporated cities, and the development of a regional bikeways system. The regional routes identified in the Plan (see **Figure 3.** Regional Considerations) have been incorporated, into the Gridley Bicycle Plan.

Butte County General Plan
The Butte County General Plan contains several goals, objectives, and policies which promote bicycle planning. The County's Circulation Element encourages decision makers to "Provide for a safe and convenient bicycle transportation system which is integrated with other transportation modes". Supporting objectives and policies encourage local jurisdictions to coordinate with the county and provide a bicycle system that is integrated with other transportation modes.

Other Plans

Streetscape Design Plan- Highway 99
A major redesign of Highway 99, creating a more attractive, pedestrian-friendly environment, has been recently approved. The Design Plan calls for seven foot bike lanes to be striped along Highway 99 from Ford Street to Archer Street. While these bike lanes have been

incorporated into the Bike Plan, their construction should be pursued and implemented only during the comprehensive reconstruction of Highway 99 that contains the recommendations of the Streetscape Design Plan.

2.7 FEDERAL AND STATE POLICIES

Accommodating Bicycle and Pedestrian Travel Statement

"Accommodating Bicycle and Pedestrian Travel: A Recommended Approach" is a policy statement that was adopted by the U.S. Department of Transportation (USDOT) in response to TEA-21. USDOT encourages public agencies, professional organizations, advocacy groups, and any other groups involved in transportation issues to adopt this policy to further promote bicycling and walking as viable components of the transportation system. The four directives issued in this policy statement address measures to improve bicycle and pedestrian access, convenience, and safety in transportation projects. The policy statement notes that, "The challenge for transportation planners, highway engineers and bicycle and pedestrian user groups, therefore, is to balance their competing interests in a limited amount of right-of-way, and to develop a transportation infrastructure that provides access for all, a real choice of modes, and safety in equal measure for each mode of travel."

Caltrans Deputy Directive-64

Caltrans has adopted a policy directive related to non-motorized travel that the City could follow by issuing a similar statement. The Caltrans Deputy Directive 64 (DD-64) reads:

> "The Department fully considers the needs of non-motorized travelers (including pedestrians, bicyclists and persons with disabilities) in all programming, planning, maintenance, construction, operations and project development activities and products. This includes incorporation of the best available standards in all the Department's practices. The Department adopts the best practice concepts in the US DOT Policy Statement on Integrating Bicycling and Walking into Transportation Infrastructure."

Assembly Concurrent Resolution No. 211 (ACR 211)

California's cities and counties have even more reason to pay attention to the two aforementioned policies. ACR 211 (Nation) "Integrating walking and biking into transportation infrastructure" became effective in August 2002, and encourages all cities and counties to implement the policies of DD-64 and the USDOT design guidance document when building local transportation infrastructure.

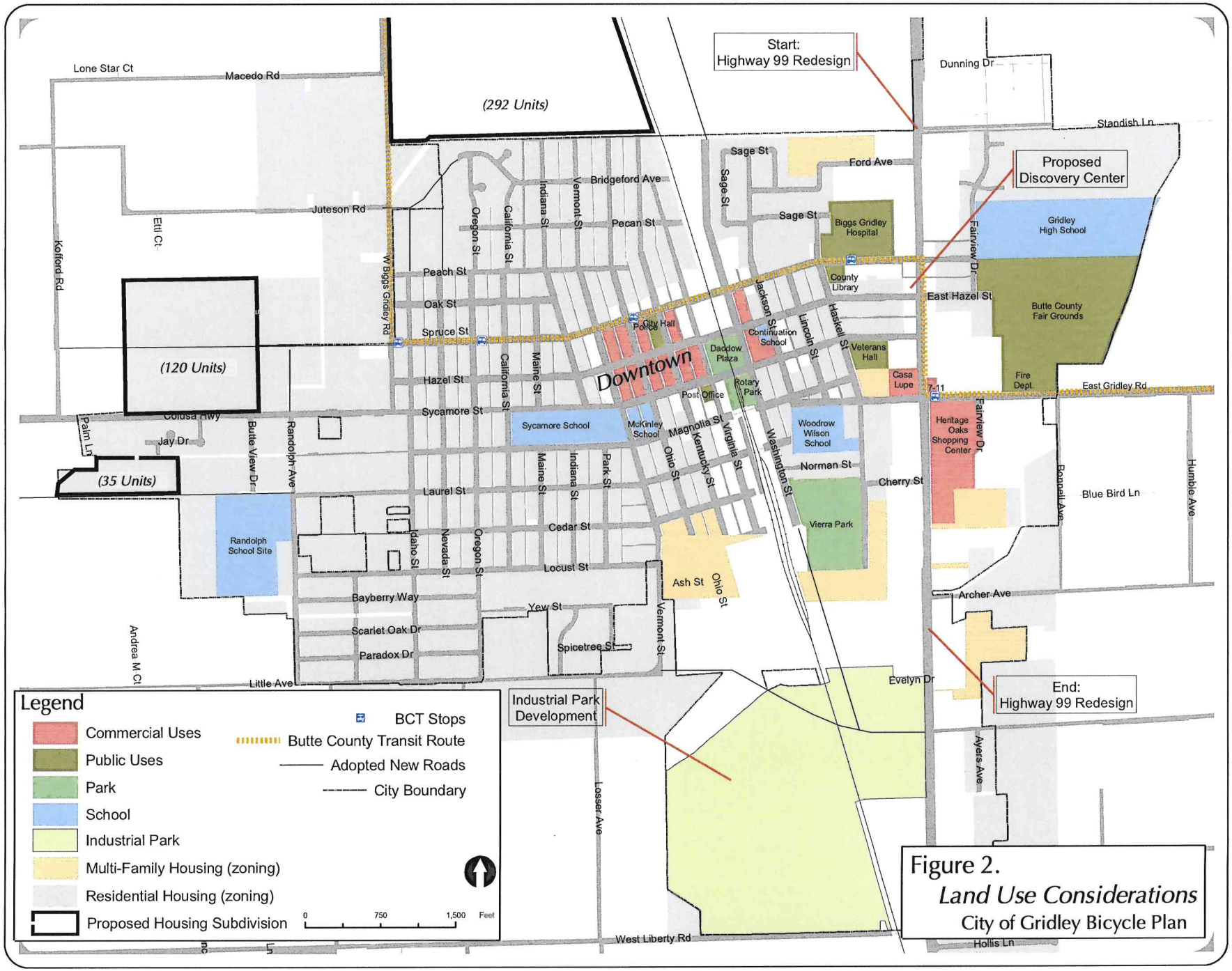


Figure 2.
Land Use Considerations
City of Gridley Bicycle Plan

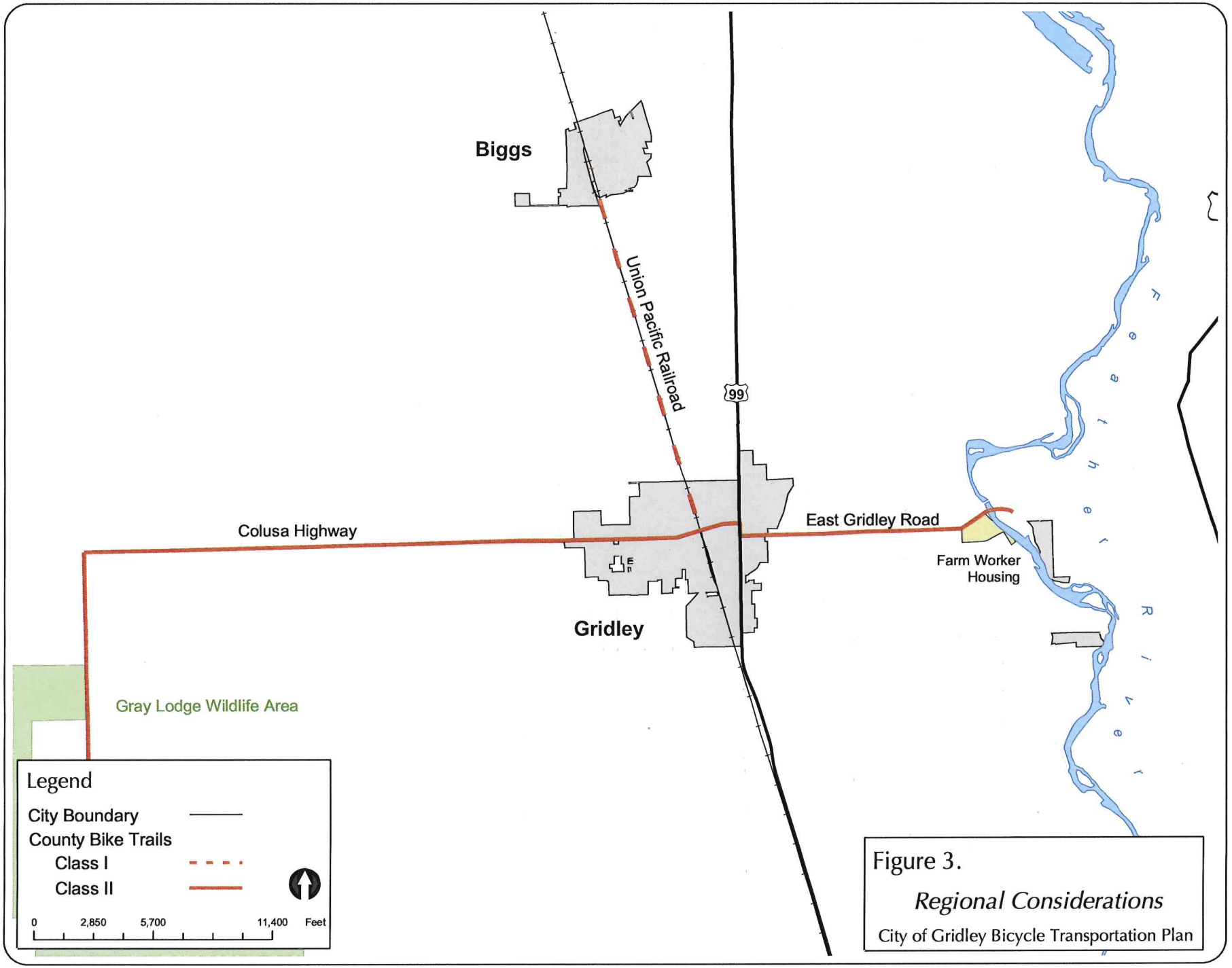
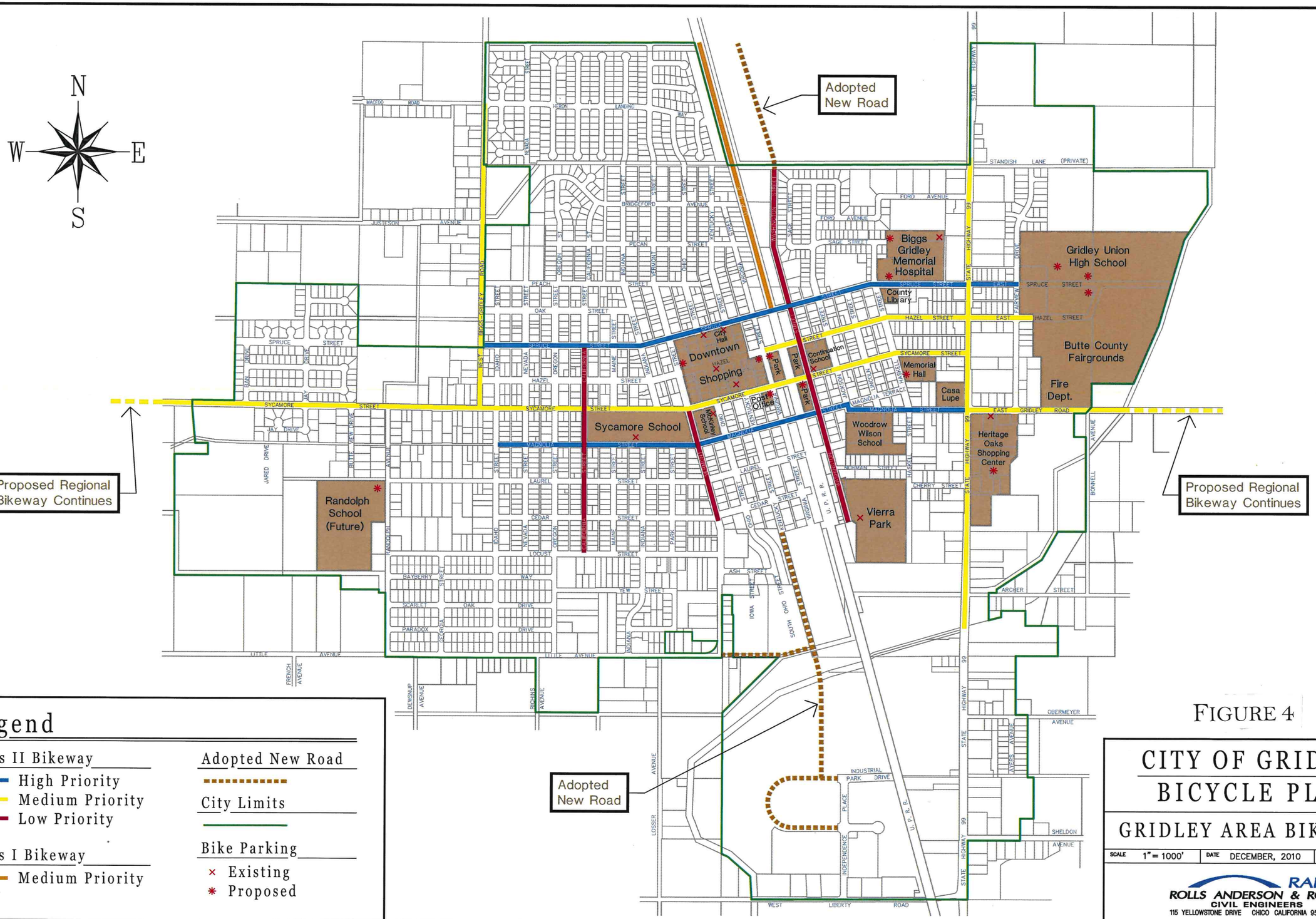


Figure 3.

Regional Considerations

City of Gridley Bicycle Transportation Plan



Legend

Class II Bikeway
- High Priority
- Medium Priority
- Low Priority

Class I Bikeway
- Medium Priority

Adopted New Road

City Limits

Bike Parking
- × Existing
- ✱ Proposed

FIGURE 4

CITY OF GRIDLEY BICYCLE PLAN

GRIDLEY AREA BIKEWAYS

SCALE	1" = 1000'	DATE	DECEMBER, 2010	DRAWN BY	RAR

ROLLS ANDERSON & ROLLS
CIVIL ENGINEERS
115 YELLOWSTONE DRIVE CHICO CALIFORNIA 95973 5811

S:\CITIES\Gridley_GRIDLEY MASTER FILE.dwg 12/29/10 8:24:03 AM

CHAPTER 3. PARTICIPATION

3.1 COMMUNITY INVOLVEMENT

A public outreach and planning effort was designed to facilitate community involvement in the preparation of this plan. A feature on the City's web site was created to publicize the bike planning process, and to inform citizens of the upcoming public meeting events. Two public meetings were held, in September and October 2003, at City Hall. Newspaper ads were also published and flyers were distributed to promote the events.

PUBLIC MEETING: CITY OF GRIDLEY BICYCLE PLAN UPDATE

NOTICE IS HEREBY GIVEN that the Gridley Planning Commission will hold a public meeting to obtain citizen input on the 2010 Gridley Bicycle Plan Update on **Monday, September 20, 2010 at 5:30 P.M. in Gridley City Hall Council Chambers, 685 Kentucky Street, Gridley.** All interested persons are invited to attend or submit comments in writing.

Bicycle Plan Update: This city-initiated project will result in an update of the 2008 Bicycle Plan. The updated Bicycle Plan will define bike paths, lanes, and routes and also propose implementation measures that will help establish priorities for construction of these facilities. The updated plan will also allow the City to better compete for various state and federal grants to construct bicycle facilities.

This public meeting will be used to review the 2010 Draft Bicycle Plan Update. The public input received at this meeting will be used to help prepare a Final Plan to be presented to the Planning Commission and City Council for review and approval.

Further information regarding this project may be obtained by contacting Andrea Redamonti, Community Development Director, City of Gridley, in person or by correspondence at 685 Kentucky Street, Gridley, CA 95948, by telephone (530-846-3631), or by e-mail (aredamonti@gridley.ca.us). Environmental Review Status: The proposed action is exempt from review under the California Environmental Quality Act section 15601 (b) (3) because it can be seen with certainty that the proposed amendments would not have a significant effect on the environment.

Publish: September 15, 2010
Andrea Redamonti Community Development Director

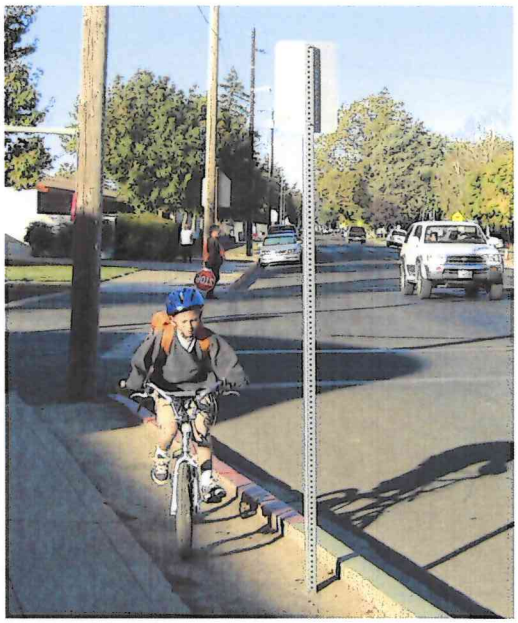
Advertisement for Community Meeting

The public meetings were designed to address the community's needs and concerns. The public meetings consisted of a background slide show on bicycle planning and design concepts. Participants were then asked to help identify different bicycle users in their area, barriers to bicycle use, and opportunities for bicycle facility and program improvement.

3.2 RESULTS

The public meeting was modestly attended and was held during a regular planning commission meeting. The meeting consisted of a background slide show on bicycle planning and design concepts. Participants were then asked to help identify different bicycle users in their area, barriers to bicycle use, and opportunities for bicycle facility and program improvement.

The following is a summary list of the comments provided by participants as the meeting:



Bike Users in Gridley

- Students to school
- Recreational users
- Errands
- Seniors on three wheel bikes and motorized scooters

Obstacles/Barriers

- Crossing Highway 99
- Using Highway 99 as a north-south route
- Automobile congestion around schools
- East Gridley Road lacks shoulders
- West Biggs Gridley Road lacks shoulders
- Pavement conditions
- Automobile speeding problems
- Lack of shoulders
- Poor image of cycling; not "cool" to take bikes to school
- Lack of bicycle parking at destinations
- No easy way to get to Biggs
- Lack of safe routes to Gray Lodge Wildlife Area

Solutions/Opportunities

- Make provisions for bicyclists in new projects
- Explore railroad right-of-way
- Explore alternative east-west routes
- Explore alternative north-south routes
- Need path to Biggs
- Work with schools to increase bicycle ridership
- Use cycling as a tourist attraction
- Provide access to the labor housing on East Gridley Rd.
- Explore bike trail opportunities to and along Feather River
- Use wide roads in Gridley to accommodate painted lanes

Participants helped identify different bicycle users in their area, barriers to bicycle use, and opportunities for bicycle facility and program improvement.

CHAPTER 4. GOALS AND OBJECTIVES

Goal: A safe, effective, and efficient bicycle circulation system

Objective 1.0: A continuous bicycle system that is part of the multi-modal transportation network in Gridley.

Implementation Measure 1.1: Develop, approve, and update the bicycle transportation plan that identifies local bikeway routes in Gridley, every five years.

Implementation Measure 1.2: Coordinate with local and regional transit providers to integrate bicycle facilities with their services.

Objective 2.0: Promote bicycling and information about bicycle safety programs.

Implementation Measure 2.1: Work with local schools and businesses to encourage participation in statewide bike to work and bike to school days.

Implementation Measure 2.2: Develop a feature on the City's web site to compile information on bicycling events and safety.

Implementation Measure 2.3: Develop a notification method through the City web site to inform the City about new bicycle hazards.

Implementation Measure 2.4: Place adertisements in the newspaper to promote bicycling and bicycle safety (education programs, helmet laws, share-the-road).

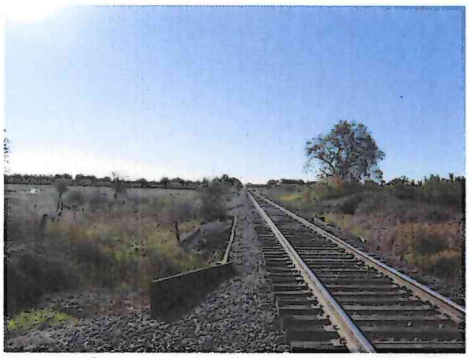
Implementation Measure 2.5: As requested by the school district and other public groups, coordinate the training of children aged 5-12 on the safe use of bicycles.

Especially school-aged children should be trained in the safe use of bicycles in traffic.

Objective 3.0: Continuous regional routes surrounding the City of Gridley.

Implementation Measure 3.1: Participate and comment on the Butte County Bicycle Plan update as it relates to Gridley-area routes, namely access to Feather River along East Gridley Road, and bikeways to Biggs and Gray Lodge Wildlife Area.

Implementation Measure 3.2: Work with Butte County representatives to maintain the Union Pacific Railroad



Proposed route connecting the cities of Gridley and Biggs.

route between the Cities of Gridley and Biggs as identified in the Butte County Regional Bikeways Plan.

Implementation Measure 3.3: Continue the coordination and communication between relevant jurisdictions in Butte County, including the Butte County Association of Governments, City of Biggs, and Caltrans.

Implementation Measure 3.4: Hold and/or participate in regional bicycle planning meetings.

Implementation Measure 3.5: Develop a Class II bike lane between Gridley and Biggs, along the proposed new road extension of Washington Street to Sixth Street in Biggs.

Implementation Measure 3.6: Coordinate and cooperate with the City of Biggs to develop a continuous bikeway between the cities.

Implementation Measure 3.7: Explore trailway easement opportunities and linear parkways during Gridley-Biggs "Area of Concern" meetings.

Objective 4.0: Increase bicycle and pedestrian safety and access to all points in the City.

Implementation Measure 4.1: Improve safety conditions on select streets in the City with Class II bicycle facilities.

Implementation Measure 4.2: Require the establishment of Class II Bike Lanes whenever roads are repaved along existing bike routes, as available funding permits.

Implementation Measure 4.3: Require that, as conditions of project approval, bicycle lanes, access points, and safety enhancement measures be integrated into new development proposals, as appropriate.

Bicycle access should be a considered during project design and approval.

Implementation Measure 4.4: Review local California Department of Transportation projects for their "bicycle

New development provides an excellent opportunity to provide bike facilities.

friendliness". Where possible, make modifications to project plans in order to provide safe access for bicyclists.

Implementation Measure 4.5: Amend zoning codes for multi-family, commercial, and planned developments to require secure bicycle parking.

Implementation Measure 4.6: Purchase and place bicycle racks at public buildings, parks, and key downtown locations.

Implementation Measure 4.7: Replace hazardous grates along identified bike routes.

Implementation Measure 4.8: Ensure that new railroad crossings that intersect routes, lanes, or corridors identified in this plan are designed to accommodate pedestrian and bicycle traffic.

Implementation Measure 4.9: Develop a program to provide area destinations with discounted bicycle parking racks.

Implementation Measure 4.10: Require, as conditions of project approval, bicycle parking facilities to be integrated into new development proposals, as appropriate.

Objective 5.0: Integrate bicycling into existing recreational and tourism opportunities

Implementation Measure 5.1: Support local organized (recreational and/or competitive) bicycle rides.

Implementation Measure 5.2: Support the development of bicycle facilities that provide connections to local and regional recreational destinations.

Proposed route connecting the cities of Gridley and Biggs.

route between the Cities of Gridley and Biggs as identified in the Butte County Regional Bikeways Plan.

Implementation Measure 3.3: Continue the coordination and communication between relevant jurisdictions in Butte County, including the Butte County Association of Governments, City of Biggs, and Caltrans.

Implementation Measure 3.4: Hold and/or participate in regional bicycle planning meetings.

Implementation Measure 3.5: Develop a Class II bike lane between Gridley and Biggs, along the proposed new road extension of Washington Street to Sixth Street in Biggs.

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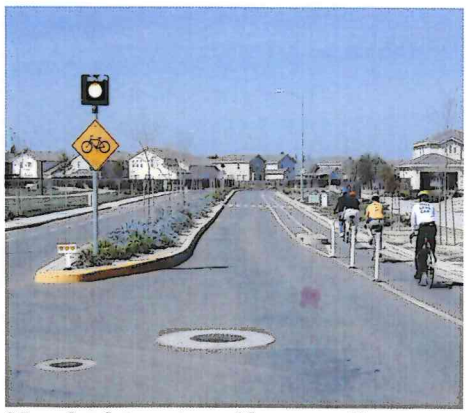


New development provides an excellent opportunity to provide bike facilities.

CHAPTER 5. GRIDLEY AREA BIKEWAYS

5.1 BACKGROUND

With the established goals and objectives in hand, existing conditions were analyzed using traditional transportation demand analysis to produce a bikeway network concept (see **Figure 5.** Gridley Area Bikeways). The Gridley Area Bikeways identify key facility improvements to help develop the bikeway network. The facility improvements listed are broken into three levels of priority: high, medium and low.

Bicycle parking has been proposed for key destination points throughout the City (see Figure 4, Existing and Proposed Bicycle Parking Facilities).

Education programs and City planning policy improvements have been recommended in Chapter 4. Goals and Policies.

5.2 NETWORK CONCEPTS DEVELOPMENT

Developing a bikeway network concept for the City of Gridley Bikeways Plan consisted of three major tasks: data collection, developing goals and objectives, and analyzing travel demand corridors with knowledge of existing conditions. Data collection included roadway inventories, existing facilities inventories, review of relevant plans and studies, and data from public meetings. Goals and objectives were developed through the public participation process (see Chapter 3). With goals and objectives identified the existing conditions were evaluated and strategies for improving the conditions were developed into a network concept. The following is a discussion of various land uses and settlement patterns of Gridley that influenced the development of significant bikeways.

5.3 LAND USE CONSIDERATIONS

Traditional Neighborhood Form

The City of Gridley consists of a compact downtown with surrounding neighborhoods. The downtown core is a significant commercial destination and employment center. Other destinations such as schools, businesses, and parks are located proximate to the downtown. The one exception is the strip commercial development located along Highway 99 which bisects the City in a north-south direction.

The grid network of residential streets in Gridley provides safe convenient bicycle access in most neighborhoods. Because of the traditional grid pattern, traffic is dispersed throughout the neighborhoods, and is subsequently low-volume. Vehicular transportation in Gridley does get concentrated on select east-to-west streets, namely, Spruce Street, Hazel Street, and Sycamore Street, especially as they meet Highway 99. The local north-to-south streets are used primarily to provide access to these east-to-west streets, except in the case of Highway 99 and West Gridley Biggs Road, which serve as regional thoroughfares.

Major Employment Centers

Major employment centers include the Heritage Oaks Shopping Center, Biggs-Gridley Hospital, Holiday Foods, Rio Pluma Company, Signature Fruit Company, and Mitchells Building Materials Warehouse.

Recreational Areas

The City of Gridley contains several prominent recreational locations; the Butte County Fairgrounds, Vierra Park, Rotary Park, and Daddo Park.

Regional Destinations

Regional bikeways, generally, fall outside the jurisdiction of the City of Gridley. During the public meetings, public comments emphasized the need for improved access to the following regional destinations: the City of Biggs, Butte County farmworker housing on East Gridley Road, and Graylodge Wildlife Area. These destinations, in fact, are already included as bikeways in the Countywide Bikeway Master Plan. These bikeways have been considered and incorporated into the proposed bikeways network (see **Figure 3.** Regional Considerations).

Highway 99

Highway 99 provides the most direct north-south route through Gridley; however it is largely inhospitable to bicyclists. The arterial is a four lane facility characterized by higher speed traffic, large trucks, little or no shoulder area, and numerous driveways to businesses fronting the highway. These factors combine to make the road unwelcoming for bicycle traffic. The Streetscape Design Plan for Highway 99 calls for a major redesign of Highway 99 to include bike lanes. These bike lanes have been included in the bikeways network.

Gridley Area Bikeways

The Gridley Area Bikeways Map addresses the land use and transportation discussed above. Class II Bike Lanes have been proposed for the east to west streets that serve as collectors or arterials: Spruce Street, Hazel Street, Sycamore Street, and Magnolia Street.

Class II Bike Lanes have been proposed for Highway 99 as designed in the recently approved Streetscape Design Plan.

A Class I Bike Trail linking Gridley to Biggs has been identified. This remains an intriguing proposal for many in Gridley as it would link the neighboring cities with a direct and scenic trail, fully separating cyclists and pedestrians from vehicular traffic. A Class II Bike Lane has also been proposed that would help to link the cities, in this case along a proposed extension of Washington Street.

As residential neighborhoods are built on the outside of town, and new roads are added and extended, it will become necessary to provide north-to-south routes from the outlying neighborhoods. Class II Bicycle Lanes have been proposed for California Street, Vermont Street, and Washington Street.

Finally, a segment of West Biggs Gridley Road has been added as a bikeway with a Class II Bike Lane. This narrow route experiences relatively heavy and fast vehicle traffic along the approach to Gridley from the north. As residential development occurs along this corridor (especially if the existing grid street pattern is not extended), all traffic including cyclists will be forced to utilize this segment.

Tables 2 through **4** describe the priority projects (also shown on **Figure 5.** Gridley Area Bikeways). Brief narrative descriptions of the projects'

merits are included. The estimated costs for the projects are also included.

Table 2
High Priority Projects

Project	Class	Length (Miles)	Cost*	Benefits
Spruce Street, from West Gridley Biggs Road to Highway 99	II	1.1	$8,000	Provides better roadway sharing on this east-west arterial. Reduces automobile speeds with narrower drive lanes. Provides access to destinations downtown and to Gridley High School.
Magnolia Street, from Idaho Street to Highway 99	II	1.0	$7,300	Provides better roadway sharing on this east-west arterial. Reduces automobile speeds with narrower drive lanes. Provides access to all elementary schools.

Table 3
Medium Priority Projects

Project	Class	Length (Miles)	Cost*	Benefits
Sycamore St., from Palm Lane to Highway 99	II	1.6	$11,650	Provide better roadway sharing on this east-west arterial. Reduces automobile speeds with narrower drive lanes. Serves downtown location and two schools. Connects to proposed regional route along Colusa Highway.
Trailway along railroad corridor from Gridley to Biggs	I	3.4	$497,500	Separates cyclists from traffic to Biggs. Has recreation and economic development potential.
Highway 99, from Ford Rd. to Archer Ave.	II	1.0	$7,300	Provides better roadway sharing for cyclists on this high volume highway. Element in major Highway 99 redesign plan. Bike lane has multiple effects such as providing breakdown lane, provides better sight distance for motorists, creates additional buffer for pedestrians.
East Hazel St., from Virginia St. to Highway 99	II	0.5	$3,650	Provides better roadway sharing on this east-west arterial. Reduces automobile speeds with narrower drive lanes. Provides visual appeal as

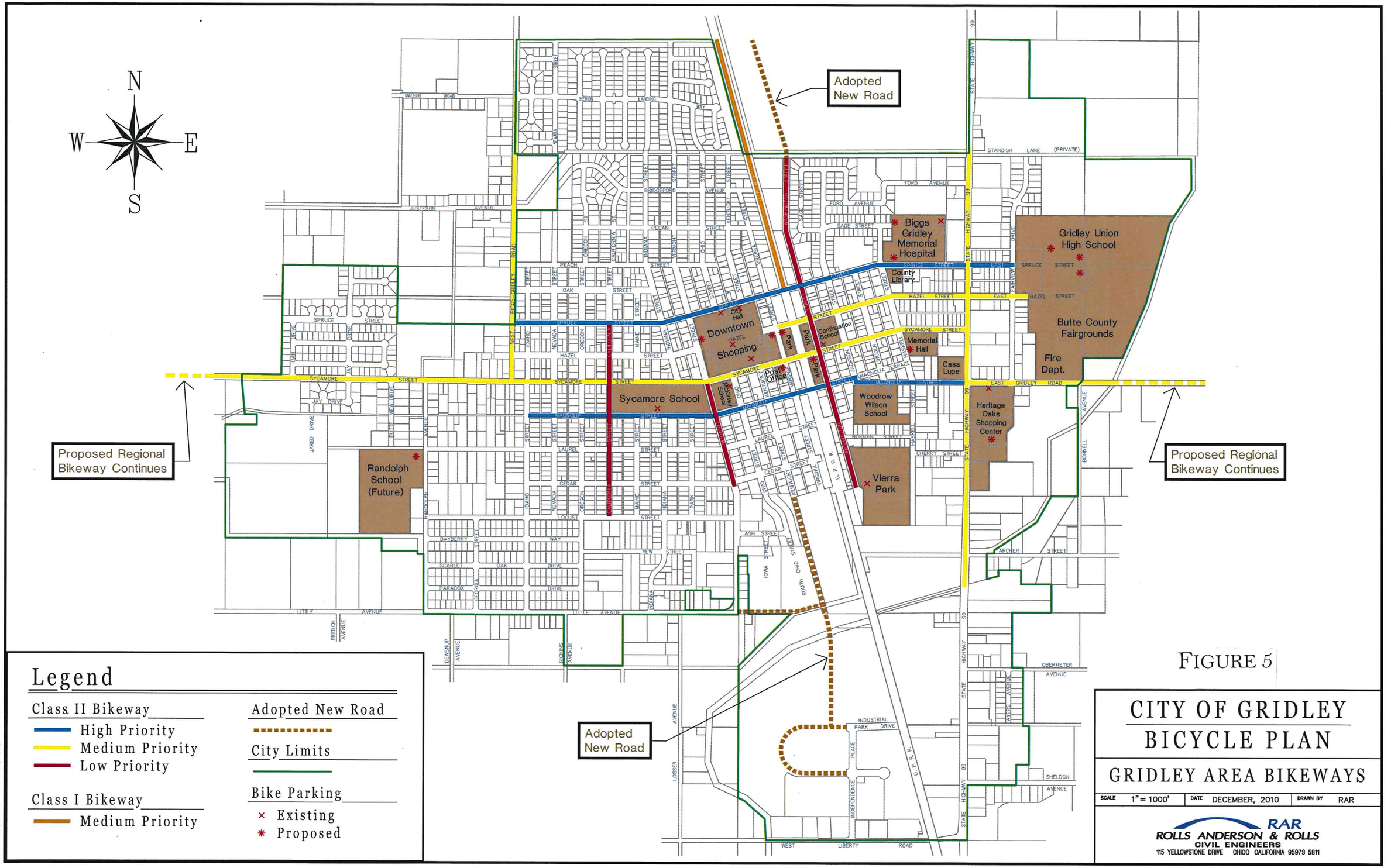
Table 3
Medium Priority Projects

Project	Class	Length (Miles)	Cost*	Benefits
				an entrance to downtown. Helps link downtown to East side of Highway 99.
W Biggs Gridley Rd., from Macedo Rd. to Sycamore Street	II	0.6	$4,400	Provides buffer from high speed/volume roadway. Provides access to local roads from distant subdivisions. Will help to reduce vehicle speed on their approach to the City.
East Gridley Rd., from Highway 99 to East Sphere of Influence Boundary	II	0.3	$2,200	Helps to link neighborhoods with commercial destinations. Provides connection to regional route along East Gridley Rd.

Table 4
Low Priority Projects

Project	Class	Length (Miles)	Cost*	Benefits
Extension of Little Ave from Vermont Street to Highway 99	II	0.5	$3,650	New road may become primary City entrance for residents (high volume). Minimal cost to provide bicycle infrastructure during new construction.
Extension of Washington St. South	II	0.4	$2,900	New road may become primary City entrance for residents (high volume). Minimal cost to provide bicycle infrastructure during new construction.
Washington St., from current northern terminus to Vierra Park	II	0.8	$5,850	Would provide safer north-to-south bicycle access when approved roads are built. Provides access to parks and schools.
Washington Street extended to 6th St. in Biggs	II	1.9	$13,900	Provides safer route to Biggs. Minimal cost to provide bicycle infrastructure during new construction.

*Cost estimates are based on figures provided by Caltrans Bicycle Facilities Unit (November 1999), plus an additional 10 percent for inflation. Costs for building bicycle facilities vary greatly based on project requirements. The Class II cost estimation includes striping, marking, and signing only. The Class I cost estimation is for grading and paving an 8' bikeway only. Purchasing pavement, widening, right-of-way acquisition, major drainage and ditch work, landscaping, and traffic control features are a few factors that can dramatically increase the cost of facilities.



Legend

Class II Bikeway
- High Priority
- Medium Priority
- Low Priority

Class I Bikeway
- Medium Priority

Adopted New Road

City Limits

Bike Parking
- × Existing
- ✱ Proposed

FIGURE 5

CITY OF GRIDLEY BICYCLE PLAN

GRIDLEY AREA BIKEWAYS

SCALE	1" = 1000'	DATE	DECEMBER, 2010	DRAWN BY	RAR

RAR
ROLLS ANDERSON & ROLLS
CIVIL ENGINEERS
115 YELLOWSTONE DRIVE CHICO CALIFORNIA 95973 5811

APPENDIX A. BICYCLE FACILITIES DESIGN GUIDELINES

Background

The following is a summary of the Caltrans 1995 publication *Bikeway Planning and Design.* This information is provided as a convenient reference for City Staff. The most relevant design elements pertaining to the City of Gridley have been included. The complete Caltrans Highway Design Manual can be found on-line at www.dot.ca.gov/hq/oppd/hdm/hdmtoc.htm.

The Caltrans Highway Design Manual figure numbers have been included on the figures in this summary to ease cross-referencing.

CLASSES OF BIKEWAYS FACILITIES

Class I Bikeways (Separate Bike Paths)

Bike paths are facilities with exclusive right of way for non-motorized travel, with cross flows by motorists minimized. The Caltrans design manual highlights some inappropriate bike path designs. For example, "bike paths in the median of highways are not recommended because they require movements contrary to normal rules of the road". Sidewalks should not be considered bike paths as bicyclists on sidewalks may cause conflicts with pedestrians.

If significant pedestrian use of a bike path is anticipated, Caltrans recommends separate facilities for pedestrians in order to minimize conflicts. Furthermore, "Where equestrians are expected, a separate facility should be provided." Caltrans recognizes that in some instances it may be appropriate to develop unpaved, multipurpose recreational trails and only requires that such facilities be signed as a recreational trail and not a bikeway. Motorized vehicles and motorized bicycles (mopeds) are prohibited on bike paths by state law. Caltrans discourages the development of one-way bike paths due to the difficulties of enforcement. The estimated cost of Class I bike paths is $100,000+ per mile (Caltrans Office of Bicycle Facilities).

Class II Bikeways (Bike Lanes)

Bike lanes are areas within the paved roadway that are reserved for bicyclist use. They are designated by bike lane stripes and signing. Bike lanes actively encourage bicyclist travel by creating safer conditions that increase bicyclist's confidence and decrease their level of stress. The estimated cost for Class II bike lanes is $5,000+ per mile for signing, markings and striping only (Caltrans Office of Bicycle Facilities).

Bike lanes should be installed on each side of the street as Caltrans requires that, "**Class II bikeways shall be one-way facilities".** If bike lanes are to be located on one-way streets, Caltrans specifies that they should be placed on the right side of the street.

Class III Bikeways (Bike Routes)

Class III bikeways are shared facilities and are established by placing Bike Route signs along roadways. Bike routes are intended to provide continuity to the bikeway system. Bike routes are established along through routes not served by bike paths or bike lanes, or to connect bike lanes. Bike routes may also designate preferred (safe and direct) routes to high demand

destinations. The estimated cost for Class III bike routes is $500+ per mile for signing only (Caltrans Office of Bicycle Facilities).

BIKEWAY DESIGN CRITERIA

Class I Bikeways Design

Widths

The Caltrans design guideline states that, "**The minimum paved width for a two-way bike path shall be 2.4m. The minimum paved width for a one-way bike path shall be 1.5m. A minimum .6m wide graded area shall be provided adjacent to the pavement** (see **Figure 1003.1A**). A 1.0m graded area is recommended... 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 2.4m, preferably 3.6m or more".

Clearance to Obstructions

In designing a bike path, appropriate clearance width must be given between the path and obstacles such as trees and signs. Caltrans states that, "**A minimum .6m horizontal clearance to horizontal obstructions shall be provided adjacent to the pavement** (see **Figure 1003.1A**). A 1.0m clearance is recommended. **The clear width on structures between railings shall be no less than 2.4m A 3.6m clear width is preferable**. Caltrans also requires that, **"The vertical clearance to obstructions across the clear width of the path shall be a minimum of 2.5m".**

Striping and Signing

Caltrans has found that a yellow centerline stripe is particularly helpful when there is heavy use of a bike path, on curves with restricted sight distance and where the path is unlighted. A .9m long stripe with a 2.7m space is the recommended striping pattern to separate opposing directions of travel. Caltrans permits white painted word or symbol warning markings on the pavement to alert bicyclists to approaching hazards, such as sharp curves.

Figure 1003.1A

Two-Way Bike Path on Separate Right of Way

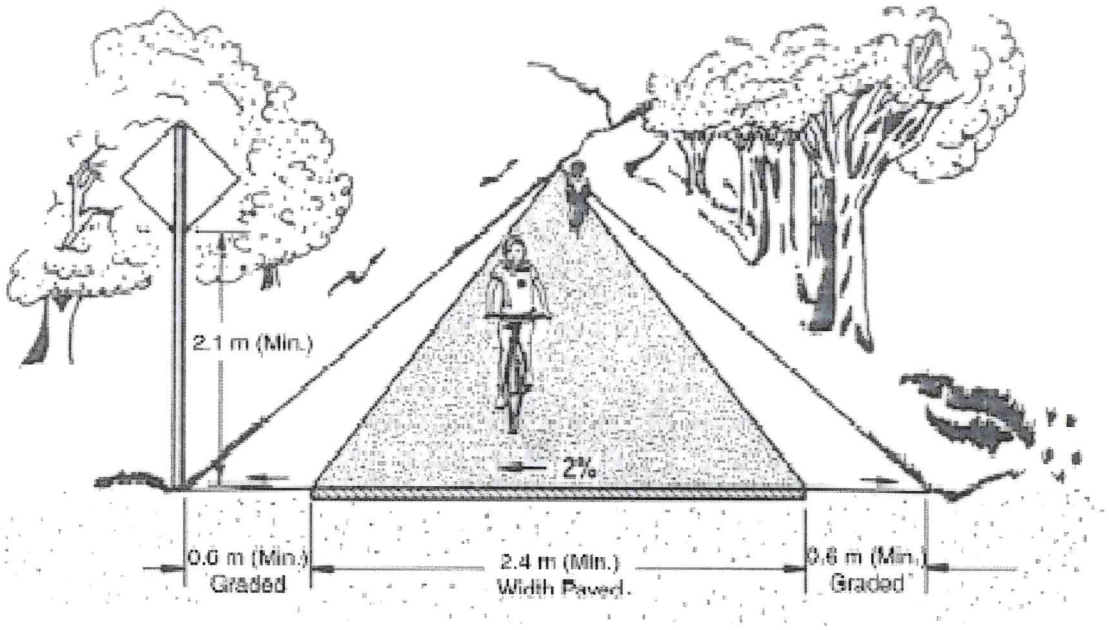
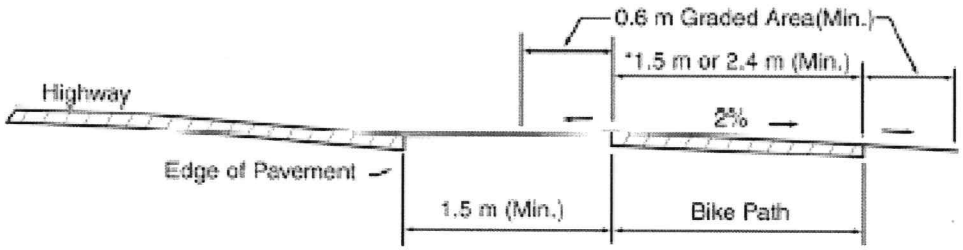


Figure 1003.1A

Typical Cross Section of Bike Path Along Highway



NOTE: See Index 1003.1(5)

*One - Way: 1.5 m Minimum Width
Two - Way: 2.4 m Minimum Width

Design Speed

Caltrans requires that, **"The minimum design speed for bike paths shall be 40km/h"**. The minimum design speed for bike paths on long downgrades (steeper than 4%, and longer than 150m) is 50km/h. In addition, **"Installation of 'speed bumps' or other similar surface obstructions, intended to cause bicyclists to slow down in advance of intersections, shall not be used"**.

Horizontal Alignment and Superelevation

See **Figure 1003.1C** for Caltrans' requirements. Caltrans recommends increased pavement width on the inside of the curve when minimum curve radii are selected.

Stopping Sight Distance

See **Figure 1003.1D** for Caltrans' requirements stopping sight distance. For two-way bike paths design will be for the descending conditions.

Grades

Caltrans states that, "The maximum grade rate recommended for bike paths is 5%. It is desirable that sustained grades be limited to 2% if a wide range of riders is to be accommodated". Steeper grades can be tolerated for up to about 150m. In such cases the design speed should be increased and additional width provided.

Structural Section

The structural section of a bike path should be designed in the same manner as a highway. Caltrans recommends a minimum pavement thickness of 50mm of asphalt concrete. It also recommends the use of type "A" or "B" asphalt concrete with a 12.5mm maximum aggregate and medium grading (as described in Department of Transportation Standard Specifications). Consideration should be given to increasing the asphalt content and sterilization of basement soil.

Drainage

According to the Caltrans guidelines, "For proper drainage, the surface of a bike path should have a cross slope of 2%." 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. In addition, "Where necessary, catch basins with drains should be provided to carry intercepted water across the path". One of the best standards for a typical bike path section has been developed by the City of Madison Engineering Division.

Figure 1003.1C

Curve Radii & Superelevations

$$R = \frac{V^2}{127\left(\frac{e}{100} + f\right)}$$

where,

R = Minimum radius of curvature (m),

V = Design Speed (km/h),

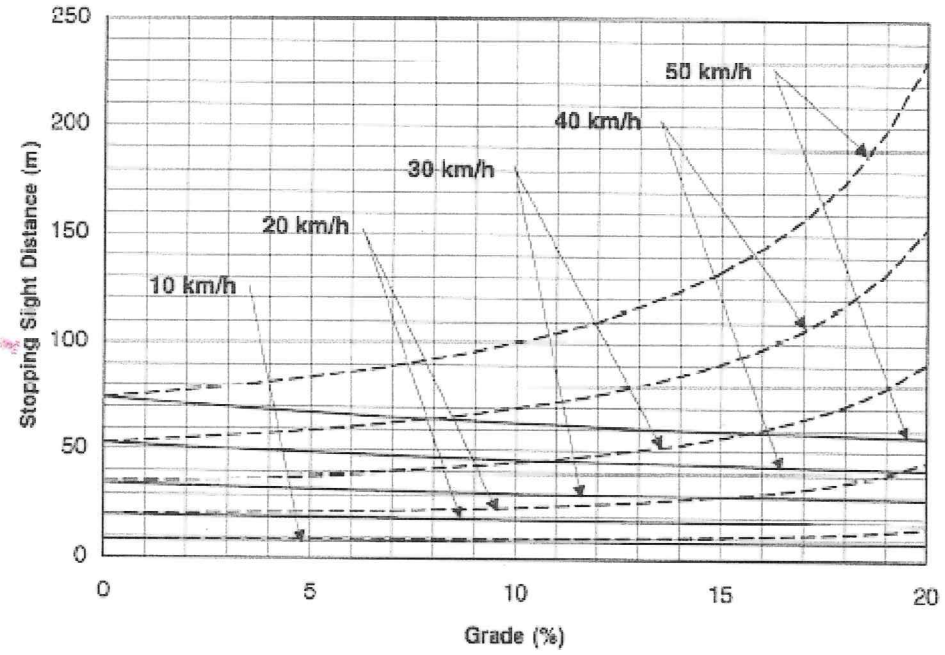
e = Rate of bikeway superelevation, percent

f = Coefficient of friction

Design Speed-V (km/h)	Friction Factor-f	Superelevation-e (%)	Minimum Radius-R (m)
20	0.31	2	10
30	0.28	2	24
40	0.25	2	47
50	0.21	2	86
20	0.31	3	9
30	0.28	3	23
40	0.25	3	45
50	0.21	3	82
20	0.31	4	9
30	0.28	4	22
40	0.25	4	43
50	0.21	4	79
20	0.31	5	9
30	0.28	5	21
40	0.25	5	42
50	0.21	5	76

Figure 1003.1D

Stopping Sight Distance



$$S = \frac{V^2}{254\,(f \pm G)} + \frac{V}{1.4}$$

Descend ------
Ascend ——

Where : S = stopping sight, m
V = velocity, km/h
f = coefficient of friction (use 0.25)
G = grade, m/m (rise/run)

Class II Bikeways Design

Widths

Caltrans states that, "**Bike lanes shall not be placed between the parking area and the curb…As indicated 3.3 or 3.6m (depending on the type of curb) shall be the minimum width of the bike lane where parking is permitted**". If parking is substantial or turnover of parked cars is high, additional width is recommended. Where parking is prohibited with a normal 600mm gutter, Caltrans requires the minimum bike lane width to be 1.5m. Furthermore, "Where gutters are wide (say, 1.2m), and additional .9m must be provided because bicyclists should not be expected to ride in the gutter. Wherever possible, the width of bike lanes should be increased to 1.8m to 2.4m".

Caltrans also requires that, "**Striping bike lanes next to curbs where parking is prohibited only during certain hours shall be done only in conjunction with special signing to designate the hours bike lanes are to be effective**". This type of lane is not encouraged however.

On highways where motor vehicle speeds exceed 66km/h additional bike lane width is desirable. Additional width increases distance between automobiles and bicyclists, partly adjusting for the increased stopping distances and decreased maneuverability of fast moving automobiles. Where automobile speeds exceed 66km/h additional width is also needed to decrease the anxiety level of bicyclists. Additional width should also be provided where unavoidable steep downgrades may create bicycle speeds greater than 50/km/h.

The motor vehicle lane width next to a bike lane is 3.6m. Where favorable conditions exist, Caltrans allows motor vehicle lane width to be narrowed to 3.3m in order to stripe a bike lane where traffic conditions do not demand a 3.6m lane.

Striping and Signing

The Caltrans guidelines require that, "**The R81 bike lane shall be placed at the beginning of all bike lanes, on the far side of every arterial street intersection, at all major changes in directions, and at maximum 1km intervals. Bike land pavement markings shall be placed on the far side of each intersection, and may be placed at other locations as desired. Raised barriers (e.g., raised traffic bars and asphalt concrete dikes) or raised pavement markers shall not be used to delineate bike lanes**".

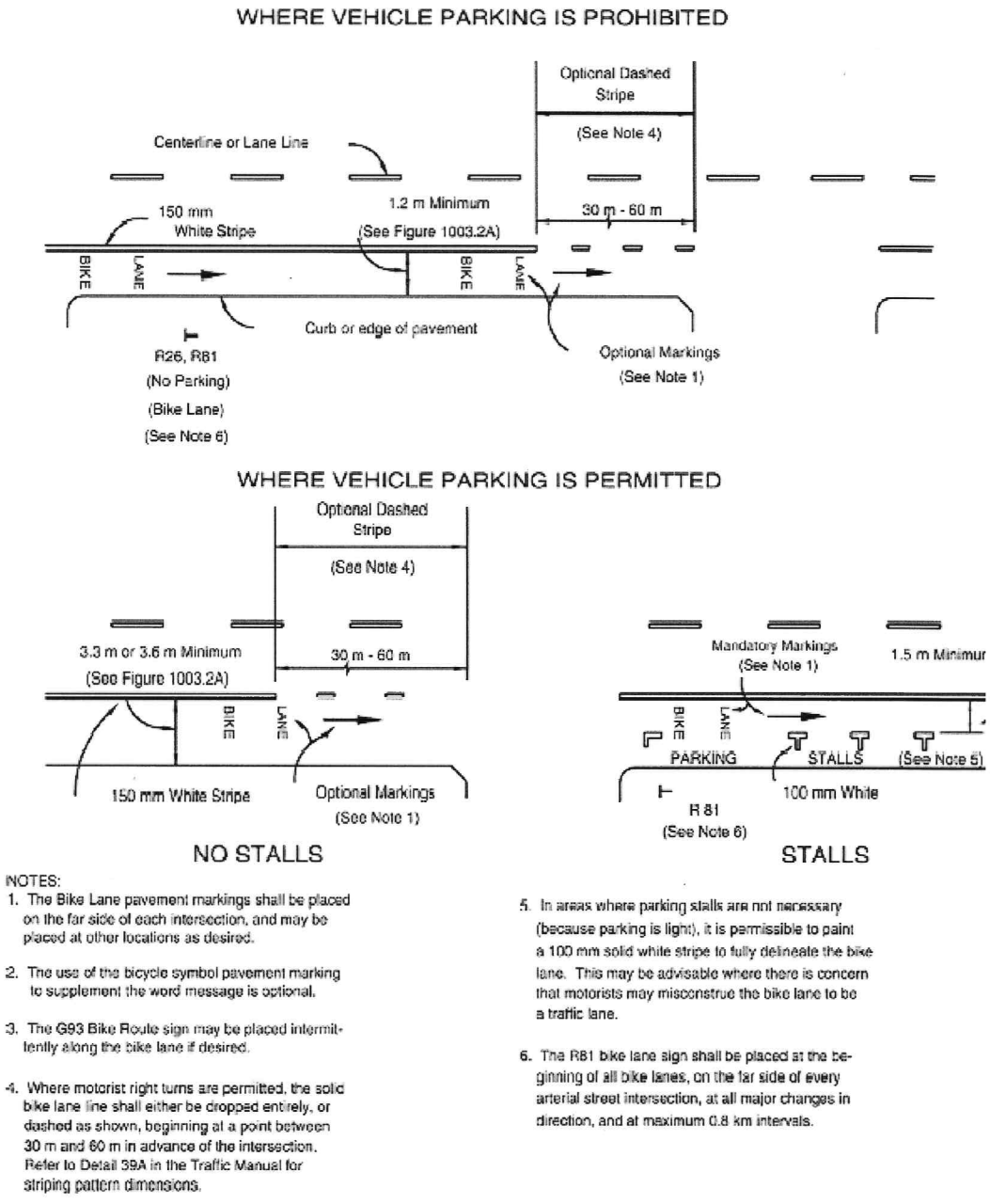
Caltrans also specifies that, "Bike lane stripes should be placed a constant distance from the outside motor vehicle lane... Bike lanes with parking permitted should not be directed toward the curb at intersections or localized areas where parking is prohibited". Caltrans standard signing and pavement markings for bike lanes are shown on **Figure 1004.3**.

Intersection Design

Caltrans suggests that bicycle-sensitive detectors be installed within the bike lane at intersections where there is a bike lane and traffic-actuated signal. Caltrans also recommends that detectors in left-turn lanes be sensitive enough to detect bicycles.

A

Figure 1004.3
Bike Lane Signs and Markings



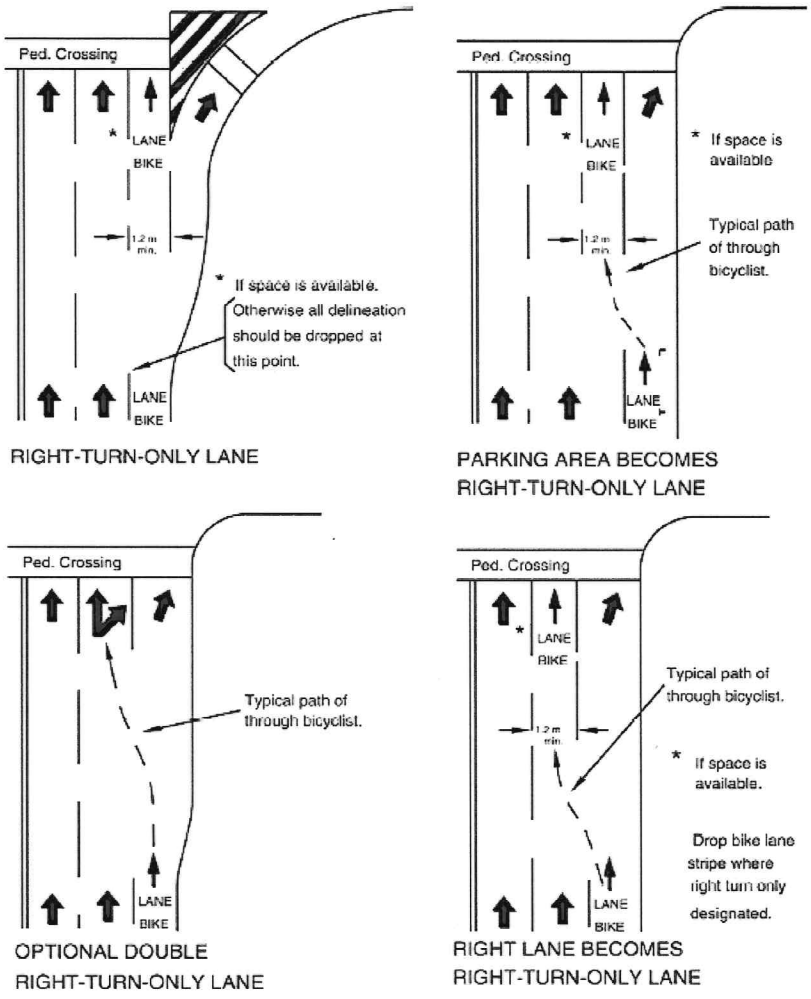
NOTES:

1. The Bike Lane pavement markings shall be placed on the far side of each intersection, and may be placed at other locations as desired.
2. The use of the bicycle symbol pavement marking to supplement the word message is optional.
3. The G93 Bike Route sign may be placed intermittently along the bike lane if desired.
4. Where motorist right turns are permitted, the solid bike lane line shall either be dropped entirely, or dashed as shown, beginning at a point between 30 m and 60 m in advance of the intersection. Refer to Detail 39A in the Traffic Manual for striping pattern dimensions.
5. In areas where parking stalls are not necessary (because parking is light), it is permissible to paint a 100 mm solid white stripe to fully delineate the bike lane. This may be advisable where there is concern that motorists may misconstrue the bike lane to be a traffic lane.
6. The R81 bike lane sign shall be placed at the beginning of all bike lanes, on the far side of every arterial street intersection, at all major changes in direction, and at maximum 0.8 km intervals.

point of potential conflict occurs when a bicycle lane is crossed by a motorist right-turn-only lane. As some bicyclists are apt to assume they have the right of way, and may not check for right-turning motor vehicles, Caltrans does not recommend striping the bike lane through the right-turn-only lane. Caltrans notes that, "When confronted with such intersections bicyclists should signal and merge where there is sufficient gap in right-turning traffic". **Figure 1003.2C**

illustrates Caltrans' recommended striping patterns for bike lanes crossing a motorists' right-turn-only lane. To warn motorists of the potential for bicyclists crossing their right-turn-only lane, Caltrans permits a Bike Xing sign to be used.

Figure 1003.2C
Bike Lanes Approaching Motorist
Right-turn-only Lane



Surface Tolerances

Bicycle tires can easily catch or be diverted on uneven surfaces. To facilitate the design of smooth surfaces, Caltrans has developed a table of recommended bikeway surface tolerance for bike lanes and routes (see **Figure 1003.6**).

Table 1003.6

Bikeway Surface Tolerances

Direction of Travel	Grooves(1)	Steps(2)
Parallel to travel	No more than 12 mm wide	No more than 10 mm high
Perpendicular to travel	---	No more than 20 mm high

(1) Groove--A narrow slot in the surface that could catch a bicycle wheel, such as a gap between two concrete slabs.

(2) Step--A ridge in the pavement, such as that which might exist between the pavement and a concrete gutter or manhole cover, or that might exist between two pavement blankets when the top level does not extend to the edge of the roadway.

Class III Bikeways Design

On-Street Bike Route Criteria

Bicyclists using a bike route expect it to offer a higher degree of service than alternative streets. Caltrans states that, "Routes should be designed only if some of the following apply:

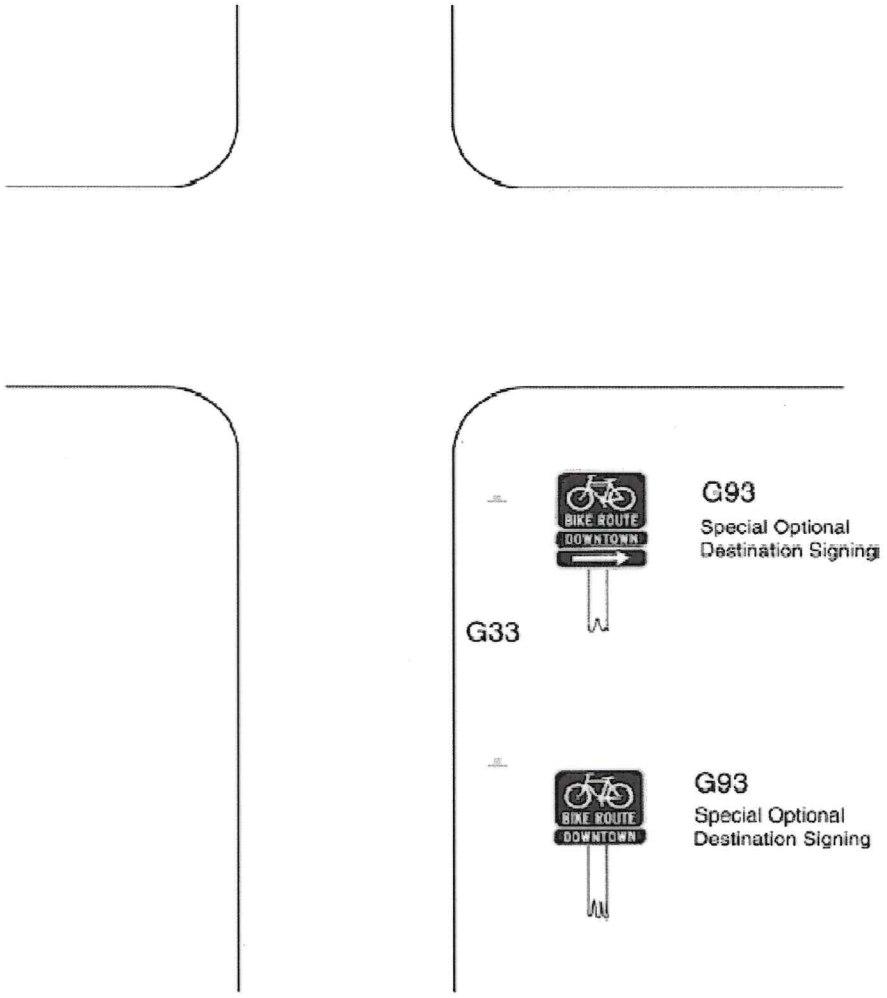
1. They provide for through and direct travel in bicycle-demand corridors.
2. They connect discontinuous segments of bike lanes.
3. An effort has been made to adjust traffic control devices (stop signs, signals) to give greater priority to bicyclists, as compared with alternative streets.
4. Street parking has been removed or restricted in areas of critical width to provide improved safety. Surface imperfections or irregularities have been corrected.
5. Maintenance of the route will be a higher standard that that of other comparable streets".

SIGNING AND MARKING OF BIKE ROUTES

The Caltrans guidelines state, "Bike routes are established through placement of the G93 Bike Route sign. Bike route signs are to be placed periodically along the route. At changes in directions, the bike route signs are supplemented by G33 directional arrows". Typical bike signing is shown on **Figure 1004.5**.

Figure 1004.5

Bike Route Signing



NOTES: The G93 Bike Route signs shall be placed at all points where the route changes direction and periodically as necessary.

While Bike Routes do not require pavement markings, Caltrans permits a 100mm white edge stripe separating the traffic lanes from the shoulder in order to provide for safer shared use. Edge stripes may be especially beneficial on rural highway and on major arterials in urban areas where there is no vehicle parking. For Bike Route signs to be more functional, Caltrans permits supplemental plates to be placed beneath them when located along routes leading to high demand destinations (e.g., "To Downtown").

OVERCOMING OBSTACLES

Railroad Crossings

All new bike path railroad crossings must be approved by the California Public Utilities Commission. The best design for a bikeway railroad crossing is a straight approach, crossing the rails at a right angle. The bikeway should not narrow at the crossing. According to the Caltrans guidelines "For on-street bikeways where a skew is unavoidable, the shoulder (or bike lane) should be widened, if possible, to permit bicyclists to cross at right angles" (see **Figure 1003.6A**).

Drainage Grates

Caltrans requires that, "Drainage inlet grates on bikeways have openings narrow enough and short enough to assure bicycle tires will not drop into the grates (e.g., reticuline type), regardless of the direction of bicycle travel". Where existing grates can not be replaced with standard ones Caltrans suggest welding 25mm x 6mmsteel cross straps to the grates at a spacing of 150mm to 200mm on center.

Driveways

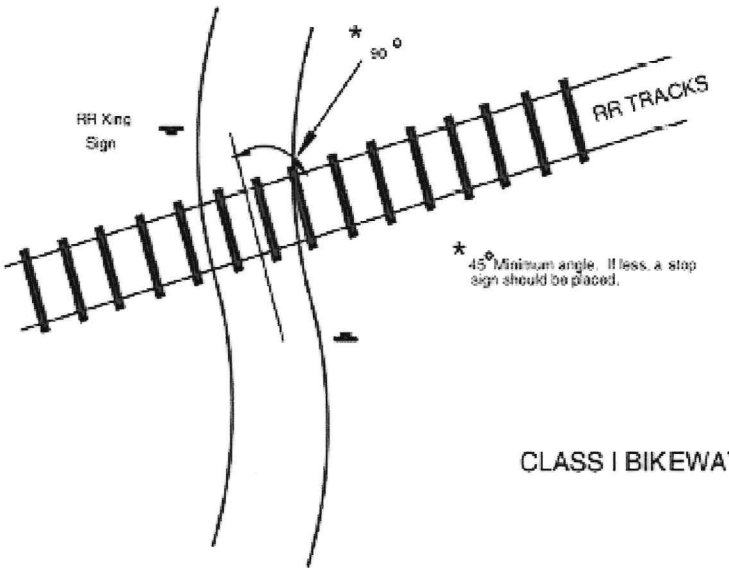
Bicycle tires can catch when entering driveways at a flat angle if a significant vertical lip exists between the driveway and gutter. For this reason Caltrans discourages the construction of such lips and suggest that, where a vertical lip is deemed necessary, the height should be limited to 15mm.

HAZARD MARKINGS FOR OBSTRUCTIONS

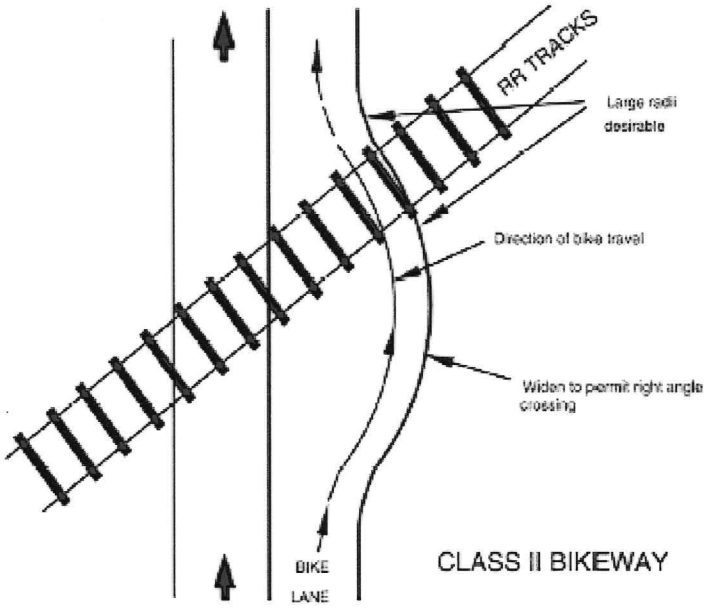
Bikeways should be designed around obstructions. However, unavoidable obstructions that restrict the width of a bikeway (such as piers or abutments) should be clearly marked to warn bicyclists (see **Figure 1003.6B** for Caltrans' guidelines).

Where pavement widening is not possible, Caltrans recommends retrofitting to keep the flangeway depth and width to a minimum. Caltrans also mentions that maintenance may be necessary to prevent ridge buildup of pavement along rails. Where hazards to bicyclists can not be avoided, Caltrans recommends installing warning signs. The North Carolina DOT recommends a warning sign the message, "BIKES CROSS AT RIGHT ANGLE", where crossings are not perpendicular to the rails.

Figure 1003.6A
Railroad Crossings



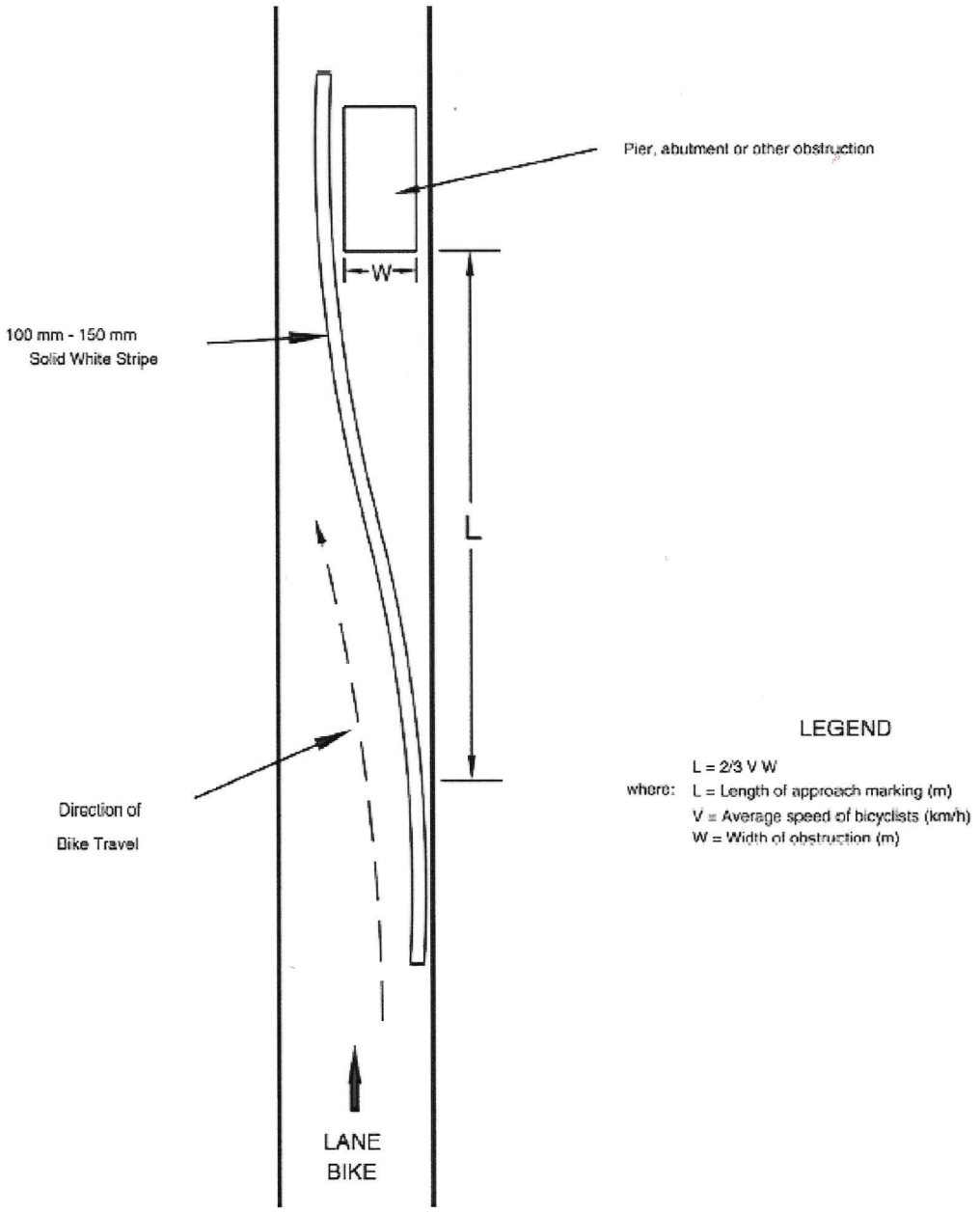
CLASS I BIKEWAY



CLASS II BIKEWAY

Figure 1003.6B

Obstruction Markings



LIGHTING

Caltrans recommends the consideration of lighting along routes where nighttime riding is expected. Lighting may be especially important along commuter routes, at bike path crossings of streets, and for underpass.

SHARED USE

Since all roadways, with the exception of some highways, can be expected to be used by bicyclists, designing and enhancing roadways for bicycle travel, regardless of the presence of a bikeway, is an important part of being a "bicycle-friendly" environment.

Caltrans guidelines require that all new construction or reconstruction of a roadway accommodate shared use by bicyclists. The guidelines state "On new construction, and major reconstruction projects, adequate width should be provided to permit shared use by motorists and bicyclists. **On resurfacing projects, the entire paved shoulder and traveled way shall be resurfaced. When adding lanes or turn pockets, a minimum 1.2m shoulder shall be provided.** When placing a roadway edge stripe, sufficient room outside the stripe should be provided for bicyclists". Caltrans also specifies surface qualities of new roads as follows, "For rideability on new construction, the finished surface of bikeways should not vary more than 6mm from the lower edge of a 2.4m long straight edge when laid on the surface in any direction".

REFERENCES

California Department of Transportation. 1995. *Bikeways Planning and Design.* 5th ed.

California Department of Transportation. 2001. *Highway Design Manual.*

APPENDIX B. BICYCLE PARKING FACILITIES

Background

To encourage increased bicycle use, it is recommended to plan thoughtfully for convenient, secure, and plentiful bicycle parking. This section is intended to provide information to decision makers wishing to provide and enhance bicycle-parking facilities.

Many communities recognize secure bike parking as the first and most important improvement to enhance the viability of a bicycle transportation system. Lack of bicycle parking facilities and fear of theft are common deterrents for bicyclists. The basics of effective bicycle parking are a good rack and a good location. To ensure that bicycle parking will be used, it is important to locate the parking facility in places that are convenient enough to encourage cycling and secure enough to reasonably safeguard against bicycle theft. Other factors of when considering appropriate bicycle parking facilities are adequate support for the bicycle, ease of use, durability, visibility of site, shelter from weather, and cost.

Bicycle parking facilities are usually manufactured according to two broad categories depending on the frequency and duration of use, security needs, and cost; long-term parking and short-term parking. **Figure B-1** and **B-2** are examples of the basic bicycle parking design categories.

Types of Bike Parking Facilities

Long-Term Parking –Bike Lockers
High security facilities are commonly rectangular enclosures that hold one or two bicycles each (see **Figure B-1**).

Several factors determine the locker security, durability, and cost; material and finish; type of construction; hardware materials and locking mechanism; and installation features. Bicycle lockers are intended for repeated use of day-long or longer bicycle storage.

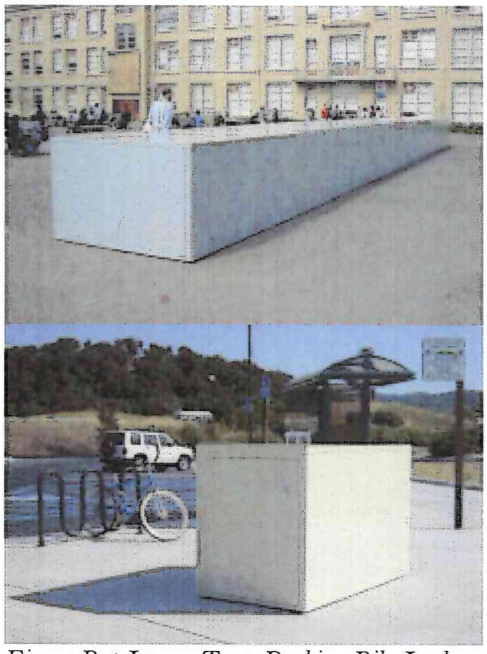


Figure B-1 Long –Term Parking Bike Lockers bikeparking.com/Palmer Group

Bicycle lockers are usually reserved or rented for an extended period of time, therefore a management program must be implemented and periodic maintenance and repair is needed. Appropriate places for these facilities are: government buildings, transit access points, and park and ride facilities.

Short-Term Parking – "Inverted U" style racks
This group of racks consists of a variety of styles including Inverted "U", "A" and "Post and Loop" designs (Figure D.2). These designs allow two points of contact, providing stability, and the ability to lock the frame and wheel(s).

APPENDIX B
BICYCLE PARKING FACILITIES

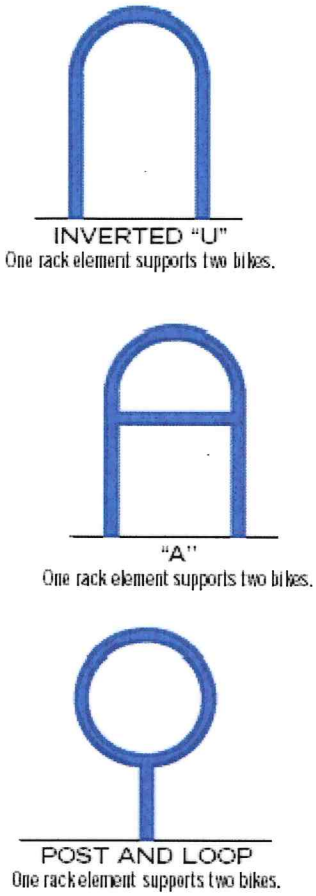


Figure B-2 Short-Term Parking Rack Styles www.apbp.org (Association of Pedestrian and Bicycling Professionals)

Parking facilities such as these are appropriate for places where repeated short-term to day-long use is common. This would include places of employment, schools, transit access points, and other places where there is a minimum of supervision. When combined with other amenities, such as shelter from the weather, this type of bike rack can function well for long-term bicycle parking.

Locating Bicycle Parking

As stated before, primary consideration in planning for bicycle parking is finding a good location. Bicycle facilities should be located to meet the needs of potential users. Most bicycle end of trip destinations are schools, recreation sites, employment centers, public areas, and commercial centers. Therefore, ample bicycle parking should be made available a those places.

Choosing sites with high visibility adds security to the parking facility. The best locations are adjacent to, or close proximity to entrance doors and in line of site of a window. Since six to eight bicycles can be parked in the space of one car, converting automobile parking spaces to bicycle parking should be considered.

General requirements of bicycle parking locations:

- Locate within 50 feet of a main entrance.
- Isolation does not work! – A bicycle rack that is visually or physically isolated will not be used and is a target for thieves.
- Distribute parking – where there is more than one building on a site, or where a building has more than one main entrance, the parking should be distributed to serve all buildings or main entrances.
- If possible, locate parking in areas where there is a high pedestrian activity – having lots of eyes and ears nearby ads to cyclists' perceptions of security.
- Locate parking in visible and prominent locations – if cyclists are unaware of the parking it won't be used.
- If parking is not immediately visible, a sign should be posted at main building entrances

indicating the location of the parking.

- A rack area should be as close *or closer* than the nearest car parking space.

Design of Bike Rack

Proper design of the bicycle rack contributes to the success of the facility. Poor planning and design of bicycle parking facilities results in compromised usage, capacity and safety. The placement of each bicycle rack element (the part of the bike rack that supports one bicycle) should be reviewed to provide easy, independent access).

General Considerations of Bike Rack Design:

- Racks should attracts cyclists (and be visually attractive)
- Racks should support the bicycle at two points and not pinch the front wheels
- Racks should be from heavy duty materials and securely fixed to the ground (with tamper-proof hardware)
- Racks should be designed to accommodate U-type locks

Design of the Bicycle Rack Area

A rack area or "bicycle parking lot" is an area where more than one rack is installed and aisles separate the racks. If possible, the rack area should be protected from the elements to provide shelter for bicyclists while parking and locking the bike. A sheltered facility will also help keep the bicycle dry, especially the saddle. A typical layout and configuration of a bicycle rack area is shown in **Figure B-3.**

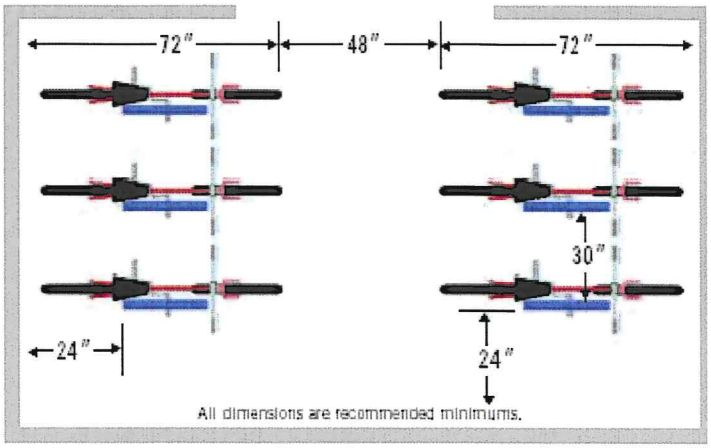


Figure B-3 Typical Bike Rack Configuration (Association of Pedestrian and Bicycling Professionals)

Generally, when bicycle rack elements are to be combined into a bike rack area, they should be placed on 30" centers (see **Figure B-4**). This allows for enough room for two bicycles to be secured to each rack element.

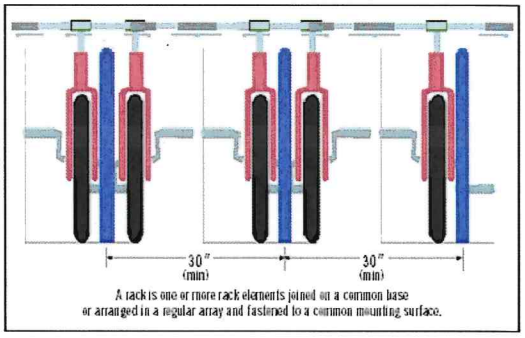


Figure B-4 Bike Rack Layout (Association of Pedestrian and Bicycling Professionals)

Costs

The costs of bicycle parking facilities are difficult to summarize because of the variation in models. The following is an approximate range for most storage facilities:

- High security lockers that hold one to two bicycles cost

approximately $400 to $1300 per bike, depending on the materials used.

- Short-term, "Inverted U" style rack costs range from $70 to $150 per bike.

Racks Styles to Avoid

The style of bicycle rack contributes to the success or failure of the parking facility. The installation of poorly designed racks results in compromised parking capacity, security, and use. **Figure B-5** shows rack styles to avoid.

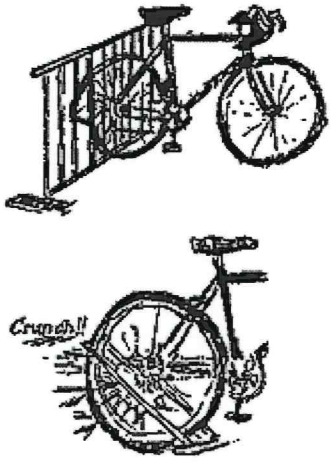


Figure B-5 Rack Styles to Avoid (Cora Bike Rack Pty Ltd. www.cora.com.au)

Notice that these facilities do not allow for the use of a "U-Lock" to secure the frame of the bicycle to the rack. Additionally, these rack types expose the wheels of the bike to being kicked over by vandals, resulting in a bent wheel.

Some rack designs, although modern in appearance and conception, do not provide intended results. The style known as the "Wave" is intended to hold 3-4 bikes however, the capacity is often compromised by improper placement of the bike resulting in room for only 1-2 bikes (see **Figure B-6**). The same capacity could be attained in a smaller area at a lower cost by using "inverted U" style racks.

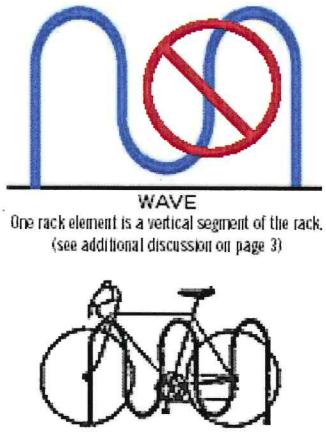


Figure B-6 Design Allows Improper Use (Association of Pedestrian and bicycling professionals, Cora Bike Rack Pty Ltd. www.cora.com.au)

Designs of Bike Rack Areas to Avoid

- Installing bike racks too close to a wall or too close to each other; – installing racks improperly can cut capacity as much as 90%.
- Installing bicycle racks too close to car parking – motorists will seldom leave sufficient room for bicyclists to park and maneuver of bicycle parking is not sufficiently separated from car parking.
- Old fashioned racks that hold only the wheel of the bicycle can cause damage, are not cost effective, and many cyclists will seek other alternatives for parking.
- Complicated signing schemes – if a complicated signing scheme is needed to find bicycle parking, a better location may be needed.

- Partial cover or cover that is too high – cover is intended to protect bicycles from rain and sun as well as protect cyclists when they are locking or unlocking their bicycle.
- Signs that discourage bicycling and bicycle parking

Key Reference Documents

American Association of State Highway and Transportation Officials (AASHTO), Guide for the Development of Bicycle Facilities.
These national guidelines and minimum design criteria have been published by AASHTO to proved information on the development of new faculties to enhance and encourage safe bicycle travel.

U.S. Department of Transportation. Federal Highway Administration, Manual on Uniform Traffic Control Devices.
This manual contains unified national standards for signs, signal, and marking and devices on all streets and highways open to public travel.

U.S. Department of Transportation, Federal Highway Administration, Selecting Roadway Design Treatments to Accommodate Bicycles.
This manual was published by the FHWA in 1994 to assist transportation planners and engineers in selecting roadway design treatments to accommodate bicycles. It offers guidelines on the desirable width for various types of design treatments based on the anticipated types of bicycle users and various types of traffic operational factors.

Association of Pedestrian and Bicycle Professionals. Bicycle Parking Guidelines.
LEJ Graphics., 2002

This set of guidelines contains suggestions for the proper design, configuration and placement of bicycle parking facilities.

Manufacturers of Bike Parking Facilities

Cycle-Safe, Inc.
4630 Ada Drive SE Suite B
Grande Rapids, Michigan 49546
(888) 950-6531
info@cyclesafe.com

Palmer Group
1072 Folsom #328
San Francisco, CA 94103
(888) 764-2453
info@bikeparking.com

Dero Bike Racks
221 Arthur Avenue SE
Minneapolis, MN 55454-1000
(888) 337-6729
dero@dero.com

Function First Bike Security
P.O. Box 882
Corvallis, OR 97339
(888)245-3742
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