Exhibit 3

CARLSBAD BIKEWAY MASTER PLAN

For the

City of Carlsbad

December 2007

Prepared by

Alta Planning + Design

TABLE OF CONTENTS

1. INTRODUCTION

The Carlsbad Bikeway Master Plan provides a blueprint for bicycle transportation and recreation in the city of Carlsbad. After many years of bicycle facility development guided by the Circulation Element of the Carlsbad General Plan, the city has implemented an extensive network of bikeways that provide connections to destinations throughout the city as well as links to adjacent communities and the regional system. Bike lanes are present on a portion of every arterial roadway within Carlsbad, and the city recently opened its first segment of the Coastal Rail Trail. This Bikeway Master Plan seeks to build upon this foundation – to enhance and expand the existing bikeway network, connect gaps, address constrained areas and improve intersections, provide for greater local and regional connectivity, and encourage even more residents to bicycle.

Cyclists along Carlsbad Boulevard

The Bikeway Master Plan provides for an updated system of bike lanes, bike routes and bike paths, identifies necessary support facilities such as bicycle parking, and recommends a variety of programs to allow for safe, efficient and convenient bicycle travel within Carlsbad and connecting to regional destinations. The Plan covers the "4 E's" of planning for bicyclists – Engineering, Education, Encouragement, and Enforcement – recognizing that an approach that draws from all 4 E's will be the most successful in improving safety and increasing the number of Carlsbad residents bicycling for work, shopping, school, and recreation.

"Carlsbad is a great place to bike."

-2006 Bikeway Master Plan Survey Respondent

1.1. WHY BICYCLING?

The bicycle is a low-cost and effective means of transportation that is quiet, non-polluting, extremely energy-efficient, versatile, healthy, and fun. Bicycles also offer low-cost mobility to the non-driving public. Bicycling as a means of transportation has been growing in popularity as many communities work to create more balanced transportation systems by giving bicyclists a greater share in use of the roadway networks. In addition, recent national surveys find that more people are willing to cycle more frequently if better bicycle facilities are provided.[1]

Existing bicycle parking at the Carlsbad Village Station

The City of Carlsbad is in a unique position to capitalize on its bicycle-friendly features, such as temperate climate, scenic vistas and reputation as a community with ample recreational amenities, to increase the number of residents and visitors who see Carlsbad by bicycle. Carlsbad's traditional walkable downtown, accessible beachfront and open space are all conducive to cycling for utility and recreation.

[1] National Bicycling and Walking Study: Ten Year Status Report, (www.bicyclinginfo.org/pp/nbsw2.htm)

1.2. PURPOSE OF THE BIKEWAY MASTER PLAN

This Bikeway Master Plan provides a broad vision, strategies and actions for the improvement of bicycling in Carlsbad. It is important to note that the City of Carlsbad is by no means starting from scratch in terms of accommodating and encouraging bicycling. This Bikeway Master Plan focuses on completion of the bicycle network, identifies several new routes to provide additional connectivity, provides recommendations for spot improvements to the existing network, and identifies programs to educate motorists and bicyclists on the rules of the road, and encourage even more residents to bicycle. The Bikeway Master Plan is important for the following reasons:

Maximize Funding Sources for Implementation. A key reason for the Bikeway Master Plan is to satisfy requirements of the California Bicycle Transportation Account (BTA) and other state and federal funding programs for bicycle transportation projects for which Caltrans plays an oversight and review role. In order to qualify for available funding, the State of California requires that applicants have a master plan adopted or updated within the past five years that includes a number of specific elements related to bicycle commuting, land uses, multi-modal connections, funding, and public input. The complete list of required BTA elements and their locations in this document is provided in Chapter 8 of this document.

Improve Safety and Encourage Cycling. This plan provides tools to reduce the accident rate for bicyclists in Carlsbad through design standards and guidelines, education, and enforcement. This plan provides recommendations for spot improvements intended to make cycling safer for cyclists of all ability levels. Examples of encouragement programs are also provided to motivate Carlsbad residents to ride to work, school, for exercise and recreation.

Provide Needed Facilities and Services. Carlsbad has existing bikeways on all arterial roadways including, but not limited to Carlsbad Boulevard, Carlsbad Village Drive, El Camino Real, Palomar Airport Road, and La Costa Avenue. While these facilities provide direct routes for experienced cyclists comfortable with riding on streets with relatively high volumes of traffic and high vehicular traffic speeds, much of the success of encouraging new cyclists will depend on meeting the needs of less experienced riders who are less comfortable on such roadways. In addition to incorporating more alternative routes into the existing bikeway network, support facilities such as clear directional signage and secure bicycle parking at schools, employment centers and transit stops will encourage more people to ride bicycles and enhance the level of comfort for all.

Well designed bikeways, such as the Coastal Rail Trail at Tamarack Drive, enhance user experiences.

Enhance the Quality of Life in Carlsbad. The development of bicycle facilities provides for people-friendly streets, paths, trails, and activity centers available to everyone, and supports sustainable community development. Bicycling can reduce traffic congestion, vehicle exhaust emissions, noise, and energy consumption. It is a healthy and active form of travel. Good bicycling opportunities can mean good economic sense for businesses in Carlsbad. Safe and efficient cycling opportunities will help to attract tourists to Carlsbad's beaches and resorts, and employees to Carlsbad's many sports and recreation oriented businesses.

1.3. MAJOR RECOMMENDATIONS OF THE PLAN

This Bikeway Plan recommends the enhancement of the existing network with the implementation of approximately 6.5 miles of new Class I Bike Paths, 2.8 miles of new Class II Bike Lanes, and 4.2 miles of new Class III Bike Routes. The total cost of the recommended projects is estimated to be about $12.6 million dollars, most of which is due to the high cost of constructing Class I Bike Paths. The Recommended Bikeway Network is shown in Figure 6-1 in Chapter 6, and the proposed cost breakdown by segment is provided in Table 7-1 in Chapter 7.

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

1.4. PLAN CONTENTS

The Carlsbad Bikeway Master Plan is organized as follows:

Chapter 2, Goals, Objectives and Policies, documents the goals and policies of this Bikeway Plan.

Chapter 3, Existing Conditions, provides a description of the existing bicycle conditions in Carlsbad. The conditions presented include the existing bicycle network, support facilities, and programs, as well as existing network needs, opportunities and constraints.

Chapter 4, Planning and Policy Context, provides an overview of the Bikeway Master Plan's consistency with existing local and regional plans and policies, in accordance with BTA requirements.

Chapter 5, Needs Analysis, documents the need for bicycle transportation in Carlsbad, including an overview of existing user groups, bicycle commute statistics, and bicycle accident data.

Chapter 6, Recommended Bikeway Improvements, outlines the recommended Class I, II, and III bicycle network map, as well as support facilities and programs such as bicycle parking, Safe Routes to School, and educational efforts that will improve safety and convenience for bicyclists and complement the recommended network. Chapter 6 also includes individual Project Sheets that provide additional detail and highlight design and feasibility issues for each of the major projects identified in this plan.

Chapter 7, Implementation, provides a complete list of recommended project components with cost estimates, outlines the highest priority projects and provides a guide to system implementation and funding sources and strategies for getting the recommended bikeway network and facilities built.

Signs are an integral part of an effective bikeway network

Chapter 8, Compliance with BTA Requirements, documents this Master Plan's compliance with the Caltrans Bicycle Transportation Account requirements, with a table showing where each required element of Streets and Highways Code Section 891.2 (a-k) can be found in the document. This section is intended to facilitate Caltrans review and approval of this Bikeway Master Plan.

Appendices:

- Appendix A: Bikeway Design Guidelines
- Appendix B: Sample Bicycle Parking Code Language
- Appendix C: Construction Zone Treatments
- Appendix D: Public Outreach: Survey Results
- Appendix E: Bicycle Commute and Air Quality Calculations
- Appendix F: Detailed Cost Estimates

2. GOALS, OBJECTIVES AND POLICIES

This section presents the recommended goals, objectives and policies for the Carlsbad Bikeway Master Plan. Goals provide the context for the specific policies and actions discussed in the Master Plan. The goals and objectives provide the long-term vision and serve as the foundation of the plan, while the policies provide more specific descriptions of actions to undertake to implement the plan.

2.1. GOALS, OBJECTIVES AND POLICIES OF BIKEWAY MASTER PLAN

As part of this Bikeway Master Plan, the goals, objectives and implementing policies of the existing 2004 General Plan Circulation Element have been expanded upon to provide an updated and comprehensive set of goals, objectives and policies covering all aspects of bicycle facility development, education and encouragement, system maintenance, and regional cooperation. Goals, objectives and policies shown in *italics* are taken directly from these existing General Plan Circulation Element policies.

Goal 1. *A City which promotes, encourages and accommodates a variety of transportation modes as alternatives to the automobile. (Alternative Modes Goal A)*

Objective 1.1. *To provide infrastructure and facilities necessary to accommodate pedestrians, bicycles and other non-automobile modes of transportation. (Alternative Modes Objective B.1)*

Policy 1.1.1. Implement a bikeway network which serves all bicycle use groups, including commuters, recreational cyclists and those making utilitarian and school trips.

Policy 1.1.2. *Coordinate the location of bicycle routes with the Parks and Recreation Element and the Open Space and Conservation Element. (Alternative Modes Implementing Policy C.11)*

Policy 1.1.3. *Extend bicycle routes to cultural, educational and recreational facilities whenever possible. (Alternative Modes Implementing Policy C.12)*

Policy 1.1.4. *Design bicycle routes in accordance with "Bicycle Route Standards" Chapter 1000 of the State of California Highway Design Manual. (Alternative Modes Implementing Policy C.14)*

Policy 1.1.5. *Improve bicycle access to beach areas. (Alternative Modes Implementing Policy C.15)*

Policy 1.1.6. *Provide linkage to bus, pedestrian and bicycle routes from any new light rail commuter transit facility. (Alternative Modes Implementing Policy C.18)*

Policy 1.1.7. *Encourage passive and active use of the railroad right of way as trail linkage and bicycle pathway. (Alternative Modes Implementing Policy C.19)*

Policy 1.1.8. Seek funding for bicycle transportation through regional, state and federal funding programs.

Policy 1.1.9 Provide secure bicycle storage in activity centers and at major bus and transit stations.

Policy 1.1.10. Encourage bicycling by publicizing local and commuter routes through installation of wayfinding signage.

Policy 1.1.11. Continue routine street repair and maintenance activities, including regular sweeping of bikeways and shared use pathways.

Policy 1.1.12. Install trail systems within existing and new industrial developments.

Policy 1.1.13. *Review, periodically, the Circulation Element Bicycle Route Map and revise, as necessary, to reflect existing roadway conditions and changed land uses. (Alternative Modes Implementing Policy C.16)*

Objective 1.2. Provide education, encouragement and enforcement programs which promote the use of bicycling as a mode of transportation.

Policy 1.2.1. *Encourage school districts to implement safety programs for pedestrians and bicyclists within the public school system. (Alternative Modes Implementing Policy C.7)*

Policy 1.2.2. *Develop and implement employer incentive programs to encourage the placement of strategic bicycle storage lockers, and the construction of safe and convenient bicycle facilities. (Alternative Modes Implementing Policy C.13)*

Policy 1.2.3. Continue to ensure that construction and repair activities along the roadway network minimize disruption to bikeway facilities, ensure bicyclist safety at all times and provide alternative routes if necessary.

Policy 1.2.4. Continue Carlsbad Police Department enforcement of bicycle-related violations by both motorists and bicyclists, and emphasize positive enforcement for safe bicycling behavior by children.

3. EXISTING CONDITIONS

This chapter provides a description of existing conditions within the City of Carlsbad relevant to this Bikeway Master Plan. Information is based on field visits, existing planning documents, maps, and conversations with City and other agency staff.

The historic Carlsbad Well is a longstanding symbol of Carlsbad's commitment to healthful living

3.1. SETTING

3.1.1. Location

The City of Carlsbad is located in the northwestern portion of San Diego County. Encompassing 42 square miles, the City boundaries are generally defined by State Route 78 (SR-78), along the northern border with Oceanside, new development and open space to the east along the border with Vista and San Marcos, Rancho Santa Fe Road and Batiquitos Lagoon to the south, along the border with Encinitas and the Pacific Ocean to the west. Topographically, the City is characterized by the Pacific Ocean and beaches to the west, three lagoons which extend inland from the coast, and coastal hills, mesas and canyons in the City's interior. Carlsbad is bisected along its north-south axis by Interstate 5 (I-5), separating the coastal flatlands and lagoons of the west from the eastern mesas and canyons.

3.1.2. Land Uses

Carlsbad, in contrast to many areas of San Diego County, is characterized by concentrated, clustered development in conjunction with areas of open space. This development pattern has resulted from a need to accommodate the building limitations of the City's eastern hillsides. Commercial land uses are distributed throughout the City, but are primarily focused in the historic downtown area near the Pacific coast, Carlsbad Village, along the SR-78 and I-5 corridors, and along El Camino Real near La Costa Avenue. Industrial uses are located in the vicinity of McClellan Palomar Airport. Well-established neighborhoods occupy most of the area north of Agua Hedionda Lagoon. Single-family homes dominate the neighborhoods, mixed with some condominiums and apartment buildings. Newer neighborhoods occupy the southern and eastern portions of the City. Open space, lagoons and parks are located throughout Carlsbad, with a concentration of open space in the eastern hills surrounding the airport. Much of the Carlsbad coast is public beach, with Carlsbad State Beach in the north and South Carlsbad State Beach in the south. Limited private development is located along the remaining coastline, including the highly visible Encina Power Plant on the southern shore of Agua Hedionda Lagoon at Carlsbad Boulevard. Schools and churches are scattered throughout the neighborhoods.

The Carlsbad Village Station provides transit patrons convenient access to Carlsbad Village

3.1.2.1. Schools

Table 3-1 provides an inventory of Elementary, Middle and High Schools in Carlsbad.

Table 3-1
Schools in Carlsbad

School Name	Grades	Address
Aviara Oaks Elementary	K-5	6900 Ambrosia Lane
Buena Vista Elementary	K-5	1330 Buena Vista Way
Calavera Hills Elementary	K-5	4100 Tamarack Avenue
Carlsbad Seaside Academy	K-12	Alternative/Home School
Hope Elementary	K-5	3010 Tamarack Avenue
Jefferson Elementary	K-6	3743 Jefferson Street
Kelly Elementary	K-5	4885 Kelly Drive
Magnolia Elementary	K-5	1905 Magnolia Avenue
Pacific Rim Elementary	K-5	1100 Camino de las Ondas
La Costa Meadows Elementary	K-5	6889 El Fuerte Street
Carrillo Elementary	K-5	2875 Poinsettia Lane
Olivenhain Pioneer	K-6	8000 Calle Acervo
El Camino Creek	K-6	7885 Paseo Aliso
La Costa Heights	K-6	3035 Levante Street
Mission Estancia	K-6	3330 Calle Barcelona
Aviara Oaks Middle	6-8	6880 Ambrosia Lane
Calavera Hills Middle	6-8	4104 Tamarack Avenue
Valley Middle	7-8	1645 Magnolia Avenue
Carlsbad High	9-12	3557 Monroe Street
Carlsbad Village Academy	9-12	1640 Magnolia Avenue
La Costa Canyon High	9-12	1 Maverick Way

3.1.2.2. Park and Recreation Facilities

New park and recreation facilities provide access to open space in eastern Carlsbad

The City of Carlsbad has numerous municipal parks and recreational facilities available for use of residents, in addition to two State Beaches. Municipal park and recreation facilities range from developed park sites with playgrounds, picnic areas, and sport courts, to community rooms and other facilities available for rental for parties, banquets or other events. The City of Carlsbad also manages 625 acres of open space and numerous beach access points. The State Beaches are popular recreation sites, with high volumes of pedestrian and bicycle traffic along Carlsbad Boulevard at Carlsbad State Beach. South Carlsbad State Beach features camping facilities and is a population destination for visitors.

Parks and recreation facilities are an important source of bicycle support facilities for Carlsbad cyclists. Parks and other recreation facilities provide bicycle racks, restrooms and changing facilities. **Table 3-2** lists major park and recreation facilities in Carlsbad.

Table 3-2
Park and Recreation Facilities in Carlsbad

Park/Facility Name	Address
Pine Park/Brierly Field	3500 Harding Street
Cadencia	3310 Cadencia
Calavera Hills Park	2997 Glasgow Drive
Cannon Park	Carlsbad Boulevard and Cannon
Carlsbad State Beach	Carlsbad Boulevard
Chase Field	3400 Harding Street
Harding Community Center	3960 Harding Street
Heritage Hall	2650 Garfield
Holiday Park	Chestnut and Pio Pico
Hosp Grove Park	Jefferson and Marron
La Costa Canyon Park	Pueblo and Rana Court
La Costa Heights Park	3035 Levante
La Costa Meadows Park	El Fuerte Street
Laguna Riviera Park	Kelly and Park
Magee House and Park	258 Beech Street
Magnolia Athletic Field	Valley Street
Maxton Brown Park	500 Laguna Drive
Poinsettia Park	6600 Hidden Valley Road
Rotary Park	2900 Washington Street
Safety Center/Skatepark	2560 Orion Way
Senior Center	799 Pine Street
South Carlsbad State Beach	Carlsbad Boulevard
Stagecoach Park	3420 Camino de los Coches
Swim Complex	3401 Monroe Street
Hidden Canyon Park	2685 Vancouver Street
Aviara Community Park	6435 Ambrosia Lane
Business Park Recreational Facility	Faraday and Camino Hills
Leo Carrillo Ranch Historic Park	6200 Flying LC Lane
Alga Norte Park (future)	Poinsettia and Alicante
City Golf Course	Hidden Valley Road

3.1.2.3. Employment Centers

The City of Carlsbad's pattern of development provides for dispersed employment centers, with significant concentrations of employees. Many of these centers are located along the freeway and arterial roadway corridors, as well as in the vicinity of McClellan Palomar Airport. The locations of Carlsbad's ten largest employers are shown in **Table 3-3** on the following page.

Table 3-3
Ten Largest Employers in Carlsbad

Employer	Location	Number of Employees
Callaway Golf	2180 Rutherford Road	1,785
Carlsbad Unified School District	6225 El Camino Real	950
Four Seasons Resort Aviara	7100 Four Seasons Point	900
Invitrogen	1600 Faraday Avenue	900
Taylor Made--Adidas Golf Co.	5545 Fermi Ct.	645
La Costa Resort and Spa	2100 Costa Del Mar Rd	604
City of Carlsbad	1635 Faraday Avenue	603
Gemological Institute of America	5345 Armada Drive	600
Acushnet Golf	2819 Loker Ave East	535
Isis Pharmaceuticals	2292 Faraday Avenue	506

3.2. EXISTING BICYCLE FACILITIES

3.2.1. Definition of Bikeways

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

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

An existing Bike Route sign on Monroe Street

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

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

It is important to note that bicycles are permitted on *all* roads in the State of California and in Carlsbad (with the exception of access-controlled freeways). As such, Carlsbad's entire street network is effectively the city's bicycle network, regardless of whether or not a bikeway stripe, stencil, or sign is present on a given street. The designation of certain roads as Class II or III bicycle facilities is not intended to imply that these are the only roadways intended for bicycle use, or that bicyclists should not be riding on other streets. Rather, the designation of a network of Class II and III on-street bikeways recognizes that certain roadways are optimal bicycle routes, for reasons such as directness or access to significant destinations, and allows the City of Carlsbad to then focus resources on building out this primary network.

One of the greatest divergences of opinion among bicyclists lies between those who feel paved Class I bike paths, separated from roadways, should be constructed wherever physically possible, versus those who feel more comfortable riding on streets or bike lanes or routes. This preference is usually based on personal feeling regarding comfort and safety.

In general, Class I bike paths are desirable for slower-speed recreational cycling, particularly by families and children. Although referred to as "bike paths," Class I facilities are multi-use facilities that will likely see use by a wide mix of non-motorized uses, including pedestrians, joggers, roller bladers and dog walkers. Given this mix of uses, there is potential for conflicts on heavily-used Class I facilities, necessitating lower bicycle speeds on these paths. Class I bike paths are preferred for corridors where there are few intersections or crossings, to reduce the potential for conflicts with motor vehicles. Class I facilities located immediately adjacent to roadways, often referred to as "sidepaths," are less desirable due to the numerous potential conflicts with motor vehicles turning on or off of side streets and driveways. Due to their linear off-street nature, opportunities for developing Class I facilities in an urban setting are typically much more limited, often occurring along waterways, rail corridors, or utility corridors. As such, Class I bike paths will normally comprise a much smaller fraction of the total designated bikeway network than on-street bike lanes and routes, and Class I bikeways will connect to far fewer destinations.

Most commuter bicyclists would argue that on-street bikeway facilities are the safest and most functional facilities for bicycle transportation, as they typically provide the most direct routes and offer the greatest connectivity and access to employment, schools, and shopping destinations. Bicyclists have stated their preference for marked on-street bicycle lanes in numerous surveys. The fact is that many bicyclists – particularly less experienced riders – are far more comfortable riding on a busy street if it has a striped and signed bike lane. Part of the goal of this Plan is to encourage new riders, and providing marked facilities such as bike lanes is one way of helping to persuade residents to give bicycling a try as a transportation mode. This Bicycle Plan takes the approach that if properly designed, Class II bike lanes can increase safety and promote proper riding, and are therefore highly desirable for bicycle transportation routes along major roadways. Bike lanes help to define the road space for bicyclists and motorists, reduce the chance that motorists will stray into the cyclists' path, discourage bicyclists from riding on the sidewalk, remind motorists that cyclists have a right to the road, and remind cyclists that by being in the road they have the same responsibilities as a motor vehicle. One key consideration in designing bike lanes in an urban setting is to ensure that bike lane and adjacent parking lane are wide enough so that cyclists have enough room to avoid a suddenly opened vehicle door.

On streets with low traffic volumes and speeds, striped bike lanes may not be needed at all. This is based on the potential for serious conflicts being so low that the cost of installing bike lanes is not warranted. On these types of low-traffic neighborhood streets, designated and signed Class III bike routes can serve as important connectors to schools and recreational areas such as parks. Class III bike routes may also be desirable on certain commute routes where installing bike lanes is not possible, provided that appropriate signage is installed to alert

motorists to the presence of bicycles on the roadway. Class III bike route signing should also include "Share the Road" signs at regular intervals along the route.

Carlsbad's existing network of designated bikeways is shown in **Figure 3-1**. Specific facility segments are discussed in more detail below.

3.2.2. Existing Off-Street Bike Paths

Carlsbad is in the process of developing an off-street bike path as part of the Coastal Rail Trail project. This path will link San Diego with Oceanside along the Los Angeles—San Diego (LOSSAN) rail corridor utilizing North San Diego County Transit District right-of-way. The City of Carlsbad has completed construction of a portion of the Class I Coastal Rail Trail, approximately 3/4 miles in length, running from Tamarack Avenue north to Oak Avenue. An existing portion of Class II Coastal Rail Trail runs from La Costa Avenue to the Poinsettia Coaster Station.

3.2.3. Existing On-Street Bike Lanes and Routes

As shown in Figure 3-1, Carlsbad's existing bikeway network is comprised of a Class II on-street facility on nearly every major roadway in the City. **Tables 3-4, 3-5** and **3-6** show the limits and lengths of existing Class I, II and III bikeway segments in the city, respectively.

The City of Carlsbad has focused on implementing a network of Class II bike lanes that provide regional bikeway connectivity. Key existing Class II Bike Lane segments are present on El Camino Real, La Costa Avenue, Carlsbad Boulevard, Carlsbad Village Drive, College Boulevard, Palomar Airport Road, Poinsettia Lane, Aviara Parkway, Melrose Drive and Rancho Santa Fe Road. Carlsbad has an extensive primary Class II network in place that serves the city's major activity centers and provides links to the regional system.

Table 3-4
Index of Existing City of Carlsbad Class I Bike Paths

Street	From	To	Class	Length (Miles)
Coastal Rail Trail	Oak Avenue	Tamarack Avenue	I	0.8
Legoland Bike Path	Northeast Corner	Northwest Corner	I	0.5
TOTAL CLASS I MILES				*1.3*

Source: Alta Planning + Design field inventory, SANDAG GIS data, February 2006.


Pacific Ocean
Buena Vista Lagoon
Agua Hedionda Lagoon
Batiquitos Lagoon
Calavera Lake
Squires Dam
San Marcos Creek
Encinitas Creek
Buena Vista Creek
Agua Hedionda Creek
MARRON ST
JEFFERSON RD
GRAND AVE
CARLSBAD VILLAGE DR
HARDING ST
TAMARACK AVE
ADAMS ST
PARK DR
KELLY DR
COLLEGE BLVD
TAMARACK DR
EL CAMINO REAL
CANNON RD
FARADAY AVE
PALOMAR AIRPORT RD
PASEO DEL NORTE
HIDDEN VALLEY RD
CARLSBAD BLVD
AVIARA PKY
BATIQUITOS DR
LA COSTA AVE
POINSETTIA LN
EL FUERTE ST
MELROSE DR
ALGA RD
CALLE BARCELONA
OLIVENHAIN RD
ENCINITAS
78
5
FIGURE 3-1
Existing Bikeways
Existing Bikeways
Bike Path - Class I
Bike Lane - Class II
Bike Route - Class III
Other Existing Trails
Unpaved Open Space Trail
Paved Open Space Trail
Schools
Bus Stops
Police Station
Fire Station
Civic/Comm. Ctr.
Library
Coaster Station
Top 10 Employers
Parks
Carlsbad City Limits
0 0.25 0.5 0.75 1
Miles
alta PLANNING + DESIGN

This page intentionally left blank

Table 3-5
Index of Existing City of Carlsbad Class II Bike Lanes

Street	From	To	Class	Length (Miles)
Adams St	Chinquapin Ave	Park Dr	II	0.8
Alicante Rd	Alga Rd	Gateway Rd	II	2.0
Alga Rd	El Camino Real	Melrose Dr	II	2.4
Arenal Rd.	El Camino Real	Lotus Ct	II	0.1
Armada Rd.	Palomar Airport Rd.	Legoland Dr	II	0.9
Ave Encinas	Carlsbad Blvd	Poinsettia Station	II	2.6
Aviara Pkwy	Palomar Airport Rd	El Camino Real	II	3.2
Batiquitos Dr	Poinsettia Ln	Aviara Pkwy	II	2.4
Calle Acervo	Rancho Santa Fe Rd	Camino de los Coches	II	0.5
Calle Barcelona	El Camino Real	Rancho Santa Fe Rd	II	3.0
Camino de los Coches	Rancho Santa Fe Rd	La Costa Ave	II	0.9
Camino Junipero	Rancho Santa Fe Rd	East City Limits	II	1.0
Cannon Rd	El Arbol Dr	College Blvd	II	3.3
Carlsbad Blvd	Northern City Limit	La Costa Ave	II	6.6
Carlsbad Village Dr	I-5	College Blvd	II	2.7
Chestnut Ave	Pio Pico Dr	Monroe St	II	0.8
College Blvd	Northern City Limit	Palomar Airport Rd	II	3.5
El Camino Real	Northern City Limit	Southern City Limit	II	10
El Fuerte St	Palomar Airport Rd	Corintia Street	II	2.4
Faraday Ave	Cannon Rd	Orion St	II	3.0
Gateway Dr	El Camino Real	Palomar Airport Rd	II	1.2
Harding St	Grand Ave	Magnolia Ave	II	0.8
Hidden Valley Rd	Palomar Airport Rd	Legoland Bike Path	II	1.2
Hosp Way	Avenida Magnifica	Marron Rd.	II	0.6
Innovation Way	Gateway Rd.	Palomar Airport Rd	II	0.2
Jefferson Rd	Carlsbad Village Dr	Marron Rd	II	1.5
Kelly Drive	El Camino Real	Park Dr	II	0.4
La Costa Ave	Carlsbad Blvd	Camino de los Coches	II	2.8
La Costa Ave	Calle Madero	Rancho Santa Fe Rd	II	1.0
Laguna Dr	Carlsbad Blvd	Jefferson Rd	II	0.3
Marron Rd	Jefferson Street	Carlsbad Village Dr	II	0.9
Melrose Dr	Northern City Limit	Corintia Street	II	2.8
Monroe St	Marron Rd	Carlsbad Village Dr	II	0.6
Olivenhain Rd	El Camino Real	Rancho Santa Fe Rd	II	0.9
Palomar Airport Rd	I-5 ramp	Eastern City Limit	II	5.8
Park Dr	Tamarack Ave	Hillside Dr	II	0.4
Paseo Aliso	Calle Barcelona	Paseo Tulipero	II	0.2
Paseo Almendro	Calle Barcelona	Avenida Ciruela	II	0.1
Paseo Del Norte	Car Country Dr	Poinsettia Ln	II	2.1
Poinsettia Ln	Skimmer Court	Melrose Dr	II	2.4
Poinsettia Ln	Carlsbad Blvd	Cassia Road	II	2.4
Rancho Santa Fe Rd	Melrose Dr	Calle Acervo	II	2.9
Tamarack Ave	Carlsbad Blvd	Chatham Row	II	3.5
Tamarack Ave	Harwich Dr	College Blvd	II	1.3
Town Garden Rd	El Camino Real	Alicante Rd	II	0.3
TOTAL CLASS II MILES				*88.7*

Source: Alta Planning + Design field inventory, SANDAG GIS data, March 2007.

Table 3-6
Index of Existing City of Carlsbad Class III Bike Routes

Street	From	To	Class	Length (Miles)
Cannon Rd	I-5 Ramp	Paseo Del Norte	III	0.1
Cannon Rd	Carlsbad Blvd	El Arbol Dr	III	0.1
Carlsbad Village Dr	Carlsbad Blvd	I-5	III	0.6
Chinquapin Ave	Jefferson St	Highland Dr	III	0.5
Grand Ave	Carlsbad Blvd	Jefferson St	III	0.4
Jefferson St	Magnolia Ave	Chinquapin Ave	III	0.4
La Costa Ave	1/3rd mile east of El Camino Real	Calle Madero	III	0.9
Park Dr	Hillside Dr	Kelly Dr	III	1.4
TOTAL CLASS III MILES				4.4

Source: Alta Planning + Design field inventory, SANDAG GIS data, February 2006

3.2.4. Bikeway Signage

Implementing a well-designed, attractive, and functional system of network signage greatly enhances bikeway facilities by promoting their presence to both potential and existing users. Currently, Carlsbad uses standard California MUTCD bikeway signage for Class II bike lanes and Class III bike routes.

The Coastal Rail Trail system has its own sign/logo, which is supplemented with individual city logos. Carlsbad uses signs with the Coastal Rail Trail logo along the Class I segment of the trail, as well as the designated on-street segment along Avenida Encinas, and Carlsbad Boulevard.

Wayfinding signage in the downtown area and along Carlsbad Boulevard directs users to the Coastal Rail Trail. Aside from the Coastal Rail Trail, no other directional or destination signage was observed along bikeways in Carlsbad.

3.2.5. Bicycle Signal Detection

Bicycle signal detection refers to mechanisms that activate traffic signals when a bicyclist positions him/herself in bicycle or auto travel lanes at signalized intersections. An older method of bicycle signal detection involved the use of inductive loops installed in the pavement to sense bicyclist and trigger the signal change. In addition to inductive loops, the City of Carlsbad uses an alternative video signal detection system, using video cameras mounted on the signal mast arms that have zones for motor vehicle and bicycle detection. Video detection is generally viewed as superior to inductive pavement loops as video requires less long-term maintenance and calibration to operate properly.

3.2.6. Bicycle Parking

Bicycle parking is an important component in planning bicycle facilities and encouraging people to use their bicycles for everyday transportation. Bicycles are one of the top stolen items in many communities, with components often being

stolen even when the bicycle frame is securely locked to a rack. Because today's bicycles are often high-cost and valuable items, many people will not use a bicycle unless they are sure that there is secure parking available at their destinations. In California, bicycle parking facilities are classified as either Class I or Class II facilities. Many cyclists may use (and even prefer) less formal bicycle parking methods, such as simply bringing their bicycle inside their building and storing it in their office. Cyclists with higher-end bicycles (perhaps costing several thousand dollars) may be reluctant to risk their bicycle with insecure parking, and for them the ability to bring a bicycle inside a building may be a deciding factor when they are considering whether or not to bicycle to work or to a store.

Bicycle lockers at the Poinsettia Transit Station.

Bike Lockers – Long Term (Class I Parking)

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

Bike Racks – Short-Term (Class II Parking)

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

3.2.6.1. Carlsbad Bicycle Parking Ordinance

The Carlsbad Zoning Code does not currently provide standards for bicycle parking implementation or development. A sample bicycle parking ordinance is included as **Appendix B** to this document. Bicycle parking ordinances can encourage bicycling by providing cyclists with secure and convenient storage for their bicycles at their destination.

Existing bicycle parking may be found at Carlsbad's parks

3.2.6.2. Carlsbad Existing Bicycle Parking Facilities

A variety of types of existing bicycle parking facilities are located throughout Carlsbad, at locations such as civic buildings, schools, parks and commercial centers. Many of these racks, especially at shopping centers, are the undesirable "wheel bender" style that can potentially damage a bicycle. Recommendations for bicycle parking can be found in Appendix A: Design Guidelines.

Both the Carlsbad Village and Poinsettia Transit Stations have bicycle racks and bike lockers.

Although the Carlsbad Village area is served by bicycle racks and lockers at the Carlsbad Village Transit Station, nearby streets, such as Grand Avenue and State Street, lack convenient sidewalk bicycle parking.

3.2.7. Showers, Lockers and Other Bicycle Support Facilities

For the purposes of this Bikeway Plan, bicycle support facilities refer to end-of-trip facilities or services designed to accommodate or promote the use of bicycles.

Showers, lockers, and changing rooms are a critical need for commuting bicyclists. For those bicyclists needing to dress more formally, commute long distances, or bicycle during wet or hot weather, the ability to shower and change clothing can be as important as bicycle storage. Such facilities are most often provided by building owners or tenants for use by those who work in the building. Cyclists are encouraged to ride to work if employers offer bicycle support facilities which offer a safe place to store bicycles, changing facilities and showers.

Table 3-7 shows Carlsbad's ten largest employers and the bicycle support facilities offered by each.

Table 3-7
Bicycle Racks and Support Facilities
at the Ten Largest Employers in Carlsbad

Employer	Bicycle Racks	Bicycle Lockers	Showers
Callaway Golf	No	No	Yes
Carlsbad Unified School District	No	No	No
Four Seasons Resort Aviara	Yes	No	Yes
Invitrogen	Yes	No	Yes
Taylor Made--Adidas Golf Co.	No	No	No
La Costa Resort and Spa	No	No	Yes
City of Carlsbad	Yes	Yes	Yes
Gemological Institute of America	Yes	Yes	Yes
Acushnet Golf	No	No	Yes
Isis Pharmaceuticals	No	Yes	Yes

Source: Alta Planning + Design Telephone Survey, March 2006

Health clubs are another potential location for showers and changing facilities, although they are only available to their members. And while less desirable than a full shower/locker facility, any publicly-accessible restroom can serve as a changing area for cyclists. Public parks, beaches, and civic buildings can also serve as rest stops offering water, a place to sit or rest, and restroom facilities. Public park and recreational facilities in Carlsbad are discussed in Section 3.1 above and shown on Figure 3-1.

Transit stations extend the range cyclists can commute. As noted earlier, both the Carlsbad Village and Poinsettia Transit Stations have bicycle racks and lockers. Additional discussion of multi-modal bicycle connections is provided later in this chapter.

Bicycle shops are important for bicyclists making trips within urban areas in the event they suffer an equipment failure and need repair parts or service. Currently there are no bicycle shops located within the city of Carlsbad, however a number of shops are located in the neighboring cities of Encinitas, Vista, San Marcos, and Oceanside.

3.3. BICYCLE FACILITY MAINTENANCE

Currently, the maintenance of Carlsbad's bikeway facilities consists of restriping, restenciling and sweeping, on a regular basis. Other maintenance activities are conducted on an as-needed basis by the City.

3.4. PAST BICYCLE PROGRAM EXPENDITURES

Table 3-8 lists past bicycle program funds and expenditures in Carlsbad from 2003 to the present. These totals include Class II projects that were implemented as part of roadway construction funded by development agreements.

Table 3-8
Past Bicycle Program Expenditures

Year	Project	Type	Cost
2003-2004	Faraday Ave s/o Cannon Road	Class II	$580,000
2003-2004	Cannon Road south side e/o Faraday	Class II	$165,000
2003-2004	Cannon Road north side e/o Faraday	Class II	$165,000
2003-2004	Carlsbad Blvd at Poinsettia Lane	Class II	$112,000
2004-2005	Rancho Santa Fe Rd - La Costa to Melrose	Class II	$274,000
2004-2005	Melrose Drive s/o Palomar Airport Road	Class II	$175,000
2005-2006	College Blvd/Cannon Rd	Class II	$958,000
2005-2006	Poinsettia Lane Reach "C"	Class II	$79,000
2005-2006	Bikeway Master Plan	Plan	$60,000
2006-2007	Melrose Drive n/ o Palomar Airport Road	Class II	$57,000
2006-2007	Coastal Rail Trail - Oak to Tamarack	Class I	$2,500,000
2006-2007	Coastal Rail Trail - Poinsettia Transit Station to Encinitas	Class II	$20,000
2006-2007	Faraday Ave - Melrose to Orion	Class II	$710,000
	TOTAL		***$5,855,000***

Source: City of Carlsbad, 2007.

3.5. ENFORCEMENT AND EDUCATION PROGRAMS

3.5.1. Enforcement

The City of Carlsbad Police Department enforces bicycle and motorist traffic violations through its Traffic Division. The Department's Traffic Division consists of

motor officers, collision investigators, a traffic lieutenant, traffic sergeant and a parking enforcement officer. The City of Carlsbad Police Department also has a bicycle patrol unit which provides patrol services for business districts, beaches and other areas.

3.5.2. Educational Programs

In past years, the City of Carlsbad Police Department has offered educational programs such as bicycle rodeos to Carlsbad schoolchildren. Initially, rodeos were offered at every school site. With the growth of the school system, the Police Department transitioned from offering rodeos at every school to instead offering rodeos located in different parts of the City a few times each year. Other bicycle safety programs included a bicycle safety poster contest popular with elementary school children. The Police Department no longer offers rodeos due to a lack of interest from Carlsbad Elementary Schools.

The Carlsbad Police Department's Crime Prevention Office does offer educational materials and is willing to provide customized training and education programs for schools if requested. Customized training and programs, through the Crime Prevention Office, are available to any group interested in bicycle and trail safety.

3.6. MULTI-MODAL CONNECTIONS

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

Carlsbad Village Station is accessible to bicyclists and features bicycle racks and lockers

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

3.6.1. North County Transit District

The North County Transit District provides "Breeze" bus service throughout Carlsbad. The bus routes follow major arterial roadways, serving commercial and employment centers. Many North County Transit District buses feature bicycle racks that can carry up to four bicycles. Carlsbad is home to two Breeze bus transit stations, Carlsbad Village and Poinsettia. Carlsbad Village is served by three Breeze lines and Poinsettia is served by two.

The North County Transit District also provides commuter rail service to the North County on the Coaster. The Coaster stops twice in Carlsbad, at Carlsbad Village

Station and Poinsettia Station. The Coaster accommodates several bicycles on board each train without restriction.

The North County Transit District Short Range Transit Plan 2003-2007 reports that 68 percent of Breeze riders do not have a car available to them. 63 percent of riders surveyed use Breeze five days per week. Of the Breeze passengers surveyed, 47 percent use Breeze to commute to work. Because a large portion of Breeze riders are transit-dependent and do not have access to a car, providing bicycle-transit connections will help to facilitate more efficient transportation for North County Transit District's riders.

As outlined in the Short Range Transit Plan 2003-2007, the North County Transit District has initiated the Bicycle Facility Improvement Program aimed at increasing and upgrading the bicycle facilities on buses and at each transit station.

This page intentionally left blank

4. PLANNING AND POLICY CONTEXT

As required by Caltrans, this chapter provides an overview of local and regional planning documents and policies relevant to this Bikeway Master Plan. This chapter demonstrates consistency between this Master Plan and existing plans and policies.

4.1. RELEVANT PLANS AND POLICIES

4.1.1. Carlsbad General Plan

4.1.1.1. Land Uses

The Carlsbad General Plan represents a comprehensive plan for the City, and establishes strategies to achieve community goals pertaining to development, circulation patterns, aesthetics, public safety, open space, and other civic matters. The General Plan contains maps showing existing and proposed land uses within the City planning limits. **Figure 4-1** shows the Carlsbad General Plan Land Use Plan.

4.1.1.2. Circulation Element

Adopted as part of the Carlsbad General Plan, the Circulation Element contains overall goals, objectives and policies related to roadways, transportation routes, terminals and other public utilities and facilities. The following are the goals and objectives outlined by the Circulation Element:

Many of Carlsbad's scenic destinations are accessible by bicycle

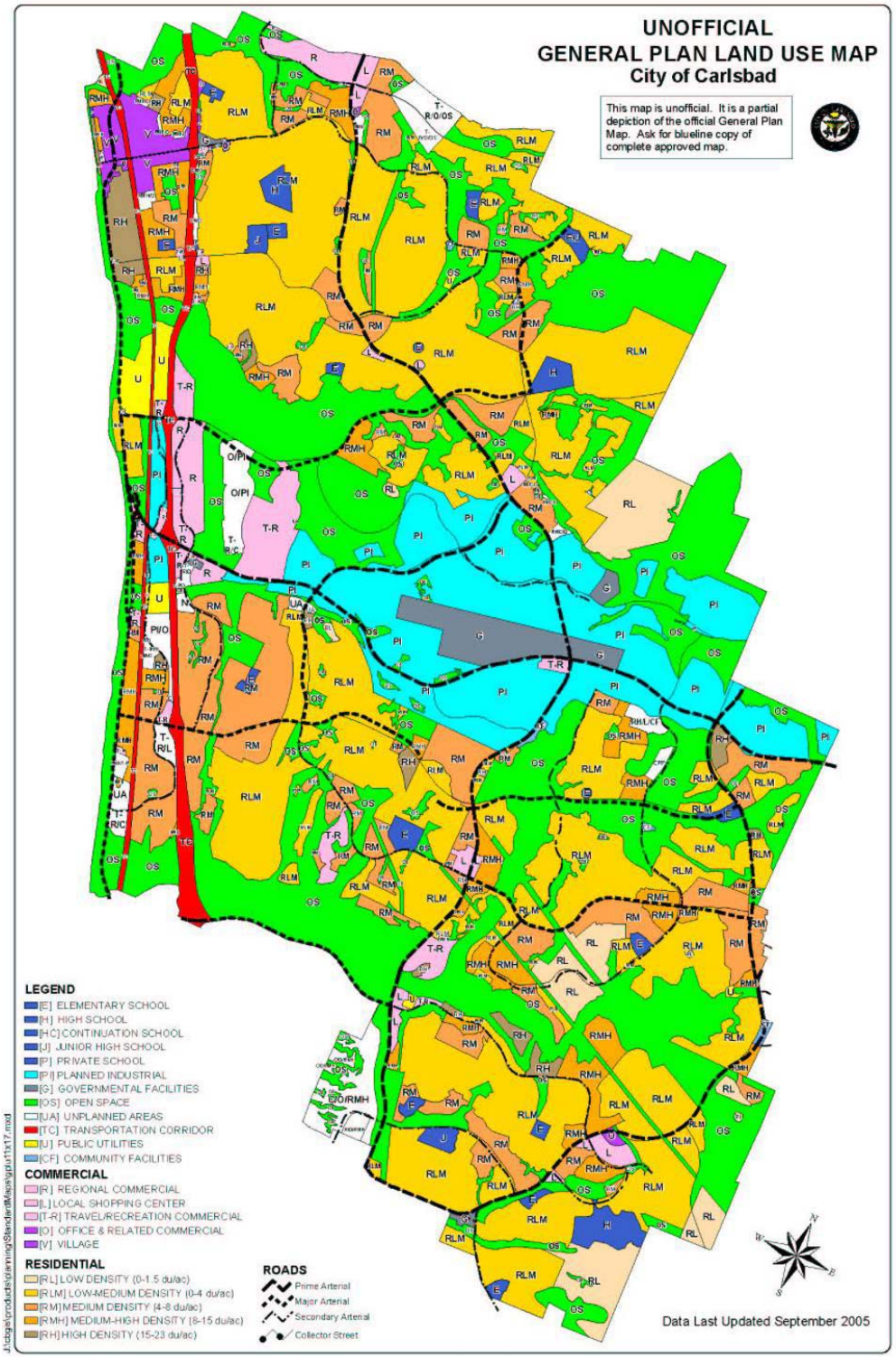
Goals:

- A City with an integrated transportation network serving local and regional needs which accommodates a balance of different travel modes based on safety, convenience, attractiveness, costs, environmental and social impacts.
- A City with adequate circulation infrastructure to serve the projected population.
- A City with a comprehensive network of roads which provides appropriate access to all land uses.
- A City with properly maintained, smooth functioning and safe traffic control systems.

Objectives:

- To provide an adequate circulation infrastructure concurrent with or prior to the actual demand for such activities.
- To design streets for the safe and efficient movement of people, goods and services within and through the City in the most environmentally sound and aesthetically pleasing manner possible.

Figure 4-1
City of Carlsbad General Plan Land Use Map



- To enhance the economic value of property and improve the economic competitiveness of the City through the construction of well-designed, efficient and cost-effective transportation facilities.

Alternative Modes of Transportation Goal:

- A City which promotes, encourages and accommodates a variety of transportation modes as alternatives to the automobile.

Objectives:

- To provide infrastructure and facilities necessary to accommodate pedestrians, bicycles and other non-automobile modes of transportation.
- To reduce the number and severity of vehicular, bicycle and pedestrian-related accidents.

Implementing Policies and Action Programs:

- Install sidewalks and trail systems within existing and new industrial developments.
- Encourage school districts to implement safety programs for pedestrians and bicyclists within the public school system.
- Employ improved traffic control devices and monitor police accident reports to increase pedestrian and bicyclist safety.
- Coordinate the location of bicycle routes with the Parks and Recreation Element and the Open Space and Conservation Element.
- Extend bicycle routes to cultural, educational and recreational facilities whenever possible.
- Develop and implement employer incentive programs to encourage the placement of strategic bicycle storage lockers (or other secure bicycle parking) and the construction of safe and convenient bicycle facilities.
- Design bicycle routes in accordance with "Bicycle Route Standards" Chapter 1000 of the State of California Highway Design Manual.
- Improve bicycle access to beach areas.
- Review, periodically, the Circulation Element Bicycle Route Map and revise, as necessary, to reflect existing roadway conditions and changed land uses.
- Provide linkages to bus, pedestrian and bicycle routes from any light rail commuter transit facility.
- Encourage passive and active use of the railroad right of way as trail linkage and bicycle pathway.

Scenic Roadways Goal:

- A City which preserves and enhances the visual, environmental and historical characteristics of the local community through sensitive planning and design of transportation and utility corridors.

Objectives:

  - To enhance the scenic environmental and historical quality of roadways in conjunction with the Circulation, Open Space and Conservation, and Park and Recreation Elements of the General Plan.
  - To establish a route map identifying existing and future scenic roadway, railroad and utility corridors within the City.
  - To consider a system of routes and special treatments to increase the enjoyment of an opportunities for recreational and cultural pursuits and tourism in Carlsbad.
  - To provide a process for the establishment of convenient and safe scenic routes to major recreational areas and points of historic, scenic or cultural significance.
  - To provide multiple recreational uses, such as bikeways, roadside rests and observation points, when appropriate, on lands within and adjacent to designated scenic corridors, and provide a means of coordinating scenic roadways with other transportation and recreational opportunities within the City.

The General Plan also provides goals for reducing air pollution and traffic congestion as well as working with the county, other cities and SANDAG on regional transportation issues.

4.1.2. Carlsbad Open Space and Conservation Element

Preservation of open space is an important component of Carlsbad's General Plan

The Open Space and Conservation Element of the Carlsbad General Plan establishes policies for interconnection of open space and parks. The Element considers neighborhood parks to be recreational activity hubs, and therefore should be connected to the bikeway network. While the Open Space and Conservation Element currently covers trails and considers them to be a type of open space, the City of Carlsbad is in the process of developing a specific plan for trails.

4.1.3. Carlsbad Open Space and Conservation Resource Management Plan

The Open Space and Conservation Resource Management Plan (Resource Management Plan) provides for off-street trails, parks and natural resource areas. The Resource Management Plan focuses on the development of the trail system and the management of natural resources along trail corridors. As noted in Section 4.1.2, the City is currently in the process of developing a trails plan.

4.1.4. 2030 Regional Transportation Plan

The San Diego Regional Transportation Plan (RTP), MOBILITY 2030, is a $ 2 billion plan which serves as a blueprint to address the mobility challenges created by the region's growing population and employment. It contains an integrated set of public policies, strategies, and investments to maintain, manage, and improve the transportation system in the San Diego region. A main focus of the RTP is to reduce motor vehicle trips in the region by providing additional mobility choices through modes such as transit and bicycling. Included in the Plan is a discussion of Regional Bikeway corridors that could convert intercommunity trips from motor vehicles to bicycles. Several Regional Bikeways run through Carlsbad, including: the Coastal Rail Trail, Palomar Airport Road, and La Costa Avenue. The Bikeway Master Plan also furthers *Mobility 2030's* overall goal of converting motor vehicle trips to bicycle trips, thereby reducing motor vehicle trips in the region. This Bikeway Master Plan is therefore consistent with the goals of the 2030 Regional Transportation Plan.

Carlsbad is served by the NCTD Coaster

4.1.5. San Diego Basin Air Quality Consistency

The 2030 RTP was determined to be in conformance with the region's State Implementation Plan (SIP), which is the plan for reaching attainment with federal air quality standards. This conformity determination means that future transportation projects identified in the RTP will not jeopardize air quality standards. It also means that federal funding and approval will go to transportation projects that help to meet air quality goals. A major goal of this Bikeway Master Plan is to reduce the number of motor vehicle trips within Carlsbad and the region, by converting these trips to bicycle trips. This plan is therefore consistent with the air quality goals of the San Diego basin.

4.2. REGIONAL BICYCLE NETWORK

4.2.1. Regional Bikeway Corridors

As part of their long range transportation planning effort, SANDAG designated a network of Regional Bikeway Corridors in their Regional Transportation Plan, *Mobility 2030*. As outlined in *Mobility 2030* the designated Regional Bikeway Corridors in Carlsbad are the Coastal Rail Trail, Palomar Airport Road, San Marcos Boulevard and La Costa Avenue. These regional bikeways provide both north-south and east-west links through Carlsbad, connecting to the adjoining cities of Oceanside, Encinitas, and San Marcos.

4.2.2. San Diego Region Bike Map

Produced by SANDAG and most recently updated in 2007, the San Diego Region Bike Map is intended to provide information on bicycle facilities to bicyclists. The map shows existing Class I, II and III facilities across San Diego County, as well as "Other Suggested Routes" that are not designated facilities, but are recommended routes for bicycling. In the City of Carlsbad, the bike lanes shown on the San Diego Region Bike Map are segments along El Camino Real, Tamarack Avenue, Faraday Avenue, Cannon Road, Palomar Airport Road, College Boulevard, Camino Vida Roble, Poinsettia Lane, Aviara Parkway, La Costa Avenue and Carlsbad Boulevard. The bike routes shown in Carlsbad include segments of Carlsbad Village Drive, Monroe Street and Avenida Encinas.

Carlsbad bikeways are included in the San Diego Region Bike Map

4.3. SURROUNDING COMMUNITIES

4.3.1. Oceanside

The City of Oceanside's Recreational Trails Element, a Sub-Element of the General Plan Circulation Element, includes the Bicycle Circulation Master Plan for the City, as well as the Equestrian and Pedestrian Circulation Master Plan. Oceanside has an extensive existing network of bicycle facilities, including Class I trails along the San Luis Rey River, rail corridors and beaches which are popular with residents. The San Luis Rey River trail is a regional attraction and is used by Carlsbad residents for recreational cycling, particularly with children. Oceanside has recently completed a segment of Coastal Rail Trail and continues to add to its bikeway network.

4.3.2. Vista

The City of Vista currently has 23.75 miles of existing Class II bikeways. The City of Vista's existing Class II bicycle facilities are located on nearly all major arterials, including connections to Carlsbad such as Melrose Drive. Vista's proposed bicycle facilities are outlined in the City of Vista General Plan Circulation Element and include two proposed Class I facilities and numerous additional Class II and III bikeways.

4.3.3. San Marcos

The City of San Marcos Bikeway Plan, updated in 2005, identifies more than 60 miles of bikeways planned for the city, many of which will be implemented with construction of new housing, recreation facilities and roadway improvements. The Plan identifies 70 projects, including the 22 mile inland rail trail which will run along the NCTD Sprinter from Oceanside to Escondido. The City of San Marcos has already implemented an extensive network of Class I trails, with 38 miles completed and an additional 34 planned for the future. Many of these trails are easily accessible to residents of eastern Carlsbad via Rancho Santa Fe Road.

4.3.4. Encinitas

The City of Encinitas updated their Bikeway Master Plan in 2005. The plan focuses on maximizing connections between multimodal transportation and bicycles. The plan primarily recommends Class II and III facilities and emphasizes regional as well as local connections. The Bikeway Master Plan proposes numerous facilities connecting to the City of Carlsbad in the south.

5. NEEDS ANALYSIS

This chapter reviews the relationship between bicycle use, commute patterns, demographics, and land use in the City of Carlsbad. It identifies major activity centers and public facilities where bicyclists may be destined, along with the needs of recreational and commuter bicyclists. A review of the needs of each bicycle user group will help guide the type and routing of the bikeway system.

One of the primary reasons for producing this Bikeway Master Plan is to maximize the number of bicycle commuters in order to help achieve transportation goals such as minimizing traffic congestion and air pollution. In order to set the framework for these benefits, local and national statistics are used as a basis for determining the benefits of enhancements to Carlsbad's bikeway network and implementation of educational, encouragement and maintenance programs. The national and local statistics are based on the 2000 U.S. Census.

5.1. LAND USE AND DEMAND

Unlike automobile use, where historical trip generation studies and traffic counts for different types of land uses permits an estimate of future "demand" for travel, bicycle trip generation methods are less advanced and standardized. This is partly due to the limited data available on when, where and why people bicycle. Land use patterns can help predict demand and are important to bikeway planning because changes in land use (and particularly employment areas) will affect average commute distance, which in turn affects the attractiveness of bicycling as a commute mode. A comprehensive bikeway network should connect the neighborhoods where people live to the places they work, shop, recreate, or go to school. An emphasis is placed on regional bikeway and transit connections centered on the major activity centers, including:

- Major employment centers
- Major retail and commercial centers
- Civic buildings such as libraries
- Schools
- Transit Stations
- Neighborhood parks, beaches, and regional recreational areas

5.2. COMMUTE PATTERNS

A central focus of presenting commute information is to identify the current "mode split" of people that live and work in Carlsbad. Mode split refers to the choice of transportation a person selects to move to destinations, be it walking, bicycling, taking a bus, or driving. One major objective of any bicycle facility enhancement or encouragement program is to increase the "split" or percentage of people who

choose to bike rather than drive or be driven. Every saved vehicle trip or vehicle mile represents quantifiable reductions in air pollution and can help in lessening traffic congestion. Due to the unstable nature of congestion, even small reductions in the number of vehicles on the road can dramatically improve congestion.

Journey to work and travel time to work data were obtained from the 2000 US Census for Carlsbad, San Diego County, California, and the United States. Journey to work data are shown in **Table 5-1**.

Table 5-1
Journey to Work Data

Mode	United States	California	San Diego County	Carlsbad
Bicycle	0.4%	0.8%	0.6%	0.3%
Drove Alone	75.7%	71.8%	73.9%	78.1%
Carpool	12.2%	14.6%	13.0%	8.4%
Public Transit	4.7%	5.1%	3.4%	2.2%
Walked	2.9%	2.9%	3.4%	1.5%
Other	4.1%	4.8%	1.0%	1.1%

Source: U.S. Census 2000

As shown, about 0.3% of all employed Carlsbad residents commute primarily by bicycle, which is slightly less than the national average of 0.4%, the state average of 0.8% and the San Diego County average of 0.6%. This figure indicates that Carlsbad has a slightly less than average bicycle mode split for commuting purposes.

Travel time is important because it can give an indication of the number of potential new bicycle commuters. Travel time to work is shown in **Table 5-2**.

Table 5-2
Travel Time to Work Data

Time	United States	California	San Diego County	Carlsbad	
				%	#
5 to 9 minutes	14.4%	11.5%	11.0%	10.7%	3,784
10 to 14 minutes	15%	13.8%	13.7%	16.1%	5,702
15 to 29 minutes	36.1%	35.4%	40.7%	32.2%	11,406
30 to 59 minutes	26.5%	29.2%	28.3%%	31.2%	11,045
60 minutes or more	8%	10.1%	6.4%	9.8%	3,485

Source: Census 2000. Percentages reflect percent of workers who do not work from home.

5.3. TRIP REDUCTION AND POTENTIAL AIR QUALITY BENEFITS

It is possible to use the Census data above, in combination with national commuting statistics from the 2001 National Household Travel Survey (NHTS) and EPA estimates of standard emissions rates for cars to give a rough projection of future bicycle ridership in Carlsbad along with the trip reduction and air quality benefits. While these projections are only ambitious estimates, they are important to building a case for investing in bicycle facilities and programs over time.

According to the National Household Travel Survey (NHTS), the average work commute time has remained close to 20 minutes since 1983. In 2001, averaging all modes, the commute time was 23 minutes.[1] Assuming an average speed of 10 miles per hour, a cyclist traveling for 23 minutes covers about 4 miles, which would be equivalent to a 9-minute motor vehicle trip (traveling at about 30 mph). As shown in Table 5-2, about 3,784 Carlsbad commuters (about 11%) have a commute time of 9 minutes or less. Subtracting those residents that already walk or bike to work, (674) we find that 3,110 Carlsbad residents could potentially convert their short (9-minute or less) commute trip from a vehicle trip into a bicycle trip.

With enhancement of the Bikeway Master Plan network, implementation of education and encouragement programs and employer incentives, and establishment of a bikeway maintenance program, a reasonable estimate is that the city could capture at least 25% of those potential bicycle commuters. This would result in an increase to 1,630 daily bicycle riders making 3,260 daily trips and saving an approximately 10,947 vehicle miles travels (VMTs)[2] per weekday. With this shift, the total bicycle mode share in Carlsbad would increase to 2.5%. Bicycle commute mode shares between 2% to 3% are generally considered high.[3]

Table 5-3 quantifies the estimated reduction in VMTs and estimated reduction in air pollutants in Carlsbad following implementation of the bicycle network and capture 25% of potential bicycle commuters. According to the San Diego County Air Pollution Control District, motor vehicles are responsible for approximately 50 percent of the smog in San Diego County. Reducing VMTs by providing residents safe and functional ways to get to work, school, or shopping without using a motor vehicle will aid in reducing the amount of smog produced by motor vehicle pollution.

---

[1] Hu, Patricia and T. Reuscher. "Summary of Travel Trends: 2001 National Household Travel Survey." Published by U.S. Department of Transportation, Federal Highway Administration. December 2004. Available at <nhts.ornl.gov/2001/pub/STT.pdf> Table 26. General Commute Patterns by Mode of Transportation.

[2] Vehicle Miles Traveled is a measurement of the extent of motor vehicle operation, a sum of all miles traveled by motor vehicles over a given period of time.

[3] It is possible that some commuters would be willing to bicycle more than 23 minutes to their workplace. Almost six-thousand Carlsbad residents have a commute time between 10 and 15 minutes. (Table 5-2) A fifteen minute drive translates to a 30-40 minute bicycle ride. If 10% of the 5,702 commuters that have a ten to fifteen minute commute convert to bicycling, the Carlsbad bicycle commute mode share would increase to 4%. If all Carlsbad residents that lived fifteen minutes away from work bicycled instead of drove, the mode share would increase to 25%. This mode share, while very high, is achievable: the City of Davis, California (home to the University of California, at Davis) estimates its 2000 bicycle mode share to be between 15% and17.5% and its 1990 bicycle mode share to have been between 20% and 25%.

Table 5-3
Bicycle Commute and Air Quality Projections

Current Commuting Statistics		Source[1]
Carlsbad Population	77,998	*2000 US Census*
Number of Commuters	35,422	*2000 US Census (Employed persons minus those that work at home)*
Number of Bicycle-to-Work Commuters	113	*2000 US Census*
Bicycle-to-Work Mode Share	0.32%	*Mode share percentage of Bicycle to Work Commuters*
School Children Grades K-8	9,495	*2000 US Census, population ages 6-14*
Estimated School Bicycle Commuters	475	*Lamorinda School Commute Study (Fehr & Peers Associates, 1995) and San Diego County School Commute Study (1990). (5%)*
Number of College Students	5,100	*2000 US Census*
Estimated College Bicycle Commuters	255	*National Bicycling & Walking Study, FHWA, Case Study No. 1, 1995. Review of bicycle commute share in seven university communities (5%)*
Average Weekday Coaster Ridership	698	*Average of weekday system wide Coaster boardings divided by 8 stations*
Number of Daily Bike-Coaster Users	10	*RTD (Denver) Bike-n-Ride Survey, December 1999 (1.4% of total boardings)*
Estimated Total Number of Bicycle Commuters and Utilitarian Riders	853	*Total of bike-to-work, transit, school, college and utilitarian bicycle commuters Does not include recreation.*
Estimated Adjusted Mode Share	1.1%	*Estimated Bicycle Commuters divided by population*
Total Daily Bicycle Trips	1,705	*Total bicycle commuters x 2 (for round trips) plus total number of utilitarian bicycle trips*
Reduced Vehicle Trips per Weekday	803	*Assumes 73% of bicycle trips replace vehicle trips for adults/college students and 53% for school children*
Reduced Vehicle Miles per Weekday	2,663	*Assumes average one-way trip travel length of 4.6 miles for adults/college students and 0.5 mile for schoolchildren*

Potential Future Bicycle Commuters		Source[1]
Number of workers with commutes nine minutes or less	3,784	*US Census 2000*
Number of workers who already bicycle or walk to work	674	*US Census 2000*
Number of potential bike-to-work commuters	3,110	*Calculated by subtracting number of workers who already bicycle or walk from the number of workers who have commutes 9 minutes or less*
Future number of new bike-to-work commuters	778	*Based on capture rate goal of 25% of potential bicycle riders*
Total Future Daily Bicycle Commuters and Utilitarian Riders	1,630	*Current daily bicycle commuters, bike to school and utilitarian riders, plus future bicycle commuters*
Future Total Daily Bicycle Trips	3,260	*Total bicycle commuters x 2 (for round trips)*
Future Reduced Vehicle Trips per Weekday	2,380	*Assumes 73% of bicycle trips replace vehicle trips*
Future Reduced Vehicle Miles per Weekday	10,947	*Assumes average one-way trip travel length of 4.6 miles for adults. Assumes 12 mph average bicycle speed; 23 minute average travel time. Travel time data from NHTS 2001 Trends, Table 26.*
Future Reduced Vehicle Miles per Year	2,901,003	*256 weekdays per year*
Future Air Quality Benefits[2,3]		**Source[1]**
Reduced HC (kg/weekday)	31	*(0.0028 kg/mile)*
Reduced CO (kg/weekday)	229	*(0.0209 kg/mile)*
Reduced NOX (kg/weekday)	15	*(0.00139 kg/mile)*
Reduced CO2 (kg/weekday)	1,205,367	*(.4155 kg/mile)*
Reduced HC (metric tons/year)	8	*1000 kg per metric ton; 256 weekdays/year*
Reduced CO (metric tons/year)	59	*1000 kg per metric ton; 256 weekdays/year*
Reduced NOX (metric tons/year)	4	*1000 kg per metric ton; 256 weekdays/year*
Reduced CO2 (metric tons/year)	308,574	*1000 kg per metric ton; 256 weekdays/year*

Notes:
1. Sources as noted in table. Due to lack of detailed local bicycle usage data, estimates for Carlsbad were based in part on best available data from comparable communities in California and nationwide.
2. Emissions rates from EPA report 420-F-00-013 "Emission Facts: Average Annual Emissions and Fuel Consumption for Passenger Cars and Light Trucks." 2000. Other sources as noted in the table.
3. HC = hydrocarbons, CO = carbon monoxide; NOX = nitrogen oxides, CO2 = carbon dioxide.

Under these estimates, the bicycle mode share of trips in Carlsbad would increase from 0.3% in 2000 (U.S. Census) to 2.5% percent. This increase would represent an eightfold increase of the current number of bicycle commuters in Carlsbad. This would result in an estimated decrease of 31 kilograms per day of hydrocarbons, 229 kilograms per day of carbon monoxide, 15 kilograms per day of nitrous oxides and over 1,205,000 kilograms per day of carbon dioxide. Total annual reductions in these pollutants would be 8 metric tons of hydrocarbons, 59 metric tons of carbon monoxide, 4 metric tons of nitrous oxides and over 308,000 metric tons of carbon dioxide.

5.4. BICYCLE SAFETY AND ACCIDENT ANALYSIS

5.4.1. Perceptions of Safety

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

Bicycle riding on-street is commonly perceived as unsafe because of the exposure of a lightweight, two-wheeled vehicle to heavier and faster moving automobiles, trucks and buses. Actual collision statistics, however, show that bicyclists face only a marginally higher degree of sustaining an injury than a motorist based on numbers of users and miles traveled. Death rates are essentially the same with bicyclists as with motorists. Bicycle-vehicle collisions are much less likely to happen than bicycle-bicycle, bicycle-pedestrian, or collisions caused by physical conditions. The majority of reported bicycle collisions show the bicyclist to be at fault; (due to not obeying basic traffic laws; these often involve younger bicyclists riding on the wrong side of the road or being hit by a vehicle at an intersection or driveway).

5.4.2. Safety Enforcement in Carlsbad

The City of Carlsbad's Traffic Enforcement Division of the Police Department enforces all traffic laws in Carlsbad for bicycles and motor vehicles as part of their regular duties. Violations may include bicyclists who break traffic laws, as well as motorists who disobey traffic laws and make the cycling environment more dangerous.

In addition, an important function of the police department is filing reports for accidents involving bicyclists. A record is kept, accessible to other city departments on where, when and how collisions between bicyclists and cars and bicyclists and pedestrians occur. For the City's bicycle planning effort, these departments review and monitor bicycle and pedestrian accident data to improve safety through the bicycle network.

5.5. BICYCLIST NEEDS

The purpose of reviewing the needs of bicyclists is twofold: (a) it is instrumental when planning a system that must serve different skill levels and different trip types; and (b) it is useful when attempting to quantify future usage and benefits

to justify expenditures of resources. According to a nationwide 1991 Lou Harris Poll, it was reported that "...nearly 3 million adults (about one in 60) already commute by bike, and projected the number could rise to 35 million if more bicycle friendly transportation systems existed." In short, there is a large reservoir of potential bicyclists who do not ride (or ride more often) simply because they do not feel comfortable using the existing street system and/or don't have appropriate bicycle facilities at their destination.

While the majority of Americans own bicycles, most of these people are recreational riders who ride relatively infrequently. Schoolchildren between the ages of about 6 and 14 typically make up a large percentage of the bicycle riders, often riding to school, parks, or other local destinations. The serious adult road bicyclist makes up a small, but important, segment of bikeway users, along with serious off-road mountain bicyclists, who enjoy riding on trails and dirt roads. The single biggest adult group of bicyclists is the intermittent recreational rider who generally prefers to ride on pathways or quiet side streets.

5.5.1. Needs of Casual and Experienced Cyclists

Cyclist needs vary depending on the skill level of the cyclist and the type of trip the cyclist is taking. For the purposes of this Plan, cyclists are separated into two skill levels: casual and experienced. Casual cyclists include youth and adults who are intermittent riders. Some casual cyclists, such as youth under age 16, may be unfamiliar with operating a vehicle on roads. Experienced cyclists include long-distance road cyclists, racers, and those who use their bicycle as a primary means of transportation. These cyclists generally feel comfortable riding on roads and with traffic. A summary of the needs of the different types of cyclists is provided below.

Table 4-5

Characteristics of Casual and Experienced Cyclists

Casual Riders	Experienced Riders
Prefer off-street bike paths or bike lanes along low-volume, low speed arterials	Can comfortably ride alongside higher-volume, higher-speed arterials without bike lanes. Prefers on-street facilities over off-street paths.
May have difficulty gauging traffic and may be unfamiliar with rules of the road. May walk bike across intersections.	Negotiates streets like a motor vehicle, including "taking the lane" and using left-turn pockets.
May use less direct route to avoid arterials with heavy traffic volumes.	Prefers a more direct route.
May ride on sidewalks and ride the wrong way on streets.	Avoids riding on sidewalks or on multi-use paths. Rides with the flow of traffic on streets.
Rides shorter distances: ten miles or less.	Cycles longer distances, often more than 25 miles, on a recreational ride.

The casual bicyclist will benefit from route markers, bike paths, bike lanes on low-speed streets, neighborhood routes, traffic calming, wider curb lanes, and educational programs. Casual bicyclists may also benefit from marked routes

that lead to parks, schools, shopping areas, and other destinations. To encourage youth to ride, routes must be safe enough for their parents to allow them to ride.

The experienced bicyclist will benefit from wider curb lanes, bicycle lanes on more direct arterials, and loop detectors at signals. The experienced bicyclist who is primarily interested in exercise will benefit from loop routes that lead back to the point of origin.

5.5.2. Needs of Cyclists Making Recreational and Utilitarian Trips

As this plan for enhancing and developing bicycle facilities, and available state and federal bicycle funding is primarily focused on commuting cyclists – those riding to work or school, or for shopping, errands, and other utilitarian trips – it is important to understand the specific needs of bicycle commuters.

For the purpose of this Plan, bicycle trips are separated into two trip types: recreational and utilitarian. Recreational users cover all age groups from children to adults to senior citizens. Recreational trips can range from a 50-mile weekend group rides, to a family outing along a quiet bike path, and all levels in between. Utilitarian trips include commuter cyclists, which are a primary focus of state and federal bicycle funding, as well as cyclists going to school, shopping or running other errands.

Table 4-6

Characteristics of Recreational and Utilitarian Trips

Recreational Trips	Utilitarian Trips
Directness of route not as important as visual interest, shade, protection from wind	Directness of route more important than visual interest, etc…
Loop trips may be preferred to backtracking	Trips generally travel from residential to shopping or work areas and back
Trips may range from short to over 50 miles	Trips generally are 1-5 miles in length
Short-term bicycle parking should be provided at recreational sites, parks, trailheads and other recreational activity centers	Short-term and long-term bicycle parking should be provided at stores, transit stations, schools, workplaces.
Varied topography may be desired, depending on the skill level of the cyclist	Flat topography is desired
May be riding in a group	Often ride alone
May drive with their bicycles to the starting point of a ride	Use bicycle as primary transportation mode for the trip; may transfer to public transportation; may or may not have access to a car for the trip
Trips typically occur on the weekend or weekday afternoons	Trips typically occur during morning and evening commute hours (commute to school and work). Shopping trips also occur on weekends.
Type of facility varies, depending on the skill level of cyclist	Generally use on-street facilities, may use pathways if they provide easier access to destinations than on-street facilities

Recreational cyclists' needs vary depending on their skill level. Road cyclists out for a 100-mile weekend ride may prefer well-maintained roads with wide shoulders and few intersections, stop signs or stop lights. Casual cyclists out for a family trip may refer a quiet bike path with adjacent parks, benches and water fountains.

Utilitarian bicyclists have needs that are more straightforward. They require bike lanes or wider curb lanes along all arterials and collectors, loop detectors at signalized intersections and adequate maintenance of the pavement. At the destination points, commuters require adequate long term bicycle storage and showers or changing facilities while shoppers require short term bicycle storage.

It should be noted that with higher densities of development planned for Downtown Carlsbad, residents will be placed in close proximity to shopping and transit. This commitment to a more pedestrian and bicycle-friendly land use pattern means that Carlsbad has the potential to increase the number of people who ride to work, school or shopping. Other factors that contribute to a potential for increased bicycle ridership in Carlsbad include (a) a temperate climate, and (b) a significant percentage of work commute trips (24.6%) that are less than 15 minutes in length.

5.6. CITIZEN AND COMMUNITY INVOLVEMENT

Public involvement is an important component of the Carlsbad Bikeway Master Plan process. The public outreach process for this project included a survey of community members. Surveys were distributed through local bicycle groups, Carlsbad's top fifty employers, local bicycle shops, and on the city's website. The surveys were intended to gather input on existing bicycling conditions and attitudes about bicycling in Carlsbad. A summary of survey responses is provided in **Appendix D** to this plan.

5.6.1. Community Survey Responses

Sixty-seven responses were received from the community survey. All respondents are adults, with 26% aged 19-39, 66% aged 40-59 and the remaining 8% aged sixty and over. Several respondents bicycle with their children and provided comments and suggestions for improving the cycling environment for younger people. Thirty-four percent of respondents are women. Eighty-two percent of the respondents are from Carlsbad, with the remainder from Encinitas (10%), Oceanside (3%) and the communities of Vista, San Marcos and San Diego (2% each).

"I ride all over the county!"

-2006 Bikeway Master Plan Survey Respondent

Most respondents to the survey are frequent cyclists, with 28% reporting daily or weekly rides. Cyclists who average longer rides tended to ride more frequently than cyclists who ride shorter distances. Respondents are more likely to ride in the morning than in the evening, with 32% reporting that they ride during weekend mornings, and 23% reporting that they ride during weekday mornings. Nearly half the respondents take bike rides that are 25 miles or more. Not including these long distance cyclists, most other respondents average less than ten miles on their rides (34% 6-10 miles, 31% 3-5 miles and 21% under 2 miles). It is reasonable

to assume that the long-distance cyclists are more experienced than the short-distance cyclists.

Most respondents ride for recreation or exercise: 28% and 23% respectively. The next most common reason to ride is "social" (15%). Twelve percent of respondents bicycle to work. Very few respondents bicycle to school, to shop, or to transit (3% each). Respondents chose three main obstacles to bicycling: Lack of Bikeways (29%), Concerns about safety (28%), and lack of time (22%). These are the top concerns for both long-distance and short-distance cyclists, though short-distance cyclists are more concerned with safety and lack of bikeways than long-distance cyclists.

When asked to rank facility preferences, respondents on average prefer off-street paved bikeways and paths and on-street bike lanes to bike routes/boulevards or trails and single track dirt paths. When results are broken down by the distance cyclists ride, it is shown long distance (25+ miles) cyclists prefer on-street bike lanes and routes to off-street paths and trails. The shorter distance (less than 25 miles) cyclists prefer off-street paved roads more than on-street bike lanes and bike routes or off-street unpaved trails. Twenty three of the 67 respondents reported their employers provided showers and bicycle lockers, and seventeen stated that bicycle racks are found at their destinations.

6. RECOMMENDED BIKEWAY IMPROVEMENTS

The recommended improvements for the Carlsbad Bikeway Master Plan consist of additional bikeway network facilities, intersection and spot improvements, and bicycle-related support facilities and programs such as bike parking, maintenance programs, and educational programs. Most of the City's major arterials have existing Class II facilities, and those comfortable riding on major streets are well-served by the existing network. Recommendations included in this chapter address the need to regularly sweep and maintain the existing on-street network, and ensure that bicyclists are accommodated during roadway construction. Other improvements in this chapter focus on expanding the bike lane network to certain collector streets and adding additional bike routes to provide greater connectivity between the arterials.

Carlsbad's numerous open spaces, parks, beaches as well as temperate weather and active lifestyles help to make bicycling in Carlsbad an effective transportation and recreation option at any time of the year. The recommendations included in this chapter will help to enhance Carlsbad's status as a great place to bicycle.

Carlsbad's first segment of the Coastal Rail Trail was constructed in 2005

6.1. RECOMMENDED BIKEWAY NETWORK

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

The Existing and Proposed Bikeway Network for Carlsbad is shown in **Figure 6-1**. The system of bikeways is classified into the standard Caltrans Class I, II, and III bikeway categories discussed in Chapter 2.

The full bikeway network project list for the Bikeway Master Plan is provided at the end of this chapter, beginning on page 6-14. The project list includes some of the specific facility improvements discussed below. Following the project list, graphics and detailed descriptions of each project are provided to illustrate the specific facility improvements and enhancements that are recommended.

No Parking signs help to keep bike lanes free of obstructions

6.2. RECOMMENDED SUPPORT FACILITIES AND PROGRAMS

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

6.2.1. Bicycle Parking and End-of-Trip Facilities

Bike lockers provide secure, covered, long-term storage at key commuter locations such as Transit Stations.

Bicycle parking includes standard bike racks, covered lockers, and corrals. While Carlsbad's transit stations and some parks and recreation facilities are well outfitted with bicycle parking, Carlsbad's commercial areas have limited bicycle parking available. Bicycle parking facilities are frequently located behind buildings and are intended solely for commuter cyclists. Bicycle racks should be placed in well-lit, accessible and convenient locations where they are visible to the public and convey a sense of safety for cyclists and their bicycles. Locations in need of additional bicycle parking include the Village, commercial areas near La Costa, and beach areas. A lack of safe and secure bicycle parking is often noted as a concern of bicyclists who may wish to ride to work or to shop. Theft and vandalism of bicycles, especially given that bicycles may be worth anywhere from $250 to $2,000, is a major impediment to bicycle riding.

A systematic program to improve the quality and increase the quantity of bicycle end-of-trip facilities should be implemented in Carlsbad. For example, the city could look for appropriate public locations to install new bicycle racks (such as sidewalks within the downtown commercial area, parks, and community centers). For existing private locations such as shopping centers, appropriate bicycle racks (e.g. inverted-U's) could be made available to property owners for free or low-cost to encourage the installation of additional bike racks or the replacement of poorly designed wheel bender racks.

RECOMMENDATIONS

Increase Public Bicycle Parking Facilities

Carlsbad Village Station features inverted U-style racks

Functional bike parking should be provided at public destinations, including shopping centers, community centers, parks, and schools. All bicycle parking should be in a secure, visible area that is convenient to the destination (near building entrances). Bicycle parking on sidewalks in commercial areas and along walkways of shopping centers should be provided according to specific design criteria, reviewed by merchants and the public, and installed as demand warrants.

As a general rule, inverted-U type racks bolted into the sidewalk are preferred in shopping centers, to be located intermittently and/or at specific bicycle destinations (e.g. cafes, grocery stores). Some rack manufacturers may be able to provide custom racks that can serve not only as bike racks, but also public artwork. While these racks can add a creative and fun element to the shopping center, the rack function should not be overlooked: all racks should adhere to the basic functional requirement of supporting the bicycle by the frame (not the wheel) and accepting a U-lock.

December 2007

This page intentionally left blank

Standard inverted-U racks also are preferred for downtown sidewalk areas, such as in Carlsbad Village. The inverted-U should be placed parallel to the street, and should be located within the sidewalk furnishing zone (in line with trees, benches, newspaper racks, etc.) so as not to block pedestrian traffic in the sidewalk through-zone. As an alternate to the standard inverted-U in areas such as the downtown area, the City of Carlsbad may wish to install a decorative bike rack style that serves to add an artistic element or ties to a theme of the streetscape.

A simple sticker on the top of the rack can illustrate the correct way to park the bicycle. This is especially important in downtown areas where orienting the bicycle incorrectly against the rack (e.g. perpendicular to the rack) may result in the bicycle blocking the sidewalk.

Installation of multiple capacity "wave" style racks is not recommended due to common misunderstanding of how to properly lock a bike to these racks (users commonly lock their bike parallel to the rack, effectively limiting their capacity to 1 or 2 bikes).

Adopt a Bicycle Parking Ordinance with Design Requirements

The City of Carlsbad should consider adopting a bicycle parking ordinance to ensure that new bicycle parking facilities are installed with new development. The city should consider including specific design requirements in the bicycle parking ordinance that require an inverted U-style rack, or other rack type that supports the bicycle frame in at least two points and can accept a U-lock. "Wave" style racks should generally not be recommended. The Association of Bicycle and Pedestrian Professionals (APBP) *Bicycle Parking Guidelines* document is a good source of information on appropriate bike rack styles and placement. Numerous bike rack vendors offer the inverted-U style rack; these racks are relatively inexpensive, simple to install, minimal and unobtrusive on sidewalks, and well-understood by users.

6.2.2. Safe Routes to School

The recommended bicycle network includes a number of Class III neighborhood bike routes that will benefit school children who bicycle to school. Identifying and improving routes for children to walk or bicycle to school is one of the most effective means of reducing AM traffic congestion and addressing existing safety problems. Most effective school commute programs are joint efforts of the school district, city, and parent organizations.

RECOMMENDATION

Develop a Safe Routes to School Program

Each public and private school in Carlsbad should conduct its own evaluation of school commute patterns and work with the city to identify corridor and crossing improvements. School commute routes are highly local in nature, requiring extensive and detailed examination of patterns and conditions and local input.

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

6.2.3. Maintenance

The City of Carlsbad should continue with its routine bikeway maintenance and repair activities. The city's bikeways are on-street bike lanes and are swept and maintained as part of a routine street sweeping and maintenance schedule. Although the majority of bikeway maintenance can be accomplished through these routine activities, special consideration should be given to bikeway safety and usability and provisions put in place for non-routine maintenance, such as a telephone number cyclists can call to report debris such as glass. Ongoing land development and roadway construction in Carlsbad also may increase the need for regular maintenance, as dirt, sand and other construction debris can be tracked or deflected into bike lanes. The City should continue to ensure that contractors routinely clean any tracked dirt or other debris from construction sites that may be deposited in the bike lanes.

Construction materials and vehicles can impede cyclists' safe use of bicycle lanes

In addition to maintenance issues, ongoing construction activities may also hinder bicyclists as Class II lanes are closed off or obstructed, due to road work or other construction activities. Special accommodations, described below, should be considered for any construction work that will require obstructing a bike lane.

RECOMMENDATIONS

Develop a Funding Source for the Bicycle Facility Maintenance Program

Bicycling is an integral part of Carlsbad's transportation network, and maintenance of the bikeway network should be part of the ongoing maintenance program for all city transportation facilities. As such, bikeway network maintenance should receive an appropriate allocation of the City's transportation maintenance funds. Cost estimates for a standard maintenance program are provided in Chapter 7.

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

Many local cyclists commented in their survey forms about the challenges presented by construction activities along Carlsbad's roadway network. Even the most experienced cyclists may feel anxiety when the bike lane is blocked by construction activites and they are forced out into travel lanes with vehicles that may be traveling in excess of 50 mph. While cyclists are permitted by the California Vehicle Code to leave the bike lane if it is obstructed, motorists may not be expecting them to merge left into the travel lane. For construction activities:

- The City should continue to provide suitable construction warning signs for any activities that involve work in a designated bikeway. Signage should warn cyclists well in advance of any location where the bicycle lane is closed for construction or maintenance activities.

- The City should continue to, if possible, maintain a coned-off area between the construction zone and vehicle lane for bicycle travel. 5' is optimal, but even a 3' area provides cyclists room to maneuver past the construction activities without forcing them into the travel lane.

- The City should continue to provide, where necessary, detour routes around areas undergoing construction.

- The City should continue to sign and enforce reduced speed limits around construction zones to ensure that motorists passing these areas are traveling at a safe speed (see CVC 22350).

The City already routinely implements many of these special construction accommodations described above and should continue to do so. More detailed guidelines are provided in Appendix C for accommodating bicycles in construction zones.

6.2.4. Bicycle Signal Detection

To enable safe bicycle travel through signalized intersections, bicycles should be detected at the waiting positions used by cyclists proceeding through and turning left. Detection of vehicles and bicycles in Carlsbad is performed by video (overhead cameras combined with image processing software) and by inductive loops.

RECOMMENDATON

The City should continue to ensure that all existing and new video signal detection includes zones for bicycle detection.

6.2.5. Bicycle Enforcement

In order to encourage safe cycling in Carlsbad, facility improvements must be accompanied by enforcement of California Vehicle Code (CVC) regulations pertaining to bicycles and bicycling. The City of Carlsbad should continue to enforce CVC regulations and to ensure safe use of bicycle facilities, such as the installation of signage prohibiting parking in bicycle lanes. However, violations of such signed regulations needs to be enforced by City of Carlsbad law enforcement officers.

RECOMMENDATION

The City of Carlsbad Police Department should continue to perform enforcement of vehicle statutes relating to bicycle operation. A particular focus should be on obstructions of bicycle facilities, individuals riding the wrong direction, or riding on the sidewalk, as these behaviors increase the chance that a cyclist will be involved in a collision. Enforcement of vehicle laws related to bicycling can serve as an educational tool, as some individuals may simply not understand that they are breaking the law and putting themselves at risk. A tip-line or website where cyclists and motorists can report violations might aid in law enforcement efforts to curb bicycle-related violations.

6.2.6. Signage and Striping

All bikeway signage on public roadways in Carlsbad should conform to the signage identified in the California Manual on Uniform Traffic Control Devices

("California MUTCD," the Federal Highway Administration's MUTCD 2003 Edition, as amended for use in California). This document gives specific information on the type and location of signing for bicycle facilities in the State of California. Samples of suggested signage and striping are outlined in Appendix A.

RECOMMENDATION

Designated Bikeway Signs

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

"SHARE THE ROAD" Signage

For all Class III Bike Routes, the City may wish to consider installing "SHARE THE ROAD" signs (MUTCD W16-1) along with the standard "BIKE ROUTE" signage (MUTCD D11-1).

Wayfinding Signage

Wayfinding signage can help provide cyclists with information necessary to use the bicycle network as an effective transportation network through the display of distance, direction and in some cases, estimated travel time information. The City could consider adding wayfinding signs along key routes to direct cyclists to important destinations. An example of this already exists in Carlsbad Village, where signage directs cyclists from the street network to access the Coastal Rail Trail. Additional wayfinding signage design details are provided in Appendix A.

6.2.7. Multi-Modal Connections

RECOMMENDATION

The North County Transit District (NCTD) should continue to allow bicycle access on all buses and trains. Bicycle travel to transit stops and stations should be enhanced in order to make the transfer between bicycle and transit travel as convenient as possible. NCTD should continue to ensure that sufficient secure bicycle parking is provided at transit stops in order to facilitate multi-modal connections.

6.2.8. Education Programs

This section covers future efforts to educate bicyclists and motorists, and efforts to increase the use of bicycles as a transportation alternative. Most education and encouragement programs and activities will likely be cooperative efforts between the City of Carlsbad Police Department, Carlsbad Unified School District, San Marcos Unified School District, Encinitas Union School District, San Diegito Union

High School District, SANDAG, and local bicycle groups such as the North County Cycle Club and San Diego County Bicycle Coalition.

The Police Department currently works in a variety of ways to educate children and adults on bicycle safety as described in Chapter 3. Unfortunately, statewide trends show that the lack of education for bicyclists, especially younger students, continues to be a leading cause of accidents. For example, the most common type of bicycle accident reported in California involves a younger person (between 8 and 16 years of age) riding on the wrong side of the road in the evening hours. Studies of accident locations around California consistently show the greatest concentration of accidents is directly adjacent to elementary, middle, and high schools. Parental responsibility in teaching bicycle safety to their children cannot be overlooked, but the fact is that many parents themselves are not educated in safe on-road cycling skills. The recommendations below are intended to ensure that both child and adult safety education remain an integral part of bicycling improvement efforts in Carlsbad.

RECOMMENDATIONS

Continue and Expand Existing Education Programs

Existing school education programs offered by the Police Department should be continued and supported by a secure, regular funding source. Schools should be encouraged to develop their own bicycle education programs.

For adult education, the City should support local adult bicycle education and safety programs, such as the Road I and II courses offered by the San Diego County Bicycle Coalition. To encourage courses to be taught in Carlsbad, the city could make small grants available to certified bicycle education instructors to offset time and materials costs and to offer the course free to participants. Meeting spaces, such as community centers and libraries, are available for rental through the City of Carlsbad, and may be useful as locations for such programs. Local employers should also be encouraged to invite bicycle education instructors to teach at their workplace.

For bicycle infractions (such as running stop signs) by minors, the Police Department should consider implementing a "bicycle traffic school" in lieu of fines.

Provide Safety Handbook

A standard safety handbook, such as the *From A to Z By Bike* handbook, should be made available to each school. Schools should develop a circulation map of the campus and immediate neighborhood showing the preferred circulation and parking patterns and explaining in text the reason behind the recommendations. This circulation map should also be a permanent feature in all school newsletters. Bicycle helmet subsidy programs are available in California and should be used to provide low-cost approved helmets for all school-aged bicyclists.

Educate Motorists and Bicyclists

Motorist education on the rights of bicyclists and pedestrians, and vice versa, is virtually non-existent. Many motorists mistakenly believe, for example, that

bicyclists do not have a right to ride in travel lanes and they should be riding on sidewalks. Many motorists do not understand they must only pass bicyclists when it is safe to do so and with adequate passing distance. Many motorists do not understand a bicyclist may need to ride in a travel lane if there is no shoulder or if the shoulder is full of gravel, glass, or potholes. The term "Share the Road" is a common message intended to educate both motorists and bicyclists about their legal rights and responsibilities on the road, and the need to increase courtesy and cooperation to improve safety. Motorists and bicyclists should be educated about the rights and characteristics of bicyclists through a variety of means including:

- Enforce existing traffic laws for both motorists and bicycles (Police Department responsibility).
- Work with towing companies and emergency clean up crews so they better understand the needs of cyclists.
- Work with contractors, subcontractors and city maintenance and utility crews to ensure they understand the needs of bicyclists and follow standard procedures when working on or adjacent to roadways.
- Create public service announcements on radio and TV to promote the health and livability benefits of bicycling, and provide accurate information about motorist and bicyclists rights and responsibilities on the road.
- Make bicycle safety a part of traffic school curriculum (California Department of Motor Vehicles responsibility)
- The City may distribute a brochure on bicycle safety and laws to the public (such brochures are available from organizations such as AAA and the California Highway Patrol).

6.2.9. Encouragement Programs

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

RECOMMENDATIONS

Facilitate the Development of Employer Incentive Programs

Facilitate the development of employer incentive programs to encourage employees to try bicycling to work include providing bicycle lockers and shower

facilities, and offering incentives to employees who commute by bicycle by allowing for more flexible arrival and departure times, and possibly paying for transit or taxis during inclement weather. The City may offer incentives to employers to institute these improvements through air quality credits, lowered parking requirements, reduced traffic mitigation fees, or other means. Other efforts should include:

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

Utilitarian and Recreational Trip Incentive Programs

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

- Implementing a "Bicycle Friendly Businesses" program (City recognizes local businesses that encourage employees or clients to bicycle, through end-of-trip facilities like bike parking, or incentives such as discounts or stipends, or other programs).
- Holding an annual community event to encourage residents to replace one car trip a week with a bicycle trip.
- Supporting the planning and implementation of an annual mass bicycling ride in Carlsbad to attract new riders, showcase the city, and demonstrate the benefits of bicycling.
- Develop and implement a public education campaign to encourage bicycling, such as advertising on city benches, bicycle lockers, billboards and cable access television.

Community Bikeway Adoption

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

Bike Fairs and Races

Hosting bike fairs and races in Carlsbad can raise the profile of bicycling in the area and provide entertainment for all ages at the same time. Bike fairs and races, similar to bike-to-work day events and bike rodeos, provide an opportunity

to educate and encourage current and potential bicyclists. These events can also bring visitors to Carlsbad who may also contribute to the local economy.

Local Bikeways Map

Producing a local bikeways user map can serve as an important tool for showing bicyclists the designated bikeways in Carlsbad. Given the relatively small land area of Carlsbad, a small pocket map of the local bikeways could be produced inexpensively and distributed widely to schools, at city offices, and at major employers. The map could show significant destinations, the location of bicycle parking facilities, connections to bicycle facilities in the neighboring communities. Local businesses, such as the local bike shop may, wish to advertise or sponsor the map, helping to offset printing costs, and the map could be produced in cooperation with the Carlsbad Chamber of Commerce. The map should be distributed as widely as possible at locations such as city offices, libraries, schools, and bike shops. The Bicycle Map should clearly show the type of facility (path, lane, or route) as well as include basic safety information.

Carlsbad should also continue to coordinate with SANDAG to ensure that its bikeways are included on future updates to the San Diego Region Bike Map.

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

The City of Carlsbad should continue to participate in the annual Bike-to-Work day in May, in conjunction with the California bike-to-work week activities. City staff can be present at "energizer" stations along key local commuter routes. Local Bike-to-School days should be held annually in conjunction with Police Department bicycle education programs. These should include International Walk and Bike to School Day, held in early October each year. The City should consider hosting, sponsoring, or supporting other bicycle events unique to the Carlsbad community that will encourage more and safer riding.

Marketing the Bikeway Master Plan

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

- Distribute copies of the Bikeway Master Plan to members of the City Council, and all Commissions.
- Distribute copies of the Plan to City of Carlsbad's Community Development, Community Services and Public Works Departments, the Redevelopment Agency, and the Police Department.
- Provide copies of the Carlsbad bicycle network map to local schools, bicycle and recreational groups, NCTD, SANDAG, local bicycle shops, and major employers.

6.2.10. Bicycle Facility Coordinator

In order to assist with implementation of the many projects and programs recommended in this chapter, the City of Carlsbad may consider hiring a dedicated Bicycle Coordinator. Many large cities have Bicycle Coordinators; in some cases this position is combined as a Bicycle and Pedestrian Coordinator. Bicycle coordinators are most often planners, but may be housed in the planning, public works, or transportation departments depending on the jurisdiction. Some cities in California with populations similar to Carlsbad (approximately 100,000) that have full-time bicycle or bicycle/pedestrian planners include the City of Roseville and the City of Berkeley. While staffing a full-time bicycle coordinator position may not be feasible for Carlsbad from a budgetary standpoint, the City may choose to identify the role of bicycle facility coordinator as a portion of an existing staff person's job duties. This existing member of the planning or engineering department staff would fill the role of Bicycle Facility Coordinator by devoting a certain percent of their work time to bicycle planning efforts. The job duties for this staff person may include attending the monthly SANDAG Bicycle/Pedestrian Working Group meetings, and creating and staffing a city bicycle advisory committee.

6.3. RECOMMENDED NETWORK PROJECTS

The recommended Carlsbad bikeway network shown in Figure 6-1 focuses on implementing Class I, II, and III bikeways to expand and enhance the City's bikeway network. Encouragement and enforcement programs and intersection improvements to improve cycling in Carlsbad are also included in the plan.

The next section presents descriptions and cost estimates for the top priority bicycle projects. A summary list of all recommended bikeway facilities, with segment lengths and cost estimates, is provided in Chapter 7, Implementation.

CLASS I BIKE PATH IMPLEMENTATION PROJECT

1. CARLSBAD BOULEVARD BIKE PATH AT PONTO

Project Description and Location

The proposed relocation of Carlsbad Boulevard between Palomar Airport Road and Avenida Encinas presents the opportunity for a Class I facility along the coast. This location is already served by existing Class II bike lanes along the roadway. The existing roadway is divided at this point, but portions of the roadway are planned for relocation in the future, which will provide right-of-way for a Class I facility. A Class I path at this location would serve residents of Carlsbad who prefer a separated bike path, as well as visitors to South Carlsbad State Beach. Suggested facility designs are presented below. Further study of Class I path feasibility at this location is recommended.

Design Issues

Constraints:

- Limited right-of-way until Carlsbad Boulevard relocation.

Improvement Options:

- Bicycle lanes along the Carlsbad Boulevard should be retained after the relocation process to provide facilities for more experienced cyclists who prefer to travel at higher speeds.
- The Class I path should be designed with minimum of 10 to 12 feet of width to accommodate the higher volumes of users associated with the path's coastal location.
- The path should be equipped with directional signage, providing information to users regarding connections to the Coastal Rail Trail and other destinations.

Project Length:
1.5 miles

Graphic:

Coast Highway south of Palomar Airport Road.

A Class I path could be located on the shoulder between the southbound lanes and the campground.

Cost Estimate

Total estimated cost: $4,940,000

CLASS I BIKE PATH IMPLEMENTATION PROJECT

2. COASTAL RAIL TRAIL

Project Description and Location

The Coastal Rail Trail project contained in this Master Plan is part of a larger effort to link the coastal cities of Northern San Diego County with the City of San Diego through implementation of a Class I path along the existing rail lines. In Carlsbad, the Coastal Rail Trail would run along the eastern side of the NCTD rail line from Oceanside to Encinitas. A ¾ mile segment of the Co astal Rail Trail in Carlsbad was completed in 2005, connecting Tamarack Avenue with Oak Avenue. Due to the significant cost of completing the long-term alignment, which includes crossing three lagoons, an interim alignment has been included, which includes Class II and III on-street facilities which may be implemented while additional funding is being sought for long-term Class I facility. Currently, signed on-street segments of the Coastal Rail Trail exist on Avenida Encinas and between the Poinsettia Rail Station and Carlsbad Boulevard at La Costa Avenue.

Design Issues

Constraints:

- Lagoon crossings along long-term Class I alignment
- Right-of-way constraints

Improvement Options:

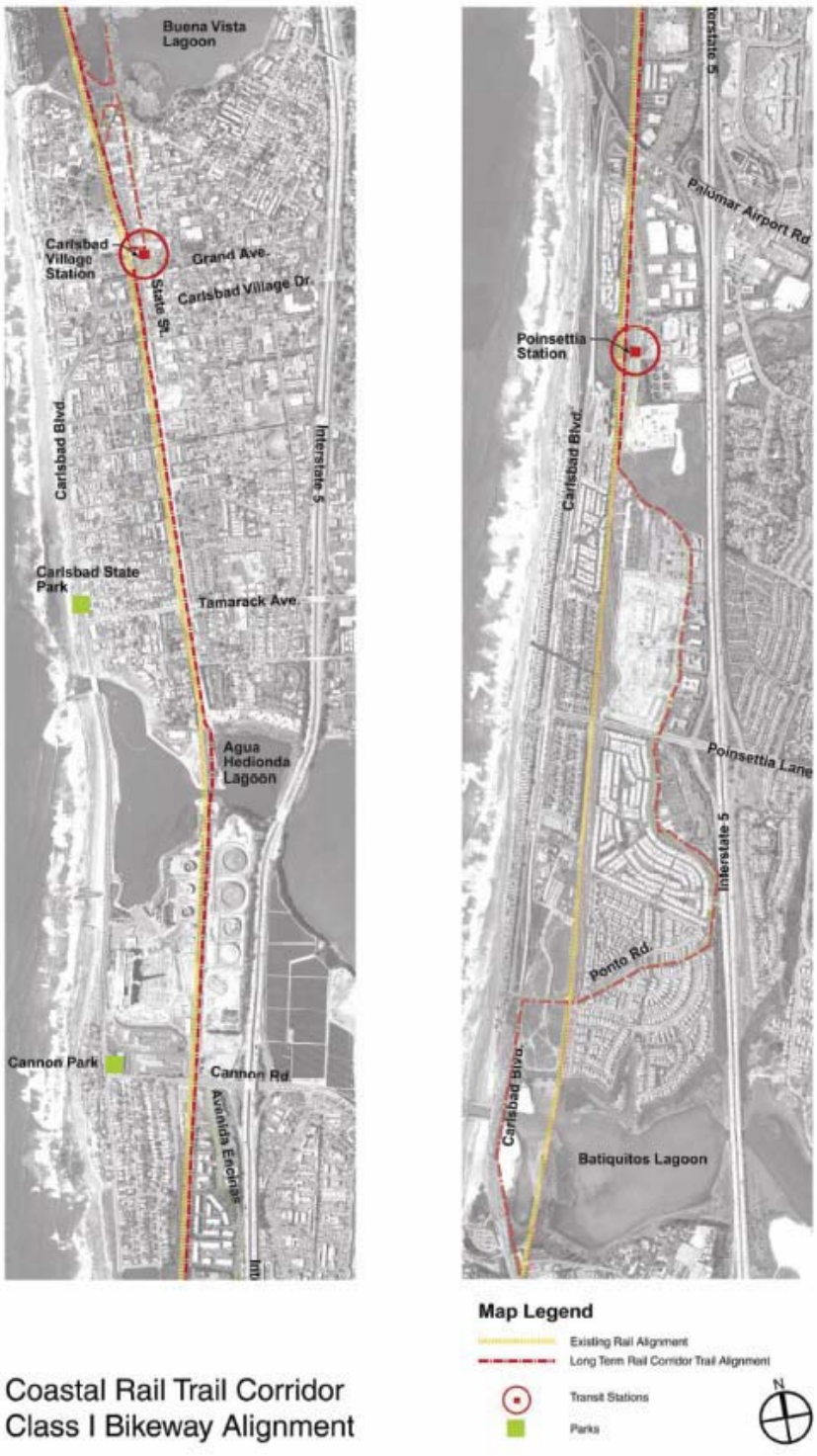
- The Class I path should be designed with minimum of 10 to 12 feet of width to accommodate the higher volumes of users associated with the path's coastal location.
- The path should be equipped with directional signage, providing information to users regarding connections to Carlsbad Village, Encinitas, Oceanside and other destinations.

Project length:
6.5 miles

Cost Estimate

Total estimated cost: $5,860,000

Graphic:


Buena Vista Lagoon
Carlsbad Village Station
Grand Ave.
Carlsbad Village Dr.
State St.
Carlsbad Blvd.
Interstate 5
Carlsbad State Park
Tamarack Ave.
Agua Hedionda Lagoon
Cannon Park
Cannon Rd.
Avenida Encinas
Palomar Airport Rd.
Poinsettia Station
Poinsettia Lane
Ponto Rd.
Batiquitos Lagoon
Map Legend
Existing Rail Alignment
Long Term Rail Corridor Trail Alignment
Transit Stations
Parks
N
Coastal Rail Trail Corridor
Class I Bikeway Alignment

CLASS II BIKE LANE IMPLEMENTATION PROJECT

3. HILLSIDE/HIGHLAND DRIVE FROM TAMARACK AVENUE TO KELLY DRIVE

Project Description and Location

Hillside/Highland Drive from Tamarack Avenue to Kelly Drive is a residential street which connects the neighborhoods south and east of the Village to the Village and other destinations such as Carlsbad High School, Valley Middle School and Magnolia Elementary School. Hillside Drive is currently 48 feet wide with no existing bicycle facilities. Implementation of 6 foot wide Class II bicycle lanes on either side of the street will allow for 11 foot travel lanes in both directions and 7 foot wide parking lanes on both sides of the street. Class II bicycle lanes along Hillside Drive will provide cyclists with connections to existing Class II facilities on Tamarack Avenue and Kelly Drive, as well as proposed Class III facilities on Highland Drive and Monroe Street.

Design Issues

Constraints:

- No notable constraints

Improvement Options:

- Retain parking lanes on both sides of the street with 11-foot travel lanes and 6-foot bicycle lanes, or
- Retain parking on only one side of the street and provide one 8-foot parking lane, two 8-foot bicycle lanes and two 12-foot travel lanes.

Project length:
1.5 miles

Graphic:

Hillside Drive at Kelly Elementary School

Cost Estimate

Total estimated cost: $60,000

CLASS II BIKE LANE IMPLEMENTATION PROJECT

4. AVENIDA ENCINAS FROM PALOMAR AIRPORT ROAD TO POINSETTIA TRANSIT STATION

Project Description and Location

There are currently Class II bicycle lanes along the southern portion of Avenida Encinas, from Poinsettia Transit Station south to Carlsbad Boulevard. These lanes provide a connection from the south to Poinsettia Station, yet there are no existing bicycle facilities connecting to Poinsettia Station from the north. Between Palomar Airport Road and Poinsettia Station on Avenida Encinas, there is adequate width to install Class II bicycle lanes on both sides of the roadway. In many locations, there is adequate room to provide on-street parking in addition to Class II lanes. Class II lanes along Avenida Encinas would provide a connection to Class II facilities on Palomar Airport Road and would provide a north-south link near the coast, yet avoiding the more heavily used Carlsbad Boulevard. Poinsettia Station provides secure bicycle parking for commuters, and North County Transit District accommodates bicycles on their trains and buses.

Design Issues

Constraints:

- Variable roadway width
- On-street parking

Improvement Options:

- Class II Bike Lanes in both directions.
- Maintenance of parking on both sides of street, where width is available.

Project Length:
1.0 miles

Graphic:

Bicycle Lockers at Poinsettia Transit Station

Cost Estimate

Total estimated cost: $50,000

CLASS II BIKE LANE IMPLEMENTATION PROJECT

5. PALOMAR AIRPORT ROAD FROM AVENIDA ENCINAS TO CARLSBAD BOULEVARD

Project Description and Location

The implementation of Class II lanes on Palomar Airport Road from Avenida Encinas to Carlsbad Boulevard would provide nearly continuous Class II facilities on Palomar Airport Road. Completion of this facility would provide a link to existing bicycle facilities along the Carlsbad Boulevard, as well providing a connection to significant destinations such as Poinsettia Transit Station and South Carlsbad State Beach. This segment of Palomar Airport road is currently too narrow for the implementation of Class II lanes. However, the roadway may be reconfigured in the future, at which time Class II lanes may be added. (Between Paseo Del Norte and Avenida Encinas, through the I-5 interchange, the current narrow lane widths and ramp configurations preclude the installation of Class II bike lanes, and this segment of Palomar Airport Road would continue to require shared lane use by bicyclists and motor vehicles. Recommendations for this location are discussed below under project #5.)

Design Issues

Constraints:

- Narrow roadway and bridge.

Improvement Options:

- Addition of Class II Lanes west of Avenida Encinas during future roadway reconfiguration.
- Between Paseo Del Norte and Avenida Encinas install "Share the Road" and other warning signage to alert motorists to the presence of cyclists through the interchange.

Project length:
0.3 miles

Cost Estimate

Total estimated cost: $30,000

CLASS III BIKE ROUTE IMPLEMENTATION PROJECT

6. MONROE STREET (LANCER WAY) FROM CARLSBAD VILLAGE DRIVE TO HILLSIDE DRIVE

Project Description and Location

There are existing Class II bicycle lanes on Monroe Street from Marron Road to Carlsbad Village Drive. South of Carlsbad Village Drive, Monroe Street is signed with one Class III Bike Route sign in the southbound direction. Monroe Street provides an important connection to Carlsbad High School and Magnolia Elementary School, as well as a significant north-south link with gentle topography. Monroe Street (Lancer Way) should be signed with additional Class III Bike Route signage between Carlsbad Village Drive and Hillside Drive, providing connections to destinations along Monroe Street, as well as connections to Class II facilities on Carlsbad Village Drive, Tamarack Avenue, and proposed facilities along Hillside Drive.

Design Issues:

Constraints:

- On-street parking.

Improvement Options:

- Class III Bike Route signage.

Project Length:
1.3 miles

Graphic:

Existing Bike Route signage on Monroe Street south of Carlsbad Village Drive

Cost Estimate

Total estimated cost: $13,000

CLASS III BIKE ROUTE IMPLEMENTATION PROJECT

7. LAS FLORES DRIVE/HIGHLAND DRIVE FROM JEFFERSON STREET TO TAMARACK AVENUE

Project Description and Location

Las Flores Drive/Highland Drive provides an essential element of the connection between Carlsbad Village Drive and the residential neighborhoods, schools and services located east of Interstate 5. The limited width of Highland Drive (28 feet) prevents the continuation of Class II facilities from the intersection of Highland with Hillside Drive at Tamarack Avenue. Class III Bike Route designation is recommended from Jefferson Street to Tamarack Avenue along Highland Drive/Las Flores.

Design Issues

Constraints:

- On-street parking.

Improvement Options:

- Class III Bike Route designation.

Project length:
0.8 miles

Cost Estimate

Total estimated cost: $8,000

CLASS III BIKE ROUTE IMPLEMENTATION PROJECT

8. CHESTNUT AVENUE FROM COASTAL RAIL TRAIL TO INTERSTATE 5

Project Description and Location

The eastern portion of Chestnut Avenue features Class II bicycle lanes, which are dropped as the roadway passes under Interstate 5. The western portion of Chestnut Avenue connects Brierly and Chase Fields with neighborhoods east of the highway. In addition, the recent completion of the Coastal Rail Trail trailhead at Chestnut Avenue may result in an increased demand for bicycle facilities along Chestnut Avenue as residents of surrounding neighborhoods access the Coastal Rail Trail via the Chestnut Avenue trailhead. Chestnut Avenue between the Coastal Rail Trail trailhead and Jefferson Street should be designated a Class III Bike Route. Destination signage should be provided to guide Coastal Rail Trail users to the trailhead.

Design Issues

Constraints:

- On-street parking.

Improvement Options:

- Class III Bike Route designation.

Project length:
0.4 miles

Graphic:

Coastal Rail Trail near Chestnut Avenue trailhead

Cost Estimate

Total estimated cost: $4,000

CLASS III BIKE ROUTE IMPLEMENTATION PROJECT

9. AVENIDA ENCINAS FROM CANNON ROAD TO PALOMAR AIRPORT ROAD

Project Description and Location

Avenida Encinas between Cannon Road and Palomar Airport Road has no existing bikeway facilities. Limited roadway width prevents the installation of Class II bike lanes. However, Avenida Encinas provides an important connection for cyclists who wish to access Poinsettia Station. Class III Bike Route designation along Avenida Encinas will provide a north-south link between Class II facilities on Cannon Road and Palomar Airport Road.

Design Issues

Constraints:

- On-street parking.
- Narrow roadway width.

Improvement Options:

- Class III Bike Route designation.

Project Length:
0.9 miles

Cost Estimate

Total estimated cost: $9,000

CLASS III BIKE ROUTE IMPLEMENTATION PROJECT

10. LAGUNA DRIVE FROM JEFFERSON STREET TO STATE STREET

Project Description and Location

Laguna Drive from Jefferson Street to State Street should be designated a Class III Bike Route, connecting Class II facilities along Jefferson Street to State Street and the Carlsbad Boulevard. This short Class III segment will provide access to Maxton Brown Park on the southern shore of Buena Vista Lagoon.

Design Issues

Constraints:

- None

Improvement Options:

- Class III Bike Route designation.

Project Length:
0.3 miles

Cost Estimate

Total estimated cost: $3,000

CLASS III BIKE ROUTE IMPLEMENTATION PROJECT

11. CHINQUAPIN AVENUE FROM THE COASTAL RAIL TRAIL TO JEFFERSON STREET

Project Description and Location

The installation of Class III Bike Route signage and stenciling on Chinquapin Avenue from the future Coastal Rail Trail to Highland Drive would provide an east-west connection while avoiding an I-5 interchange. The existing roadway crossing over I-5 provides one of the few opportunities to connect the eastern and western portions of the City without intercepting a freeway intersection. Chinquapin Avenue also provides a connection to the existing and proposed Coastal Rail Trail for residential neighborhoods both to the east and west of I-5.

Design Issues

Constraints:

- None.

Improvement Options:

- Class III Bike Route designation.

Project Length:
0.2 miles

Cost Estimate

Total estimated cost: $2,000

CLASS III BIKE ROUTE IMPLEMENTATION PROJECT

12. GABBIANO LANE FROM BATIQUITOS DRIVE TO BATIQUITOS LAGOON

Project Description and Location

Implementation of Class III bicycle facilities along Gabbiano Lane from Batiquitos Drive to Batiquitos Lagoon will provide a connection to the Batiquitos Lagoon ecological area from Poinsettia Lane. This connection will provide bicycle access to the Batiquitos Lagoon Nature Center and trailhead. Batiquitos Drive has existing Class II lanes and provides connections to Aviara Parkway as well as Poinsettia Lane. Note that bicycles are not permitted on the unpaved Lagoon Trail. There is a bicycle rack with a capacity of 5-10 bikes located at the trailhead at the end of Gabbiano Lane. Bicyclists must lock there bikes up here and walk to the Nature Center and the Lagoon Trail.

Design Issues

Constraints:

- None.

Improvement Options:

- Class III Bike Route designation.

Project Length:
0.3 miles

Cost Estimate

Total estimated cost: $3,000

BIKEWAY NETWORK FACILITY ENHANCEMENT PROJECT

13. STATE STREET AT CARLSBAD BOULEVARD

Project Description and Location

The intersection of State Street and Carlsbad Boulevard presents a challenge for cyclists, particularly those traveling south on Carlsbad Boulevard wishing to turn left onto State Street. Due to the limited sight distance and high traffic speeds, additional signage is recommended to alert motorists to the presence of cyclists at this intersection.

Design Issues

Constraints:

- High traffic volumes and speeds.
- Limited sight distance.

Improvement Options:

- Installation of "Share the Road" signage to alert motorists to the presence of cyclists in the intersection.

Graphic:

For additional details see Appendix A: Design Guidelines.

Cost Estimate

Total estimated cost: $5,000

BIKEWAY NETWORK FACILITY ENHANCEMENT PROJECT

14. TAMARACK AVENUE AT I-5

Project Description and Location

Tamarack Avenue includes Class II bicycle lanes most of its length. However, where Tamarack intersects I-5, the bicycle lanes are dropped to make room for freeway on- and off-ramps. In order to proceed straight through the intersection of Tamarack and I-5 on Tamarack, cyclists must merge into the through lanes and avoid vehicular traffic entering and exiting the freeway. The installation of signage alerting motorists to the presence of cyclists may help cyclists to proceed safely through the intersection of Tamarack Avenue and I-5. There are future plans to widen Interstate 5 at Tamarack Avenue, providing additional opportunities to accommodate cyclists. The widening of I-5 is currently undergoing environmental study, with construction planned to begin in 2009. Any improvements to this interchange will be subject to Caltrans review and approval.

Design Issues

Constraints:

- Narrow roadway.
- Freeway on- and off-ramps.
- High traffic volumes.

Improvement Options:

- Install "Share the Road" and other warning signage to alert motorists to the presence of cyclists through the interchange.

Cost Estimate

Total estimated cost: $5,000

BIKEWAY NETWORK FACILITY ENHANCEMENT PROJECT

15. PALOMAR AIRPORT ROAD AT I-5

Project Description and Location

Palomar Airport Road includes Class II bicycle lanes for its entire length east of Paseo Del Norte. West of Paseo Del Norte the bicycle lanes are dropped due to narrow lane widths extending through the I-5 interchange and the overcrossing of the railroad tracks. Project # (found previously on page 6-19) provides recommendations for installing Class II bike lanes on Palomar Airport Road west of Avenida Encinas when that segment of the roadway is reconfigured and widened in the future. Between Paseo Del Norte and Avenida Encinas, through the I-5 interchange, it is not feasible to install Class II bicycle lanes given the narrow lane widths and freeway ramp configurations, and this segment will continue to require shared lane use by bicyclists and motorists. The installation of signage alerting motorists to the presence of cyclists may help cyclists to proceed safely through the interchange of Palomar Airport Road and I-5.

Design Issues

Constraints:

- Narrow roadway lanes.
- Freeway on- and off-ramps.
- High traffic volumes.

Improvement Options:

- Install "Share the Road" and other warning signage to alert motorists to the presence of cyclists through the interchange.

Cost Estimate

Total estimated cost: $5,000

This page intentionally left blank

7. IMPLEMENTATION

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

7.1. IMPLEMENTATION PROCESS

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

1. Adoption of the project as part of the Capital Improvement Program and the appropriation of funds by the City Council to perform preliminary engineering tasks
2. Preliminary engineering (with consideration of possible alternatives and environmental issues) and cost estimate for individual projects as needed.
3. Secure, as necessary, any applicable environmental approvals.
4. Approval of the project by the Planning Commission and the City Council, including the commitment by the latter to provide for any unfunded portions of project costs.
5. Completion of final plans, specifications and estimates, advertising for bids, receipt of bids and award of contract(s).
6. Construction of Project.

Prior to any action however, the Carlsbad City Council will need to officially adopt the Carlsbad Bikeway Master Plan to receive certain state or federal funding.

7.2. HIGH PRIORITY PROJECTS

Once a bikeway system has been identified, the greatest challenge is to identify the top priority projects that will offer the greatest benefit to bicyclists if implemented. Prioritization involves a number of factors, including: (a) cost and construction feasibility given existing traffic, safety, and environmental constraints; (b) need, benefit, and public support; (c) funding cycles and opportunities, and strength of the project as measured by specific funding criteria.

It is important to remember that the recommended bikeway projects and programs are flexible concepts that serve as guidelines to those responsible for implementation. The bikeway network project list may change over time as a result of changing bicycling patterns and implementation constraints and opportunities. Carlsbad city staff should review the project list on a periodic basis to ensure that 1) it reflects the most current priorities, needs, and opportunities; 2) it can be implemented in a logical and efficient manner; and 3) it takes advantage of all available funding opportunities and grant cycles. As projects are built and taken off the list, new projects should be moved up on the list.

7.3. COST BREAKDOWN

A summary of estimated costs for the recommended bicycle network provided by this plan is presented in Table 7-1 below. The cost of the long-term recommended projects is estimated to be $12,440,000 for Class I projects, $140,000 for Class II Bike Lane projects, $42,000 for Class III Bike Routes projects, and $15,000 for network facility enhancement projects, for a combined total system build out cost of $12.6 million. Cost estimates include estimated cost of construction, administration and engineering design, utilities relocation, and environmental document and mitigation. Detailed cost breakdowns for each project are provided in Appendix F.

Table 7-1
Estimated Construction Cost of Long-Term Recommended Bikeway Projects

Segment Name	Start	End	Class	Length (miles)	Cost ($)
Recommended Class I Bike Paths					
Carlsbad Boulevard Bike Path at Ponto	Palomar Airport Road	Poinsettia Lane at Ponto	I	1.5	$4,940,000
Coastal Rail Trail	N. City Limit	S. City Limit	I	5.0	$7,500,000*
Total Class I Cost				*6.5*	*$12,440,000*
Recommended Class II Bike Lanes					
Hillside Drive/HIghland Drive	Tamarack Avenue	Kelly Drive	II	1.5	$60,000
Avenida Encinas	Palomar Airport Road	Poinsettia Station	II	1.0	$50,000
Palomar Airport Road	Paseo Del Norte	Carlsbad Boulevard	II	0.3	$30,000
Total Class II Cost				*2.8*	*$140,000*
Recommended Class III Bike Routes					
Monroe Street (Lancer Way)	Carlsbad Village Drive	Hillside Drive	III	1.3	$13,000
Las Flores/Highland Drive	Jefferson Street	Tamarack Avenue	III	0.8	$8,000
Chestnut Avenue	Coastal Rail Trail	Interstate 5	III	0.4	$4,000
Avenida Encinas	Cannon Road	Palomar Airport Road	III	0.9	$9,000
Laguna Drive	Jefferson Street	State Street	III	0.3	$3,000
Chinquapin Avenue	Coastal Rail Trail	Jefferson Street	III	0.2	$2,000
Gabbiano Lane	Batiquitos Drive	Batiquitos Lagoon	III	0.3	$3,000
Total Class III Cost				*4.2*	*$42,000*

Costs provided in 2007 dollars. Cost estimate details are found in Appendix F.
**Estimate provided by the City of Carlsbad Public Works Department.*

Table 7-1, continued
Estimated Construction Cost of Long-Term Recommended Bikeway Projects

Recommended Network Facility Enhancement Projects		
Location	**Description**	**Cost**
State Street at Carlsbad Boulevard	Install Bicycle Warning Signage	$5,000
Tamarack Avenue at I-5	Install Bicycle Warning Signage	$5,000
Palomar Airport Rd. at I-5	Install Bicycle Warning Signage	$5,000
Total Facility Enhancement Projects Cost		*$15,000*
TOTAL SYSTEM COST		**$12,637,000**

Notes:
Cost of acquiring right of way is not included.
Bike lane improvements assumed to be striping and signage only.
Bike route improvements assumed to be signage only.

The total annual maintenance cost of the primary bike path system is estimated to be $120,300 per year when fully implemented. Bicycle facility maintenance costs are based on per mile estimate, which covers labor, supplies, and amortized equipment costs for weekly trash removal, monthly sweeping, and bi-annual resurfacing and repair patrols. Other maintenance costs include restriping bike lane lines, sweeping debris, and tuning signals for bicycle sensitivity.

Table 7-2
Annual Operations and Maintenance Cost Estimates for Recommended Bikeway Network

Facility/Program	Unit Cost[1]	Description	Miles	Cost	Notes
Class I Maintenance	$17,000	Annual Cost per Mile	6.5	$110,500	Lighting and debris and vegetation overgrowth removal.
Class II Maintenance	$2,000	Annual Cost per Mile	2.8	$5,600	Repainting lane stripes and stencils, sign replacement as needed
Class III Maintenance	$1,000	Annual Cost per Mile	4.2	$4,200	Sign and shared use stencil replacement as needed
		Avg. Cost/Year		**$120,300**	
		Est. 10-Year Cost		**$1,203,000**	

Notes:

1. Unit costs based on Alta Planning + Design experience with similar bikeway systems, and "Trails for the 21st Century: Planning, Design and Management Manual for Multi-Use Trails," published by the Rails-to-Trails Conservancy, 2001.

Maintenance costs for the bikeway network will be relatively low due to the limited number of long Class I path facilities. The existing and recommended bikeway network is predominately made up of on-street bike lanes and routes

that will be treated as part of the normal roadway maintenance program. As part of the normal roadway maintenance program, extra emphasis should be put on keeping the bike lanes and roadway shoulders clear of debris and keeping vegetation overgrowth from blocking visibility or creeping into the roadway. The other typical maintenance costs for the bikeway network, as shown above in Table 7-2, include the maintenance of signage, striping and stencils.

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

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

7.4. FUNDING

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

7.4.1. Federal Funding Sources

7.4.1.1. The Safe, Accountable, Flexible, Efficient Transportation Equity Act (SAFETEA)

SAFETEA is the third iteration of the transportation vision established by Congress in 1991 with the Intermodal Surface Transportation Efficiency Act (ISTEA) and renewed in 1998 through the Transportation Equity Act for the 21st Century (TEA-21). Also known as the Federal Transportation bill, the $286.5 million SAFETEA bill was passed in 2005.

SAFETEA funding will be administered through the state (Caltrans or Resources Agencies) and regional planning agencies (SANDAG). Most, but not all, of the funding programs are oriented toward transportation versus recreation, with an emphasis on reducing auto trips and providing inter-modal connections. Funding criteria often includes completion and adoption of a bikeway master plan, quantification of the costs and benefits of the system (such as saved vehicle trips and reduced air pollution), proof of public involvement and support, CEQA compliance, and commitment of some local resources. In most cases, SAFETEA provides matching grants of 80 to 90 percent--but prefers to leverage other monies at a lower rate. SAFETEA continues to support many of the non-motorized programs that were contained in TEA-21, with the following new and existing non-

motorized programs (dollar amounts listed are totals for the entire federal transportation bill).

- Recreational Trails Program – $110 million over five years, to be dedicated to non-motorized trail projects.
- Safe Routes to School Program – A new program with $612 million over five years.
- Transportation, Community and System Preservation Program - $270 million over five years reserved for bicycle and pedestrian projects.
- Alternative Transportation in Parks and Public Lands - $96 million over the next four years reserved for promoting non-motorized transportation in national parks and other public lands.

7.4.1.2. Congestion Mitigation and Air Quality Improvement Program

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

7.4.1.3. Land and Water Conservation Fund (LWCF)

The Land and Water Conservation Fund, a program administered by the National Parks Service, allocates money to state and local governments to acquire new land for recreational purposes, including bicycle paths and support facilities such as bike racks. Funding allocated to California is administered by the State Department of Parks and Recreation. Eligible applicants include cities, counties and districts authorized to acquire, develop, operate and maintain park and recreation areas. For local agencies, funds are provided through a competitive selection process. There is a 50% local match requirement.

7.4.2. State Funding Sources

7.4.2.1. Bicycle Transportation Account

The State Bicycle Transportation Account (BTA) is an annual statewide discretionary program that is available through the Caltrans Bicycle Facilities Unit for funding bicycle projects. Available as grants to local jurisdictions, the emphasis is on projects that benefit bicycling for commuting purposes. The BTA program currently has $5 million available (statewide) per year. The local match must be a minimum of 10% of the total project cost.

7.4.2.2. National Recreational Trails Fund

The Recreational Trails Program provides funds for developing and maintaining recreational trails and trail-related facilities for both non-motorized and motorized recreational trail uses. Examples of trail uses include hiking, bicycling, in-line skating, equestrian use, and other non-motorized as well as motorized uses.

Recreational Trails Program funds may be used for:

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

7.4.2.3. Safe Routes to School (AB 1475/SB 1087)

The Safe Routes to School program is a recently created state program using funds from the Hazard Elimination Safety program. This program is meant to improve school commute routes by eliminating barriers to bicycle and pedestrian travel through rehabilitation, new projects, and traffic calming. In September of 2004, the passage of SB 1087 extended the Safe Routes to School program for 3 additional years.

7.4.3. Regional Funding Sources

7.4.3.1. TransNet

TransNet, San Diego County's program generated to raise funds for transportation improvements in the urbanized portion of the county, allocates $1 million dollars for bicycle paths and facilities. A one-half cent amount is attached to all sales tax transactions and placed into a fund for improvements throughout the county. The program, begun in 1988 and extends into 2008, has generated $3 billion dollars, of which one million is secured annually for bicycle paths and facilities. The program is guaranteed secured funding for an additional forty years, as it was successfully renewed under Proposition A in 2004. Local jurisdictions are awarded TransNet funds through a competitive grant process through SANDAG.

7.4.4. Local Funding Sources

7.4.4.1. TDA Article III (SB 821)

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

7.4.4.2. Mello-Roos Community Facilities Act

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

7.4.4.3. Impact Fees

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

Other opportunities for funding implementation of bicycle projects will appear over time.

Table 7-3
Funding Sources

Acronyms:	Jurisdictions for Carlsbad, California:
AQMD - Air Quality Management District Caltrans - California Department of Transportation CMAQ - Congestion Mitigation and Air Quality CTC - California Transportation Commission FHWA - Federal Highway Administration SANDAG – San Diego Association of Governments RTPA - Regional Transportation Planning Agency State DPR - California Department of Parks and Recreation (under the State Resources Agency) SAFETEA – Safe Accountable Flexible, Efficient Transportation Equity Act: A Legacy for Users	Caltrans - Caltrans District 11 SANDAG—San Diego Association of Governments Congressional District 50 Assembly District 74 Senate District 38 County District 5 Resources: Caltrans TEA-21 website - http://www.dot.ca.gov/hq/TransEnhAct/ FHWA – SAFETEA-LU – website - http://www.fhwa.dot.gov/reauthorization/

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

Grant Source	Due Date	Agency	Annual Total	Matching Requirement	Eligible Applicants	Eligible Bikeway Projects			Comments
						Commute	Recreation	Safety/Ed	
Conservation Lands Share	varies by RTPA	Caltrans, State Resources Agency	$11 m	"	RTPAs, counties, cities and non-profits.	X	X		Funding share for conservations lands category - acquisitions of scenic lands with high habitat conservation value.
Recreational Trails Program (RTP)	Oct. 1	State DPR	$3 m	20% match	jurisdictions, special districts, non profits with management responsibilities over the land		X		For recreational trails to benefit bicyclists, pedestrians, and other users; contact State Dept. of Parks & Rec. , Statewide Trails Coordinator, (916) 653-8803
Transportation and Community and System Preservation Pilot Program	pending	FHWA	$25 m nationwide	--	state, local, MPOs	--	--	--	Projects that improve system efficiency, reduce environmental impacts of transportation, etc. Contact K. Sue Kiser, Regional FHWA office, (916) 498-5009
Land & Water Conservation Fund (LWCF)	May 1st	State DPR	$7.7 m statewide	50%, including in-kind	Federal, state, city, county, eligible districts		X		Federally-funded. Projects that acquire and develop outdoor recreation areas and facilities. Contact Odel King, State DPR, (916) 653-8758
State Funding									
Safe Routes to School (SB 10)	May 31	Caltrans	$18 m	11.5% min.	city, county	X	X	X	Primarily construction program to enhance safety of pedestrian and bicycle facilities. Contact. Caltrans District 4, (510) 286-5598
Bicycle Transportation Account	December	Caltrans	$7.2 m	min. 10% local match on construction	city, county	X		X	State-funded. Projects that improve safety and convenience of bicycle commuters. Contact Ken McGuire, Caltrans, (916) 653-2750
Regional Transportation Improvement Program (RTIP)	December 15, odd years	RTPA	--	--	city, county, transit operators, Caltrans	X		X	Part of State Transportation Improvement Program (STIP), the main state program for transportation project funding. For "improving transportation within the region." RTPA must program funds.
Petroleum Violation Escrow Account (PVEA)	On-going	State Legislature	$5 m	--	city, county, transit operators, Caltrans	--	--	--	Bicycle and trail facilities have been funded with this program. Contact Caltrans Federal Resource Office, (916) 654-7287
Community Based Transportation Planning Demonstration Grant Program	Nov.	Caltrans	$3 m	20% local	MPO, RPTA, city, county	X			Projects that exemplify livable community concepts. Contact Leigh Levine, Caltrans, (916) 651-6012
Office of Traffic Safety Grants	Jan. 31	Office of Traffic Safety	--	--	state, city, county			X	Bicycle and pedestrian projects have been funded through this program. Contact OTS, (916) 262-0990

Grant Source	Due Date	Agency	Annual Total	Matching Requirement	Eligible Applicants	Eligible Bikeway Projects			Comments
						Commute	Recreation	Safety/Ed	
Local Funding									
Transportation Development Act (TDA) Article 3 (2% of total TDA)	Jan.	RPTA	--	--	--	--	--	--	
State Gas Tax (local share)	--	State Auditor Controller	--	--	--	X		X	Allocated by State Auditor Controller
Developer Fees or Exactions (developer fee for street improvements - DFSI)	--	Cities or County	--	--	--	--	--	--	Mitigation required during land use approval process
TransNet Sales Tax		SANDAG	$1 m		City, county				Contact Craig Scott, Project Manager, (619) 699-1926

8. COMPLIANCE WITH BTA REQUIREMENTS

The following table is provided for the convenience of Caltrans Staff, to outline the elements within the Carlsbad Bikeway Master Plan that comply with the Bicycle Transportation Account (BTA) requirements. Caltrans Bicycle Transportation Account (BTA) is a significant source of funding for bicycle facility construction. To become eligible for such funding, a jurisdiction must adopt a bicycle plan that meets certain BTA requirements. The following table briefly answers the required elements of the BTA and provides references to relevant tables, figures and sections within the Carlsbad Bikeway Master Plan Update document. In cases where the BTA requirement is not applicable, that is noted below.

Table 8-1
BTA Compliance Table for the Carlsbad Bikeway Master Plan

BTA 891.2	Required Plan Elements	Description of Compliance	Location
(a)	*The estimated number of existing bicycle commuters in the plan area and the estimated increase in the number of bicycle commuters resulting from implementation of the plan.*		
	Existing Bicycle Commuters	According to the 2000 Census, one hundred thirteen Carlsbad residents bicycled to work. This represents a 0.3% mode share. Factoring in estimated school, bike-transit and utilitarian riders, it is estimated that 853 Carlsbad residents bicycle to work, school, or shop. Census data is listed in Table 5-1: Journey to Work Data and non-commute bicycling estimations are explained in Table 5-3: Bicycle Commute and Air Quality Projections.	Chapter 5 Needs Analysis Pgs 5-1 to 5-10.
	Estimated Increase in Bicycle Commuters	Based on data from the 2000 Census, it is estimated that there are 3,110 potential bicycle commuters in Carlsbad. It is estimated that with implementation of this plan's recommendations, 25% of these commuters can be captured, bringing the total number of bicycle commuters to 891 and increasing the bike-to-work mode share to 2.5%. Calculations and model assumptions are discussed in Chapter 5: Needs Analysis and presented in Table 5-3: Bicycle Commute and Air Quality Projections on page 5-5 to 5-6.	Chapter 5 Needs Analysis Pgs 5-1 to 5-10.

BTA 891.2	Required Plan Elements	Description of Compliance	Location
(b)	*A map and description of existing and proposed land use and settlement patterns which shall include, but not be limited to, locations of residential neighborhoods, schools, shopping centers, public buildings, and major employment centers.*		
	Map and description of existing land use and settlement patterns	Carlsbad is characterized by concentrated, clustered development in conjunction with areas of open space. Open space, lagoons and parks are located throughout Carlsbad, with a concentration of open space in the eastern hills surrounding the airport. Much of the Carlsbad coast is public beach, with Carlsbad State Beach in the north and South Carlsbad State Beach in the south. Limited private development is located along the remaining coastline, including the highly visible Encina Power Plant on the southern shore of Agua Hedionda Lagoon at Carlsbad Boulevard. Please see Figure 4-1 City of Carlsbad General Plan Land Use Map on page 4-2 for a map of land uses...	Chapter 3: Existing Conditions. Pgs 3-1 to 3-13 Section 3.1.2 Land Uses Figure 4-1 Land Use Map pg 4-2
	Map and description of proposed land use and settlement patterns	There are no plans for major land use changes in Carlsbad.	Chapter 3: Existing Conditions. Pgs 3-1 to 3-13 Section 3.1.2 Land Uses Figure 4-1 Land Use Map Pg 4-2
	Locations of residential neighborhoods	Well-established neighborhoods occupy most of the area north of Agua Hedionda Lagoon. Single-family homes dominate the neighborhoods, mixed with some condominiums and apartment buildings. Newer neighborhoods occupy the southern and eastern portions of the City. Please see Figure 4-1 City of Carlsbad General Plan Land Use Map on page 4-2 for a map of land uses.	Chapter 3: Existing Conditions. Pgs 3-1 to 3-13 Section 3.1.2 Land Uses Figure 4-1 Land Use Map Pg 4-2
	Locations of schools	Schools and churches are scattered throughout the neighborhoods. Please also see Table 3-1 Elementary and Middle Schools in Carlsbad on page 3-2 for specific locations of schools.	Table 3-1 Elementary and Middle Schools Pg 3-2
	Locations of shopping centers	Commercial land uses are distributed throughout the City, but are primarily focused in the historic downtown area near the Pacific coast, Carlsbad Village, along the SR-78 and I-5 corridors, and along El Camino Real near La Costa Road. Industrial uses are located in the vicinity of Palomar Airport. Please see Figure 4-1 City of Carlsbad General Plan Land Use Map on page 4-2 for a map of land uses.	Figure 4-1 Land Use Map Pg 4-2
	Locations of public buildings	Please see Figure 3-1 Existing Bicycle Network on page 3-6 for locations of public buildings	Figure 3-1 Existing Bicycle Network Map Pg 3-6
	Locations of major employment centers	Please see Table 3-3: Ten Largest Employers in Carlsbad on page 3-3 and Figure 3-1 Existing Bicycle Network on page 3-6 for locations of the	Table 3-3: Ten Largest Employers Pg 3-3.

BTA 891.2	Required Plan Elements	Description of Compliance	Location
		ten largest employers in Carlsbad.	Figure 3-1 Existing Bicycle Network Map Pg 3-6
(c)	*A map and description of existing and proposed bikeways.*		
	Map of existing bikeways	The existing bicycle network map is shown on page 3-6.	Figure 3-1 Existing Bicycle Network Map Pg 3-6
	Description of existing bikeways	The City of Carlsbad has completed construction of a portion of the Coastal Rail Trail, approximately 3/4 miles in length, running from Tamarack Drive north to Oak Avenue. Carlsbad's existing bikeway network is comprised of a Class II on-street facility on nearly every major roadway in the City. Key existing Class II Bike Lane segments are present on El Camino Real, College Boulevard, Palomar Airport Road, Poinsettia Lane, Aviara Parkway, Melrose Drive and Rancho Santa Fe Road. Please also see: Table 3-4: Index of Existing City of Carlsbad Class I Bike Lanes Table 3-5: Index of Existing City of Carlsbad Class II Bike Routes Table 3-6: Index of Existing City of Carlsbad Class III Bike Routes	Section 3.2.2 through Section 3.2.3 Pgs 3-7 to 3-8 Pg 3-6 Pgs 3-9 Pg 3-10
	Map of proposed bikeways	A map of the proposed bikeway network is located on page 6-2.	Figure 6-1: Proposed Bikeway Network Pg 6-2
	Description of proposed bikeways	The top priority recommended bikeways are described in detail in Section 6.3, starting on page 6-13.	Section 6.3 Recommended Network Projects Pgs 6-13 to 6-30
(d)	*A map and description of existing and proposed end-of-trip bicycle parking facilities. These shall include, but not be limited to, parking at schools, shopping enters, public buildings, and major employment centers.*		
	Map and description of existing end-of trip bicycle parking facilities	A variety of existing bicycle parking facilities are located throughout Carlsbad, at locations such as civic buildings, schools, parks and commercial centers. Both the Carlsbad Village and Poinsettia Transit Stations have bicycle racks and bike lockers. Although the Carlsbad Village area is served by bicycle racks and lockers at the Carlsbad Village Transit Station, nearby streets, such as Grand Avenue and State Street, lack convenient sidewalk bicycle parking. Parks and other recreation facilities provide bicycle racks, restrooms and changing facilities. Parks are listed in Table 3-2 on page 3-2. Table 3-7 on page 3-11 shows Carlsbad's ten largest employers and the bicycle support facilities offered by each.	Table 3-2 Parks Page 3-2 Table 3-7 Bicycle Racks and Support Facilities at the Ten Largest Employers in Carlsbad Pg 3-11

BTA 891.2	Required Plan Elements	Description of Compliance	Location
	Map and description of proposed end-of-trip bicycle parking facilities	Bicycle parking facilities should be provided in commercial areas in Carlsbad. Locations in need of additional bicycle parking include the Village, La Costa, and beach areas. A systematic program to improve the quality and increase the quantity of bicycle end-of-trip facilities should be implemented in Carlsbad. This may include providing free inverted U-racks to businesses to replace the commonly used wheelbender design. The City of Carlsbad should adopt a bicycle parking ordinance to ensure that new bicycle parking facilities are installed with new development. See Section 6.2.1 Bicycle Parking Facilities on pages 6-3 to 6-4 and Appendix B: Sample Bicycle Parking Code on pages B-1 to B-15 for additional information.	Section 6.2.1 Bicycle Parking Facilities Pgs 6-3 to 6-4 Appendix B: Sample Bicycle Parking Code Pgs B-1 to B-15
(e)	*A map and description of existing and proposed bicycle transport and parking facilities for connections with and use of other transportation modes. These shall include, but not be limited to, parking facilities at transit stops, rail and transit terminals, ferry docks and landings, park and ride lots, and provisions for transporting bicyclists and bicycles on transit or rail vehicles or ferry vessels.*		
	Map and description of existing bicycle facilities for connections with other modes	The North County Transit District provides "Breeze" bus service throughout Carlsbad. The bus routes follow major arterial roadways, serving commercial and employment centers. Many North County Transit District buses feature bicycle racks that can carry up to four bicycles. Carlsbad is home to two Breeze bus transit stations, Carlsbad Village and Poinsettia. Carlsbad Village is served by three Breeze lines and Poinsettia is served by two. The North County Transit District also provides commuter rail service to the North County on the Coaster. The Coaster stops twice in Carlsbad, at Carlsbad Village Station and Poinsettia Station. The Coaster accommodates several bicycles on board each train without restriction	Section 3.6 Multi-modal Connections Pgs 3-12 to 3-13
		See Figure 3-1 Existing Bikeway Network, on page 3-6, for locations of bus stops.	Figure 3-1 Existing Bikeway Network Pg 3-6
	Map and description of proposed bicycle facilities for connections with other modes	The North County Transit District has initiated the Bicycle Facility Improvement Program aimed at increasing and upgrading the bicycle facilities on buses and at each transit station. This plan recommends that NCTD continue to allow bicycle access on all buses and trains. Bicycle travel to transit stops and stations should be enhanced in order to make the transfer between bicycle and transit travel more convenient NCTD should continue to ensure that sufficient secure bicycle parking is provided at transit stops.	Section 6.7.1 Multi-Modal Connections Pg 6-8
(f)	*A map and description of existing and proposed facilities for changing and storing clothes and equipment. These shall include, but not be limited to, locker, restroom, and shower facilities near bicycle parking facilities.*		
	Map and description of existing end-of-trip facilities	Table 3-7 on page 3-11 shows Carlsbad's ten largest employers and the bicycle support	Table 3-7 Bicycle Racks and Support

BTA 891.2	Required Plan Elements	Description of Compliance	Location
		facilities offered by each. Public parks, beaches, and civic buildings also serve as rest stops offering water, a place to sit or rest, and restroom facilities. Public park and recreational facilities in Carlsbad are shown in Table 3-2 on page 3-2. and shown on Figure 3-1. Currently there are no bicycle shops located within the City of Carlsbad; however a number of shops are located in the neighboring cities of Encinitas, Vista, San Marcos, and Oceanside. Please also see Section 3.2.7 Bicycle Support Facilities on pages 3-10 to 3-11.	Facilities at the Ten Largest Employers in Carlsbad Pg 3-11 Table 3-2 Park and Recreation Facilities in Carlsbad Pg 3-2 Section 3.2.7 Bicycle Support Facilities on pages 3-10 to 3-11
	Map and description of proposed end-of-trip facilities	Functional bike parking should be provided at public destinations, including shopping centers, community centers, parks, and schools. All bicycle parking should be in a secure, visible area that is convenient to the destination (near building entrances). Bicycle parking on sidewalks in commercial areas and along walkways of shopping centers should be provided according to specific design criteria, reviewed by merchants and the public, and installed as demand warrants. The City of Carlsbad should adopt a bicycle parking ordinance to ensure that new bicycle parking facilities are installed with new development. Locations in need of additional bicycle parking include the Village, La Costa, and beach areas. Please also see Section 6.2.1 Bicycle Parking and End of Trip Facilities on pages 6-3 to 6-4 and Appendix B: Sample Bicycle Parking Code on pages B-1 to B-15	Section 6.2.1 Bicycle Parking and End of Trip Facilities Pgs 6-3 to 6-4 Appendix B: Sample Bicycle Parking Code Pgs B-1 to B-15

(g) *A description of bicycle safety and education programs conducted in the area included within the plan, efforts by the law enforcement agency having primary traffic law enforcement responsibility in the area to enforce provisions of the Vehicle Code pertaining to bicycle operation, and compile existing data on the resulting effect on accidents involving bicyclists.*

Description of bicycle safety and education programs	In past years, the City of Carlsbad Police Department has offered educational programs such as bicycle rodeos to Carlsbad schoolchildren. Initially, rodeos were offered at every school site. The Police Department no longer offers rodeos due to a lack of interest from Carlsbad Schools. The Carlsbad Police Department's Crime Prevention Office does offer educational materials and is willing to provide customized training and education programs for schools if requested. Customized training and programs, through the Crime Prevention Office, are available to any group interested in bicycle and trail safety.	Section 3.5 Education and Enforcement Programs Pg 3-12
Law enforcement of Vehicle Code provisions pertaining to bicycle operations	The City of Carlsbad Police Department enforces bicycle and motorist traffic violations through its Traffic Division. The Department's Traffic Division consists of motor officers, collision investigators and a parking enforcement officer. The City of	Section 3.5 Education and Enforcement Programs Pg 3-12

BTA 891.2	Required Plan Elements	Description of Compliance	Location
		Carlsbad Police Department also has a bicycle patrol unit which provides patrol services for business districts, beaches and other areas.	
	Effect of programs on accidents involving cyclists	Data has not been collected regarding the effects of educational programs and law enforcement on bicycle-related accidents.	Section 3.5 Education and Enforcement Programs Pg 3-12

(h) *A description of the extent of citizen and community involvement in development of the plan.*

Description of public involvement in developing the plan	The public outreach process for this project included a survey of community members. Surveys were distributed through local bicycle groups, Carlsbad's top fifty employers, local bicycle shops, and on the city's website. Sixty-seven responses were received. The surveys were intended to gather input on existing bicycling conditions and attitudes about bicycling in Carlsbad. A summary of survey responses is provided in Appendix D to this plan.	Section 5.7 Citizen and Community Involvement Pgs 5-10 to 5-11 Appendix D: Public Outreach Pgs D-1 to D-7

(i) *A description of how the bicycle transportation plan has been coordinated and is consistent with other local or regional transportation, air quality, or energy conservation plans, including, but no limited to, programs that provide incentives for bicycle commuting.*

Description of coordination and consistency with other local and regional plans	Chapter 4: Planning and Policy Context provides an overview of relevant local, state and federal plans and demonstrates consistency with these plans. This plan meets the City of Carlsbad's General Plan Circulation Element goal to "promote, encourage and accommodate a variety of transportation modes as alternatives to the automobile." Several regional bikeways located within Carlsbad are identified in San Diego's RTP: Mobility 2030. These bikeways have been included in this plan as proposed projects. This Bicycle Master Plan furthers Mobility 2030's overall goal of converting motor vehicle trips to bicycle trips, thereby reducing motor vehicle trips in the region. The reduction in vehicle trips translates to a reduction in vehicle emissions, thereby ensuring that this plan is consistent with San Diego Air Quality Basin goals.	Chapter 4: Planning and Policy Context Pgs 4-1 to 4-6

BTA 891.2	Required Plan Elements	Description of Compliance	Location
	Programs that provide incentives for bicycle commuting	This plan outlines several recommendations for encouraging people to bicycle in Carlsbad. Recommendations include: facilitating the development of employer incentive programs through contests and education; developing incentives for recreational and utilitarian bicycling by working with businesses; establishing a bicycle clunker parts and repair program; establishing community bikeway adoption; holding bike fairs and races; producing a local bikeways map; continue to support bike-to-work and school days; and marketing the Bicycle Master Plan. See Section 6.1.9 on pages 6-10 to 6-12 for more detailed descriptions of these plans.	Section 6.1.9 Encouragement Programs Pg 6-10 to 6-12.
(j)	*A description of the projects proposed in the plan and a listing of their priorities for implementation.*		
	Description of proposed projects	The top priority recommended bikeways are described in detail in Section 6.3 Recommended Network Projects, starting on page 6-14.	Project Sheets Pgs 6-14 to 6-28
	Priority list of proposed projects	A summary list of all recommended bikeway facilities, with segment lengths and cost estimates is provided in Chapter 7, Implementation.	Table 7-1 Construction Cost of Long-Term Recommended Bikeways Pages 7-2 to 7-3
(k)	*A description of past expenditures for bicycle facilities and future financial needs for projects that improve safety and convenience for bicycle commuters in the plan area.*		
	Description of past expenditures	Between 2003 and 2006 the City of Carlsbad implemented approximately $.9 million of bikeway projects. An annual breakdown of expenditures is provided in Table 3-8 Past Bicycle Program Expenditures on page 3-13.	Table 3-8 Past Bicycle Program Expenditures Pg 3-13
	Estimated future financial needs	The cost of the long-term recommended projects is estimated to be about $2 ,440,000 for Class I projects, $40 ,000 for Class II Bike Lane projects, $2 ,000 for Class III Bike Routes projects, and $15,000 for network facility enhancement projects, for a combined total system build out cost of about $2.6 million. Cost estimates include estimated cost of construction, administration and engineering design, utilities relocation, and environmental document and mitigation. Cost breakdowns by proposed facility are listed in Table 7-1 on pages 7-2 to 7-3. Detailed cost breakdowns for each project are provided in Appendix E. Annual operations and maintenance costs are estimated to be $20,300. A cost breakdown by Bikeway Class is provided in Table 7-2 on page 7-3.	Table 7-1 Construction Cost of Long-Term Recommended Bikeway Projects Pgs 7-2 to 7-3 Appendix F: Project Cost Estimates Table 7-2 Annual Operations and Maintenance Cost Estimates for Recommended Bikeway Network Pg 7-3

This page intentionally left blank

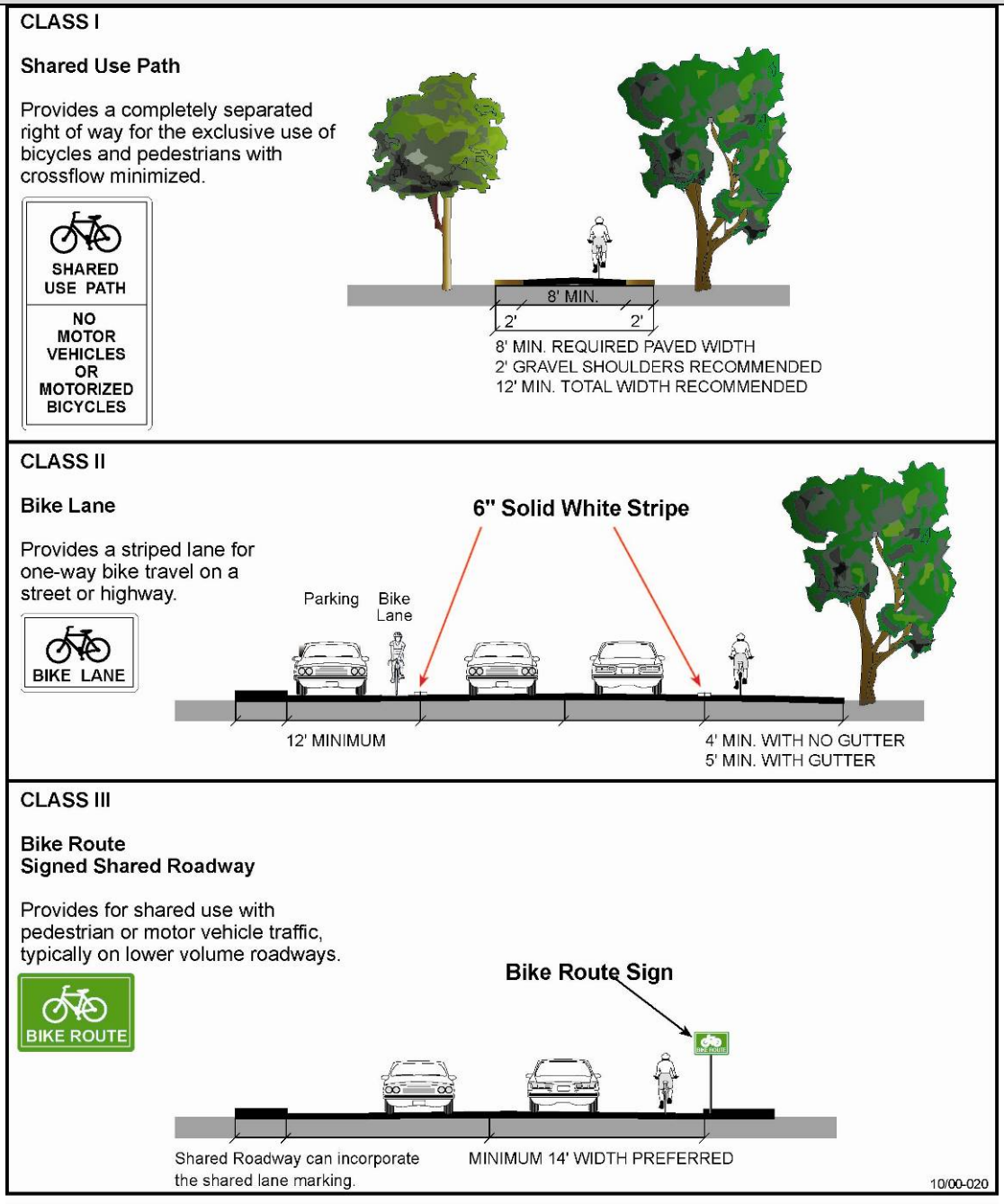
APPENDIX A: BIKEWAY DESIGN GUIDELINES

The design guidelines presented in this chapter are a combination of minimum standards outlined by the California Highway Design Manual's Chapter 1000 (Chapter 1000) and the California Manual on Uniform Traffic Control Devices (California MUTCD), as well as supplemental design solutions tailored to the needs of the City of Carlsbad. The minimum standards and guidelines presented by Chapter 1000 and the California MUTCD provide basic information about the design of bicycle and pedestrian facilities, such as minimum standards for Class I paths and associated signage. The supplemental guidance in this chapter provides additional design recommendations for the Carlsbad Bikeway Network, such as recommended wayfinding signage.

A.1. CALTRANS BIKEWAY CLASSIFICATION OVERVIEW

Description
Caltrans has defined three types of bikeways in Chapter 1000 of the Highway Design Manual: Class I, Class II, and Class III. Minimum and recommended standards for each of these bikeway classifications is shown below. The existing Carlsbad Bikeway Network includes segments of all three types of bikeways described below.

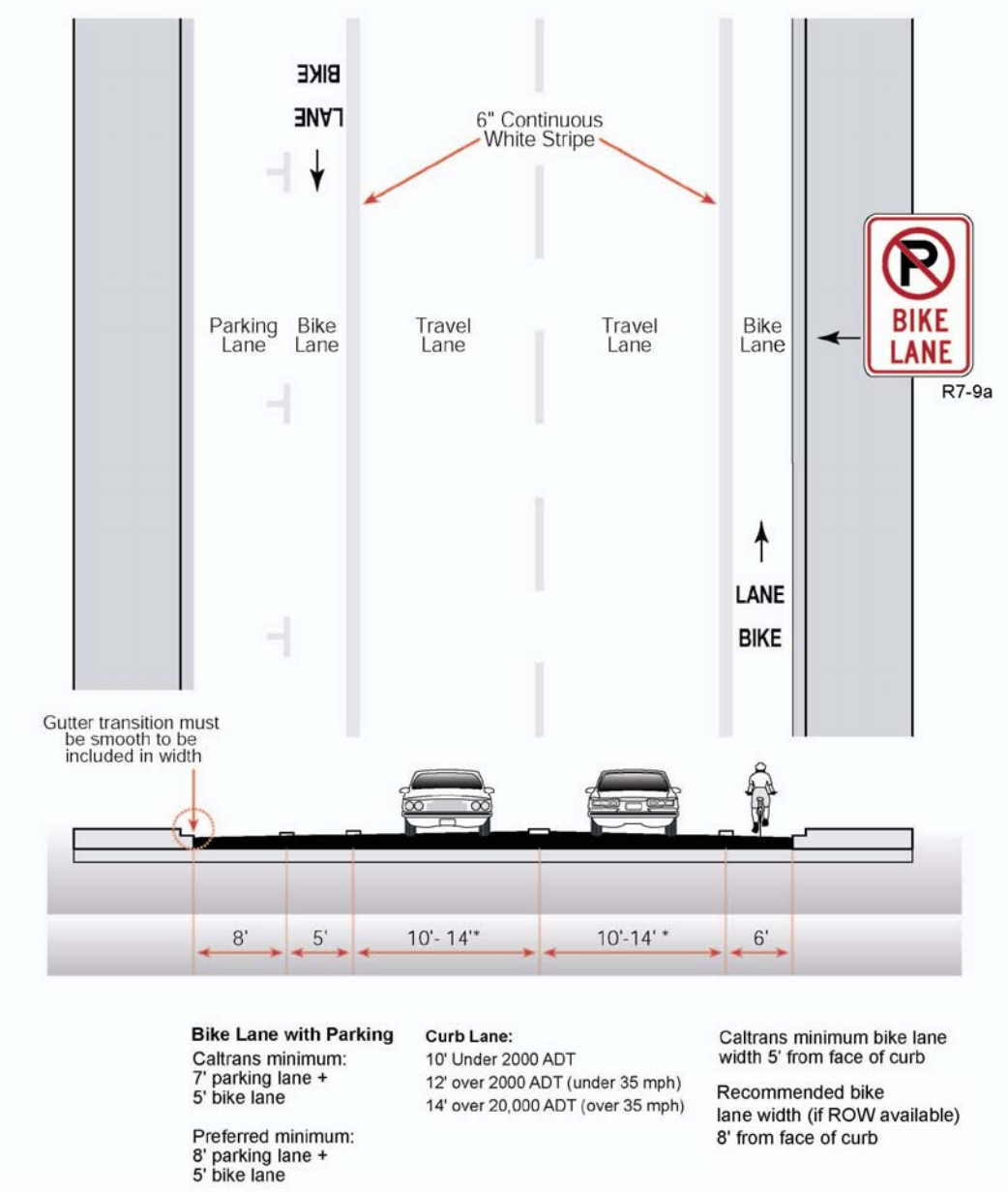
Graphic



A.2. CLASS II BIKE LANE MINIMUM STANDARDS

Description
Chapter 1000 of the Caltrans Highway Design Manual provides standards for bicycle facilities planning and design. These standards outline minimum dimensions, proper pavement markings, signage and other design treatments for bicycle facilities. Refer to Caltrans website: www.dot.ca.gov/hq/oppd/hdm/hdmtoc.htm.

Graphic



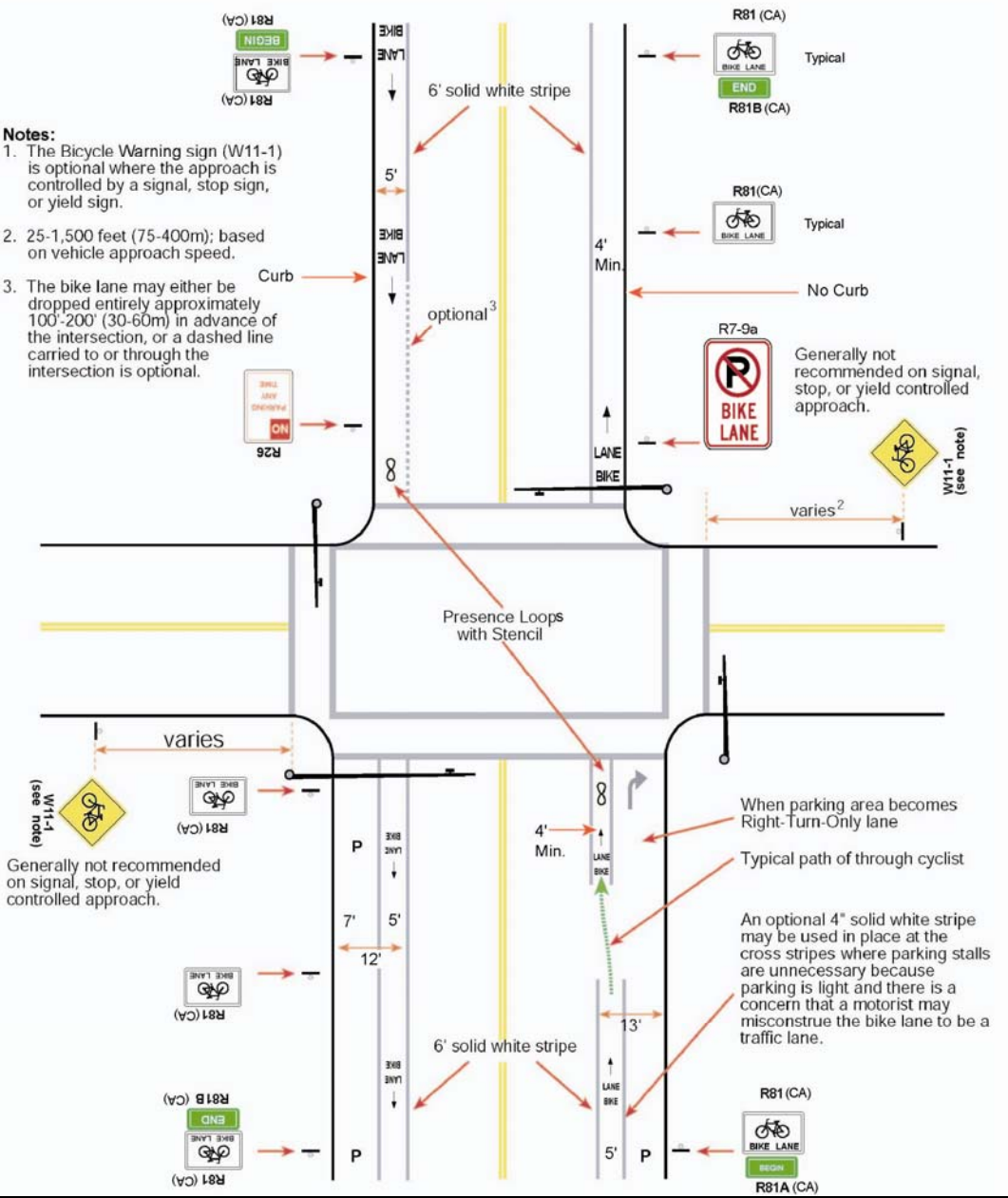
Summary of Standards

- Bicycle lanes shall be one way facilities, running with the direction of traffic.
- Where on-street parking is allowed, bicycle lanes must be striped between the parking area and the travel lanes.
- Width of bicycle lane:
    1. Without an existing gutter, bicycle lanes must be a minimum of 4 feet wide.
    2. With an existing gutter, bicycle lanes must be a minimum of 5 feet wide.
    3. Where on-street parking stalls are marked and bicycle lanes are striped adjacent to on-street parking, bicycle lanes must be a minimum of 5 feet wide.
    4. Where on-street parking is allowed but stalls are not striped, bicycle lanes must be a minimum of 12 feet wide. Depending on the type and frequency of traffic, wider bicycle lanes may be recommended.
- Bicycle lane striping standards:
    1. Bicycle lanes shall be comprised of a 6 inch solid white stripe on the outside of the lane, and a 4 inch solid white stripe on the inside of the lane.
    2. Bicycle lanes must never be delineated with raised barriers.
    3. The inside 4 inch stripe of the bicycle lane should be dropped 200 feet prior to any intersection where right turns are permitted, and the outside 6 inch stripe should be dashed in this location. Bicycle lanes are generally not marked through intersections.
    4. Bicycle lanes shall never be striped to the right of a right-hand turn lane
- Bicycle lane signage standards:
    1. The R81 (CA) bicycle lane sign shall be placed at the beginning of all bicycle lanes, on the far side of arterial street intersections, at all changes in direction and at a maximum of .6 mile intervals.
    2. Standard signage is shown in Chapter 9 of the California MUTCD.

A.3. TYPICAL CLASS II BIKE LANE SIGNING AT A SIGNALIZED INTERSECTION

Description
This treatment provides a design for where a roadway with Class II bike lanes intersects with a road at a signalized intersection.

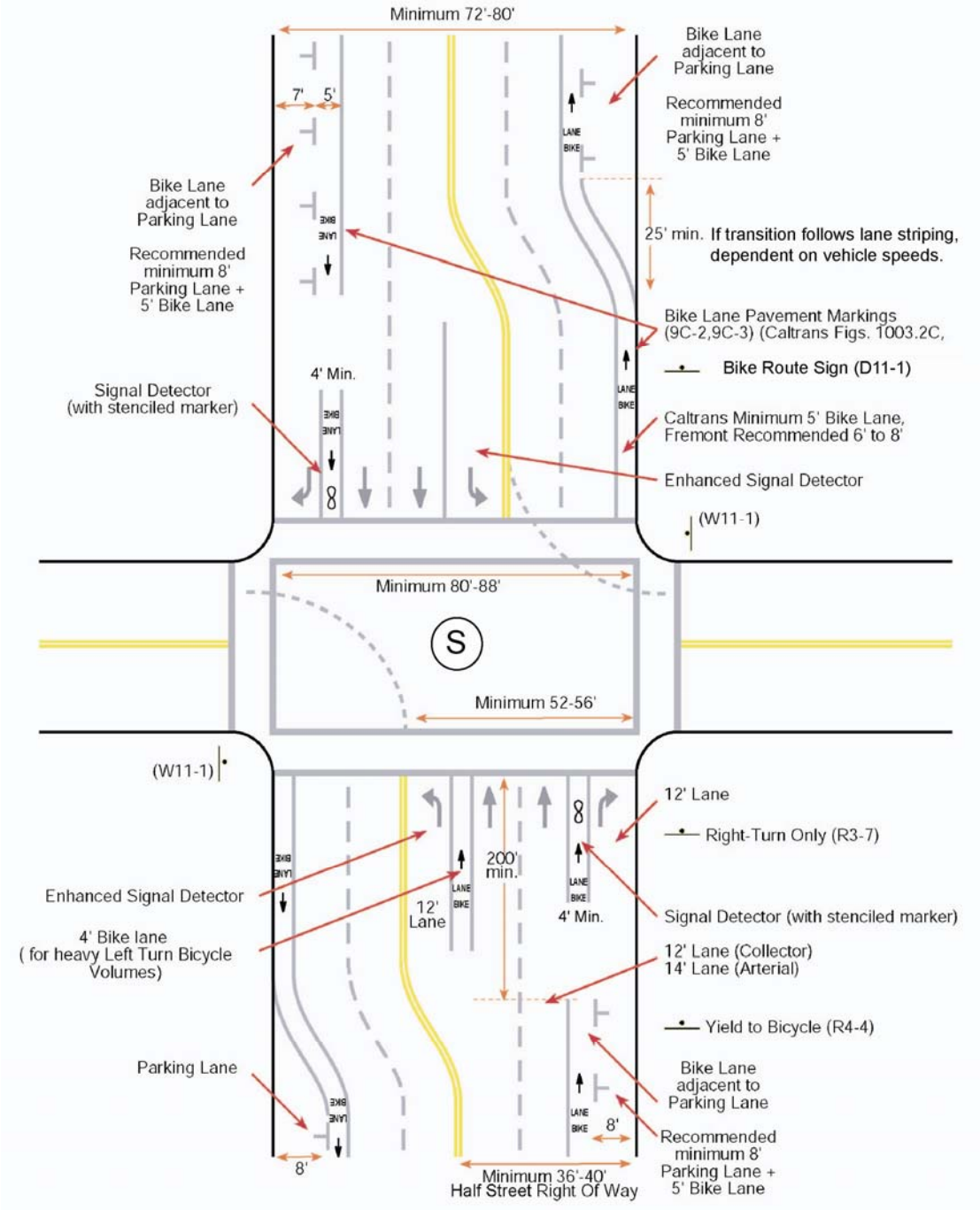
Graphic



A.4. DEDICATED BIKE TURN LANES AT AN INTERSECTION

Description
This treatment provides a design for bicycle turn lanes at signalized intersections along a Class II facility.

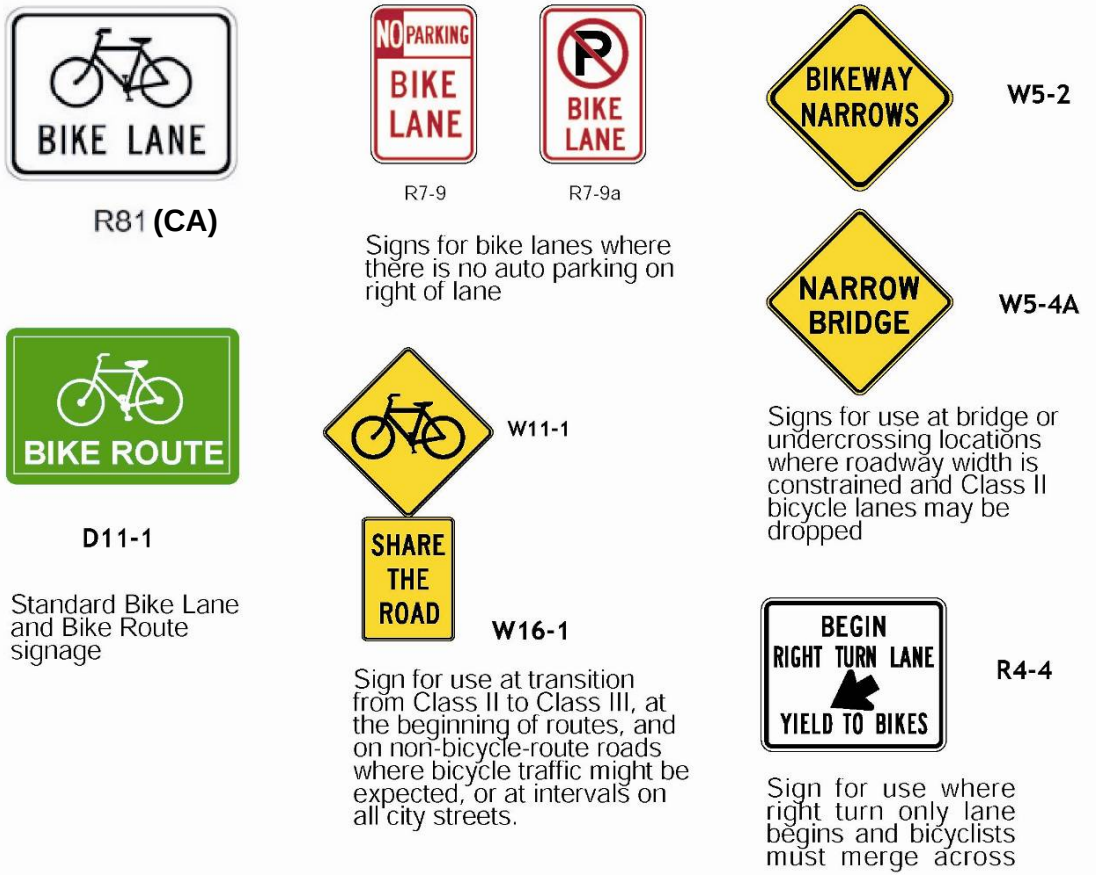
Graphic



A.5. ON-STREET BIKEWAY REGULATORY & WARNING SIGNAGE

Description
Signage for on-street bikeways includes standard BIKE LANE and BIKE ROUTE signage, as well as supplemental signage such as SHARE THE ROAD and warning signage for constrained bike lane conditions.

Graphic



Figures are from the California MUTCD.

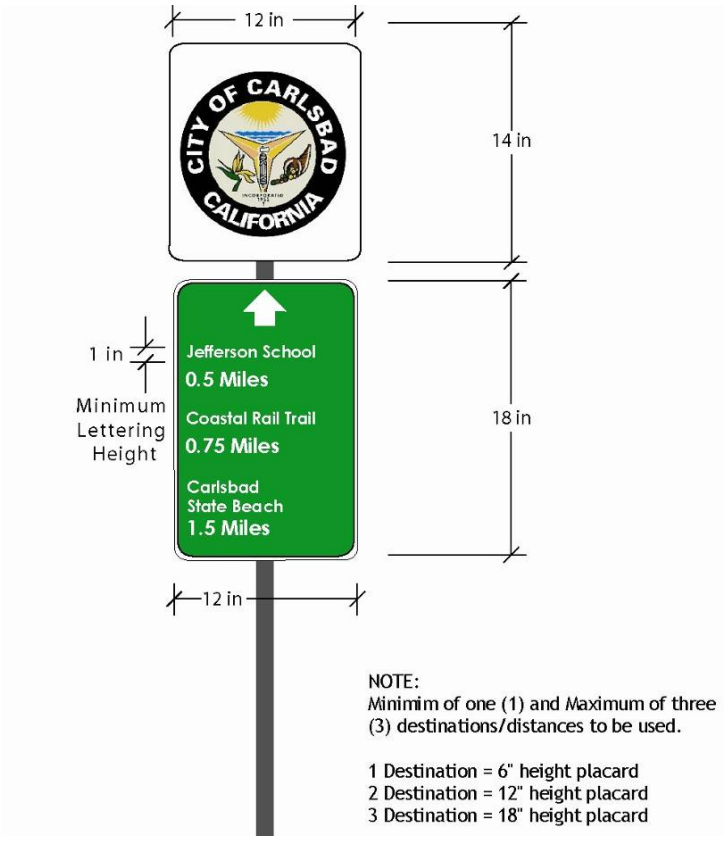
Potential Applications
Various situations, specific to each site. The City should install SHARE THE ROAD signs along all Class III Bike Routes in addition to standard BIKE ROUTE signage. SHARE THE ROAD signs may be installed at one-half mile intervals along the designated route.

Guidelines
Signage should be installed on existing signposts if possible, reducing visual clutter along the path or roadway.

A.6. CARLSBAD BIKEWAY NETWORK SUGGESTED WAYFINDING SIGNAGE

Description
Destination signage acts as a "map on the street" for cyclists. Destination signage can not only direct cyclists to locations, but provide mileage and draw attention to local destinations. The destination signage shown below indicates destinations along the route, and may include mileage. The city's Coastal Rail Trail signage, also shown, provides a sample of the type of signage plate that could be attached to existing "Bike Lane" and "Bike Route" signs to enhance the network.

Graphic



Existing Coastal Rail Trail signage plate along the on-street bikeway network

Potential Applications
Along bicycle network streets near major destinations on the Carlsbad Bikeway Network.

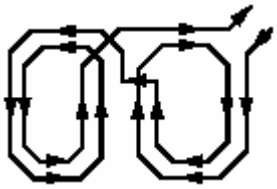
Guidelines
1. Signage should be focused along major routes near key destinations. Signage should be oriented toward both commuter and recreational cyclists. 2. Destination signage should be easy to read. 3. Signage should be installed on existing Bike Route or Bike Lane signs where possible to avoid sign clutter.

A.7. BICYCLE LOOP DETECTORS

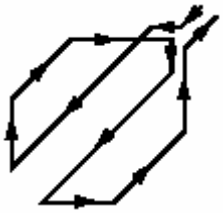
Description
Bicycle loop detectors activate traffic signals at intersections, similar to standard loop detectors used for auto traffic. Where bicycle loop detectors are not present, bicyclists are forced to wait for a motor vehicle to trigger a signal; where motor vehicle traffic is infrequent, they may cross against a red signal. Bicycle loop detectors should be identified with pavement markings that show cyclists where to position themselves to trigger the traffic signal.

Graphic

Bicycle-Sensitive Loop Detector Examples



Quadrupole Loop – Type "C"
Detects most strongly in center
Sharp cut-off sensitivity
Used in bike lanes



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

Potential Applications
At signalized intersections along on-street segments of the Carlsbad Bikeway Network.

Guidelines

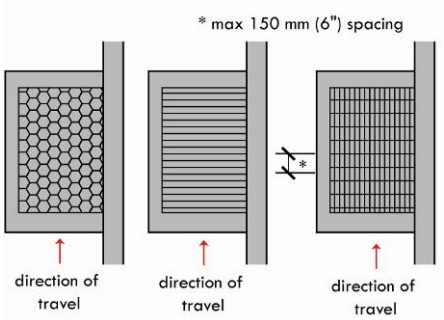
1. Pavement markings should identify proper cyclist position above the loop detector.
2. Loop detectors should provide adequate time for cyclists to cross the intersection, keeping in mind the slower travel speed (10-15 mph) of bicyclists.

A.8. DRAINAGE GRATES AND UTILITY COVERS

Description

Improper drainage grates and utility covers can catch bicycle tires and cause bicyclists to lose control. Because of this, cyclists may veer into traffic lanes to avoid grates and utility covers. Properly designed grates and utility covers allow cyclists to maintain their direction of travel without catching tires or being forced into travel lanes.

Graphic



Example of bicycle friendly drainage grates.

Potential Applications

Wherever drainage grates or utility covers are located along on-street segments of the Carlsbad Bikeway Network.

Guidelines

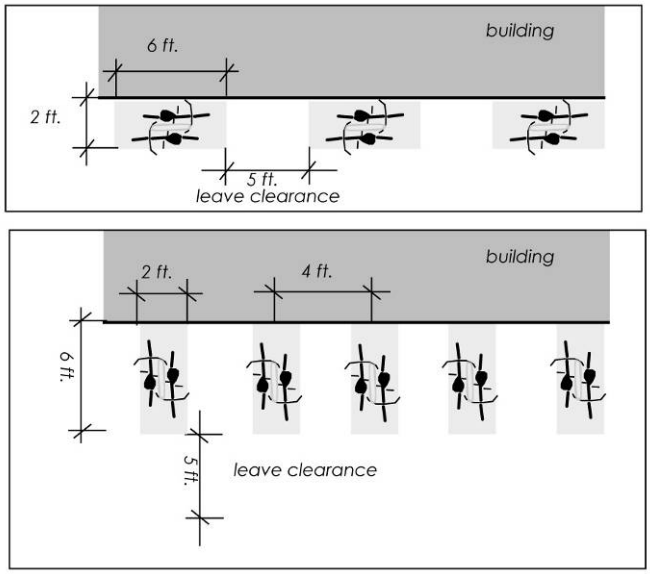
1. Grates must feature crossbars or a grid which prevents bicycle tires from catching or slipping through, as shown above.
2. Metal covers used in construction zones must have a non-slip coating.

A.9. BICYCLE RACKS

Description

Secure bicycle parking is an essential element of a functional bicycle network. Bicycle racks are a common form of short-term secure bicycle parking and should be installed and maintained in various locations in Carlsbad such as shopping centers, recreation and beach areas and schools.

Graphic



Potential Applications

Throughout the Carlsbad Bikeway Network, with priority given to significant destinations such as parks, schools, shopping centers, transit hubs and job centers.

Guidelines

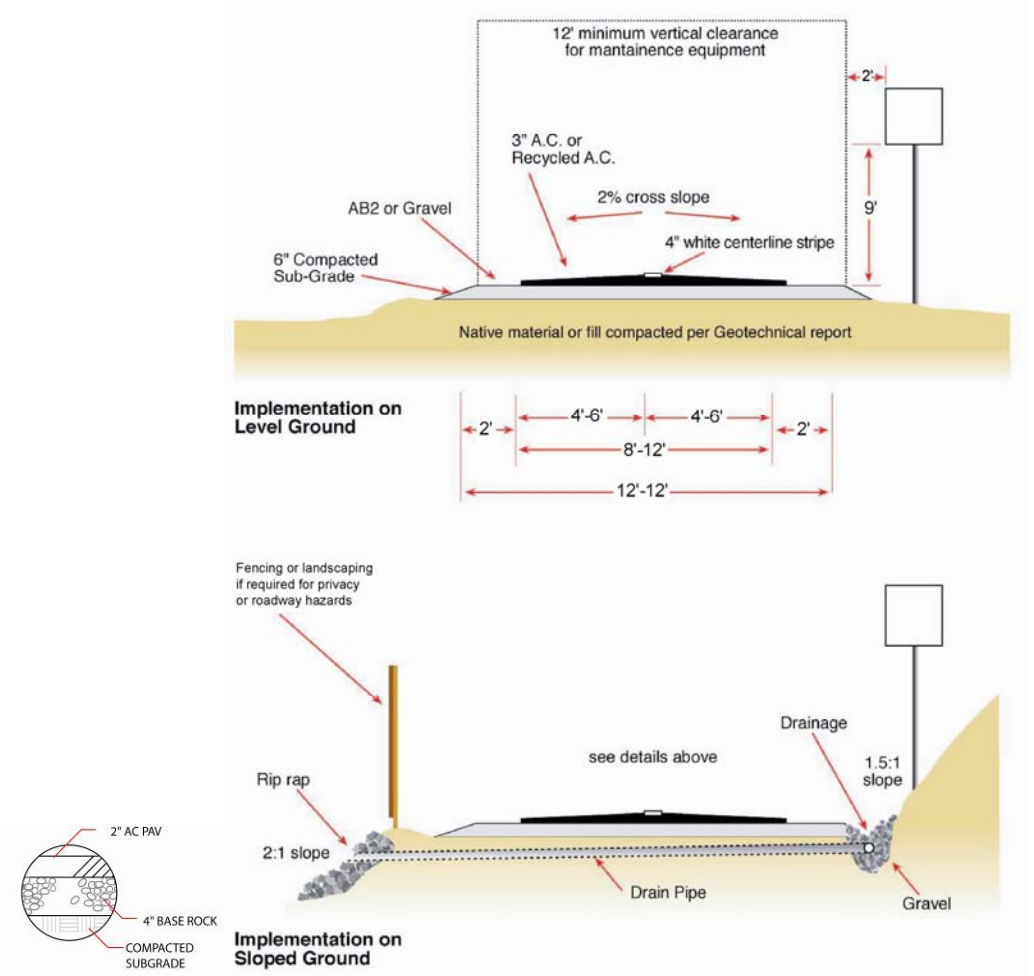
1. The rack element (part of the rack that supports the bicycle) should keep the bicycle upright by supporting the frame in two places without the bicycle frame touching the rack. The rack should allow one or both wheels to be secured.
2. A standard inverted-U style rack (shown above) is a simple and functional design that takes up minimal space on the sidewalk and is easily understood buy users. Most rack vendors offer the inverted-U design
3. In general, avoid use of multiple-capacity "wave" style racks. Users commonly misunderstand how to correctly park at wave racks, placing their bikes parallel to the rack and effectively limiting capacity to 1 or 2 bikes.
4. Position racks so there is enough room between adjacent parked bicycles. If it becomes too difficult for a bicyclist to easily lock their bicycle, they may park it elsewhere and the bicycle capacity is lowered. A row of inverted "U" racks should be situated on 30" minimum centers.
5. Empty racks should not pose a tripping hazard for visually impaired pedestrians. Position racks out of the walkway's clear zone.
6. When possible, racks should be in a lighted, high visibility, covered area protected from the elements. Long-term parking should always be protected.

A.10. TYPICAL CLASS I PATH DESIGN DETAILS

Description

In order to accommodate both bicyclists and pedestrians, Class I paths should be designed to the minimum standards shown below. In locations with high use, or on curves with limited sight distance, a yellow centerline should be used to separate travel in opposite directions. High use areas of the trail should also provide additional width up to 12 feet -16 feet as recommended below. Lighting should be provided in locations where evening use is anticipated or where paths cross below freeways or other structures.

Graphic



Potential Applications

All Class I Paths.

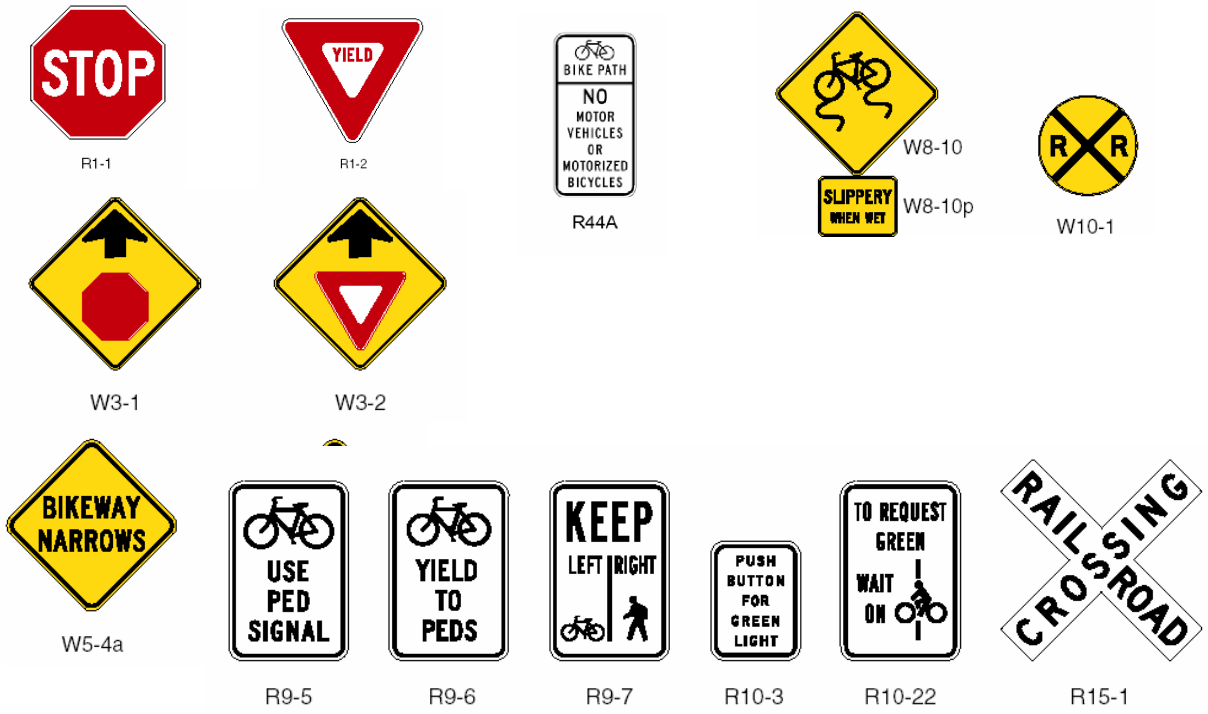
Guidelines

1. Paths should be constructed with adequate sub grade compaction to minimize cracking and sinking, and should be designed to accommodate appropriate loadings, including emergency vehicles.
2. A 2% cross slope shall be provided to ensure proper drainage.

A.11. CLASS I PATH REGULATORY AND WARNING SIGNAGE

Description
Signage for Class I paths includes warning signage for path-roadway crossings, destination and way finding signage for path users, signage to assist path users in crossing roadways, and signage to encourage proper use of path facilities. Striping along paths can help separate different types of path users, can separate opposing flows of pathway traffic, and can provide information to path users about upcoming roadway crossings or obstacles.

Graphic



Figures are from California MUTCD.

Potential Applications
Various situations, specific to each site.

Guidelines
Signage should be installed on existing signposts if possible, reducing visual clutter along the path or roadway.

This page intentionally left blank

APPENDIX B: SAMPLE BICYCLE PARKING ORDINANCE LANGUAGE

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

PALO ALTO MUNICIPAL CODE

BICYCLE PARKING REQUIREMENTS

Section 18.83.050

Table 1. Minimum Off-Street Parking Requirements

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

Table 1. Minimum Off-Street Parking Requirements

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

Table 1. Minimum Off-Street Parking Requirements

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

Table 1. Minimum Off-Street Parking Requirements

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

Table 1. Minimum Off-Street Parking Requirements

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

Table 1. Minimum Off-Street Parking Requirements

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

Table 1. Minimum Off-Street Parking Requirements

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

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

DESIGN STANDARDS: BICYCLE PARKING FACILITIES

Section 18.83.080

(a) Classifications of Bicycle Parking Facilities.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

  Paving of bicycle parking areas is required.

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

- Signage of Bicycle Parking Facilities.

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

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

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

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

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

EMPLOYEE SHOWER FACILITY REQUIREMENTS

Section 18.49.040

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

Use	Gross Floor Area of New Construction	Number of Showers Required
Medical, professional, general business offices, financial services, business and trade schools and general business services.	0-9,999 sq. ft.	No requirement
	10,000-19,999 sq. ft.	1
	20,000-49,999 sq. ft.	2

	50,000 sq. ft. and up	4
Retail, personal and eating and drinking services.	0-24,999 sq. ft	No requirement
	25,000-49,999 sq. ft.	1
	50,000-99,999 sq. ft.	2
	100,000 sq. ft. and up	4

SAN FRANCISCO PLANNING CODE

BICYCLE PARKING AND SHOWER REQUIREMENTS

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

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

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

(a) **Definitions.**

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

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

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

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

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

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

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

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

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

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

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

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

(b) **Location of Facilities.**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(g) **Miscellaneous Requirements.**

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

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

(a) **Definitions.**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(a) **Definitions.**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

This page intentionally left blank

APPENDIX C: CONSTRUCTION ZONE TREATMENTS

Construction zones are difficult environments in which to manage traffic. Priorities exist to maintain vehicular traffic flow, to maintain transit service at an acceptable level, to maintain pedestrian access to businesses and the street, and to maintain bicycle traffic flow to minimize inconveniences to riders. Issues related to bicycles in construction zones must not be overlooked. Some of these issues are discussed here. They include the following:

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

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

LANE CLOSURES

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

A complete road closure affects bicyclists in a similar manner as motorists. If an entire roadway segment is closed for construction activities, a sufficient detour route should be provided for all modes of travel. The implementation of these detour routes, however, should take into consideration attributes of alternative routes as they pertain to bicycles versus motor vehicles. The same detour route may not be suitable for both modes. For example, a motorist detour may traverse several hills on a major thoroughfare. A bicycle detour might be provided on another set of streets that minimizes changes in elevation that impact bicyclists more than motorists. Maintaining a direct route should be a primary goal when bicycles are detoured.

GUIDELINES

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

- Continuing a bike lane through a construction zone

  Efforts shall be made to re-create the bike lane to the left of the construction zone if enough space exists to do so. The standard width of a bike lane is five feet.

  Standard construction zone signs (see California MUTCD) are part of the recommended design, including:

W21-4A	Road Work Ahead
W20-5	Right Lane Closed
W4-2	Lane Shift, Left Sign
W11-1	Bicycle Warning Sign
W16-1	Share The Road

  The bicycle warning sign is recommended in combination with W4-2 and again in combination with W16-1. This effectively warns motorists of the presence of bicycles at the lane drop and again where the work zone begins.

  Construction barrels equipped with flashers delineate the edge of the construction zone and also indicate the outer edge of the bike lane.

- Transitioning a bike lane to a wide travel lane in a construction zone

  Where there is insufficient space to carry a bike lane through a construction zone, a wide travel lane adjacent to the construction zone should be considered. The travel lane width should be 14 to 15 feet. Bicycles share the travel lane with motor vehicles.

  Standard construction zone signs (see California MUTCD) are part of the recommended design, including:

W21-4A	Road Work Ahead
W20-5	Right Lane Closed
W4-2	Lane Shift, Left Sign
W11-1	Bicycle Warning Sign
W16-1	Share The Road

  The bicycle warning sign is recommended in combination with W4-2 and again in combination with W16-1. This effectively warns motorists of the presence of bicycles at the lane drop and again where the work zone begins.

  Construction barrels equipped with flashers delineate the edge of the construction zone and also indicate the outer edge of the bike lane. The barrels delineating the outer bike lane edge do not carry through the work zone.

- Transitioning a bike lane to a standard travel lane in a construction zone

  Where there is insufficient space to provide a wide travel lane adjacent to the construction zone, then a standard 12-foot wide travel lane should be provided. Bicycles share the travel lane with motor vehicles. The rules of overtaking and passing apply in this case as in similar situations where only one travel lane is provided in one direction.

  Standard construction zone signs (see California MUTCD) are part of the recommended design, including:

W21-4A	Road Work Ahead
W20-5	Right Lane Closed
W4-2	Lane Shift, Left Sign
W11-1	Bicycle Warning Sign
W16-1	Share The Road

  The bicycle warning sign is recommended in combination with W4-2 and again in combination with W16-1. This effectively warns motorists of the presence of bicycles at the lane drop and again where the work zone begins.

  Construction barrels equipped with flashers delineate the edge of the construction zone and also indicate the outer edge of the bike lane. The barrels delineating the outer bike lane edge do not carry through the work zone.

- For a complete roadway closure

  A sufficient detour route shall be outlined with adequate signage similar to that provided for motor vehicle traffic.

  Consideration should be given to alternative detour routes that minimize vertical transitions and situations where bicyclist safety may be an issue.

  A bicycle detour route different from the one outlined for motor vehicle traffic may be appropriate in cases where significant grades or levels of traffic and/or traffic speeds make the route less than desirable for the average bicyclist.

  Signage specific to bicyclists shall be installed on the detour route to ensure proper guidance through the roadway closure.

SIGNAGE

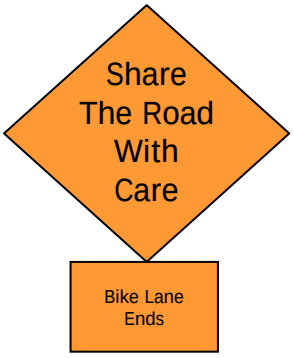
Signage is a critical component of construction activities. Due to the temporary nature of roadway work, information regarding temporary detours and reduced capacity do not appear on conventional maps. Aside from public notification through various media, roadside signage and signals are the only methods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

Signage alerting roadway users of construction activities can provide for motorists and bicyclists alike. However, signage specific for bicyclists should be employed if the circumstances warrant it. Such circumstances may include a detour route that is different for bicyclists and motorists, loss of a bike lane, or reductions in the travel way width that require bicyclists to share a travel lane with motor vehicles.

Another issue with signage is its placement along a roadway. It is often the case that typical orange construction signs, which are large compared to the size of a bicycle, are placed either squarely in a bike lane or in the riding area of a wide curb lane. Sign placement should be made with bicyclists and pedestrians in mind. Because many sidewalks are directly adjacent to the roadway, placing signage on sidewalks would obstruct the pedestrian pathway and may not be visible to motorists. Sign placement can present challenges when construction activities take place.

GUIDELINES

- The City shall place signage related to construction activities in a location that does not obstruct the path of bicycles or pedestrians, including bicycle lanes, wide curb lanes, or sidewalks.
- Signage related to bicycle travel shall be included on all bikeways where construction activities occur. Signage shall also be provided on all other roadways where bicycle travel is likely to occur.
- Signage that increases motorist awareness of bicyclists through construction zones shall be used wherever possible on bikeways and other roadways on which bicyclists travel.
- Suggested non-standard signage to be used include the following signage now being used in the City of Denver, Colorado and the County of Clark, Nevada, respectively. These non-standard signs are not found in California MUTCD or Caltrans manuals:



Among others, signs that may be used in coordination with construction activities include those found on the following page. These include standard signage from the Manual of Uniform Traffic Control Devices. Some of these signs may be used in conjunction with one another in order to enhance the visibility of and provide enhanced guidance to bicyclists through construction zones and detours.

ROADWAY SMOOTHNESS AND COMPACTION

Roadway surface is a critical issue for bicyclists. As mentioned previously, bicycles are much more sensitive to subtle changes in roadway surface than are motor vehicles. Various pavement materials are used to pave roadways, and some are smoother than others. Compaction is also an important issue after trenches and other construction holes are filled. Uneven settlement after trenching can affect the roadway space nearest the curb where bicycles travel. Sometimes compaction is not achieved to a satisfactory level, and an uneven pavement surface can result due to settling over the course of days or weeks.

GUIDELINES

- The surface of a roadway open to bicycle travel should be smooth, free of potholes, and the pavement edge uniform.
- Pavement shall be maintained so ridge buildup does not occur at the gutter-to-pavement transition or adjacent to railway crossings.
- City officials should inspect the pavement two to four months after trenching construction activities are completed to ensure that excessive settlement did not occur.

ENFORCEMENT OF GUIDELINES AND INSPECTION

Regulations and policies are only as good as the enforcement that accompanies them. Sometimes inspections do not occur during construction and/or after construction is completed. Insufficient resources can affect the ability of a municipality to conduct proper inspections. In order to ensure that proper construction procedures are followed, it is imperative that inspectors are used to field inspect construction sites while construction activities are occurring and again once they have been completed. When roadway surfaces are not inspected, the surface may be left in an unacceptable condition, such as in an uneven or concave fashion, for months or years. Because these conditions are more likely to occur in the portion of the roadway where bicyclists travel, it is a critical issue for bicyclists.

One of the most important issues related to construction activities is enforcement. Often it is difficult to manage a team of contractors and subcontractors on a given project. The contractor is responsible for the subcontractors' work, and the public agency has very little interaction with subcontractors. The only way for an agency to ensure that procedures and guidelines are being followed is through periodic inspection. Some contractors neglect to draft a traffic control plan and/or implement one as required. Enforcement is certainly a key issue to ensure that proper regulations are followed during construction activities.

GUIDELINES

- A traffic control plan that adequately addresses the needs of bicycle traffic through a construction zone shall be made and approved by the City Engineering Department prior to the start of construction.
- Inspection shall be made at all sites during construction activities on bikeways and on city streets to ensure that the traffic control plan is being followed.
- Inspection shall be made of the construction site immediately after construction is completed.
- If settling is likely to occur once construction is ended, such as with trenching activities, the City shall inspect the pavement surface quality two to four months after construction activities cease in order to ensure that excessive settlement did not occur.
- The City should ensure adequate staff and budget for inspection and monitoring of construction activities as they affect bicycle traffic on bikeways and all other roadways where bicycle travel is permitted.

TRENCHING AND PLATE USE

Recent years have seen the installation of fiber-optic cable under many city streets. The primary method used to perform this type of work is trenching, which involves cutting a one- to two-foot wide trench. This

activity often takes place near the curb of roadways in order to minimize the disruption to automobile traffic. However, the common practice maximizes disruptions to bicycle traffic since bicycle travel predominantly takes place near the curb. Bike lane facilities can also be disrupted because they are located near the curb and away from vehicle travel lanes.

When plates are used to cover open trenches, they are typically not flush with the pavement and have a one- to two-inch vertical transition on the edges. This can puncture a hole in a narrow bicycle tire and can cause the bicyclists to lose control due to the shock of the vertical transition. Also, coordination among different trenching entities is a significant problem. Trenching performed by different City departments, utility companies, telecommunication companies, and others sometimes creates a situation where a street segment may be trenched several times over the course of a year. Coordination to prevent the duplication of trenching activities is a problem, especially for bicyclists whose riding space is often interrupted during trenching activities.

When activities such as this take place, bicycle travel is negatively affected, but no noticeable difference has occurred to motorists. Bicyclists often are left to their own devices to merge with vehicles in the adjacent travel lane. The interim condition of the trenches during non-construction hours is also of concern because of the impact on bicyclist travel. Although the common practice is to use steel plates during non-construction hours, these plates can be slippery, especially when wet. Slippage can be a significant problem for bicyclists riding over steel plates in any weather.

GUIDELINES

- Steel plates used as a temporary measure during construction activities shall not have a vertical edge greater than 10 mm without a temporary asphalt lip to accommodate bicyclists riding over them.
- The City should consider using non-skid steel plates with no raised steel bar on top.
- Wherever possible, the City should use in-laid steel plates that are flush with the surrounding pavement surface in order to minimize or eliminate the vertical transition between plates and the pavement for bicyclists.
- Steel plates shall be used only as a temporary measure during construction and shall not be used for extended periods of time.

GUTTER-TO-PAVEMENT TRANSITION

As mentioned earlier in this document, the path of travel for bicyclists is most often near the curb of a given roadway. On streets with concrete curb and gutter, one to two feet of this curbside area is typically devoted to the gutter pan, where water collects and drains into catch basins. On many streets, the path of the bicyclist is near the transition between the gutter pan and the edge of pavement. It is at this location that water can erode the transition, creating potholes and a rough surface for travel.

Many streets' pavements do not meet flush with the gutter, creating a vertical transition between these two segments of the roadway. This area can buckle over time and create a hazardous environment to ride in for bicyclists. Since it is the most likely place for bicyclists to ride on the roadway, this issue is significant for bicycle travel.

GUIDELINES

- Gutter-to-pavement transitions should have no more than a 10 mm vertical transition.
- Pavement transitions should be examined during every roadway project for new construction, maintenance activities, and construction project activities that occur in streets.

DRAINAGE GRATES

Drainage grates are encountered in the gutter area near the curb of a roadway. This area is where most bicycle travel occurs. Drainage grates typically have some kind of slots through which water drains into the municipal wastewater system. Many grates are designed with linear parallel bars spread wide enough for a tire to become caught in so that if a bicycle were to ride on them, the front tire would become caught and fall through the slot. This would cause the rider of the bicycle to tumble over the handlebars and sustain potentially serious injuries. Drainage grates are often wider than the gutter making avoiding them difficult and sometimes dangerous pushing bicyclists out into the vehicle traffic lane.

GUIDELINES

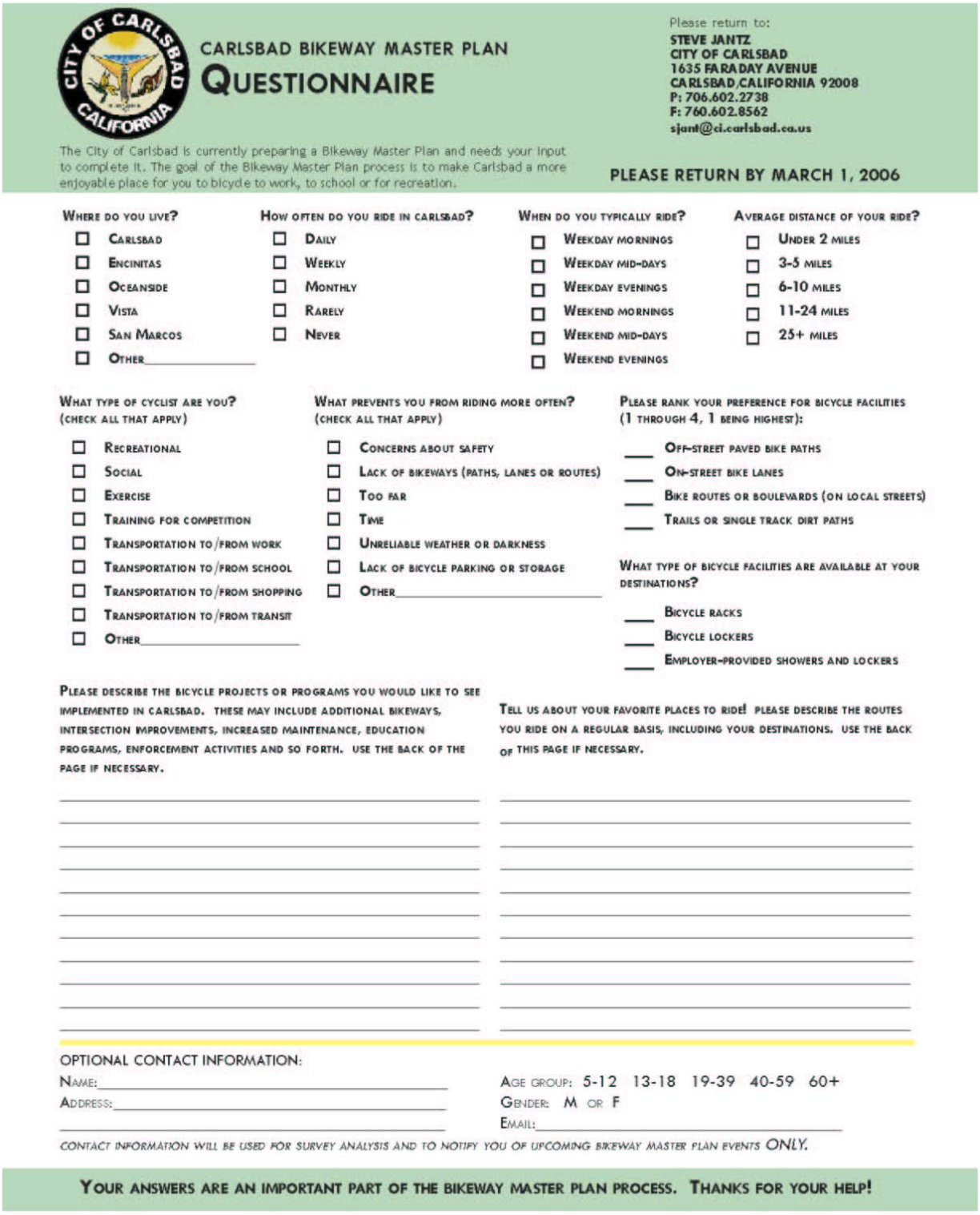
- The City shall require that all new drainage grates be bicycle-friendly. These include grates that have horizontal slats on them so that bicycle tires do not fall through the vertical slats.
- A program to inventory all existing drainage grates should be implemented. Grates that are not bicycle-friendly should be replaced or reset citywide.

This page intentionally left blank

APPENDIX D: PUBLIC OUTREACH SURVEY RESULTS

A survey was conducted in February 2006 to gather feedback on the current conditions and attitudes toward bicycling in Carlsbad. Surveys were distributed to the community through the school system, through major employers, local bicycle clubs and local bicycle shops. The questionnaire and a summary of survey responses are provided in this Appendix.

Figure D-1: Questionnaire Form



CARLSBAD BIKEWAY MASTER PLAN

QUESTIONNAIRE

Please return to:
STEVE JANTZ
CITY OF CARLSBAD
1635 FARADAY AVENUE
CARLSBAD, CALIFORNIA 92008
P: 706.602.2738
F: 760.602.8562
sjant@ci.carlsbad.ca.us

The City of Carlsbad is currently preparing a Bikeway Master Plan and needs your input to complete it. The goal of the Bikeway Master Plan process is to make Carlsbad a more enjoyable place for you to bicycle to work, to school or for recreation.

PLEASE RETURN BY MARCH 1, 2006

WHERE DO YOU LIVE?
- ☐ CARLSBAD
- ☐ ENCINITAS
- ☐ OCEANSIDE
- ☐ VISTA
- ☐ SAN MARCOS
- ☐ OTHER_____

HOW OFTEN DO YOU RIDE IN CARLSBAD?
- ☐ DAILY
- ☐ WEEKLY
- ☐ MONTHLY
- ☐ RARELY
- ☐ NEVER

WHEN DO YOU TYPICALLY RIDE?
- ☐ WEEKDAY MORNINGS
- ☐ WEEKDAY MID-DAYS
- ☐ WEEKDAY EVENINGS
- ☐ WEEKEND MORNINGS
- ☐ WEEKEND MID-DAYS
- ☐ WEEKEND EVENINGS

AVERAGE DISTANCE OF YOUR RIDE?
- ☐ UNDER 2 MILES
- ☐ 3-5 MILES
- ☐ 6-10 MILES
- ☐ 11-24 MILES
- ☐ 25+ MILES

WHAT TYPE OF CYCLIST ARE YOU? (CHECK ALL THAT APPLY)
- ☐ RECREATIONAL
- ☐ SOCIAL
- ☐ EXERCISE
- ☐ TRAINING FOR COMPETITION
- ☐ TRANSPORTATION TO/FROM WORK
- ☐ TRANSPORTATION TO/FROM SCHOOL
- ☐ TRANSPORTATION TO/FROM SHOPPING
- ☐ TRANSPORTATION TO/FROM TRANSIT
- ☐ OTHER_____

WHAT PREVENTS YOU FROM RIDING MORE OFTEN? (CHECK ALL THAT APPLY)
- ☐ CONCERNS ABOUT SAFETY
- ☐ LACK OF BIKEWAYS (PATHS, LANES OR ROUTES)
- ☐ TOO FAR
- ☐ TIME
- ☐ UNRELIABLE WEATHER OR DARKNESS
- ☐ LACK OF BICYCLE PARKING OR STORAGE
- ☐ OTHER_____

PLEASE RANK YOUR PREFERENCE FOR BICYCLE FACILITIES (1 THROUGH 4, 1 BEING HIGHEST):
- ___ OFF-STREET PAVED BIKE PATHS
- ___ ON-STREET BIKE LANES
- ___ BIKE ROUTES OR BOULEVARDS (ON LOCAL STREETS)
- ___ TRAILS OR SINGLE TRACK DIRT PATHS

WHAT TYPE OF BICYCLE FACILITIES ARE AVAILABLE AT YOUR DESTINATIONS?
- ___ BICYCLE RACKS
- ___ BICYCLE LOCKERS
- ___ EMPLOYER-PROVIDED SHOWERS AND LOCKERS

PLEASE DESCRIBE THE BICYCLE PROJECTS OR PROGRAMS YOU WOULD LIKE TO SEE IMPLEMENTED IN CARLSBAD. THESE MAY INCLUDE ADDITIONAL BIKEWAYS, INTERSECTION IMPROVEMENTS, INCREASED MAINTENANCE, EDUCATION PROGRAMS, ENFORCEMENT ACTIVITIES AND SO FORTH. USE THE BACK OF THE PAGE IF NECESSARY.

TELL US ABOUT YOUR FAVORITE PLACES TO RIDE! PLEASE DESCRIBE THE ROUTES YOU RIDE ON A REGULAR BASIS, INCLUDING YOUR DESTINATIONS. USE THE BACK OF THIS PAGE IF NECESSARY.

OPTIONAL CONTACT INFORMATION:

NAME:_____

ADDRESS:_____

_____

AGE GROUP: 5-12 13-18 19-39 40-59 60+

GENDER: M OR F

EMAIL:_____

CONTACT INFORMATION WILL BE USED FOR SURVEY ANALYSIS AND TO NOTIFY YOU OF UPCOMING BIKEWAY MASTER PLAN EVENTS ONLY.

YOUR ANSWERS ARE AN IMPORTANT PART OF THE BIKEWAY MASTER PLAN PROCESS. THANKS FOR YOUR HELP!

Table D-1: Summary of Survey Results

	AGE GROUP					GENDER		WHERE DO YOU LIVE?						HOW OFTEN DO YOU RIDE IN CARLSBAD?				
	5-12	13-18	19-39	40-59	60+	F	M	Carlsbad	Encinitas	Oceanside	Vista	San Marcos	Other	Daily	Weekly	Monthly	Rarely	Never
						% Female	% Male	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
# Responses	0	0	16	41	5	21	41	49	6	2	1	1	1	28	28	8	4	1
Percent	0%	0%	25.8%	66.1%	8.1%	33.8%	66.2%	81.7%	10.0%	3.3%	1.7%	1.7%	1.7%	40.6%	40.6%	11.6%	5.8%	1.4%
Percent sum					100%		100%						100%					100%
Total Responses					62		62						60					69

	WHAT TYPE OF CYCLIST ARE YOU?									WHAT PREVENTS YOU FROM RIDING MORE OFTEN?						
	Recreational	Social	Exercise	Training for Competition	Transportation to from Work	Transportation to from School	Transportation to from Shopping	Transportation to from transit	Other	Concerns about safety	Lack of Bikeways	Too Far	Time	Unreliable Weather or Darkness	Lack of Bicycle Parking or Storage	Other
	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
# Responses	40	25	49	21	21	6	5	5	0	32	33	5	25	8	11	0
Percent	23.3%	14.5%	28.5%	12.2%	12.2%	3.5%	2.9%	2.9%	0%	28.1%	28.9%	4.4%	21.9%	7.0%	9.6%	0%
Percent sum									100%							100%
Total Responses									172							114

Table D-1: Summary of Survey Results, Continued

	WHEN DO YOU TYPICALLY RIDE?						AVERAGE DISTANCE OF YOUR RIDE?					PLEASE RANK YOUR PREFERENCE FOR BICYCLE FACILTIES.				WHAT TYPE OF BICYCLE FACILTIIES ARE AVAILABLE AT YOUR DESTINATIONS?		
	Weekday Mornings	Weekday Mid-days	Weekday Evenings	Weekend Mornings	Weekend Mid-days	Weekend Evenings	Under 2 miles	3-5 miles	6-10 miles	11-24 miles	25+ miles	Off-street Paved Bikew Paths	On-street bike lanes	Bike Routes or Boulevards	Trails or single track dirt paths	Bicycle Racks	Bicycle Lockers	Employer Provided Showers and Lockers
	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Avg	Avg	Avg	Avg	Sum	Sum	Sum
# Responses	31	16	19	43	25	2	6	9	12	9	34	2.0	2.0	2.6	2.9	17	4	23
Percent	22.8%	11.8%	14.0%	31.6%	18.4%	1.5%	8.6%	12.9%	17.1%	12.9%	48.6%							
Percent sum						100%					100%							
Total Responses						136					70	56	60	57	57			

Table D-2 Selected Comments

My opinion for most improvement would be to keep current bike lanes clean so cyclists do not have to ride so close to the car lanes to avoid stones and debris. Secondly would be to expand bike lanes to more streets.
Keep bike lanes open! Northbound ECR at Cannon has been closed way too long.
Additional Bikeways is 1st priority
Motorists required to give 5 feet of clearance. Motorists' education on bicyclist right of way. More bike lanes. Bike lanes swept more often.
Off-street paved bike paths would be TERRIFIC for Carlsbad. We go to Hilton Head Island in South Carolina where they have awesome off-street paved bike paths and we bicycle all over the place there.
Provide more Class II shared shoulder pavement striping
Additional bike lanes and paved bike paths. Received this as part of communication with North County Cycle Club Members
Off street paved bikeways on Palomar Airport Road and major roads through Carlsbad. It would be nice to have lights change when bikes are over monitors (light switches). Sometimes lights don't change unless a car drives up to intersection. For the most part, it's nice riding in Carlsbad except Palomar Airport Road where cars are driving way too fast. I would consider riding the coaster more often if the bus came to our office park in the pm's (after work). It's dark in winter walking on Palomar Airport Road and there are no sidewalks from Palomar Oaks Way to College. The bus does not stop at intersection of Palomar Oaks way and Palomar Airport Road between 4:30 and 5:30 pm.
Because of the increased construction in Carlsbad, it is dangerous to ride anywhere anymore. The bike lanes have huge pot holes, nails and other debris in them. There is no way to ride across Rancho Santa Fe by Melrose without riding in a car lane. There needs to be more signage telling motorists to "share the road" with bicycles. There needs to be more (are there any at all) bikeways that are only for runners/walkers/bikes.
The most heavily used bike route in Carlsbad is the Coast Highway, for all levels of cyclists, as well as runners, it gets crowded out there on the weekends! One problem area is for cyclists heading North on the coast, where they hit the light at Carlsbad Village Drive. There are cars coming in from the right, cars turning right, and cars going straight. It is confusing for bikes where they belong at this intersection. Palomar Airport Road also has issues for cyclists heading West from I-5 to the coast.
1) Resurface the 101 bike lane north of Avenida Encinas, east side of the road. 2) Resurface the 101 bike lane south of Palomar airport road, west side. 3) More off-street paved bike paths.
Additional bikeways, safer intersections, traffic signals that sense bicycles, jagged debris removed from bike lanes, attention paid to rough pavement.
Safer intersections, more bike lanes, "share the road" signs
Increased maintenance, bike lanes where none exist, better marking, less trash/road clutter
East West Bikeway off Road
Carlsbad used to have a nice network of trails in the "Flightline" area off Palomar Airport Road. Recent construction has made this area difficult to access and ride. I would like to make sure that any further development in the area provide/maintain access to the single track area. Commuting is often difficult when there is road construction in progress. I don't know if the city can request that some portion of the bike lane remain usable during the construction period. There is often no alternate route available when the construction takes place.
I would like to see more bike trails for recreational use. I also would like to see more off-street bike paths. For busy streets like El Camino Real and Palomar Airport Road it is too dangerous to bike in the existing bike lanes.
A bikeway path would be a great addition to Carlsbad. Since most people drive really fast on the main roads (50-60+) I would feel much safer if a bike path was implemented.
Intersection improvements. The worst offender is westbound Palomar Airport Road at I-5, where a combination of traffic calming and marked bike lanes to the left of the right turn only freeway onramp lanes might help. Most of Carlsbad is pretty bike-friendly, and the I-5 crossing is not that bad for cyclists eastbound on Palomar Airport Road, but the westbound interchange scares the crap out of me, even that I have almost 100K miles in the saddle. I avoid it, even though it is along the most direct route from my office to the Coaster Station. Other improvements: make all traffic signals sensitive to bicycles. I am batting about.500 in triggering traffic signals in the city. Finally, PLEASE insist that construction contractors be sensitive to the needs and safety of bicyclists when setting up warning signs, barriers, etc.
Eliminate bike lanes and any "facilities" that facilitate and reinforce the notion that cyclists have an obligation to yield to motorists. Wide outside lanes are great and all we need . Adding the bike lane stripe only makes matters worse.
Paved and unpaved paths dedicated to cyclists, hikers (no cars) more bike path designations through less congested residential areas. Mountain biking trails, barrier-segregated street bike lanes

Even with the helmet law, I still see way too many kids riding (sometimes riding to school) without helmets. Not sure how much bike safety is covered in school anymore. So, maybe better training/enforcement? Overall, Carlsbad is a great place to bike...if they ever finish Rancho Santa Fe Road. Not much in favor of separate, paved off-street bike paths. Seems like non-street paths allow people to be sloppy on safety, not paying attention to the road, other riders, etc. Song in praise of Carlsbad street maintenance" they're great! Always less than 7 days between reporting potholes and getting repair done. Try that in San Diego!
We like to ride as a family. With two young children, it is not safe to go on busy roads--even with bike lanes. I would like to see more bike paths that are family friendly but also take advantage of Carlsbad scenery. Would like to see more Coastal Trails and dirt paths as well.
We ride on the bike trails in Oceanside along 76. It's a wonderful trail, safe and well maintained. We need something like it in Carlsbad. The trail along the train track is an excellent start. We need trails like these along and around the lagoons, and up the canyons. If I didn't have to ride on El Comino Real, I would ride my bike to work. As you look at designing trails/paths, please look for the most direct route that uses the natural gradual slope. We have many hills in Carlsbad and when I ride I look for the most gradual climb to reach my destination. I'd rather ride an extra mile or two to avoid a massive hill like on Melrose south of Palomar Airport Road. We need bike paths in Carlsbad. It's not safe to ride on the streets.
Additional lighted bikeways next to train tracks.
More off street bike paths--paved or not. We love the new section between Tamarack and Carlsbad Village Drive
Palomar I-5 intersection area is a nightmare for cyclists. More bike lanes on new roads. Make the area east of Palomar Airport a trail area for bikes, runners and mountain bikes (east of Faraday). Coast railway trail: paved bike path all along the roadway.
Better paved surface on Coast Highway especially between Encinitas and Ponto
Cleaner bike lanes. Fix south 101 bike lanes by uphill north of campground. Fix north 101 by Ponto, fix bike lane northbound El Camino Real at Cannon
Safe bicycle routes, preferably to both convenient and interesting places.
On street bike lanes are most important and most safe. Bike paths are not cost effective and not safe because they are used by walkers, skaters, children, strollers, etc…accidents waiting to happen.
I would enjoy widened bike lanes through all streets, free of potholes
Open more fences and gates.
More bikeways and bike lanes. Safety and awareness. Better safety on La Costa Ave east of El Camino (very tight shoulders). Night routes where lighting (street lighting) is better than others.
Left turn traffic lights sensitive to bicycles. More signage on roads and streets, "share the road" and "watch for bicycles". More bike lanes marked on streets. Increase motorist's awareness and sensitivity to cyclists even though a number of cyclists do not follow rules of road.
Additional bikeways. Increased maintenance. Enforcement activities for safety.
Improved intersections for bicycles (west Cannon through 5 or West Palomar Road onto 101.
Bike racks placed more extensively throughout downtown, in front of stores, farmers' market area. Clearly marked bicycle lane on eastern part of Carlsbad Village Drive through town up to Highland Ave.
Since I use a bike to commute as well as for recreation, good bike lanes are most important to me. Maintenance of bike lanes is also important. Bike trails are not as important to serious cyclists as they become crowded with walkers, skaters, children learning to ride, mothers with strollers, etc. which actually impede rapid and safe cycling for those that want to make good time.
Bike lanes to all schools! Help keep our kids safe.
More trails please! Dirt paths and off street paved bike paths.
sidewalks in "old carlsbad"
Lighting in the winter is important to me. I feel unsafe in some of the areas I need to travel in the dark (thru the Barrio) alternate routes have a lot of traffic (Carlsbad Village Drive)
I commute to work one day a week along El Camino Real from Tamarack to Leucadia Blvd. I know there is a lot of construction going on but the road is horrible with debris everywhere. I would like to see the bike lane kept cleaner along El Camino as well as the Coast Hwy. My children love to ride on the Rails/Trail. We live on too steep of a hill so it's a great place for them to ride. Please extend this bike path!!
Safe bike paths away from traffic (vehicular) that are scenic with water/toilet facilities available. This encourages family participation and usage.
Bikeways, bike areas that do not have vehicle access, a safe biking path throughout Old Carlsbad plus other areas of Carlsbad would decrease traffic; more stop lights, stop signs or overhead bike bridges are needed; if safe biking alternatives were available, more people would bike.
1. Improved bike lane along 101 at Ponto Dr. 2. General increased maintenance of bike lanes and smoothing out potholes, etc… 3. Bike events - maybe a 1- or 2- day bike festival with USCF (United States Cycling Federation)

racers, recreational races, education programs for kids, safe riding clinics, etc.
More bike paths/ bike lanes; shoulder maintenance- ponto-coast highway-El Camino; dedicated riding areas; Palomar Airport Road; rails to trails progress?
Road maintenance, esp. after winter storms, to remove rocks & debris from bike lanes; Shoulder maintenance esp. on Palomar Airport, Coast Highway & El Camino Real bike lane is very rough and potholed. ; Bike trail along the coaster route- connect existing short stretches for a longer ride.; Bike lanes on all new roads.
I ride the 101 up to O.S. and take the new bike path along the San Luis Rey River. The bike path along the river is great, but riding along the beach is dangerous. The road is narrow and crowded.
I'd be thrilled if the kids could safely ride their bikes to Magnolia School. Highland is too dangerous.
1. Repair bike path on 101 northbound from Batiqutos Lagoon to South of Poinsettia. It is currently dangerous and a huge liability to the City of Carlsbad. 2. Uninterrupted north to south bike lane along the coaster 3. Increased maintenance of existing bike lanes and clear glass.
Please address the condition of the bike lane/shoulder along north-bound 101 from south of Avenida Encinas along Ponto. This stretch of raod has been horrible for many years and is only getting worse!
Bikeways that are longer and wider. More maintenance of the on-street bike lanes. People throw way too much glass and debris and we end up riding in the street.
It would be great IF 1. Enforcement of traffic laws to get people and cars out of the bike lane. 2. The city took some of the money they spend on golf courses and medians and actually fix the existing bike lanes 3. the city/state not waste
I believe in Carlsbad the bike lanes are laid out well.
As many of our trails are being replaced by development, we need dedicated off-road riding. For example, look at Rose Canyon, Lake Hodges, Penaquitos Park as examples of ridable trails on the city. Also keep requiring builders to build the dirt/dog walk/bike paths as done now. These also make for good, safe offroad riding but link them up, often they just stop!
Some additional scenic bike paths would be appreciated. For example around some of the local lagoons. Bike lanes on the road are a problem because of heavy traffic. We are looking forward to the extension of the route along the railway. The first part in Carlsbad is great!

This page intentionally left blank

APPENDIX E: BICYCLE COMMUTE AND AIR QUALITY CALCULATIONS

Table E-1: Bicycle Commute and Air Quality Projections

Current Commuting Statistics		**Source**
Carlsbad Population	77,998	*2000 US Census*
Number of Commuters	35,422	*2000 US Census (Employed persons minus those that work at home)*
Number of Bicycle-to-Work Commuters	113	*2000 US Census*
Bicycle-to-Work Mode Share	0.32%	*Mode share percentage of Bicycle to Work Commuters*
School Children Grades K-8	9,495	*2000 US Census, population ages 6-14*
Estimated School Bicycle Commuters	475	*Lamorinda School Commute Study (Fehr & Peers Associates, 1995) and San Diego County School Commute Study (1990). (5%)*
Number of College Students	5,100	*2000 US Census*
Estimated College Bicycle Commuters	255	*National Bicycling & Walking Study, FHWA, Case Study No. 1, 1995. Review of bicycle commute share in seven university communities (5%)*
Average Weekday Coaster Ridership	698	*Average of weekday system wide Coaster boardings divided by 8 stations*
Number of Daily Bike-Coaster Users	10	*RTD (Denver) Bike-n-Ride Survey, December 1999 (1.4% of total boardings)*
Estimated Total Number of Bicycle Commuters and Utilitarian Riders	853	*Total of bike-to-work, transit, school, college and utilitarian bicycle commuters Does not include recreation.*
Estimated Adjusted Mode Share	1.1%	*Estimated Bicycle Commuters divided by population*
Estimated Current Bicycle Trips		
Total Daily Bicycle Trips	1,705	*Total bicycle commuters x 2 (for round trips) plus total number of utilitarian bicycle trips*
Reduced Vehicle Trips per Weekday	803	*Assumes 73% of bicycle trips replace vehicle trips for adults/college students and 53% for school children*
Reduced Vehicle Miles per Weekday	2,663	*Assumes average one-way trip travel length of 4.6 miles for adults/college students and 0.5 mile for schoolchildren*

Bicycle Commute and Air Quality Projections, Continued

Potential Future Bicycle Commuters		
Number of workers with commutes nine minutes or less	3,784	*US Census 2000*
Number of workers who already bicycle or walk to work	674	*US Census 2000*
Number of potential bike-to-work commuters	3,110	*Calculated by subtracting number of workers who already bicycle or walk from the number of workers who have commutes 9 minutes or less*
Future number of new bike-to-work commuters	778	*Based on capture rate goal of 25% of potential bicycle riders*
Total Future Daily Bicycle Commuters and Utilitarian Riders	1,630	*Current daily bicycle commuters, bike to school and utilitarian riders, plus future bicycle commuters*
Future Total Daily Bicycle Trips	3,260	*Total bicycle commuters x 2 (for round trips)*
Future Reduced Vehicle Trips per Weekday	2,380	*Assumes 73% of bicycle trips replace vehicle trips*
Future Reduced Vehicle Miles per Weekday	10,947	*Assumes average one-way trip travel length of 4.6 miles for adults. Assumes 12 mph average bicycle speed; 23 minute average travel time. Travel time data from NHTS 2001 Trends, Table 26.*
Future Reduced Vehicle Miles per Year	2,901,003	*256 weekdays per year*
Future Air Quality Benefits		
Reduced HC (kg/weekday)	31	*(0.0028 kg/mile)*
Reduced CO (kg/weekday)	229	*(0.0209 kg/mile)*
Reduced NOX (kg/weekday)	15	*(0.00139 kg/mile)*
Reduced CO2 (kg/weekday)	1,205,367	*(.4155 kg/mile)*
Reduced HC (metric tons/year)	8	*1000 kg per metric ton; 256 weekdays/year*
Reduced CO (metric tons/year)	59	*1000 kg per metric ton; 256 weekdays/year*
Reduced NOX (metric tons/year)	4	*1000 kg per metric ton; 256 weekdays/year*
Reduced CO2 (metric tons/year)	308,574	*1000 kg per metric ton; 256 weekdays/year*

Emissions rates from EPA report 420-F-00-013 "Emission Facts: Average Annual Emissions and Fuel Consumption for Passenger Cars and Light Trucks." 2000.
Other sources as noted in the table.

HC = hydrocarbons, CO = carbon monoxide; NOX = nitrogen oxides, CO2 = carbon dioxide.

This page intentionally left blank

APPENDIX F: DETAILED COST ESTIMATES

CITY OF CARLSBAD

PRELIMINARY PROJECT COST ESTIMATE
SUMMARY SHEET

DATE: 3/16/2006 ESTIMATE TYPE(A, B, or C): C W.O. NO.: _____

PROJECT NAME: Carlsbad Bikeway Master Plan - Carlsbad Boulevard Bike Path at Ponto

PROJECT LIMITS: Segment 1: Palomar Airport Rd to Island Wy (0.75 mi.)

PROJECT DESCRIP.: Conceptual Study for a Class I Bike Path. The proposed path will be on the west side of Carlsbad Blvd. The proposed bikeway is approximately 1.49 miles long (total). Carlsbad Blvd will be realigned between Palomar Airport Rd and Poinsettia Lane. The realignment will provide enough space for a Class I facility.

ASSUMPTIONS:
- The existing bicycle lanes along Carlsbad Boulevard will be retained for experienced users.
- The Class I path should be designed with the minimum of 12 feet of width
- The path should be equipped with directional signage, providing users with information about connections to other destinations.
- No right of way costs included
- Environmental document assumed to be an EIR due to proximity to coastal bluffs.

CONSTRUCTION COSTS		$ 1,170,659
CONTINGENCIES	* 30%	$ 351,198
MOBILIZATION	(if const.>$1 million), @2%	$ 23,413
CONSTRUCTION TOTAL		$ 1,545,269
ADMIN. & ENG. DESIGN TOTAL	** 25%	$ 386,317
PROPERTY ACQUISITION TOTAL		$ -
PRELIMINARY ENGINEERING TOTAL		$ 100,000
UTILITIES RELOCATION		$ 50,000
ENVIRONMENTAL DOCUMENT & MITIGATION		$ 400,000
TOTAL PROJECT COST		$ 2,481,587
ROUNDED PROJECT COST		$ 2,480,000

FIELD CHECK

PREPARED BY: _____

APPROVED BY: _____

*20% FOR TYPE A, 25% FOR TYPE B, 30% FOR TYPE C
** C>1M --> 25%; 1M>C>100K --> 35%; C<100K --> 50%

CITY OF CARLSBAD

PRELIMINARY PROJECT COST ESTIMATE
SUMMARY SHEET

DATE: 3/17/2006 ESTIMATE TYPE(A, B, or C): C W.O. NO.: _____

PROJECT NAME: Carlsbad Bikeway Master Plan - Coast Highway Bike Path at Ponto

PROJECT LIMITS: Segment 2: Island Wy to Poinsettia Lane (0.74 mi.)

PROJECT DESCRIP.: Conceptual Study for a Class I Bike Path. The proposed path will be on the west side of Carlsbad Blvd. The proposed bikeway is approximately 1.49 miles long (total). Carlsbad Blvd will be realigned between Palomar Airport Rd and Poinsettia Lane. The realignment will provide enough space for a Class I facility.

ASSUMPTIONS:
- The existing bicycle lanes along Coast Highway will be retained for experienced users.
- The Class I path should be designed with the minimum of 12 feet of width
- The path should be equipped with directional signage, providing users with information about connections to other destinations.
- No right of way costs included
- Environmental document assumed to be an EIR due to proximity to coastal bluffs.

CONSTRUCTION COSTS		$ 1,157,283
CONTINGENCIES	* 30%	$ 347,185
MOBILIZATION	(if const.>$1 million), @2%	$ 23,146
CONSTRUCTION TOTAL		$ 1,527,614
ADMIN. & ENG. DESIGN TOTAL	** 25%	$ 381,903
PROPERTY ACQUISITION TOTAL		$ -
PRELIMINARY ENGINEERING TOTAL		$ 100,000
UTILITIES RELOCATION		$ 50,000
ENVIRONMENTAL DOCUMENT & MITIGATION		$ 400,000
TOTAL PROJECT COST		$ 2,459,517
ROUNDED PROJECT COST		$ 2,460,000

FIELD CHECK

PREPARED BY: _____

APPROVED BY: _____

*20% FOR TYPE A, 25% FOR TYPE B, 30% FOR TYPE C
** C>1M --> 25%; 1M>C>100K --> 35%; C<100K --> 50%

CITY OF CARLSBAD

PRELIMINARY PROJECT COST ESTIMATE
SUMMARY SHEET

DATE: 3/17/2006 ESTIMATE TYPE(A, B, or C): C W.O. NO.: _____

PROJECT NAME: Carlsbad Bikeway Master Plan - Class II Bike Lanes on Hillside Drive

PROJECT LIMITS: Hillside Drive from Tamarack Avenue to Kelly Drive

PROJECT DESCRIP.: Conceptual Study for a Class II Bike Lane Improvement Project. The proposed bikeway is approximately 1.49 miles long. Hillside Drive is a residential street that is 48 feet wide with no existing bicycle facilities. Proposed 6 foot wide bike lanes with 7 foot wide parking lanes on each side of the street.

ASSUMPTIONS:
- The street can be striped with two 11 foot travel lanes (one in each direction).
- The facility should be equipped with directional signage, providing users with information about connections to other destinations.
- Environmental Document assumed to be Negative Declaration
- No right of way costs included

CONSTRUCTION COSTS		$ 63,700
CONTINGENCIES		$ -
MOBILIZATION (if const.>$1 million), @2%		$ 1,274
CONSTRUCTION TOTAL		$ 64,974
ADMIN. & ENG. DESIGN TOTAL	** 35%	$ -
PROPERTY ACQUISITION TOTAL		$ -
PRELIMINARY ENGINEERING TOTAL		$ -
UTILITIES RELOCATION		$ -
ENVIRONMENTAL DOCUMENT & MITIGATION		$ -
TOTAL PROJECT COST		$ 64,974
ROUNDED PROJECT COST		$ 60,000

FIELD CHECK

PREPARED BY: _____

APPROVED BY: _____

*20% FOR TYPE A, 25% FOR TYPE B, 30% FOR TYPE C
** C>1M --> 25%; 1M>C>100K --> 35%; C<100K --> 50%

CITY OF CARLSBAD

PRELIMINARY PROJECT COST ESTIMATE
SUMMARY SHEET

DATE: 3/17/2006 ESTIMATE TYPE(A, B, or C): C W.O. NO.: _____

PROJECT NAME: Carlsbad Bikeway Master Plan - Class II Bike Lanes on Avenida Encinas

PROJECT LIMITS: Avenida Encinas from Poinsettia Transit Station to Palomar Airport Rd

PROJECT DESCRIP.: Conceptual Study for a Class II Bike Lane Improvement Project. The proposed bikeway is approximately 0.92 miles long. Avenida Encinas is a collector street with varying width with no existing bicycle facilities. Proposed 6 foot wide bike lanes with 7 foot wide parking lanes on each side of the street.

ASSUMPTIONS: The street can be striped with two 11 foot travel lanes (one in each direction). The facility should be equipped with directional signage, providing users with information about connections to other destinations. Environmental Document assumed to be Negative Declaration. No right of way costs included.

CONSTRUCTION COSTS		$ 49,651
CONTINGENCIES	* 30%	$ -
MOBILIZATION	(if const.>$1 million), @2%	$ 993
CONSTRUCTION TOTAL		$ 50,644
ADMIN. & ENG. DESIGN TOTAL		$ -
PROPERTY ACQUISITION TOTAL		$ -
PRELIMINARY ENGINEERING TOTAL		$ -
UTILITIES RELOCATION		$ -
ENVIRONMENTAL DOCUMENT & MITIGATION		$ -
TOTAL PROJECT COST		$ 50,644
ROUNDED PROJECT COST		$ 50,000

FIELD CHECK

PREPARED BY: _____

APPROVED BY: _____

*20% FOR TYPE A, 25% FOR TYPE B, 30% FOR TYPE C
** C>1M --> 25%; 1M>C>100K --> 35%; C<100K --> 50%

CITY OF CARLSBAD

PRELIMINARY PROJECT COST ESTIMATE
SUMMARY SHEET

DATE: 3/17/2006 ESTIMATE TYPE(A, B, or C): C W.O. NO.: _____

PROJECT NAME: Carlsbad Bikeway Master Plan - Class II Bike Lanes on Palomar Airport Rd

PROJECT LIMITS: Palomar Airport Rd from Paseo Del Norte to Carlsbad Blvd

PROJECT DESCRIP.: Conceptual Study for a Class II Bike Lane Improvement Project. The proposed bikeway is approximately 0.33 miles long. Palomar Airport Rd is a Prime Arterial roadway with varying width with no existing bicycle facilities. Proposed 6 foot wide bike lanes on each side of the street.

ASSUMPTIONS:
- The street is too narrow to be striped with 6 foot bike lanes (one in each direction).
- The facility should be equipped with directional signage, providing users with information about connections to other destinations.
- The improvements will be implemented with future roadway reconfiguration. Note that the I-5 overpass is at ultimate configuration and cannot accommodate Class II bike lanes. Remainder of segment should include Class II facility when built. The estimated improvements are assumed to be striping and signage only.
- No right of way costs included
- Environmental Document assumed to be Negative Declaration

CONSTRUCTION COSTS		$ 32,439
CONTINGENCIES	* 30%	$ -
MOBILIZATION (if const.>$1 million), @2%		$ 649
CONSTRUCTION TOTAL		$ 33,087
ADMIN. & ENG. DESIGN TOTAL	** 35%	$ -
PROPERTY ACQUISITION TOTAL		$ -
PRELIMINARY ENGINEERING TOTAL		$ -
UTILITIES RELOCATION		$ -
ENVIRONMENTAL DOCUMENT & MITIGATION		$ -
TOTAL PROJECT COST		$ 33,087
ROUNDED PROJECT COST		$ 30,000

FIELD CHECK

PREPARED BY: _____

APPROVED BY: _____

*20% FOR TYPE A, 25% FOR TYPE B, 30% FOR TYPE C
** C>1M --> 25%; 1M>C>100K --> 35%; C<100K --> 50%

CITY OF CARLSBAD

PRELIMINARY PROJECT COST ESTIMATE
SUMMARY SHEET

DATE: 3/17/2006 ESTIMATE TYPE(A, B, or C): C W.O. NO.: _____

PROJECT NAME: Carlsbad Bikeway Master Plan - Class III Bike Route on Monroe Street

PROJECT LIMITS: Monroe St from Carlsbad Village Dr to Hillside Dr

PROJECT DESCRIP.: Conceptual Study for a Class III Bike Route Improvement Project. The proposed bikeway is approximately 1.25 miles long. Monroe St has varying width with no existing bicycle facilities.

ASSUMPTIONS: The street is too narrow to be striped with 6 foot bike lanes (one in each direction). The facility should be equipped with directional signage, providing users with information about connections to other destinations. Improvements are assumed to be signage only.

No right of way costs included

CONSTRUCTION COSTS		$ 12,500
CONTINGENCIES	* 30%	$ -
MOBILIZATION	(if const.>$1 million), @2%	$ 250
CONSTRUCTION TOTAL		$ 12,750
ADMIN. & ENG. DESIGN TOTAL	** 50%	$ -
PROPERTY ACQUISITION TOTAL		$ -
PRELIMINARY ENGINEERING TOTAL		$ -
UTILITIES RELOCATION		$ -
ENVIRONMENTAL DOCUMENT & MITIGATION		$ -
TOTAL PROJECT COST		$ 12,750
ROUNDED PROJECT COST		$ 13,000

FIELD CHECK

PREPARED BY: _____

APPROVED BY: _____

*20% FOR TYPE A, 25% FOR TYPE B, 30% FOR TYPE C
** C>1M --> 25%; 1M>C>100K --> 35%; C<100K --> 50%

CITY OF CARLSBAD

PRELIMINARY PROJECT COST ESTIMATE
SUMMARY SHEET

DATE: 3/17/2006 ESTIMATE TYPE(A, B, or C): C W.O. NO.: _____

PROJECT NAME: Carlsbad Bikeway Master Plan - Class III Bike Route on Las Flores/Highland Dr

PROJECT LIMITS: Las Flores/Highland Dr from Jefferson St to Tamarack Ave

PROJECT DESCRIP.: Conceptual Study for a Class III Bike Route Improvement Project. The proposed bikeway is approximately 0.80 miles long. Monroe St has varying width with no existing bicycle facilities.

ASSUMPTIONS: The street is too narrow to be striped with 6 foot bike lanes (one in each direction). The facility should be equipped with directional signage, providing users with information about connections to other destinations. Improvements are assumed to be signage only.

No right of way costs included

CONSTRUCTION COSTS		$ 8,000
CONTINGENCIES	* 30%	$ -
MOBILIZATION	(if const.>$1 million), @2%	$ 160
CONSTRUCTION TOTAL		$ 8,160
ADMIN. & ENG. DESIGN TOTAL	** 50%	$ -
PROPERTY ACQUISITION TOTAL		$ -
PRELIMINARY ENGINEERING TOTAL		$ -
UTILITIES RELOCATION		$ -
ENVIRONMENTAL DOCUMENT & MITIGATION		$ -
TOTAL PROJECT COST		$ 8,160
ROUNDED PROJECT COST		$ 8,000

FIELD CHECK

PREPARED BY: _____

APPROVED BY: _____

*20% FOR TYPE A, 25% FOR TYPE B, 30% FOR TYPE C
** C>1M --> 25%; 1M>C>100K --> 35%; C<100K --> 50%

CITY OF CARLSBAD

PRELIMINARY PROJECT COST ESTIMATE
SUMMARY SHEET

DATE: 3/17/2006 ESTIMATE TYPE(A, B, or C): C W.O. NO.: _____

PROJECT NAME: Carlsbad Bikeway Master Plan - Class III Bike Route on Chestnut Avenue

PROJECT LIMITS: Chestnut Ave from Coastal Rail Trail to Interstate 5

PROJECT DESCRIP.: Conceptual Study for a Class III Bike Route Improvement Project. The proposed bikeway is approximately 0.40 miles long. Chestnut St has varying width with no existing bicycle facilities at Interstate 5.

ASSUMPTIONS: The street is too narrow to be striped with 6 foot bike lanes (one in each direction). The facility should be equipped with directional signage, providing users with information about connections to other destinations. Improvements are assumed to be signage only.

No right of way costs included

CONSTRUCTION COSTS		$ 4,000
CONTINGENCIES	* 30%	$ -
MOBILIZATION	(if const.>$1 million), @2%	$ 80
CONSTRUCTION TOTAL		$ 4,080
ADMIN. & ENG. DESIGN TOTAL	** 50%	$ -
PROPERTY ACQUISITION TOTAL		$ -
PRELIMINARY ENGINEERING TOTAL		$ -
UTILITIES RELOCATION		$ -
ENVIRONMENTAL DOCUMENT & MITIGATION		$ -
TOTAL PROJECT COST		$ 4,080
ROUNDED PROJECT COST		$ 4,000

FIELD CHECK

PREPARED BY: _____

APPROVED BY: _____

*20% FOR TYPE A, 25% FOR TYPE B, 30% FOR TYPE C
** C>1M --> 25%; 1M>C>100K --> 35%; C<100K --> 50%

CITY OF CARLSBAD

PRELIMINARY PROJECT COST ESTIMATE
SUMMARY SHEET

DATE: 3/17/2006 ESTIMATE TYPE(A, B, or C): C W.O. NO.: _____

PROJECT NAME: Carlsbad Bikeway Master Plan - Class III Bike Route on Avenida Encinas

PROJECT LIMITS: Avenida Encinas from Cannon Rd to Palomar Airport Rd

PROJECT DESCRIP.: Conceptual Study for a Class III Bike Route Improvement Project.
The proposed bikeway is approximately 0.90 miles long. Avenida Encinas is a collector street with varying width with no existing bicycle facilities.

ASSUMPTIONS: The street is too narrow to be striped with 6 foot bike lanes (one in each direction).
The facility should be equipped with directional signage, providing users with information about connections to other destinations.
Improvements are assumed to be signage only.

No right of way costs included

CONSTRUCTION COSTS		$ 9,000
CONTINGENCIES	* 30%	
MOBILIZATION	(if const.>$1 million), @2%	$ 180
CONSTRUCTION TOTAL		$ 9,180
ADMIN. & ENG. DESIGN TOTAL	** 50%	
PROPERTY ACQUISITION TOTAL		$ -
PRELIMINARY ENGINEERING TOTAL		$ -
UTILITIES RELOCATION		$ -
ENVIRONMENTAL DOCUMENT & MITIGATION		$ -
TOTAL PROJECT COST		$ 9,180
ROUNDED PROJECT COST		$ 9,000

FIELD CHECK

PREPARED BY: _____

APPROVED BY: _____

*20% FOR TYPE A, 25% FOR TYPE B, 30% FOR TYPE C
** C>1M --> 25%; 1M>C>100K --> 35%; C<100K --> 50%

CITY OF CARLSBAD

PRELIMINARY PROJECT COST ESTIMATE
SUMMARY SHEET

DATE: 3/17/2006 ESTIMATE TYPE(A, B, or C): C W.O. NO.: _____

PROJECT NAME: Carlsbad Bikeway Master Plan - Class III Bike Route on Laguna Drive

PROJECT LIMITS: Laguna Drive from Jefferson St to State St

PROJECT DESCRIP.: Conceptual Study for a Class III Bike Route Improvement Project. The proposed bikeway is approximately 0.28 miles long. Laguna Drive is a collector street with varying width with no existing bicycle facilities.

ASSUMPTIONS: The street is too narrow to be striped with 6 foot bike lanes (one in each direction). The facility should be equipped with directional signage, providing users with information about connections to other destinations. Improvements are assumed to be signage only.

No right of way costs included

CONSTRUCTION COSTS		$ 2,800
CONTINGENCIES	* 30%	
MOBILIZATION	(if const.>$1 million), @2%	$ 56
CONSTRUCTION TOTAL		$ 2,856
ADMIN. & ENG. DESIGN TOTAL	** 50%	
PROPERTY ACQUISITION TOTAL		$ -
PRELIMINARY ENGINEERING TOTAL		$ -
UTILITIES RELOCATION		$ -
ENVIRONMENTAL DOCUMENT & MITIGATION		$ -
TOTAL PROJECT COST		$ 2,856
ROUNDED PROJECT COST		$ 3,000

FIELD CHECK

PREPARED BY: _____

APPROVED BY: _____

*20% FOR TYPE A, 25% FOR TYPE B, 30% FOR TYPE C
** C>1M --> 25%; 1M>C>100K --> 35%; C<100K --> 50%

CITY OF CARLSBAD

PRELIMINARY PROJECT COST ESTIMATE
SUMMARY SHEET

DATE: 3/17/2006 ESTIMATE TYPE(A, B, or C): C W.O. NO.: _____

PROJECT NAME: Carlsbad Bikeway Master Plan - Class III Bike Route on Chinquapin Avenue

PROJECT LIMITS: Chinquapin Avenue from Coastal Rail Trail to Jefferson Street

PROJECT DESCRIP.: Conceptual Study for a Class III Bike Route Improvement Project. The proposed bikeway is approximately 0.18 miles long. Chinquapin Avenue is a collector street with varying width with no existing bicycle facilities.

ASSUMPTIONS: The street is too narrow to be striped with 6 foot bike lanes (one in each direction). The facility should be equipped with directional signage, providing users with information about connections to other destinations. Improvements are assumed to be signage only.

No right of way costs included

CONSTRUCTION COSTS		$ 1,800
CONTINGENCIES	* 30%	
MOBILIZATION	(if const.>$1 million), @2%	$ 36
CONSTRUCTION TOTAL		$ 1,836
ADMIN. & ENG. DESIGN TOTAL	** 50%	
PROPERTY ACQUISITION TOTAL		$ -
PRELIMINARY ENGINEERING TOTAL		$ -
UTILITIES RELOCATION		$ -
ENVIRONMENTAL DOCUMENT & MITIGATION		$ -
TOTAL PROJECT COST		$ 1,836
ROUNDED PROJECT COST		$ 2,000

FIELD CHECK

PREPARED BY: _____

APPROVED BY: _____

*20% FOR TYPE A, 25% FOR TYPE B, 30% FOR TYPE C
** C>1M --> 25%; 1M>C>100K --> 35%; C<100K --> 50%

CITY OF CARLSBAD

PRELIMINARY PROJECT COST ESTIMATE
SUMMARY SHEET

DATE: 3/17/2006 ESTIMATE TYPE(A, B, or C): C W.O. NO.: _____

PROJECT NAME: Carlsbad Bikeway Master Plan - Class III Bike Route on Gabbiano Lane

PROJECT LIMITS: Gabbiano Lane from Batiquitos Drive to Batiquitos Lagoon

PROJECT DESCRIP.: Conceptual Study for a Class III Bike Route Improvement Project. The proposed bikeway is approximately 0.33 miles long. Gabbiano Lane is a collector street with varying width with no existing bicycle facilities.

ASSUMPTIONS: The street is too narrow to be striped with 6 foot bike lanes (one in each direction). The facility should be equipped with directional signage, providing users with information about connections to other destinations. Improvements are assumed to be signage only.

No right of way costs included

CONSTRUCTION COSTS		$ 3,300
CONTINGENCIES	* 30%	
MOBILIZATION	(if const.>$1 million), @2%	$ 66
CONSTRUCTION TOTAL		$ 3,366
ADMIN. & ENG. DESIGN TOTAL	** 50%	
PROPERTY ACQUISITION TOTAL		$ -
PRELIMINARY ENGINEERING TOTAL		$ -
UTILITIES RELOCATION		$ -
ENVIRONMENTAL DOCUMENT & MITIGATION		$ -
TOTAL PROJECT COST		$ 3,366
ROUNDED PROJECT COST		$ 3,000

FIELD CHECK

PREPARED BY: _____

APPROVED BY: _____

*20% FOR TYPE A, 25% FOR TYPE B, 30% FOR TYPE C
** C>1M --> 25%; 1M>C>100K --> 35%; C<100K --> 50%

CITY OF CARLSBAD

PRELIMINARY PROJECT COST ESTIMATE
SUMMARY SHEET

DATE: 3/17/2006 ESTIMATE TYPE(A, B, or C): C W.O. NO.: _____

PROJECT NAME: Carlsbad Bikeway Master Plan - Bikeway Network Facility Enhancement on State St

PROJECT LIMITS: State Street at Carlsbad Blvd

PROJECT DESCRIP.: Conceptual Study for a Bikeway Network Enhancement Project.
The State Street and Carlsbad Blvd intersection presents a challenge for cyclists who wish to proceed through the intersection.

ASSUMPTIONS: Install Share the Road and other warning signage

Improvements are assumed to be striping and pavement marking only.

No right of way costs included

CONSTRUCTION COSTS		$ 5,000
CONTINGENCIES	* 30%	
MOBILIZATION	(if const.>$1 million), @2%	$ 100
CONSTRUCTION TOTAL		$ 5,100
ADMIN. & ENG. DESIGN TOTAL	** 50%	
PROPERTY ACQUISITION TOTAL		$ -
PRELIMINARY ENGINEERING TOTAL		$ -
UTILITIES RELOCATION		$ -
ENVIRONMENTAL DOCUMENT & MITIGATION		$ -
TOTAL PROJECT COST		$ 5,100
ROUNDED PROJECT COST		$ 5,000

FIELD CHECK

PREPARED BY: _____

APPROVED BY: _____

*20% FOR TYPE A, 25% FOR TYPE B, 30% FOR TYPE C
** C>1M --> 25%; 1M>C>100K --> 35%; C<100K --> 50%

CITY OF CARLSBAD

PRELIMINARY PROJECT COST ESTIMATE
SUMMARY SHEET

DATE: 3/17/2006 ESTIMATE TYPE(A, B, or C): C W.O. NO.: _____

PROJECT NAME: Carlsbad Bikeway Master Plan - Bikeway Network Facility Enhancement on Tamarack Ave

PROJECT LIMITS: Tamarack Avenue at Interstate 5

PROJECT DESCRIP.: Conceptual Study for a Bikeway Network Enhancement Project.
The Tamarack Ave and Interstate 6 intersection presents a challenge for cyclists who wish to proceed through the intersection.

ASSUMPTIONS: Install Share the Road and other warning signage

Improvements are assumed to be striping and pavement marking only.

No right of way costs included

CONSTRUCTION COSTS		$ 5,000
CONTINGENCIES	* 30%	
MOBILIZATION	(if const.>$1 million), @2%	$ 100
CONSTRUCTION TOTAL		$ 5,100
ADMIN. & ENG. DESIGN TOTAL	** 50%	
PROPERTY ACQUISITION TOTAL		$ -
PRELIMINARY ENGINEERING TOTAL		$ -
UTILITIES RELOCATION		$ -
ENVIRONMENTAL DOCUMENT & MITIGATION		$ -
TOTAL PROJECT COST		$ 5,100
ROUNDED PROJECT COST		$ 5,000

FIELD CHECK

PREPARED BY: _____

APPROVED BY: _____

*20% FOR TYPE A, 25% FOR TYPE B, 30% FOR TYPE C
** C>1M --> 25%; 1M>C>100K --> 35%; C<100K --> 50%

CITY OF CARLSBAD

PRELIMINARY PROJECT COST ESTIMATE
SUMMARY SHEET

DATE: 3/17/2006 ESTIMATE TYPE(A, B, or C): C W.O. NO.:

PROJECT NAME: Carlsbad Bikeway Master Plan-Bikeway Network Facility Enhancement on Palomar Airport Rd

PROJECT LIMITS: Palomar Airport Road at Interstate 5

PROJECT DESCRIP.: The Palomar Airport Rd and I-5 intersection presents a challenge for cyclists who wish to proceed through the intersection.

ASSUMPTIONS: Install Share the Road and other warning signage

Improvements are assumed to be striping and pavement marking only.

No right of way costs included

CONSTRUCTION COSTS		$ 5,000
CONTINGENCIES	* 30%	
MOBILIZATION	(if const.>$1 million), @2%	$ 100
CONSTRUCTION TOTAL		$ 5,100
ADMIN. & ENG. DESIGN TOTAL	** 35%	
PROPERTY ACQUISITION TOTAL		$ -
PRELIMINARY ENGINEERING TOTAL		$ -
UTILITIES RELOCATION		$ -
ENVIRONMENTAL DOCUMENT & MITIGATION		$ -
TOTAL PROJECT COST		$ 5,100
ROUNDED PROJECT COST		$ 5,000

PREPARED BY:

APPROVED BY:

*20% FOR TYPE A, 25% FOR TYPE B, 30% FOR TYPE C
** C>1M --> 25%; 1M>C>100K --> 35%; C<100K --> 50%