CITY OF RIVERSIDE BICYCLE MASTER PLAN

Adopted May 22, 2007

Prepared by Alta Planning + Design

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A. COMPLIANCE WITH BTA REQUIREMENTS

The following table is provided for the convenience of Caltrans Staff, to outline the elements within the Riverside Bicycle 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 Riverside Bicycle Master Plan Update document. In cases where the BTA requirement is not applicable, that is noted below.

Table A-1
BTA Compliance Table for the Riverside Bicycle Master Plan Update

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, 852 Riverside residents bicycled to work. This represents a 0.8% mode share. Factoring in estimated school, bike-transit and utilitarian riders, it is estimated that 4,144 Riverside 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 5-7.
	Estimated Increase in Bicycle Commuters	Based on data from the 2000 Census, it is estimated that there are 8,397 potential bicycle commuters in Riverside. 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 6,243. 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 5-6 to 5-7.	Chapter 5 Needs Analysis Pgs 5-1 to 5-7.

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	The City of Riverside is defined by 26 different neighborhoods and two industrial parks. Each area offers different lifestyle choices, from rural to suburban to urban living. Most of the neighborhoods are complete—they offer residential, employment, education and cultural opportunities. The neigborhoods and a summary of existing and future land use is outlined in Table 3-1. A map of Riverside's neighborhoods is provided in Figure 3-1.	Chapter 3: Existing Conditions. Pgs 3-1 to 3-24 Section "Land Uses" Pgs 3-1 to 3-10. Table 3-1 Riverside Neighborhoods' Land Use (pgs 3-2 to 3-5) Figure 3-1 City of Riverside's Neighborhoods (Pg 3-2)
	Map and description of proposed land use and settlement patterns	Riverside's General Plan 2025 focuses new growth along in-town corridors and encourages mixed-use development that supports transit and other non-motorized modes. The plan identifies several streets as "parkways" which will be used to provide multi-modal connections between the City's residential neighborhoods, employment centers, schools and recreational amenities. The Magnolia Avenue/Market Street to University Ave corridor is designated as a focus area to concentrate mixed-use development and provide multi-modal transportation, incuding bicycle, pedestrian and transit facilities. The City of Riverside is also pursuing several annexations adjacent to the City. These are shown in Figure 3-2, City of Riverside Annexation Proposals.	Figure 3-2 City of Riverside Annexation Proposals Pg 3-6 See also Section 4-1 Riverside General Plan Pgs 4-1 through 4-2
	Locations of residential neighborhoods	Descriptions of each neighborhood and a summary of existing and future land use are outlined in Table 3-1. A map of Riverside's neighborhoods is provided in Figure 3-1.	Table 3-1 Riverside Neighborhoods' Land Use (pgs 3-2 to 3-5) Figure 3-1 City of Riverside's Neighborhoods (Pg 3-2)
	Locations of schools	Schools and churches are scattered throughout the neighborhoods. Please also see Table 3-2 Public Elementary and Middle Schools in Riverside for specific locations of schools. Schools are also identified on Figure 3-3 City of Riverside Existing Bikeways on page 3-13	Table 3-2 Public Elementary and Middle Schools in Riverside Pgs 3-8 – 3-9
	Locations of shopping centers	Commercial land uses are distributed throughout the City. Please see page 3-6 for a list of activity centers.	Activity Centers List Pg 3-6
	Locations of public buildings	Please see Figure 3-3 City of Riverside	Figure 3-3 City of

BTA 891.2	Required Plan Elements	Description of Compliance	Location
		Existing Bikeways on page 3-13 for locations of public buildings. Many public buildings are located in downtown Riverside. Several parks have community centers, listed in table 3-3 Parks with Restroom Facilities in Riverside.	Riverside Existing Bikeways Pg 3-13 Table 3-3 Parks with Restroom Facilities in Riverside Pg 3-10
	Locations of major employment centers	Please see Table 3-6 Bicycle Racks and Support Facilities at Eight of Riverside's Largest Employers on page 3-18.	Table 3-6: Bicycle Racks and Support Facilities at Eight of Riverside's Largest Employers Pg 3-18
(c)	*A map and description of existing and proposed bikeways.*		
	Map of existing bikeways	The existing bicycle network map is shown on page 3-13.	Figure 3-3 City of Riverside Existing Bikeways Pg 3-13
	Description of existing bikeways	The City of Riverside has two official off-street bike paths. The Santa Ana River Trail parallels the Santa Ana River to the north of the City. The trail, when completed, will travel the length of the Santa Ana River between San Bernardino National Forest to the Pacific Ocean at Huntington Beach. The trail is completed through most of the City of Riverside. As shown in Figure 3-3, Riverside's existing bikeway network is comprised of Class II bike lanes along many major streets. The backbone of the bikeway network is the 9.5-mile bike lane that follows the Magnolia/ Market corridor. Cross-town routes, from northwest to southeast, are less common than routes that extend the length of the city. Tables 3-4 and 3-5 show the limits and lengths of existing Class I and II bikeway segments in the city, respectively. The City does not have any existing Class III bicycle routes at this time. Please also see: Table 3-4: Index of Existing City of Riverside Class I Bike Lanes Table 3-5: Index of Existing City of Riverside Class II Bike Routes	Section 3.2.2 through Section 3.2.3 Pgs 3-11 to 3-15 Pg 3-15 Pgs 3-15
	Map of proposed bikeways	A map of the proposed bikeway network is located on page 6-3.	Figure 6-1: City of Riverside Existing and Proposed Bikeways Pg 6-3
	Description of proposed bikeways	The top five recommended bikeways are described in detail starting on page 6-21.	Section 6.3 Recommended

BTA 891.2	Required Plan Elements	Description of Compliance	Location
			Network Projects Pgs 6-21 to 6-29.
(d)	*A map and description of existing and proposed end-of-trip bicycle parking facilities. These shall include, but not be limited to, parking at schools, shopping centers, public buildings, and major employment centers.*		
	Map and description of existing end-of trip bicycle parking facilities	Bicycle parking is available at all of Riverside's public elementary and middle schools. RCTC provides locker space for six bicycles at the La Sierra Metrolink Station and is planning on installing bicycle racks at the Downtown Riverside Station. Several of Riverside's largest employers provide bicycle parking for employees. Specific details are available in Table 3-6.	Table 3-6 Bicycle Racks and Support Facilities at Eight of Riverside's Largest Employers Pg 3-18 Table 3-3 Parks with Restroom Facilities in Riverside. Pg 3-10
	Map and description of proposed end-of-trip bicycle parking facilities	High-quality bike parking should be provided at public destinations, including downtown Riverside, shopping centers, community centers, parks, transit stops and schools. The City of Riverside should adopt a bicycle parking ordinance to ensure that new bicycle parking facilities are installed with new development. The city should consider including specific design requirements for bicycle parking in the 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. In addition, the City may want to update Section 10.64.210 of the Municipal Code, which requires businesses to seek a hearing before City Council and file an application with City Clerk before installing bicycle racks in front of their place of business. This ordinance was established in 1942. A more streamlined approval process, one that does not require a hearing before City Council, may be more appropriate. Sample language for a bicycle parking ordinance is provided in Appendix B	Bicycle Parking and End of Trip Facilities Pgs 6-5 to 6-6 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	Riverside Transit Agency (RTA) provides fixed route, commuter and dial-a-ride bus service within western Riverside County, including the City of Riverside. All buses on fixed-routes are equipped with bike racks that hold two bicycles. Metrolink provides commuter rail service from Riverside to downtown Los Angeles, Orange County, San Bernardino County and the Pacific Ocean. Riverside is served by three Metrolink rail	Section 3.6 Multi-modal Connections Pgs 3-22 to 3-24

BTA 891.2	Required Plan Elements	Description of Compliance	Location
		lines. Riverside has two existing Metrolink Stations: La Sierra Metrolink Station at 10901 Indiana Ave, and the Downtown Riverside Metrolink Station at 4066 Vine Street. Bicycle racks were installed at the Downtown Metrolink Station in the Fall of 2006. The La Sierra Station has bike racks and six bicycle lockers. Onboard trains, Metrolink has space for two bicycles per rail car. Amtrak Thruway provides commuter bus service between Riverside and the cities of Hemet and San Bernardino OmniTrans, San Bernardino's bus transit provider, runs daily bus service between downtown Riverside and Montclair. OmniTrans provides bicycle racks on all of its buses.	
		See Figure 3-3 City of Riverside Existing Bikeways, on page 3-13, for locations of Metrolink Stations.	Figure 3-3 City of Riverside Existing Bikeways Pg 3-13
	Map and description of proposed bicycle facilities for connections with other modes	RCTC is developing additional rail service, including the Perris Line, which would extend Metrolink service from downtown Riverside to Perris with stops at UCR and Moreno Valley. The Perris line is planned for completion in 2008. When completed, there would be up to two additional stops in Riverside. Though siting is preliminary, it is expected that one station would be near Spruce Street and the San Jacinto Branch Line and the other would be near 3rd Street and the San Jacinto Branch Line, just on the northern edge of the UCR campus. Spruce Street has existing bicycle lanes.	
(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 3-6 on page 3-18 shows Riverside's eight largest employers and the bicycle support facilities offered by each. Public parks and civic buildings also serve as rest stops offering water, a place to sit or rest, and restroom facilities. Restrooms are located at several of Riverside's parks. Please see Table 3-3 Parks with Restroom Facilities in Riverside. Park locations are shown on Figure 3-3. Riverside's existing bicycle shops are listed in Table 3-7 on Page 3-20. Please also see Showers, Lockers and Other Bicycle Support Facilities on pages 3-17 through 3-19.	Table 3-6 Bicycle Racks and Support Facilities at Eight of Riverside's Largest Employers Pg 3-18 Table 3-3 Parks with Restroom Facilities in Riverside. Pg 3-10 Table 3-7 City of Riverside Bicycle Shops Pg 3-19

BTA 891.2	Required Plan Elements	Description of Compliance	Location
	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 Riverside should adopt a bicycle parking ordinance to ensure that new bicycle parking facilities are installed with new development. Please also see Bicycle Parking and End of Trip Facilities on pages 6-6 to 6-7 and Appendix B: Sample Bicycle Parking Code on pages B-1 to B-15	Bicycle Parking and End of Trip Facilities Pgs 6-5 to 6-6 Appendix B: Sample Bicycle Parking Code Pg B-1
(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	The Riverside Police Department has a full time Traffic Education Coordinator who oversees all traffic education programming that covers all aspects of traffic safety, including seatbelt use and drunk driving as well as bicycle, pedestrian and skateboarding safety. The Police Department offers bicycle safety classes that can be customized for any age. The curriculum includes the laws and safety practices for biking, skateboarding, in-line skating and motorized scooters. The programs focus on not only learning traffic laws but also understanding the reasoning behind the laws. Three typical options are offered, though any custom class can be created: Traffic Safety Classes, Bicycle Safety Classes and Safety Presentations.	Section 3.5 Enforcement and Education Programs Pg 3-19 – 3-21
	Law enforcement of Vehicle Code provisions pertaining to bicycle operations	The City of Riverside Police Department enforces all bicycle and motorist traffic violations. Youth under 18 years who receive a ticket for a bicycle, skateboard, jaywalking or helmet violation must attend a violator course with their parents. Attendees pay $10 and receive a helmet at the end of the course. The violator course is run by the Police Department's Traffic Education Coordinator. In addition to the violator program, the Police Department provides proactive incentives to encourage youth to ride safely. One example of this is the Safety Cite program, in which police officers or park	Section 3.5 Enforcement and Education Programs Pg 3-19 – 3-21

BTA 891.2	Required Plan Elements	Description of Compliance	Location
		rangers stop and thank young riders for following traffic laws and wearing appropriate protective equipment and write them a "Safety Citation". Youth who receive a Safety Citation have a letter sent to their parents that acknowledges their good behavior, and are eligible for a bicycle raffle in the City's annual Traffic Safety Fair.	
	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.	n/a
(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 two public meetings. At the first public meeting, attendees reviewed the existing bicycle network and programs and brainstormed recommended improvements. Approximately 50 people attended this meeting. At the second public meeting, attendees reviewed the draft plan and developed a priority list for implementation. Approximately 20 people attended this meeting. A summary of the public meetings is provided in Section 5.6 Citizen and Community Involvement.	Section 5.6 Citizen and Community Involvement Pgs 5-12 to 5-15 Appendix A: Public Outreach Pg A-1
(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 General Plan's goal to allow Riverside residents "easy access to an efficient, multi-option transportation system that enables them to meet their needs within the community." Policies that relate to improving bicycle access can be found throughout Riverside's General Plan. The relevant elements of Riverside's General Plan are summarized below and include the Land Use and Urban Design Element, the Parks and Recreation Element, the Air Quality Element, the Circulation and Community Mobility Element, the Public Safety Element, and the Education Element. The plan includes bicycle plans from the University of California, Riverside's draft bicycle master plan and supports connections to the Regional Bicycle Network, including completion of the regional Santa Ana River Trail.	Chapter 4: Planning and Policy Context Pgs 4-1 to 4-11

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 Riverside. Recommendations include: facilitating the developing a Safe Routes to Schools program; facilitating the development of employer incentive programs, developing incentives for recreational and utilitarian bicycling by working with businesses; establishing a bicycle clunker parts and repair program; establishing community bikeway adoption; continuing to support 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 Encouragement Programs on pages 6-16 to 6-19 for more detailed descriptions of these plans.	Section 6.1.9 Encouragement Programs Pg 6-14 to 6-18.

(j) *A description of the projects proposed in the plan and a listing of their priorities for implementation.*

Description of proposed projects	The top five recommended bikeways are described in detail starting on page 6-21.	Project Sheets Pgs 6-21 to 6-29
Priority list of proposed projects	A summary list of all recommended bikeway facilities, with segment lengths, implementation tier and cost estimates is provided in Chapter 7, Implementation.	Table 7-3 Construction Cost of Recommended Bikeway Projects: Class I Bike Paths Page 7-8 Table 7-4 Construction Cost of Recommended Bikeway Projects: Class II Bike Lanes Pages 7-9 to 7-11 Table 7-5 Construction Cost of Recommended Bikeway Projects: Class III Bike Routes Page 7-12

(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	Past City expenditures on bicycle facilities were not available for this document. However, based on the miles of existing bikeways, it can be estimated that the city has spent approximately $2.95 million on on-street Class II Bicycle Lane land construction and striping.	
Estimated future financial needs	The cost of the long-term recommended projects is estimated to be about $21 million	Table 7-3 Construction Cost of

BTA 891.2	Required Plan Elements	Description of Compliance	Location
		for Class I projects, $7.5 million for Class II Bike Lane projects, and $343,000 for Class III Bike Routes projects for a combined total system build out cost of about $28.5 million. Cost estimates include costs for survey and design, construction, administration and contingencies. The majority of the estimated cost (74%) is due to the high cost of constructing Class I bike paths. The majority of the proposed network (128 miles of on-street bikeways) can be constructed for $7.6 million. Cost breakdowns by proposed facility are listed in Tables 7-3 through 7-5 on pages 7-8 to 7-12. Annual increase to operations and maintenance costs is estimated to be $350,000 over a year and $4.6 million over ten years.	Recommended Bikeway Projects: Class I Bike Paths Page 7-8 Table 7-4 Construction Cost of Recommended Bikeway Projects: Class II Bike Lanes Pages 7-9 to 7-11 Table 7-5 Construction Cost of Recommended Bikeway Projects: Class III Bike Routes Page 7-12 Table 7-6 Annual Operations and Maintenance Cost Estimates for Recommended Bikeway Network Pg 7-13

1. INTRODUCTION

The Riverside Bicycle Master Plan provides a blueprint for bicycle transportation and recreation in the city of Riverside. Starting with the adoption of its first Bicycle Master Plan in 1970, the City of Riverside has added to its cycling amenities. Thirty-six years after this initial plan, bike lanes are present on most major streets, and several bicycle paths serve the community, and the rate of cycling in Riverside is higher than that of surrounding communities. Highlights of the current network include:

- A 9.5-mile bike lane corridor through the center of the City along Magnolia Avenue and Market Street.

- Victoria Avenue, a multi-modal corridor in the south of the City, with bike lanes, a bike path and an equestrian path.

- The Santa Ana River Trail borders the City to the north and provides access to adjacent communities.

This Bicycle Master Plan Update 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. As addressed in the City of Riverside's General Plan 2025, the City of Riverside would like the bicycle master plan to facilitate and encourage bicycle trips by

designating Class I and Class II routes throughout the City. (The plan strongly encourages connectivity between neighborhoods.)

The Bicycle 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 Riverside 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 Riverside's residents bicycling for work, shopping, school, and recreation.

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.

The City of Riverside is in a unique position to capitalize on its bicycle-friendly features, such as temperate climate, grid-based street network, parks and trails, and scenic vistas to increase the number of residents and visitors who see Riverside by bicycle. The City has the potential to become a prime bicycle-friendly community, as it is developed with a bikeable grid-based street network, is home to the University of California Riverside campus, and is well-served by local and regional transit connections.

1.1. PURPOSE OF THE BICYCLE MASTER PLAN

This Bicycle Master Plan provides a broad vision, strategies and actions for the improvement of bicycling in Riverside. It is important to note that the City of Riverside is by no means starting from scratch in terms of accommodating and encouraging bicycling. This updated Bicycle Master Plan focuses on developing a feasible plan for an interconnected on-street and off-street bicycle lane network that serves all of Riverside's neighborhoods and provides connections to transit centers, shopping districts, parks and other local amenities. The bikeway facility recommendations are supplemented by recommended education and encouragement programs, including improved maintenance of bikeway facilities, development of wayfinding signage, and support of motorist and bicyclist educational programming. Updating the Bicycle Master Plan by the City is important for the following reasons:

Maximize Funding Sources for Implementation. A key reason for updating the Bicycle Master Plan is to satisfy requirements of Caltrans' California Bicycle Transportation Account (BTA) and other bicycle-related state and federal funding programs. 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 the preface to this document.

Develop Feasible Short-Term Projects to Implement. A key goal of Riverside's Bicycle Master Plan is to identify and evaluate bikeway projects that can be completed in the short term. In general, short-term projects can be completed within two to five years, though unexpected factors may push the timeframe for a short-term project out beyond five years.

Provide Needed Facilities and Services. Riverside has over seventy miles of existing bikeways, including long routes on Magnolia Ave/Market Street, Arlington Avenue, Alessandro Blvd and Watkins Drive. These facilities provide direct routes for experienced cyclists comfortable with riding on streets with relatively high volumes of traffic and moderately high vehicular traffic speeds. However, the existing network has several gaps, does not provide easy northwest-southeast access, and has limited facilities that cater to less experienced cyclists. Encouraging new cyclists will require developing an interconnected network that provides bicycle access to all neighborhoods and that meets the needs of cyclists of all experience levels. This network should be supplemented by support facilities such as clear directional signage and secure bicycle parking at schools, employment centers and transit stops.

Improve Safety and Encourage Cycling. This plan provides tools to reduce the accident rate for bicyclists in Riverside 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 Riverside residents to ride to work, school, for exercise and recreation.

Enhance the Quality of Life in Riverside. The development of bicycle facilities provides for people-friendly streets, paths, trails, and activity centers available to everyone, and supports sustainable community development. Mode shifts to 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 Riverside. Safe and efficient cycling opportunities will help to attract tourists to Riverside's historic downtown, and employees to Riverside's growing job market.

1.2. MAJOR RECOMMENDATIONS OF THE PLAN

This Bicycle Plan recommends the enhancement of the existing network with the implementation of 13 miles of new Class I bike paths, 110 miles of new Class II bike lanes, and almost 18 miles of new Class III bike routes. The total cost of the recommended projects is estimated to be about $29 million, with the majority of that cost ($21 million) 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 is provided in Tables 7-3 through 7-5 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 improved bikeway maintenance programs; standards for accommodating cyclists in construction zones; wayfinding signage programs; and expanded educational and encouragement programs.

1.3. PLAN CONTENTS

The Riverside Bicycle Master Plan is organized as follows:

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

Chapter 3, Existing Conditions, provides a description of the existing bicycle conditions in Riverside. The conditions presented include the existing bicycle network, support facilities and programs as well as existing land use patterns, activity centers and destinations.

Chapter 4, Planning and Policy Context, provides an overview of the relevant local and regional plans and policies. The Bicycle Master Plan has been developed to ensure consistency with these plans and policies, in accordance with BTA requirements.

Chapter 5, Needs Analysis, documents the need for bicycle transportation in Riverside, including an overview of existing user groups, bicycle commute statistics, and an analysis of bicycle collisions in Riverside.

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 the top five 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.

Appendices:

- Appendix A: Public Meeting Notices and Minutes
- Appendix B: Sample Bicycle Parking Code Language
- Appendix C: Construction Zone Treatments
- Appendix D: Bikeway Design Guidelines

2. GOALS, OBJECTIVES AND POLICIES

This section presents the recommended goals, objectives and policies for the Riverside Bicycle 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.

The objectives and policies of the Bicycle Master Plan have been developed from existing bicycle-related objectives and policies contained in the Riverside General Plan 2025[1] and reflect input gathered from the First Public Workshop to discuss the Riverside Bicycle Master Plan. The following set of goals, objectives and policies covers bicycle facility development, bicycle education and encouragement, system maintenance, and regional connections. Goals, objectives and policies shown in italics are derived from existing General Plan policies.

GOAL 1: EXPAND AND ENHANCE RIVERSIDE'S BIKEWAY NETWORK

Objective: *Provide an extensive and regionally linked on-street and off-street public bicycle network.* (Objective CCM-10.)

> **Policy 1.1:** *Improve and create more connections and increase the safety of on and off-street bicycle system within the City. (Policy PR-2.3)*

[1] The General Plan is discussed more thoroughly in Chapter 4: Planning and Policy Context.

Policy 1.2: Develop the existing and proposed bikeway network as an appropriately designed, continuous network that serves all user groups and skill levels.

Policy 1.3: The design of streets and traffic control devices shall consider the impact on bicyclists as well as the relationship in overall system mobility; travel speed; environmental factors; cost; and neighborhood character.

Policy 1.4: *Maximize links between trails and major activity centers, residential neighborhoods, schools, shopping centers and employment centers.* (Policies CCM-10.8 and ED-4.6)

Policy 1.5: Wayfinding assistance for bikeways should serve at minimum major employment centers, schools, commercial districts, transit stations, recreational centers, and public institutions.

Policy 1.6: *Create a primary trail loop to connect signature parks, county and state open spaces and parks. (Policy PR-2.4)*

Policy 1.7: *Maintain an extensive trails network that supports bicycles, pedestrians and horses and is linked to the trails systems of adjacent jurisdictions. (Policy CCM-10.5)*

GOAL 2: PLAN FOR THE NEEDS OF BICYCLISTS

Objective: *Ensure that bicyclist needs are incorporated into City planning, design and construction projects.*

Policy 2.1*: Design all street improvement projects in a comprehensive fashion to include consideration of street trees, pedestrian walkways, bicycle lanes, equestrian pathways, signing, lighting, noise and air quality wherever any of these factors are applicable. (Policy CCM-2.9)*

Policy 2.2: *Incorporate on-street and off-street bicycle facilities and bicycle parking in future development projects. (Policy CCM-2.9)*

Policy 2.3: *Evaluate the needs of bicycle traffic in the planning, design, construction and operation of all roadway projects funded by the City. (Policy CCM-10.10)*

Policy 2.4*: Provide sufficient paved surface width to enable bicycle traffic to share the road with motor vehicles where traffic volumes and conditions warrant. (Policy CCM-10.11)*

Policy 2.5: Coordinate non-motorized Capital Improvement Program projects with other planned roadway and re-surfacing projects to maximize construction and cost efficiencies.

Policy 2.6: *Seek opportunities to provide enhanced bicycle usage along parkways, as designated in the Riverside General Plan. (LU-11.3)*

Policy 2.7: Enhance bicycle facilities, including but not limited to on-street bicycle facilities, wayfinding signage, bike parking and bicycle-transit connections along the Magnolia Avenue/Market Street to University Ave corridor.

Policy 2.8: *Work with the school districts to incorporate bicycle access, racks and bike lanes into school design. (Policy ED-4.3)*

Policy 2.9: *Implement pedestrian and bicycle safety measures in any new grade separation project. (Policy PS-5.5)*

GOAL 3: ELIMINATE BARRIERS TO BICYCLING

Objective: *Identify and seek to eliminate hazards to safe, efficient bicycle movement citywide. (CCM-10.4)*

Policy 3.1: Minimize disruption to bicycle facilities during capital improvement and private development construction as well as maintenance activities to facilitate bicyclist safety at all times, and provide alternate routes if required.

Policy 3.2: All actuated signalized intersections should be evaluated for need of operable and marked bicycle loop detectors.

Policy 3.3: The City will coordinate and communicate with affected jurisdictions and agencies regarding bikeways planning and implementation.

Policy 3.4: *Ensure adequate connections among all alternative modes, including bicycle amenities at transit stations and on transit vehicles. (Policy CCM-9.7)*

Policy 3.5: Monitor and evaluate collisions involving bicyclists and use this information to assist in developing remedies for existing problem locations.

Policy 3.6: Improve safety for bicyclists and other non-motorized users by encouraging traffic calming, intersection improvements, or other similar actions.

GOAL 4: INCREASE AWARENESS OF AND USE OF THE BICYCLE AS A VIABLE TRANSPORTATION ALTERNATIVE

Objective: Educate Riversiders about the benefits of bicycling and encourage bicycling as an alternative transportation option.

Policy 4.1: *Promote the health benefits of using a bicycle as a means of transportation. (Policy CCM-10.5)*

Policy 4.2: *Encourage bicycling as a commute mode to school, work, etc. (Policy CCM-10.12)*

Policy 4.3: Support and expand existing adult and youth bicycle events and education and safety programs that promote bicycling.

Policy 4.4: Enforce bicycle-related violations by both motorists and bicyclists, and emphasize positive enforcement for safe bicycling behavior in children.

Policy 4.5: *Develop more recreational opportunities for the secondary trail system in Riverside. Opportunities could include triathlons and bike races. (Policy PR-2.5)*

GOAL 5: PRESERVE AND SUSTAIN EXISTING BICYCLE INFRASTRUCTURE

Objective: Ensure that the existing bicycle infrastructure is well maintained on a timely basis and will be considered an integral part of the City's transportation network.

Policy 5.2: Develop a program to routinely repair and maintain roads and other bikeway network facilities, including regular sweeping of bikeways and shared use pathways.

Policy 5.3: Include the costs of bicycle facilities' maintenance needs when developing the maintenance needs of streets and roadways generally.

Policy 5.4: Establish a policy to explore all other options before removing designated bikeways for road expansion, construction or other development.

3. EXISTING CONDITIONS

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

3.1. SETTING

LOCATION

The City of Riverside is located in the westernmost tip of Riverside County. Encompassing 90 square miles, the City is bordered on the northwest by the Santa Ana River, the east by Box Springs Mountain Reserve and Moreno Valley, the south by unincorporated Riverside County, and the west by the Cities of Norco and Corona. Riverside is bisected along its northeast-southwest axis by State Route 91 (SR-91) while Interstate 215 (I-215) runs through the northeastern section of the City. The City's estimated population in 2004 was 292,056.[1] This number does not include the approximately 40,000 students that attend Riverside's four universities.

[1] 2004 American Community Survey

LAND USES

The City of Riverside is defined by 26 different neighborhoods and two industrial parks. Each area offers different lifestyle choices, from rural to suburban to urban living. Most of the neighborhoods are complete—they offer residential, employment, education and cultural opportunities. The neigborhoods and a summary of existing and future land use is outlined in **Table 3-1**. A map of Riverside's neighborhoods is provided in **Figure 3-1**.

Figure 3 - 1. City of Riverside's Neighborhoods
Source: City of Riverside website: http://www.riversideca.gov/ Last accessed August 14, 2006.

Table 3-1: Riverside Neighborhoods Land Use

Neighborhood	Existing Land Use	Future Land Use Policies
Airport	Riverside Airport. Limited residential.	Attract jobs to airport area and preserve residential uses.
Alessandro Heights	Hilly, arroyos, many natural features. Very-low-density residential: estate residential and hillside residential.	No land use changes. Circulation changes include connecting Overlook Parkway. Maintain low-density residential character and preserve natural features.
Arlanza	Diverse land use. Residential ranges from semi-rural to high-density apartments. Industrial development along Arlington, commercial along Van Buren. Twin Buttes hillsides.	Support continued industrial uses, but redevelop as mixed-use, office and business park in the future. Encourage semi-rural opportunities. Encourage infill development.

Neighborhood	Existing Land Use	Future Land Use Policies
Arlington	Oldest neighborhood. Contains commercial and residential. Arlington Village is "downtown" commercial and retail.	Focus commercial development at intersections, maintain grid system, preserve Magnolia Avenue's historic character, consolidate driveways and parking along Magnolia, spur economic revitalization.
Arlington Heights	Agricultural development. Riverside's greenbelt. Victoria Avenue, Gage Canal. Very- -low-density residential.	Preserve agricultural land and open space. Ensure that Victoria Avenue and its cross streets remain accessible to pedestrian and bicycle as well as automobile use.
Arlington South	industrial and commercial in the north, medium density residential in south	concentrate commercial uses around Van Buren/Indiana intersection, maintain and extend grid residential street network, and maintain as single family residential area, spur economic revitalization of neighborhood
Canyon Crest	rolling hills, mature landscaping, Canyon Crest Town Center, all is developed or planned for development	maintain natural elements, support efforts to diversify offerings at Canyon Town Center, encourage maintenance of multi-family developments
Casa Blanca	Primarily single-family residential, with commercial along Indiana Ave. and Jefferson St. Casa Blanca Redevelopment Area. Longstanding and active neighborhood led community revitalization.	Affordable infill development, maintain partnership between community groups and city, economic revitalization, encourage non-polluting industrial, encourage public support facilities.
Downtown	Compact, grid street pattern, historic homes and public sites, City and County government buildings, walkable, pedestrian mall, commercial and residential.	Encourage high-density residential, office, commercial and entertainment. Create a downtown that is active on weekends and evenings.
Eastside	Mainly residential, low- to medium-high density. Riverside Marketplace, University Avenue. Community active in revitalization efforts.	Transit oriented development at Riverside Marketplace, mixed use development along University Avenue. Work with community in developing revitalization plans. Encourage employment opportunities for residents.
Grand	Adjacent to downtown, but more suburban and rural feel. Flat areas have grid street network, hillier areas do not. Fully developed residential areas. Tequesquite Parcel is undeveloped.	No significant land use changes planned. Establish public access to Santa Ana River through Tequesquite Parcel.
Hawarden Hills	Gage Canal, tree lined Hawarden Drive, Hawarden Hills Ridgeline. Low-density single family residential. No commercial or public uses.	No significant land use changes. Preserve single family low density. Preserve street trees and character of Hawarden Drive.

Neighborhood	Existing Land Use	Future Land Use Policies
Hunter Industrial Park	1300-acre industrial park northeast of downtown. Hunter park and small residential neighborhood near University Ave.	Encourage clean industries, high technology, biotechnology, and other industries that have a high jobs to acreage ratio, while protecting existing residential neighborhoods
La Sierra	La Sierra University, on-campus housing, commercial. Galleria at Tyler, Five Points, Kaiser Hospital. Industrial areas along 91 Freeway. Residential areas range from rural on hillsides to medium-high-density near Magnolia. La Sierra Metrolink Station. "City-within-the-City" feel.	Provide enhanced bicycle and pedestrian connections across the 91 Freeway to the La Sierra Metrolink Station, encourage pedestrian oriented retail and commercial in five points area. Develop as a major employment center, increase residential densities.
La Sierra Acres	Low-density residential and semi-rural with animal husbandry. Santa Ana River open space to north.	Maintain semi-rural animal husbandry opportunities. Ensure development of Rancho La Sierra property includes trails linking from Santa Ana River to neighborhoods to the south, trail access along the river.
La Sierra Hills	Rural character with easy access to nearby commercial.	Encourage development of suburban and semi-rural/rural with animal husbandry. Area includes portions of future Rancho La Sierra residential development.
La Sierra South	Residential, commercial, industrial, La Sierra Metrolink.	Maintain industrial. Encourage infill development. Encourage development of mixed-use transit village at La Sierra Metrolink Station.
Magnolia Center	Considered "second downtown", convergence of several streets, Magnolia Ave, Arlington Ave, Central Ave, Jurupa Ave, Brockton Ave	New commercial, residential, retail development, mixed use development for Riverside Plaza, mixed use development along Magnolia as transition between commercial and single family residential.
Mission Grove	New neighborhood, low density residential north, commercial and office parks to south, near March Air Force Base	Follow specific plan, but do not allow changes that create more residential development near March AFB.
Northside	Semi-rural and suburban residences, office park, open space	Focus commercial uses along West La Cadena Drive at Columbia Ave and West Center Street locations. Pursue beautification strategies.
Orangecrest	Largely residential master planned community, adjacent to March AFB.	Encourage development of parks, retail and commercial to serve neighborhood.
Presidential Park	Riverside Auto Center. Residential areas. Borne from a redevelopment project.	Improve multi-family unit upkeep, encourage clean businesses, support auto center viability.

Neighborhood	Existing Land Use	Future Land Use Policies
Ramona	Most populous neighborhood, all income ranges. Sherman Indian School. California Baptist University. Historic landmarks. Close to commercial on Magnolia and Arlington.	Maintain single-family residential homes and improve transit access to Arlington Village and Magnolia Center. Develop mixed-use development along Magnolia Ave.
Sycamore Canyon Business Park/Canyon Springs	Business park, mostly warehousing, some residential.	Establish as a center for economic growth. Attract job intensive businesses with higher pay.
University	University of California at Riverside, some residential neighborhoods.	Protect character of existing single-family neighborhoods. Encourage revitalization of commercial areas as mixed use. Encourage a diversity of housing. Encourage student housing & mixed use development along University Avenue corridor
Victoria	Residential, many planned developments with private recreation, custom homes, historic homes, some commercial.	No major land use plans. Encourage cluster development and designate Victoria Ave as a city park.
Wood Streets	Neighborhood conservation area with shady mature trees, small lots, built in 1913, almost entirely residential and completely built out.	No major land use plans. Tree preservation and home preservation.

Future Land Use Development

Riverside's General Plan 2025 focuses new growth along in-town corridors and encourages mixed-use development that supports transit and other non-motorized modes. The plan identifies several streets as "parkways" which will be used to provide multi-modal connections between the City's residential neighborhoods, employment centers, schools and recreational amenities. Parkways are discussed in more detail in Chapter 4: Planning and Policy Context.

The Magnolia Avenue/Market Street to University Ave corridor is designated as a focus area to concentrate mixed-use development and provide multi-modal transportation, incuding bicycle, pedestrian and transit facilities.

Activity Centers

- **Downtown Riverside**
- **Major Universities**
  La Sierra University
  California Baptist University
  Riverside Community College
  University of California Riverside
- **Regional Shopping/Mixed Use**
  Galleria at Tyler
  Riverside Plaza
  Riverside Marketplace
  University Village
- **Local Shopping/Mixed Use Centers**
  Arlington Village
  La Sierra Transit Station
  Brockton Arcade
  Eastside/Park Avenue
  Five Points
  Sears/Hardman Center
  Canyon Crest Town Center
  Van Buren Boulevard
  Mission Grove
  Orangecrest
- **Major Employment Centers**
  Enhanced La Sierra/Gateway Industrial area
  Kaiser Medical Center area
  Magnolia Center (Brockton Arcade/Riverside Plaza)
  Fleetwood Enterprises
  Hunter Business Park
  Sycamore Canyon Business Park
  Airport Industrial Park
  March Air Reserve Base
  Riverside Auto Center

The City of Riverside is also pursuing several annexations adjacent to the City. These are shown in **Figure 3-2**.

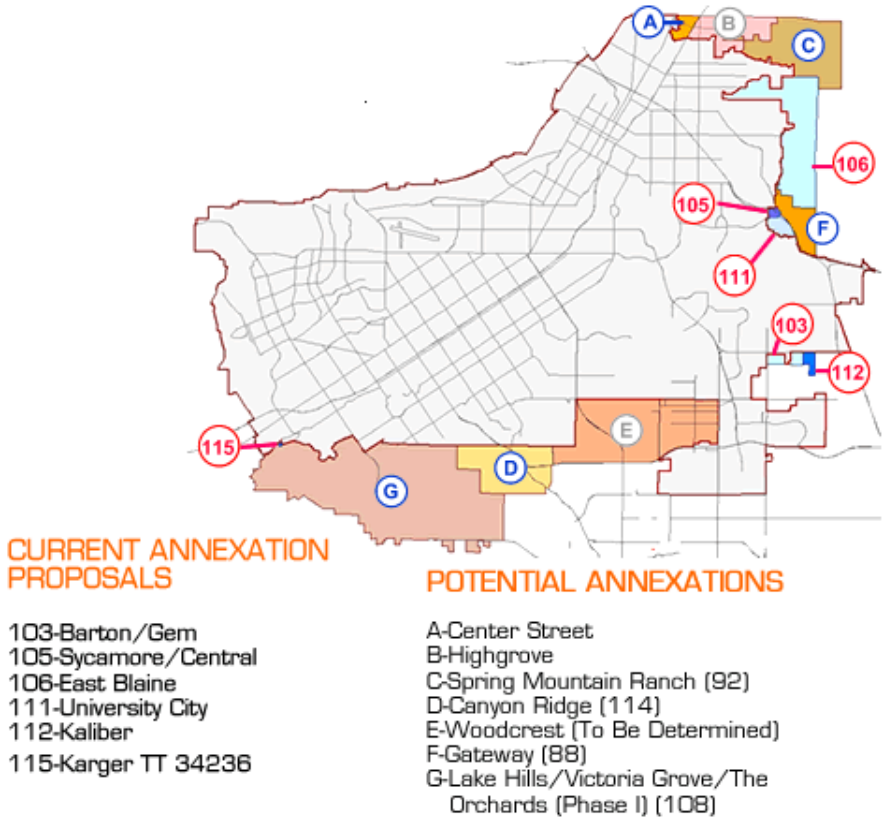


Figure 3-2 City of Riverside Annexation Proposals

SCHOOLS

University of California, Riverside

Riverside is home to the University of California's Riverside campus, located in the eastern side of the City. Campus enrollment was 16,622 in the 2005-2006 academic year, and is expected to climb to 22,000 students by 2015 The University plans on expanding graduate level housing and educational facilities west of Interstate 215 and developing land uses on the West Side of Campus to complement University Avenue development. The University plans on increasing linkages between East and West Campus.

Starting in 2004, the University has provided free registration services for student, staff, and faculty owned bicycles. Bicycles are given a serial number which is entered in the California DMV database. Cyclists who register are given a brochure outlining safety tips and campus bicycle rules. The University credits the program with reducing bicycle thefts on campus.

Several city streets that lead to the UCR campus have bicycle lanes. These bicycle lanes generally continue onto the Riverside Campus. Within the campus, Class II bicycle lanes are striped on Canyon Crest, Linden, Aberdeen, Big Springs and the campus loop road. The University is in the process of writing a bicycle plan. The draft plan includes the following recommendations:

- Establish a bicycle route through campus to reduce pedestrian-bicyclist conflicts;
- Connect the City's University Avenue bicycle lane;
- Work with the City to jointly fund and develop bicycle improvements;
- Include the campus bicycle routes in the City's Bicycle Master Plan.

California Baptist University

California Baptist University is located at 8432 Magnolia Avenue on a 103-acre campus. As of 2006, approximately 3,100 students were enrolled. Bicycle registration is required by the University and offered for free. The university police department has a bicycle patrol unit.

La Sierra University

La Sierra University is a private Christian university located in the La Sierra neighborhood at 4500 Riverwalk Parkway. As of 2004 1,924 students were enrolled. Students may keep bicycles in their dorm rooms. School security maintains a bicycle patrol.

Riverside Community College

Riverside Community College maintains a campus in downtown Riverside at 4800 Magnolia Avenue. Satellite campuses are located in Moreno Valley and Norco. Student enrollment is projected to increase to 53,000 by 2014. The college police department maintains a bicycle patrol unit.

Elementary, Junior and High Schools

Alvord Unified School District serves western Riverside and a small portion of Corona. The District runs 12 elementary schools (year round), 4 middle schools, 2 high schools and 1 alternative/continuation school.

Riverside Unified School District serves most of Riverside, plus Highgrove, Woodcrest and Lake Matthews areas of the County. The forty-six schools under Riverside Unified School District's jurisdiction include 29 elementary schools, 1 special education pre-school, 6 middle schools (grades 7-8), five high schools (9-12), two alternative/continuation high schools, and one adult alternative education school. Four new elementary schools and one new middle school planned for opening in 2005-2006.

Riverside also is home to Sherman Indian High School, a boarding school for Native American students. It serves students grades 9-12 and is located at 9010 Magnolia Avenue.

Table 3-2 provides an inventory of elementary and middle schools in Riverside.

Table 3-2
Public Elementary and Middle Schools in Riverside

School Name	School District	Address
Adams Elementary School	Riverside	8362 Colorado Ave
Alcott Elementary School	Riverside	2433 Central Ave
Bryant Elementary School	Riverside	4324 3rd St
Castle View Elementary School	Riverside	6201 Shaker Dr
Emerson Elementary School	Riverside	4660 Ottawa Ave
Franklin Elementary School	Riverside	19661 Orange Terrace Pkwy
Fremont Elementary School	Riverside	1925 N. Orange St
Grant Elementary School	Riverside	4011 14th St
Harrison Elementary School	Riverside	2901 Harrison St
Hawthorne Elementary School	Riverside	9174 Indiana Ave
Highgrove Elementary School	Riverside	690 Center St, Riverside
Highland Elementary School	Riverside	700 Highlander Dr
Hyatt Elementary School	Riverside	4466 Mt Vernon Ave
Jackson Elementary School	Riverside	4585 Jackson St
Jefferson Elementary School	Riverside	4285 Jefferson St
Kennedy Elementary School	Riverside	19125 Schoolhouse Ln
Lake Matthews Elementary School	Riverside	12252 Black Burn Rd
Liberty Elementary School	Riverside	9631 Hayes St
Longfellow Elementary School	Riverside	3610 Eucalyptus Ave
Madison Elementary School	Riverside	3635 Madison St
Magnolia Elementary School	Riverside	3975 Maplewood Pl

School Name	School District	Address
Mark Twain Elementary School	Riverside	19411 Krameria Ave
Monroe Elementary School	Riverside	8535 Garfield St
Mountain View Elementary School	Riverside	6180 Streeter Ave
Pachappa Elementary School	Riverside	6200 Riverside Ave
Rivera Elementary School	Riverside	20440 Red Poppy Ln
Sunshine Elementary School	Riverside	9390 California Ave
Taft Elementary School	Riverside	959 Mission Grove Pkwy
Victoria Elementary School	Riverside	2910 Arlington Ave
Washington Elementary School	Riverside	2760 Jane St
Woodcrest Elementary School	Riverside	16940 Krameria Ave
Central Middle School	Riverside	4795 Magnolia Ave
Chemawa Middle School	Riverside	8830 Magnolia Ave
Earhart Middle School	Riverside	20202 Aptos St
Gage Middle School	Riverside	6400 Lincoln Ave
Sierra Middle School	Riverside	4950 Central Ave
University Heights Middle School	Riverside	1155 Massachusetts Ave
Arlanza Elementary School	Alvord	5891 Rutland Street
Collett Elementary School	Alvord	10850 Collett Avenue
Foothill Elementary School	Alvord	8230 Wells Avenue
La Grandad Elementary School	Alvord	10346 Keller Avenue
McAuliffe Elementary School	Alvord	4100 Golden Avenue
Myra Linn Elementary School	Alvord	10435 Branigan Way
Orrenmaa Elementary School	Alvord	3350 Fillmore Street
Rosemary Kennedy Elementary School	Alvord	6411 Mitchell Avenue
Terrace Elementary School	Alvord	6601 Rutland Avenue
Twinhill Elementary School	Alvord	11000 Campbell Avenue
Valley View Elementary School	Alvord	11750 Gramercy Place
Arizona Middle School	Alvord	11045 Arizona Avenue
Loma Vista Middle School	Alvord	11050 Arlington Avenue
Villegas Middle School	Alvord	3754 Harvill Lane
Wells Middle School	Alvord	10000 Wells Avenue

PARKS, RECREATION FACILITIES AND COMMUNITY CENTERS

The City of Riverside has 52 City parks. These parks, in combination with additional open space, total more than 23,000 acres. A key policy of the Riverside Bicycle Master Plan is to provide bicycle connections to the City of Riverside's many parks and recreational facilities.

The City of Riverside categorizes its local parks into four subcategories—pocket parks, neighborhood parks, community parks and special use parks. Pocket parks are less than 2 acres and contain miscellaneous amenities. Neighborhood parks are typically 10 acres in size and serve residents within a half mile. Community parks are generally 20 to 30 acres in size and are designed to serve between twenty and thirty thousand residents. Special use parks are dedicated to specific recreational uses such as baseball, swimming or other organized sports. The City also recognizes "signature parks," which have historic and cultural significance to the community.

Parks and recreation facilities are an important source of bicycle support facilities for Riverside cyclists. Larger parks typically contain features such as sports facilities, restrooms, and picnic areas. **Table 3-3** lists Riverside parks that contain restroom facilities.

All of Riverside's community centers are located within or adjacent to a park. These centers provide recreational, educational and human service programs for the community. Programs include adult and youth sports leagues, day care, youth and adult education, and facility rental. **Table 3-3** identifies which parks contain community centers.

Table 3-3
Parks with Restroom Facilities in Riverside

Park	Location	Other Amenities
Arlington Park	3860 Van Buren Blvd	
Bobby Bonds Park	2060 University Ave	Cesar Chavez Community Center
Bordwell Park	208 Martin Luther King Blvd	Stratton Community Center
Bryant Park	7950 Philbin St	Arlanza Community Center
Don Derr Park	3003 Monroe St.	
Don Jones Park	3995 Jefferson St.	
Don Lorenzi Park	4230 Jackson St	
Fairmount Park	2601 Fairmount Blvd	
Hunt Park	4015 Jackson St	Renck Community Center
Hunter Park	1400 Iowa Ave	
La Sierra Park	5215 La Sierra Ave	La Sierra Community Center
Lincoln Park	4261 Park Ave.	
Myra Linn Park	4540 Meredith St.	
Nichols Park	5505 Dewey Ave.	Joyce Jackson Community Center
Orange Terrace Community Park	20010 Orange Terrace Pkwy.	
Patterson Park	1841 Linden St.	
Reid Park	701 N. Orange St.	Ruth Lewis Community Center
Riverside Sports Complex	1014 Blaine St.	

Park	Location	Other Amenities
Shamel Park	3650 Arlington Ave.	
Villegas Park	7260 Marguerita St.	Ysmael Villages Community Center
Washington Park	2769 Mary St.	

Source: City of Riverside Parks and Recreation Department, http://www.riversideca.gov/park_rec/pdf/facilities.pdf Accessed August 14, 2006

The City is proximate to several regional or reserve parks and nearby State and County park facilities. Many of these parks provide mountain biking opportunities.

Nearby State and County facilities include:

- California Citrus State Historic Park
- Hidden Valley Wildlife Area
- Santa Ana River Trail
- Martha McLean-Anza Narrows Park
- Box Springs Mountain Reserve
- Lake Perris State Recreation Area

LIBRARIES

The Riverside Library system includes five traditional libraries and two "cybraries." Cybraries provide internet-based materials and educational resources. The libraries include: Main Library, Arlington Neighborhood Library, Casa Blanca Family Learning Center, Marcy Neighborhood Library, La Sierra Neighborhood Library, Eastside Cybrary (near Chicago and University Avenues) and Nichols Cybrary (located in Joyce Jackson Community Center in Nichols Park).

3.2. EXISTING BICYCLE FACILITIES

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.

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 Riverside (with the exception of access-controlled freeways). As such, Riverside'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 Riverside to then focus resources on building out this primary network.

Further discussion of these bikeway types is provided in Chapter 6, Recommended Improvements.

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

EXISTING OFF-STREET BIKE PATHS

The City of Riverside has two official off-street bike paths. The Santa Ana River Trail parallels the Santa Ana River to the north of the City. The trail, when completed, will travel the length of the Santa Ana River between San Bernardino National Forest to the Pacific Ocean at Huntington Beach. The trail is completed through most of the City of Riverside. The City has plans to finish the southern section, completing the trail through the entire City.

Victoria Avenue is a tree-lined parkway with parallel bicycle and equestrian paths. Though the side path alignment is not recommended by Caltrans, traffic along Victoria Avenue is slow enough to reduce potential motorist-cyclist conflicts. Motorist cross traffic is controlled by stop signs. On-street bike lanes also parallel most of the route. As a result, the Victoria Avenue corridor is used by cyclists of varying abilities.

The access road alongside Gage Canal, while not an official bicycle or pedestrian trail, is currently used by cyclists and pedestrians. The road is unpaved, and therefore does not meet Caltrans Class I bike path standards. This plan proposes formalizing the use of the Gage Canal access road.

EXISTING ON-STREET BIKE LANES AND ROUTES

As shown in Figure 3-3, Riverside's existing bikeway network is comprised of Class II bike lanes along many major streets. The backbone of the bikeway network is the 9.5-mile bike lane that follows the Magnolia/Market corridor.

CITY OF RIVERSIDE

alta PLANNING + DESIGN

FIGURE 3-3
CITY OF RIVERSIDE
EXISTING BIKEWAYS

Bikelanes during off-peak hours only.

Legend

- Highways
- Parks
- Elementary and Middle Schools
- High Schools and Universities

Bikeways

- Bike Path and Lane- Existing
- BikePath - Existing
- Bike Lane- Existing
- Trail- Existing

Data: City of Riverside, CA. Field work.
Date: December 2006

2 Miles

0 0.5 1 1.5 2

Cross-town routes, from northwest to southeast, are less common than routes that extend the length of the city. **Tables 3-4** and **3-5** show the limits and lengths of existing Class I and II bikeway segments in the city, respectively. The City does not have any existing Class III bicycle routes at this time.

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

Name	Length (Miles)
Santa Ana River Trail	7.5
Springbrook Wash Arroyo Trail	1.0
Gage Canal Trail	1.9
Victoria Ave	7.6
Total	**18.0**

Source: Alta Planning + Design field inventory, Riverside GIS data, June 2006.

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

Street	Extents	Miles
3rd St/Blaine St	Market St to Watkins Dr (with gaps at Vine St, Kansas Ave and Chicago Ave)	2.1
Adams St	Arlington Ave to California Ave	0.5
Alessandro Blvd	Victoria Ave to Trautwein Rd	2.9
Arlington Ave	Coolwater Dr to Van Buren Blvd (gap in front of Norte Vista High School at Tyler St) Streeter Ave to Alessandro Blvd	6.2
California Ave	Arlington Ave to Polk St (gap between Jackson St and Van Buren Blvd)	3.6
Canyon Crest Dr	Central Ave to Watkins Dr (with bike lanes continued on Campus Dr through UCR)	2.0
Central Ave	Chicago Ave to Watkins Dr	2.7
Chicago Ave	Alessandro Blvd to Central Ave	1.0
Colorado Ave	Arlington Ave to Van Buren Blvd	1.4
Iowa Ave	South of Blaine St to University Ave	0.4
La Sierra Ave	Arlington Ave to Victoria Ave (gaps between Gramercy Pl and Hole Ave, between Magnolia Ave and Indiana Ave)	3.7
Linden St	Kansas St to Canyon Crest Dr	1.7
Lochmoor Dr	Central Ave to Sycamore Canyon Blvd	1.5
Magnolia Ave/Market St	South of Rte 60 Interchange to Buchanan St (with gaps between 1st St and 3rd St, between Madision St and Jefferson St, between Farnham Pl and Muir Ave)	9.5
Martin Luther King Blvd	Ottawa Ave to Canyon Crest Dr	1.0
Orange Terrace Pkwy	Trautwein Rd to Van Buren Blvd	2.1
Pierce St	La Sierra Ave to Collett Ave	1.5
Riverwalk Pkwy	Pierce St to Pierce St	1.3
Spruce St/Watkins Dr	Main St to Central Ave	2.0
Trautwein Rd	Alessandro Blvd to Van Buren Blvd	4.8
University Ave	Park Ave to Campus Dr (gap between Eucalyptus Ave to Ottawa Ave)	1.8

Van Buren Blvd	Arlington Ave to California Ave, North City Limits to Jurupa Ave, Canal St to Firethorn Ave	2.7
Total		**56.4**

Source: Alta Planning + Design field inventory, Riverside GIS data, June 2006.

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, Riverside uses standard Caltrans bikeway signage for Class II bike lanes and Class III bike routes. Signage requirements for Class I bike paths are outlined in Riversides "Multi-Purpose Recreational Trails Master Plan and Trails Standards," adopted in 1996 by the Riverside City Council. Class I Bike Paths use decals affixed to carsonite posts or trail fence posts. The 3 ½-inch, square decals contain images of bicycles, pedestrians or equestrians as appropriate. Other trail signs designate hazards, clearance requirements, approaching intersections, the need to stop or yield, and staging areas.

BICYCLE PARKING

La Sierra Metrolink Station provides both lockers and racks

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 most 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. Cyclists with higher-end bicycles are often reluctant to let a bicycle out of their sight at all, and may instead forgo outside racks and lockers and instead bring their bicycle into the building with them.

In California, bicycle parking facilities are classified as either Class I or Class II facilities

Class I Parking – Long Term Facilities include secure areas such as lockers or bicycle "cages" that can be locked by the cyclist. Used mainly by students, employees, residents and others expected to park for more than two hours.

Class II Parking – Short Term Facilities include bicycle racks. Cyclists provide their own locks to secure their bicycles. Used mainly by shoppers, visitors, messengers and others expected to depart within two hours.

Bicycle Parking Ordinance

The Riverside Municipal Code does not currently provide standards for bicycle parking implementation or bicycle parking requirements for new development.

Bicycle parking ordinances can encourage bicycling by providing cyclists with secure and convenient storage for their bicycles at their destination.

The Municipal code does, however, state that businesses may install bicycle racks on sidewalks in front of their place of business after securing a permit. Bike rack permits will be granted after an application is filed with the City Clerk and a hearing before City Council establishes that placement of the rack will benefit public safety and convenience and will not harm occupants of the building in front of which it is placed. (Section 10.64.210 Issuance of rack permit.)

Riverside Existing Bicycle Parking Facilities

Bicycle parking is available at all of Riverside's public elementary and middle schools. RCTC provides locker space for six bicycles at the La Sierra Metrolink Station and is planning on installing bicycle racks at the Downtown Riverside Station. Several of Riverside's largest employers provide bicycle parking for employees. Specific details are available in **Table 3-6**.

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 more likely to ride to work if employers offer bicycle support facilities which offer a safe place to store bicycles, changing facilities and showers.

Table 3-6 shows eight of Riverside's largest employers and the bicycle support facilities offered by each.

Table 3-6
Bicycle Racks and Support Facilities
at Eight of Riverside's Largest Employers

Employer	Bike Racks	Bike Lockers	Showers	Notes
County of Riverside	Yes – space for 10 bicycles	Yes – 8 provided, 3 in use	Yes	Also provides clothing lockers.
University of California, Riverside	Yes	Yes – 337 racks (2076 bike parking spaces)	Yes	Registered bicycle commuters receive limited free car parking, a recreation center pass, locker, lock and towels.
Kaiser Permanente Riverside Medical Center	Yes- 3 in front of building 1 in employee parking garage	Yes – 4 provided in employee parking garage	No	Three racks are "strategically located" in front of the hospital to provide bike parking for employees, visitors and patients.
Riverside Unified School District	Yes	No	No	Bicycle racks provided for students. Faculty and staff do not have bicycle parking facilities, but in some cases may store their bicycle in other locations.
Fleetwood Enterprises Inc.	No	No	Yes	Showers and lockers are available in the company gym.
Pacific Bell	Not Available			
Riverside County Office of Education	No	No	No	
Riverside Community Hospital	Yes	No	No	Lockers were provided formerly, but were damaged and not replaced. The hospital allows employees to lock bicycles near their departments or bring the bicycles inside.

Source: Alta Planning + Design Telephone Survey, August 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 Riverside are discussed in **Section 3-1** above and shown on **Figure 3-3.**

Bicycle shops are important for bicyclists making trips within urban areas in the event their equipment fails and they need repair parts or service. Riverside is

home to seven bicycle shops, listed in **Table 3-7**. Several of the shops listed below have websites which provide links to local bicycling resources and clubs.

Table 3-7: City of Riverside Bicycle Shops

Name	Location
Don's Bikes	384 S Riverside Ave
Redlands Cyclery USA	Riverside, CA 92501
Anthony's Cyclery	1450 University Ave Ste L
Sportmart Inc	3380 Tyler St
Starklite Cycle	Riverside, CA 92504
Super Gel Products	7535 Jurupa Ave Ste A
Woodcrest Bicycle Center	16960 Van Buren Blvd Ste A

3.3. BICYCLE FACILITY MAINTENANCE

Currently, the maintenance of Riverside's bikeway facilities consists of restriping, re-stenciling and sweeping, as needed. The City's Public Works Department Street Services Division is responsible for sweeping and maintaining City streets, including on-street bikeway facilities. Other maintenance activities are conducted on an as-needed basis by the City.

3.4. PAST BICYCLE PROGRAM EXPENDITURES

Past City expenditures on bicycle facilities were not available for this document. However, based on the miles of existing bikeways, it can be estimated that the city has spent approximately $2.95 million on on-street Class II bicycle striping.

3.5. ENFORCEMENT AND EDUCATION PROGRAMS

ENFORCEMENT

Section 10.64.230 of the Riverside Municipal Code states that "Every person riding a bicycle upon a roadway shall be granted all of the rights and shall be subject to all of the duties applicable to the driver of a vehicle by the laws of this State declaring rules of the road applicable to vehicles or by the traffic ordinances of this City applicable to the driver of a vehicle…"

Other provisions specific to bicycles in the Riverside Municipal Code include:

Section 10.64.240 Obedience to traffic control devices.

A. Bicyclists shall obey the instructions of official traffic control signals, signs and other control devices applicable to vehicles.

B. Whenever authorized signs are erected indicating that no right or left or "U" turn is permitted, no bicyclist shall disobey the direction of any such sign, unless the bicyclist dismounts from the bicycle to make any such turn obeys the regulations applicable to pedestrians.

C. When signs or markings are placed on any street or sidewalk giving notice that a portion of that street or sidewalk has been designated as a bicycle lane, no person shall drive, park, or operate any vehicle or any bicycle in any manner contrary to the directions posted on such signs.

Section 10.64.260 Riding on roadways and bicycle paths.

A. Every person operating a bicycle upon a roadway shall ride as near to the right side of the roadway as practicable, exercising due care when passing a standing vehicle or one proceeding in the same direction.

B. Persons riding bicycles upon a roadway shall not ride more than two abreast except on paths or parts of roadways set aside for the exclusive use of bicycles.

C. Wherever a usable path for bicycles has been provided adjacent to a roadway, bicycle riders shall use such path and shall not use the roadway, except those roadways designated by resolution of the City Council. This provision shall not apply to sidewalks, parkways or other areas unless specifically designated for the use of bicycles by official signs

Section 10.64.280 Emerging from alley or driveway.

The operator of a bicycle emerging from an alley, driveway or building shall, upon approaching a sidewalk or the sidewalk area extending across any alleyway, yield the right-of-way to all pedestrians approaching on the sidewalk or sidewalk area, and upon entering the roadway shall yield the right-of-way to all vehicles approaching on the roadway.

Section 10.64.310 Riding on sidewalks.

Except for authorized police bicycle patrols, no person shall ride a bicycle upon a sidewalk or parkway unless signs are erected permitting use of such sidewalk or parkway by bicycles.

The City of Riverside Police Department enforces all bicycle and motorist traffic violations. Youth under 18 years who receive a ticket for a bicycle, skateboard, jaywalking or helmet violation must attend a violator course with their parents. Attendees pay $10 and receive a helmet at the end of the course. The violator course is run by the Police Department's Traffic Education Coordinator.

In addition to the violator program, the Police Department provides proactive incentives to encourage youth to ride safely. One example of this is the Safety Cite program, in which police officers or park rangers stop and thank young riders for following traffic laws and wearing appropriate protective equipment and write them a "Safety Citation". Youth who receive a Safety Citation have a letter sent to their parents that acknowledges their good behavior, and are eligible for a bicycle raffle in the City's annual Traffic Safety Fair.

The Riverside Police Department has a bicycle patrol unit.

EDUCATIONAL PROGRAMS

In 1996, in response to several collisions involving youth, Riverside's Police Department expanded their Traffic Education programs. Ten years later, the Riverside Police Department has a full time Traffic Education Coordinator who oversees all traffic education programming that covers all aspects of traffic safety, including seatbelt use and drunk driving as well as bicycle, pedestrian and skateboarding safety.

The Police Department offers bicycle safety classes that can be customized for any age. The curriculum includes the laws and safety practices for biking, skateboarding, in-line skating and motorized scooters. The programs focus on not only learning traffic laws but also understanding the reasoning behind the laws. Three typical options are offered, though any custom class can be created:

Traffic Safety Classes are geared toward ages 6 to 18 and offered in February, May, August and November. Classes run 1 ½ to 2 hours, and require that the parents accompany their children. Helmets are available for students at a reduced rate.

Bicycle Safety Classes can be scheduled for a neighborhood, community group, or club. These classes can be customized to meet the needs of the group.

School-based **safety presentations** are available for Riverside Schools. Safety presentations can be for a classroom or for a school-wide assembly. Schools that participate in safety presentations are eligible to offer reduced-cost helmets to their students.

BICYCLE CLUBS

Though not officially sponsored by the City, it is important to mention Riverside's bicycle clubs. The clubs sponsor on-road and off-road rides and riding clinics and generally promote recreational cycling within the City of Riverside. Clubs include: Riverside Bicycle Club (in existence for over 100 years), the University of Riverside Cyclery Club (open to university students only), Anthony's Cyclery/UCR Club (open to anyone), and Citrus Valley Velo (competitive on-street riding club based in Redlands that has rides in Riverside). The Riverside Bicycle Club sponsors an annual "Riverside to Surfside" century ride that follows the Santa Ana River Trail from Riverside to Huntington Beach.

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 Riverside. Accommodating bicycles on mass transit allows cyclists to increase the distance they can travel and provides an alternative to riding at night or in poor weather.

Making the multi-modal connection consists of three key elements: providing bicycle access to transit stops, providing bicycle parking facilities at transit stops and accommodating bicycles on trains and buses. Riverside currently provides parking facilities at its train stations and the two transit providers: Riverside Transit Agency and Metrolink allow bicycles on transit vehicles. The service areas and bicycle amenities provided by these transit agencies are described in more detail below.

RIVERSIDE TRANSIT AGENCY

Riverside Transit Agency (RTA) provides fixed route, commuter and dial-a-ride bus service within western Riverside County, including the Cities of Riverside, Corona, Norco, Jurupa, Grand Terrace, Loma Linda, Moreno Valley, Perris, San Jacinto, Hemet, Lake Elsinore and Temecula. ADA services within the City of Riverside are provided by the City's Riverside Special Services.

All buses on fixed-routes are equipped with bike racks that hold two bicycles. Cyclists are responsible for loading and unloading their bicycles. There is no additional cost for transporting a bicycle and cyclists do not need a permit to travel with their bicycle. Bicycles are not allowed inside buses, however folding bicycles are allowed inside buses if they are folded. Forgotten or abandoned bicycles are held for up to five business days.

The Riverside Transit Center, located in downtown Riverside, serves as a transfer point for 14 bus lines. The Transit Center is owned by the City of Riverside.

RTA provides easily accessible information about bikes on buses on its website. Information is provided in both English and Spanish. (http://www.riversidetransit.com/bus_info/bikes.htm)

METROLINK

The Riverside County Transportation Commission (RCTC) is one of five transportation commissions located in Southern California that operate Metrolink trains. Metrolink provides commuter rail service from Riverside to downtown Los Angeles, Orange County, San Bernardino County and the Pacific Ocean. Riverside is served by three Metrolink rail lines:

- **91 Line (Riverside Fullerton Downtown LA)** provides weekday service between Riverside and Downtown Los Angeles through Orange County

- **Riverside Line** – provides weekday service between Riverside and downtown Los Angeles through San Bernardino County

- **Inland Empire-Orange County Line** – provides weekday and weekend connections between San Bernardino County to San Juan Capistrano in Orange County

Riverside has two existing Metrolink Stations, both of which are owned and operated by RCTC: La Sierra Metrolink Station at 10901 Indiana Ave, and the Downtown Riverside Metrolink Station at 4066 Vine Street. The Downtown Metrolink Station does not currently have bicycle parking, but RCTC plans to order bicycle racks for installation in Fall of 2006. The La Sierra Station has bike racks and six bicycle lockers. All bicycle lockers are currently in use. RCTC is developing a deposit policy for bicycle lockers, where cyclists pay a refundable $25 key deposit to use the lockers.

Onboard trains, Metrolink has space for two bicycles per rail car. In the event that a car is full, cyclists may be asked to move their bicycles to a different car or take another train at the request of a conductor.

RCTC is developing additional rail service, including the Perris Line, which would extend Metrolink service from downtown Riverside to Perris with stops at UCR and Moreno Valley. The Perris line is planned for completion in 2008. When completed, there would be up to two additional stops in Riverside. Though siting is preliminary, it is expected that one station would be near Spruce Street and the San Jacinto Branch Line and the other would be near 3rd Street and the San Jacinto Branch Line, just on the northern edge of the UCR campus.

OTHER TRANSPORTATION SERVICES

Amtrak Thruway provides commuter bus service between Riverside and the cities of Hemet and San Bernardino

OmniTrans, San Bernardino's bus transit provider, runs daily bus service between downtown Riverside and Montclair. OmniTrans provides bicycle racks on all of its buses.

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 Master Plan. This chapter demonstrates consistency between this Master Plan and existing plans and policies.

4.1. RELEVANT PLANS AND POLICIES

RIVERSIDE GENERAL PLAN

The City of Riverside's General Plan 2025 provides a blueprint for the development of the City through the year 2025. The General Plan was developed with extensive community input. The vision behind the General Plan includes ideas that the Bicycle Master Plan will help realize, including the vision that Riversiders will have "easy access to an efficient, multi-option transportation system that enables them to meet their needs within the community."

Policies that relate to improving bicycle access can be found throughout Riverside's General Plan. The relevant elements of Riverside's General Plan are summarized below and include the Land Use and Urban Design Element, the Parks and Recreation Element, the Air Quality Element, the Circulation and Community Mobility Element, the Public Safety Element, and the Education Element.

Land Use and Urban Design Element

In part the establishment of Riverside's General Plan is a reaction to past and projected future growth in the City of Riverside. The City was asked to make choices about how it would grow. The final vision focuses new growth along well-established in-town travel corridors, rather than on streets on the urban fringe, encourages preservation of the agricultural, hillside, historic and recreational assets, and encourages development of employment centers within the City of Riverside.

The Plan recommends connecting neighborhoods to the City's parks and open spaces along low-volume traffic streets, trails or local drainage pathways and designates several major streets as parkways. Parkways are designed to connect Riverside's neighborhoods, parks, open space and schools to each other. Parkways shall be "recongized as distinctive elements of the City's Circulation Network" (Policy LU-11.1) and the City shall "Seek opportunities to provide enhanced bicycle and pedestrian usage along parkways." (Policy LU-11.3)

The Land Use and Urban Design Element designates the following streets as parkways:

- Victoria Avenue – lined with trees, in national register of historic places
- Magnolia Avneue/Market Street - to be restored as a grand street
- University Avenue - connector between downtown and UCR
- Van Buren Boulevard - crosses Santa Ana River at north
- Riverwalk Parkway - near La Sierra University, new drive will provide a water-lined parkway connection between neighborhoods
- La Sierra Avenue - Santa Ana River to Lake Matthews
- Overlook Parkway - connection over Alessandro Arroyo
- Canyon Crest Drive – lushly landscaped, connects Eastside, University Mission Grove neighborhoods with southern amenities
- Arlington Avenue – linkage east to west across entire city

Parks and Recreation Element

This element envisions a "necklace" of parks that surrounds the City and is accessible by bicycle and pedestrian trails. The plan incorporates the City's existing parks, Greenspace, and natural features, such as Fairmount Park, White Park, Mt. Rubidoux, the Santa Ana River, Victoria Avenue and the Citrus Historic State Park. The Parks and Recreation Element seeks to increase the bicycle and pedestrian connections between park facilities.

The Parks and Recreation Element contains several objectives and policies that are relevant to the Bicycle Master Plan:

Objective PR-1: Provide a diverse range of park and recreational facilities that are responsive to the needs of Riverside residents.

Policy PR-1.5: Locate parks adjacent to compatible use areas, such as residential uses, greenbelts, bicycle corridors, schools and natural waterways to minimize the negative impacts of adjacent land uses.

Objective PR-2: Increase access to existing and future parks and expand pedestrian linkages between park and recreational facilities throughout Riverside.

Policy PR-2.2: Implement the revisions to the City's trails system as identified in the 2003 Park and Recreation Master Plan.

Policy PR-2.3: Improve and create more connections and increase the safety of the bicycling, equestrian and pedestrian trail system within the City.

Policy PR-2.4: Create a primary trail loop to connect signature parks, county and state open spaces and parks.

Policy PR-2.5: Develop more recreational opportunities for the secondary trail and pedestrian system in Riverside. Opportunities could include walk-a-thons, 10K-and-over runs, triathlons and bike races.

Policy PR-2.6: Provide greater amenities and access points and trail hubs. Including identification and directional signs, marked parking stalls, water facilities for equestrians, cyclists and pedestrians, hitching posts, shade and trash receptacles. Additional amenities at trail hubs could include picnic tables and rest rooms.

Policy PR-2.7: Pursue partnerships with the County, Federal Transportation Funds, the State Bicycle Account and State park bonds.

Objective PR-3 Engage Riverside residents and the business community in planning for recreation and service needs.

Policy PR-3.5: Continue to promote community awareness and stewardship of parks, open spaces and trails through activities such as the Adopt-A-Park program, public outreach and education, beautification projects, neighborhood watch and other special events.

Circulation and Community Mobility Element

The Circulation and Community Mobility Element governs the development of Riverside's transportation system, and includes streets, transit, airports, goods movement and bicycle facilities. The Circulation and Community Mobility Element also designates design guidelines for streets, which include guidelines for bicycle facilities such as bike lanes. Bicycle-related policies are contained throughout the element, and are outlined below.

Objective CCM-2: Build and maintain a transportation system that combines a mix of transportation modes and transportation system management techniques, and that is designed to meet the needs of Riverside's residents and businesses, while minimizing the transportation system's impacts on air quality, the environment and adjacent development.

> **Policy CCM-2.9**: Design all street improvement projects in a comprehensive fashion to include consideration of street trees, pedestrian walkways, bicycle lanes, equestrian pathways, signing, lighting, noise and air quality wherever any of these factors are applicable.

Objective CCM-9: Promote and support an efficient public multi-modal transportation network that connects activity centers in Riverside to each other and to the region.

> **Policy CCM-9.1**: Encourage increased use of public transportation and multi-modal transportation as means of reducing roadway congestion, air pollution and nonpoint source water pollution.

> **Policy CCM-9.7**: Ensure adequate connections among all alternative modes.

Objective CCM-10: Provide an extensive and regionally linked public bicycle, pedestrian and equestrian trails system.

> **Policy CCM-10.**1: Ensure the provision of bicycle facilities consistent with the Bicycle Master Plan.

> **Policy CCM-10.2**: Incorporate bicycle and pedestrian trails and bicycle racks in future development projects.

> **Policy CCM-10.4**: Identify and seek to eliminate hazards to safe, efficient bicycle or pedestrian movement citywide.

> **Policy CCM-10.5**: Promote the health benefits of using a bicycle or walking as a means of transportation.

> **Policy CCM-10.7**: Maintain an extensive trails network that supports bicycles, pedestrians and horses and is linked to the trails systems of adjacent jurisdictions.

> **Policy CCM-10.8**: Maximize links between trails and major activity centers, residential neighborhoods, schools, shopping centers and employment centers.

Policy CCM-10.10: Evaluate the needs of bicycle traffic in the planning, design, construction and operation of all roadway projects funded by the City.

Policy CCM-10.11: Provide sufficient paved surface width to enable bicycle traffic to share the road with motor vehicles where traffic volumes and conditions warrant.

Policy CCM-10.12: Encourage bicycling as a commute mode to school, work, etc.

Standard Roadway Cross Sections

The Circulation and Community Mobility Element designates three types of streets: local streets, collector streets and arterial streets. Neither the descriptions nor the diagrams of streets include provisions for bicycle facilities. The widths of the arterial and collector streets may allow on-street bicycle facilities with the modification of on-street parking, median widths, lane widths, or number of lanes provided. Local streets do not usually warrant bicycle lanes. Descriptions of the three street types are provided below.

Local streets provide vehicular, pedestrian and bicycle access to property adjacent to the roadway, with limited through traffic. They are 36 feet wide curb-to-curb, with 60 foot right of way and one lane in each direction.

Collector streets also provide access to adjacent property, but serve as routes between local streets and arterial streets. They are not intended to provide routes for through traffic. They provide one lane in each direction

The City has two collector street widths. One is designated as forty feet wide curb to curb within a sixty-six--foot right-of-way, and the other also measuring forty feet wide curb to curb but with an eighty-foot right-of-way.

Arterial streets carry through traffic and connect to the state highway system with restricted access to abutting properties. They are designed to have the highest traffic carrying capacity in the roadway system with the highest speeds and limited interference with traffic flow by driveways. Riverside has five Arterial classifications:

- Eighty-eight feet of right-of-way with sixty-four feet of paving and four lanes

- One hundred feet of right-of-way with eighty feet of paving, a raised median and four lanes

- One hundred ten feet of right-of-way with eighty-six feet of paving, a raised median and four lanes

- One hundred twenty feet of right-of-way with one hundred feet of paving, a raised median and six lanes

- One hundred forty-four feet of right-of-way with one hundred twenty-four feet of paving, a raised median and eight lanes

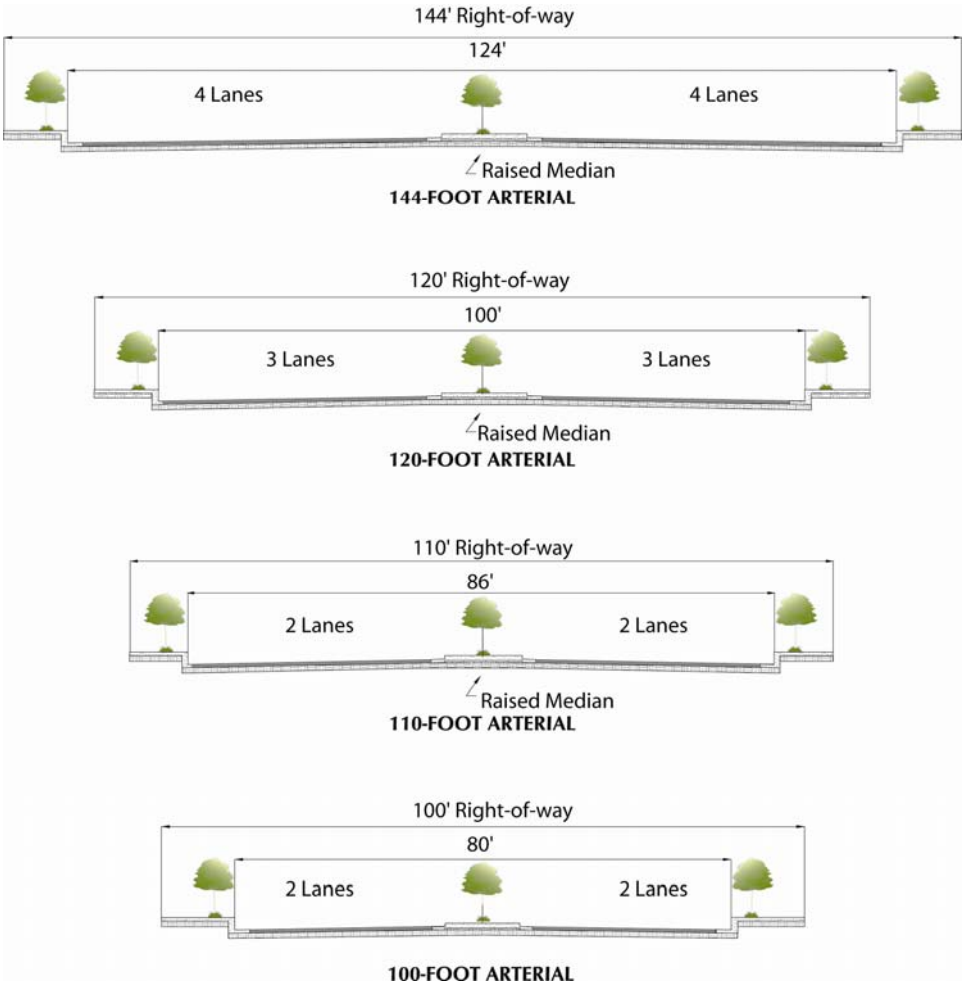


Figure 4 - 1 Riverside Circulation Element Street Cross-Sections
Adapted from the Riverside General Plan.

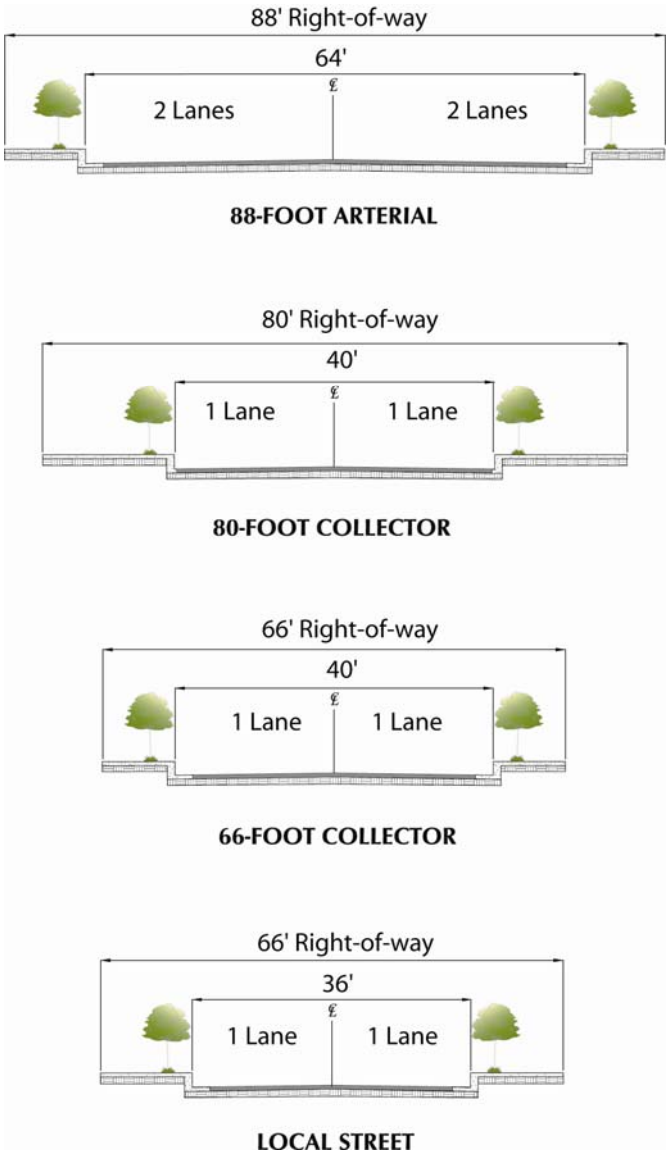


Figure 4 - 2 Riverside Circulation Element Street Cross-Sections
Adapted from the Riverside General Plan

Education Element

Two policies within Riverside's Education Element relate directly to the Bicycle Master Plan.

Objective ED-4: Maintain a safe environment at all campus facilities and on routes to school.

> **Policy ED-4.3**: Work with the school districts to incorporate bicycle access, racks and bike lanes into school design.

Policy ED-4.6: Work towards providing a bicycle network within Riverside that connects schools, employment centers and residential areas.

Public Safety Element

The safety of bicyclists and pedestrians is one aspect of the City of Riverside's Public Safety Element. While most of the policies listed below focus on providing pedestrian safety, in most cases, safer pedestrian environments, including slower traffic and easier crossings, benefit cyclists. Additionally, enhancements to the sidewalk environment will provide safe routes for young cyclists.

Objective PS-5: Provide safe pedestrian and bicyclist environments Citywide.

Policy PS-5.1: Enhance and maintain pedestrian safety through the inclusion of well-designed streets, sidewalks, crosswalks, traffic control devices and school routes throughout the City. Reasonable means of pedestrian accessibility shall be an important consideration in the approval of new development.

Policy PS-5.2: Develop objectives and detailed standards and guidelines for the treatment of public streetscapes to improve safety and walkability. Recommendations should address street trees, street lighting, street furniture, traffic calming and other pertinent issues. Establish funding sources and priorities and set forth a phased improvement program.

Policy PS-5.3: Prioritize locations for potential pedestrian safety enhancements, including modified signage, lighted crosswalks and other similar facilities.

Policy PS-5.4: Require that new development provide adequate safety lighting in pedestrian areas and parking lots.

Policy PS-5.5: Implement pedestrian and bicycle safety measures in any new grade separation project.

Air Quality Element

The Air Quality Element outlines Riverside's goals for improving air quality in the region. Improving conditions for and encouraging the use of bicycles and other non-motorized transportation are key aspects of the Air Quality Element. Bicycle-related policies are outlined below

Objective AQ-1: Adopt land use policies that site polluting facilities away from sensitive receptors and vice versa; improve job-housing balance; reduce vehicle miles traveled and length of work trips; and improve the flow of traffic.

> **Policy AQ-1.15**: Promote land use patterns that reduce the number and length of motor vehicle trips and promote alternative modes of travel.
>
> **Policy AQ-1.9**: Adhere to the adopted Master Plan for open spaces, trails and bikeways.
>
> **Policy AQ-1.18**: Encourage "walkable" neighborhoods with pedestrian walkways and bicycle paths in residential and other types of developments to encourage pedestrian rather than vehicular travel.
>
> **Policy AQ-1.20**: Create the maximum possible opportunities for bicycles as an alternative work transportation mode.
>
> **Policy AQ-1.26**: Encourage neighborhood parks and community centers near concentrations of residential areas and include pedestrian walkways and bicycle paths to encourage non-motorized travel.

Objective AQ-2: Reduce air pollution by reducing emissions from mobile sources.

> **Policy AQ-2.10**: Identify and develop non-motorized transportation corridors.
>
> **Policy AQ-2.20**: Emphasize the use of high-occupancy vehicle lanes, light rail and bus routes and pedestrian and bicycle facilities when using transportation facility development to improve mobility and air quality.

OTHER RELEVANT PLANS

Downtown Specific Plan

The Downtown Specific Plan specifies a pedestrian-oriented area within Downtown Riverside. The main pedestrian-oriented area is bounded by Market Street, 14th Street, Lime Street, and 3rd Street. The specific plan encompasses a slightly larger area. The plan identifies bikeways that connect to and run through downtown. They include: Market Street/Magnolia Avenue, Main Street, 14th Street, University Avenue, 3rd Street, and Lime Street.

Magnolia Specific Plan

The Magnolia Specific Plan is intended to restore and reestablish the 17-mile Magnolia Boulevard into a vibrant, active, exciting "destination boulevard." The

plan will take advantage of the boulevard's historic, arts and culture, retail and urban design potential.

Subdivision Ordinance

Riverside's Subdivision Ordinance governs all new development on vacant and underutilized land within Riverside and its sphere of influence. The ordinance reflects Riverside's goal of incorporating New Urbanism principles into subdivision design, including requiring narrower streets, recommending that subdivisions follow a grid street pattern and connect to existing and future street networks, and requiring sidewalks and pedestrian amenities. Though the ordinance primarily focuses on pedestrians, the design guidelines within the ordinance also benefit cyclists, and complement the goals of the Bicycle Master Plan.

Several design standards and requirements of the Subdivision Ordinance also specifically benefit cyclists. The Subdivision Ordinance allows the city to ask a developer to dedicate land for multi-purpose trails (18.210.020 Dedications). Developers may be required by the City to provide easements to develop public access to public waterways, streams, rivers, lakes, reservoirs, and other similar public resources. Public access may include pedestrian ways, bicycle routes, multi-purpose trails and/or equestrian paths. (18.210.050 Easements)

Block length is addressed in Section 18.210.070 Blocks: "To promote connectivity, walkability, and a sense of neighborhood cohesiveness, blocks should not normally exceed 2,000 feet in length, but may be up to 3,500 feet in length where topographic conditions dictate longer block lengths. Along arterial and standard streets, blocks should be designed where possible to minimize the number of interconnecting streets." Shorter blocks, as required by the Subdivision Ordinance, are beneficial to cyclists.

Street alignment and location within new subdivisions are required to "(1) conform to the alignment of existing adjoining streets; (2) to conform to the projections of existing streets where the adjoining land is not subdivided; (3) to reflect the City's overall grid pattern where physical conditions are conducive; (4) to allow, as much as possible, for the subdivision of all adjoining unsubdivided land" (18.210.030 Streets).

The Subdivision Ordinance requires cross sections as listed in **Figure 4-3**, except in the case of specific plans and private streets. Sidewalks are required on all streets unless specifically approved to be omitted. Sidewalks shall be located adjacent the property line rather than adjacent to the street. Cross sections do not include bike lanes, parking or turning lanes, however, street designations provide enough width to allow these amenities.

STREET RIGHT-OF-WAY AND IMPROVEMENTS

Street Type	Right-of-way[10] (ft.)	Median[1] (ft.)	Pavement Width[2] (ft.)	Curbs and Gutters	Parkway[3] (ft.)
Arterial street	144	12	56 (two)[7]	Yes	10
Arterial street	120	12	44 (two)[8]	Yes	10
Arterial street	110	18	34 (two)[9]	Yes	12
Arterial street	100	21	34 (two)[9]	Yes	10
Arterial street	88	--	64[7]	Yes	12
Collector street	80	--	40	Yes	20
Collector street or local street, multi-family area	66	--	40	Yes	13
Local street, single-family area	66	--	36	Yes	15
Local cul-de-sac street[4]	60	--	36	Yes	12
Frontage Road	42	--	32[5]	Yes	10
Alley	20	--	20	--	--
Half streets	43[6]	--	28	Yes	15[6]

1. Includes width of curbs on both sides of median strip.
2. Measured from curb face to curb face.
3. Sidewalks shall be required at all locations unless specifically approved to be omitted. Sidewalks generally shall be located adjacent to the property line, except where findings can be made that there are unusual circumstances warranting location of a sidewalk adjacent to the street. All sidewalks shall be in accordance with Standard Drawing No. 325. The remaining parkway area shall be landscaped and irrigated as approved.
4. When approved because of short length, topography or other reasons.
5. Includes two feet of pavement within adjoining arterial right-of-way.
6. Forty-one feet of right-of-way where ultimate curb separation is forty feet. Remaining parkway width is 13 feet.
7. Provides four travel lanes in each direction (excluding turning lanes, parking lanes and bike lanes).
8. Provides three travel lanes in each direction (excluding turning lanes, parking lanes and bike lanes).
9. Provides two travel lanes in each direction (excluding turning lanes, parking lanes and bike lanes).
10. Additional right-of-way may be required on arterial streets to accommodate reverse frontage configurations, scenic boulevard designations and additional traffic lanes at intersections.

Figure 4 - 3: Street Right of Way and Improvements
(City of Riverside Subdivision Ordinance)

4.2. REGIONAL BICYCLE NETWORK

SANTA ANA RIVER TRAIL PLAN

The Santa Ana River Trail is a 110 mile mixed-use trail that is planned to follow the Santa Ana River from it's headwaters in San Bernardino National Forest to the Pacific Ocean at Huntington Beach. The trail is completed through most of Orange County, with shorter completed segments in Riverside and San Bernardino Counties. The City of Riverside hosts the completed section of the trail in Riverside County, and has plans to extend the trail to the south to the border of the City of Norco. The project is being developed by the Santa Ana River Watershed Project Authority in conjunction with the Crest-to-Coast Partnership.

NEIGHBORING COMMUNITIES

The City of Moreno Valley and the City of Corona have established master plans for their bicycle network. These plans focus on routes within the Cities, and do not specifically address regional connections to Riverside.

5. NEEDS ANALYSIS

This chapter reviews the relationship between bicycle use, commute patterns, demographics, and land use in the City of Riverside. 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. This chapter also summarizes the results of public meetings to develop this plan, providing insight into the needs of Riverside's bicycling community.

One of the primary reasons for producing this Bicycle 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 Riverside's bikeway network and implementation of educational, encouragement and maintenance programs.

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.

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 Riverside. 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 data obtained from the 2000 US Census for the City of Riverside, Riverside County, California, and the United States are shown in **Table 5-1**.

Table 5-1
Journey to Work Data

Mode	United States	California	Riverside County	City of Riverside	
				Percent	*Number*
Bicycle	0.40%	0.80%	0.55%	0.84%	852
Drove Alone	76%	72%	76%	74%	75,199
Carpool	12%	15%	18%	18%	18,729
Public Transit	5%	5%	1%	2%	2,256
Walked	3%	3%	2%	3%	3,134
Other	4%	5%	1%	1%	1,071
Total	100%	100%	100%	100%	101,241

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

As shown, in 2000, 852 Riverside residents commuted primarily by bicycle. This equates to a bicycle mode share of 0.84% and is twice the national average of 0.40%, nearly equal to the state average of 0.80% and higher than the Riverside County average of 0.55%. This figure indicates that Riverside has a higher than average mode split for commuting purposes.

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

Table 5-2
Travel Time to Work Data

Time	United States	California	Riverside County	City of Riverside	
				%	#
9 minutes or less	14%	12%	12%	12%	12,383
10 to 14 minutes	15%	14%	14%	15%	15,451
15 to 29 minutes	36%	35%	31%	35%	35,883
30 to 59 minutes	27%	29%	27%	24%	24,216
60 minutes or more	8%	10%	16%	13%	13,308

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

It is important to note that Census data on commuting patterns is limited and tends to underestimate the true number of cyclists in any community. First, commute trips only make up 20% of all trips: People who bicycle to school, for recreation or for errands are not included in Census data. Second, Census data only allows a person to choose one mode when answering. If a commuter uses more than one mode, biking to Metrolink for instance, only the longest mode is recorded.

The next section uses average mode share rates for students and transit riders to develop a more realistic estimate of the bicycle mode share in the City of Riverside. The section also estimates the potential number of future bicycle commuters in Riverside and calculates the reductions in vehicle-based air pollution that would result from increasing the number of cyclists in Riverside.

5.3. TRIP REDUCTION AND POTENTIAL AIR QUALITY BENEFITS

AIR QUALITY IN RIVERSIDE

Riverside lies within the South Coast Air Basin, which is regulated by the South Coast Air Quality Management District. The 6,745 square mile South Coast Air Basin includes portions of Riverside, Los Angeles, San Bernardino Counties and all of Orange County. The South Coast Air Quality Management District monitors several air pollutants, including ozone, carbon monoxide, nitrogen dioxide and fine particles (PM10 and PM2.5).

Though air pollution in Riverside has improved dramatically in the last thirty years, pollution still exceeds the maximum allowable state and national limits for some portion of the year. In 2005, with the exception of national PM10 limits, air pollution in the City exceeded all state and national air pollution standards. The City exceeded state 1-hour ozone standards 46 days of the year, exceeded

the national 1-hour ozone standards 3 days of the year, exceeded the national 8-hour ozone standard 32 days of the year. It is estimated that the City exceeded the national 24-hour PM 2.5 standard 4 days of the year, and exceeded the state 24-hour PM 2.5 standard 198 days of the year.[1]

According to the South Coast Air Quality Management District's 2003 Report, motor vehicles are responsible for approximately 45% of volatile organic compounds, 63% of nitrous oxide compounds and 76% of carbon monoxide emissions. Reducing vehicle miles traveled (VMTs)[2] 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 these pollutants produced by motor vehicles.

FUTURE RIDERSHIP AND POTENTIAL AIR QUALITY BENEFITS

It is possible to use the Census data in Section 5.2, 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 Riverside along with the trip reduction and air quality benefits. While these projections are ambitious goals, they are important to building a case for investing in bicycle facilities and programs over time.

To estimate the number of potential commuter cyclists, we need to determine how many Riverside residents live within biking distance of their workplace. However, Census data do not include the *distance* from a worker's home to workplace. Instead, the Census records the *time* it takes a worker to travel from home to work. The following paragraphs will explain the calculations that one must make to determine how many people live within bicycling distance of their workplace.

First, we determine the "average" commute time. According to the NHTS, the average commute time to work has remained close to 20 minutes since 1983. In 2001, averaging all modes, the commute time was 23 minutes[3]. Second, we determine how far a bicyclist can ride within 23 minutes. Assuming an average speed of 12 miles per hour, a cyclist traveling for 23 minutes covers 4.6 miles. Third, we determine how long it takes an average commuter to drive 4.6 miles. According to the NHTS, in 2001 the average commute speed for workers who drive was 32 miles per hour. At an average commute speed of 32 miles per hour, a 4.6-mile journey would take almost nine minutes.

1 California Air Resources Board.
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.
3 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.

Finally, we find that 2000 Census data shows that 12,383 commuters within Riverside had commute times of 9 minutes or less. (**Table 5-2**) Subtracting those residents that already walk or bike to work, (3,986, US Census) we find that 8,397 Riverside residents could potentially convert their commute trip from a car trip into a bicycle trip.

As shown in **Table 5-2**, approximately twelve thousand Riverside residents live within a nine-minute drive (a twenty-minute bicycle ride) of their work. With enhancement of the City's existing bikeways, construction of new bikeways, implementation of education and encouragement programs and employer incentives, and establishment of a bikeway maintenance program, it is possible that the city could capture 25% of those potential bicycle commuters. If the City of Riverside successfully encourages 25% (approximately 2,100) of these potential bicycle commuters to bicycle to work, the City's bicycle commute mode share would more than triple to 2.9%.[4] Bicycle commute mode shares between 2% to 3% are generally considered high, while higher bicycle mode shares are achievable. The City of Davis, California estimates its 2000 bicycle mode share at between 15% and 17.5% and its 1990 bicycle mode share to have been between 20% and 25%.

Table 5-3 quantifies the estimated reduction in vehicle miles traveled (VMT) and estimated reduction in air pollutant emissions in Riverside following implementation of the recommended bicycle network and capture of 25% of potential bicycle commuters. Under these estimates, the bicycle mode share of trips in Riverside would increase from 0.8% in 2000 (U.S. Census) to 2.9% percent. This increase would more than double the current number of bicycle commuters in Riverside.

As seen in **Table 5-3**, an increase of this magnitude would result in an estimated decrease of 117 kilograms per day of hydrocarbons, 876 kilograms per day of carbon monoxide, 58 kilograms per day of nitrous oxides and 11,111,212 kilograms per day of carbon dioxide. Total annual reductions in these pollutants would be 30 metric tons of hydrocarbons, 224 metric tons of carbon monoxide, 15 metric tons of nitrous oxides and over 1,181,877metric tons of carbon dioxide.

4 It is possible that some commuters would be willing to bicycle more than 23 minutes to their workplace. Almost 15,500 Riverside residents have a commute time between 10 and 15 minutes. (Table 5-2) A fifteen-minute drive translates to a 40-minute bicycle ride. If 10% of the 15,451 commuters that have a ten to fifteen minute commute convert to bicycling, the Riverside bicycle commute mode share would increase to 4.4%.

Table 5-3
Bicycle Commute and Air Quality Projections

Current Commuting Statistics		Source
Riverside Population	255,166	*2000 US Census*
Number of Commuters	101,241	*2000 US Census (Employed persons minus those that work at home)*
Number of Bicycle-to-Work Commuters	852	*2000 US Census*
Bicycle-to-Work Mode Share	0.84%	*Mode share percentage of Bicycle to Work Commuters*
School Children Grades K-8	38,876	*2000 US Census, population ages 6-14*
Estimated School Bicycle Commuters	1944	*Lamorinda School Commute Study (Fehr & Peers Associates, 1995) and San Diego County School Commute Study (1990). (5%)*
Number of College Students	24,206	*2000 US Census*
Estimated College Bicycle Commuters	1210	*National Bicycling & Walking Study, FHWA, Case Study No. 1, 1995. Review of bicycle commute share in seven university communities (5%)*
Average Weekday RTA Ridership	9,844	*Calculated from RTA's ridership numbers in 1st, 2nd, 3rd quarters of 2005 and 1st quarter of 2006. (www.apta.com)*
Number of Daily Bike-RTA Users	138	*RTD (Denver) Bike-n-Ride Survey, December 1999 (1.4% of total boardings)*
Estimated Total Number of Bicycle Commuters and Utilitarian Riders	4,144	*Total of bike-to-work, transit, school, college and utilitarian bicycle commuters Does not include recreation.*
Estimated Adjusted Mode Share	1.6%	*Estimated Bicycle Commuters divided by population*
Estimated Current Bicycle Trips		
Total Daily Bicycle Trips	8,288	*Total bicycle commuters x 2 (for round trips) plus total number of utilitarian bicycle trips*
Reduced Vehicle Trips per Weekday	4,242	*Assumes 73% of bicycle trips replace vehicle trips for adults/college students and 53% for school children*
Reduced Vehicle Miles per Weekday	15,291	*Assumes average one-way trip travel length of 4.6 miles for adults/college students and 0.5 mile for schoolchildren*

Potential Future Bicycle Commuters		
Number of workers with commutes nine minutes or less	12,383	*US Census 2000*
Number of workers who already bicycle or walk to work	3,986	*US Census 2000*
Number of potential bike-to-work commuters	8,397	*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	2,099	*Based on capture rate goal of 25% of potential bicycle riders*
Total Future Daily Bicycle Commuters and Utilitarian Riders	6,243	*Current daily bicycle commuters, bike to school and utilitarian riders, plus future bicycle commuters*
Future Trip Reductions		
Future Total Daily Bicycle Trips	12,486	*Total bicycle commuters x 2 (for round trips)*
Future Reduced Vehicle Trips per Weekday	9,115	*Assumes 73% of bicycle trips replace vehicle trips*
Future Reduced Vehicle Miles per Weekday	41,929	*Assumes average one-way trip travel length of 4.6 miles for adults.*
Future Reduced Vehicle Miles per Year	11,111,212	*256 weekdays per year*
Future Air Quality Benefits		
Reduced HC (kg/weekday)	117	*(0.0028 kg/mile)*
Reduced CO (kg/weekday)	876	*(0.0209 kg/mile)*
Reduced NOX (kg/weekday)	58	*(0.00139 kg/mile)*
Reduced CO2 (kg/weekday)	4,616,709	*(.4155 kg/mile)*
Reduced HC (metric tons/year)	30	*1000 kg per metric ton; 256 weekdays/year*
Reduced CO (metric tons/year)	224	*1000 kg per metric ton; 256 weekdays/year*
Reduced NOX (metric tons/year)	15	*1000 kg per metric ton; 256 weekdays/year*
Reduced CO2 (metric tons/year)	1,181,877	*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.

5.4. BICYCLE SAFETY AND ACCIDENT ANALYSIS

Safety is a major concern of both existing and potential bicyclists. For those who ride, safety is typically an on-going concern or even a distraction. For those who do not ride, it is one of the most compelling reasons not to ride. Nationwide, the total number of reported cyclist fatalities has dropped dramatically since 1994, with 802 fatalities reported in 1994 and 725 fatalities reported in 2004. In comparison, total traffic fatalities have increased by 5% over this ten-year period.[5]

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

In 2004, adult cyclists (25 and older) accounted for more than half of the total number of cyclist fatalities in the US, and cyclists under the age of 16 accounted for 21% of the fatalities and 32% of the injuries. However, cyclists under the age of 16 have higher fatality and injury *rates* than other age groups (2.5 fatalities per million population, about 24% higher than the overall cyclist fatality rate, and 286 injuries per million population, more than twice the injury rate for cyclists of all ages.) [5]

According to a 1990 study of 3,000 bicycle crashes, the most common type of bicycle-vehicle crash was one where the motorist failed to yield right-of-way at a junction (21.7% of all crashes)[6]. More than a third of these involved a motorist violating the sign or signal, driving into the crosswalk or intersection, and striking the bicyclist. The next most common types of vehicle-bicycle crash were where the bicyclist failed to yield right-of-way at an intersection (16.8%), a motorist turning or merging into the path of a cyclist (12.1%) and a bicyclist failing to yield right-of-way at a midblock location.

These data suggest that a bicycle safety plan should address intersection improvements and education about the rights and responsibilities of cyclists and motorists, especially regarding right-of-way laws.

Data for reported bicycle collisions were collected for the calendar years 2002 to 2006 in Riverside, and are presented in **Table 5-4**.

As shown, there were 371 bicycle-related collisions reported in Riverside from 2002 to 2006. Three of these collisions were fatal, 25 resulted in severe injury, 157 resulted in other visible injuries, 113 resulted in complaint of pain and 47 resulted in property damage only. Comparing Riverside's injury rate to the

[5] Traffic Safety Facts, 2004 Data. "Pedalcyclists" NHTSA, DOT # HS 809 912

[6] Pedestrian and Bicycle Crash Types of the Early 1990's, Publication No. FHWA-RD-95-163, W.H. Hunter, J.C. Stutts, W.E. Pein, and C.L. Cox, Federal Highway Administration, Washington, DC, June, 1996.

national cyclist injury rates (139 injuries per 1 million population in 2004), Riverside would expect to have only thirty-nine injury collisions per year, but according to the collision data, the City has a higher than expected injury rate.[7] Between January 2002 through April 2006, Riverside averaged 76 injury collisions per year. It should be noted that the national injury rate does not take into account the potential for higher per capita bicycle injury rates in communities with higher than average cycling rates. Riverside's bicycle commuting mode share is twice that of the National Average. This may explain why the bicycle injury collision rate is almost twice the national rate. Additionally, Riverside's fatality rate during the study period (0.71 fatalities per year) is slightly lower than what would be expected using statewide fatality rates (3 per 1 million residents, which works out to an average 0.84 fatalities per year for a City the size of Riverside).[7]

Even though Riverside's injury and fatality rates for cyclists fall within statistical expectations, it is important for the City to strive to reduce bicycle fatalities and injuries to the greatest extent possible.

Table 5-4
Riverside Bicycle Collision Data 2002-2006

Year	Total Traffic Collisions	Total Bicycle Related		Fatal	Severe Injury	Other Visible Injury	Complaint of Pain	Property Damage Only
		Number	*Percent*					
2002	2982	95	3.2%	0	6	43	33	12
2003	2893	73	2.5%	1	7	36	22	7
2004	2948	89	3.0%	1	10	33	28	8
2005	3120	91	2.9%	1	2	35	20	18
2006*	680	23	3.4%	0	0	10	10	2
TOTAL	12623	371	-	3	25	157	113	47

Source: Statewide Traffic Records System 2006.
** Note: Data for 2006 only includes the months of January through April.*

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

[7] Injury rates from Traffic Safety Facts, 2004 Data. "Pedalcyclists" NHTSA, DOT # HS 809 912

because they do not feel comfortable using the existing street system and/or do not 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.

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 5-5
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 to 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 long loop routes that lead back to the point of origin and routes with significant elevation changes.

NEEDS OF CYCLISTS MAKING RECREATIONAL AND UTILITARIAN TRIPS

As 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.

Table 5-6
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, before morning commute hours or after evening commute hours.	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

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 ride, 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.

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 prefer 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 an adequate maintenance of the pavement. At destination points, commuters require and adequate long-term bicycle storage and showers or changing facilities while shoppers require short-term bicycle storage, specifically bike racks.

It should be noted that with higher densities of development planned for Downtown Riverside and along Riverside's Magnolia/Market and University corridor, 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 Riverside 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 Riverside include (a) a temperate climate, and (b) a significant number of work commute trips (27,834) that are less than 15 minutes in length.

5.6. CITIZEN AND COMMUNITY INVOLVEMENT

Public involvement is an important component of the Riverside Bicycle Master Plan process and provides the primary means of determining the specific needs of Riverside's cycling community. The public outreach process for this project included two public workshops.

FIRST PUBLIC MEETING

Approximately 55 Riverside residents attended the July 18th Bicycle Master Plan Workshop. Many of the attendees were members of the Riverside Cycling Club, which held its monthly meeting in conjunction with the workshop. After a brief overview presentation, residents broke into five working groups to mark up maps with good examples, problem areas and desired improvements. After the working group session, the group reconvened and representatives from each group presented the recommendations.

Attendees discussed a variety of issues, but several themes were present from each group:

1. **Maintenance**: Attendees expressed a desire to see more frequent street sweeping with an emphasis on sweeping all the way to the curb and sweeping intersections. A recommendation was made to

"set schedule for cleaning bike lanes dependent on time of year" and to "educate street sweeper regarding bike lane use." Attendees also wish to see bike lane striping refreshed and pothole maintenance to be more frequent and of higher quality, (e.g. the roadway should be smooth after repair).

2. **Add Bicycle Facilities**. Attendees wish to see gaps in the existing bikeway network filled in, especially on streets with existing bike lanes. Attendees would like to see connections to UCR, to downtown, to Fairmount Park, and over to Mount Vernon and up Pigeon Pass. Attendees would also like to see more north-west/south-east connections and more connections to the existing Class 1 trails, including the Santa Ana River Trail. Some would like to see a circular route around the City established, and accommodation of cyclists around Lake Matthews.

3. **Develop Educational and Encouragement Programs**. Groups expressed a desire to see more educational programs, including safe routes to school programs, motorist education of cyclist rights, cyclist education of the rules of the road. Encouragement programs included a "Welcome to Riverside, a Bicycle-friendly Town" sign, publishing a bikeway map, collaboration with other cities with bike plans, and family-friendly bicycle events. Innovative ways to publicize cycling included developing a campaign aimed at drivers for them to "Give Cyclists a Brake", inserting information in utility bills, educating through the City cable channel, and educating through schools.

4. **Develop Policies to Improve Cycling**. Attendees listed several policies that they would like to see implemented. These included requiring developers to incorporate bike paths and lanes into developments, city-provided incentives to businesses to promote alternative modes of transportation, and a city hot line/contact number to report bicycle-related issues. (The existing maintenance phone number was shared by City staff at the end of the meeting.) Additional requests included the desire to have University of California at Riverside to contribute to the bicycle infrastructure, to develop "village bicycles", to educate the city management to include bicyclist needs with road development.

5. **Increase Signage**. Attendees wish to see warning and directional signage on all major bike routes and trails. Signage requests include "Share the Road" signs, brighter signs, warning signs on roads that intersect bikeways, "Motorist Yield to Bicyclist" signs, and trail system signage that provides directions.

6. **Design and Construction**. Attendees requested a variety of improvements to the design and construction of bicycle facilities. These include: increasing the width of bicycle lanes if they include the gutter or if they are adjacent to parking; planting shade trees

along bike paths; ensuring that bike lanes do not "disappear" at intersections; installing bicycle loop detectors or bicycle push buttons (that are easy for cyclists to reach) at signalized intersections; marking potholes/grates/other obstructions on the pavement; providing wide shoulders for cyclists; ensuring that sidewalks don't have poles or other obstructions in them; and ensuring that repaving of potholes, utility covers and gutters does not leave a bump or a lip. During construction, attendees would like to see bike detours and would like to have construction signs removed from the bike lane.

7. **Provide Support Facilities**. Attendees would like to see more water fountains (one idea was to incorporate these into bus stops), more restroom facilities and benches. Attendees also would like to see staging areas for the Santa Ana River Trail.

SECOND PUBLIC MEETING

On November 6, 2006, the City hosted a second public workshop to present the recommendations of the Draft Plan and to gather citizen input for prioritizing recommended bikeways. Nineteen community members attended the workshop. During the first half of the meeting, the recommended bikeways and programs were presented to the group, along with an overview of the bikeway projects that are tied to future development.

In preparation for this meeting, the City divided recommended projects into three tiers. The tiers were developed based on input from the prior workshop and are:

Tier 1: Safety Enhancement and Visibility Signage

Inventory the areas where safety could be improved and give a high priority to completing the needed/missing improvements within one to two years

Install advisory signs along major bicycle routes to state "Be Friendly to Cyclists – Share the Road"

Tier 2: Projects that can be completed in conjunction with other planned projects

Capital Improvement Projects

Private Development Projects

Tier 3 Projects – Grant Funded Projects

- Class I Bike Paths and roadway improvements not related to Tier 1 or Tier 2.

During the second half of the workshop, attendees were asked to divide into smaller groups and prioritize the grant-funded projects (Tier 3) and to move any specific projects to the safety and visibility list (Tier 1). At the conclusion of the meeting, each table presented their recommendations to the group.

Recommendations from Working Groups

Of the grant-funded (Tier 3) projects, completion of the Santa Ana River Trail was listed as a high priority for all groups. The other projects, listed in order, were Woodcrest Reservoir Bike Path, Columbia Avenue between Mt. Vernon Ave and the Santa Ana River Trail, the St. Lawrence Bicycle Path, and Washington Street between Victoria Avenue and Van Buren Boulevard.

In terms of programmatic and policy priorities, the group confirmed the importance of ensuring that loop detectors at signalized intersections be calibrated so that they can be actuated by bicycles. Additional bicycle parking in the downtown area, near the University of Riverside, and at cafes, restaurants, stores and other destinations was identified as being a high priority, as was creation of a bicycle parking ordinance that establishes bicycle parking requirements for new development. The group also supported bicycle education programs such as Safe Routes to Schools and bicycle education classes and recommended that these classes be offered in Spanish and English.

6. RECOMMENDED IMPROVEMENTS

The recommended improvements for the Riverside Bicycle Master Plan consist of additional bikeway network facilities, intersection and other spot improvements, and bicycle-related support facilities and programs. The recommended bicycle support facilities and programs include bike parking guidelines, maintenance programs, and educational and encouragement programs. The recommended bikeways focus primarily on on-street routes, with 128 miles of proposed bike lanes and bike routes. The plan also recommends 13 miles of paved bike paths.

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

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. The bikeway network serves as a tool that allows the City to focus and prioritize bicycle facilities where they will provide the greatest benefit to bicyclists and the community at large. It is important to note that bicyclists are legally allowed on all City streets whether the streets are a part of the designated bikeway network or not.

The Recommended Bikeway Network for Riverside is shown in Figure 6-1. The bikeways are classified into the standard Caltrans Class I, II, and III bikeway categories discussed in Chapter 2.

The top five high-priority bikeway facilities are illustrated and described in detail at the end of this chapter, starting on page 6-21. A list of all proposed facilities, including segment length and construction cost estimates, is provided in Chapter 7.

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.

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. The role of a bicycle coordinator varies by jurisdiction, but may include ensuring that bicycle-related planning efforts are cohesive, monitoring and responding to bicycle-related maintenance issues, overseeing development of bicycle facilities, applying for bicycle-related grant funding, serving as a contact for the bicycling community and developing or coordinating educational and encouragement programs.

RECOMMENDATION

Fund a City Bicycle Coordinator

There are many bicycle-related planning, education and encouragement efforts already in place in Riverside. Various departments within the City have developed and maintain Riverside's 60 miles of bicycle lanes and 16 miles of off-street bicycle paths. The University of California at Riverside is developing a campus bicycle master plan with the intent of coordinating the plan with the City of Riverside's Bicycle Master Plan. The Riverside Police Department employs a full-time Traffic Education Coordinator who runs an extensive bicycle and pedestrian safety program. The Riverside Bicycle Club encourages cyclists through sponsored rides and community events.

To take full advantage of these separate efforts, and to assist with implementation of the many projects and programs recommended in this

CITY OF RIVERSIDE

alta PLANNING + DESIGN

FIGURE 6-1
CITY OF RIVERSIDE EXISTING AND PROPOSED BIKEWAYS

Bikelanes during off-peak hours only.

Legend

- Highways
- Parks
- Elementary Schools
- High Schools and Universities

Bikeways

- Bike Path and Lane - Proposed*
- Bike Path and Lane- Existing
- BikePath - Existing
- Bike Lane- Existing
- Bike Path - Proposed
- Bike Lane - Proposed
- Bike Route/Lane - Proposed**
- Bike Route - Proposed
- Trail- Existing
- Trail- Proposed

* Though bike lanes and a path exist on Victoria Ave. between Van Buren Blvd. and Washington St., the path does not currently meet Caltrans Class I bike path standards.

** These proposed segments require additional field work to determine the feasibility of striping bicycle lanes. Installing bicycle lanes on these segments may require lane reduction, road widening, or other major adjustments to the roadway.

2

Miles

0 0.5 1 1.5

Data: City of Riverside, CA. Field work.
Date: December 2006

chapter, the City of Riverside may wish to consider hiring a dedicated Bicycle Coordinator. While staffing a full-time bicycle coordinator position may not be feasible for Riverside 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 public works or planning 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 coordinating City bicycle plans and programs with the University of California, Riverside, and the Riverside Police Department and creating and staffing a city bicycle advisory committee.

BICYCLE PARKING AND END-OF-TRIP FACILITIES

Bicycle parking includes standard bike racks, covered lockers, and corrals. While Riverside's Metrolink Stations and some larger employers provide racks and lockers, Riverside's parks and commercial areas have limited bicycle parking.

End-of-trip facilities such as restrooms, changing rooms, showers and storage for bicycling clothes (helmet and other gear) are especially important for cyclists who commute to work. On hot summer days, Riverside's temperature can reach the nineties, and even cyclists who have a short commute may appreciate the opportunity to change or shower before starting work. Several of the major employers surveyed provide shower or changing facilities for their employees.

A systematic program to improve the quality and increase the quantity of bicycle parking and end-of-trip facilities should be implemented in Riverside.

RECOMMENDATIONS

Increase Public Bicycle Parking Facilities

High-quality bike parking should be provided at public destinations, including shopping centers, community centers, parks, and schools. 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. 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.

Generally, inverted-U type racks bolted into the sidewalk are preferred to other designs. 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. When placed in downtown areas and on sidewalks, the U-rack should be installed parallel to the street, and should be located within the sidewalk furnishing zone (in line with trees, benches, newspaper racks, etc.). Installation of multiple capacity "wave" style racks is not recommended due to common misunderstanding of how to properly lock a bike

Possible alternatives to the inverted-U bike rack include the simple post-and-ring style (top), or a custom artistic rack such as the heart shaped rack in the bottom photo. Both styles allow the bicycle to be secured by the frame with a U-lock.

to these racks (users often lock their bike parallel to the rack, effectively limiting their capacity to 1 or 2 bikes).

The City may want to consider custom racks that can serve not only as bike racks, but also public artwork or as advertising for a specific business. The "post and ring" style rack is an attractive alternative to the standard inverted-U, which requires only a single mounting point and can be customized to have the city name or emblem stamped into the rings. These racks can also be easily retrofitted onto existing street posts, such as parking meter posts. While custom racks can add a decorative element and relate to a neighborhood theme, the rack function should not be overlooked: All racks should adhere to the basic functional requirement of supporting the bicycle by the frame (not only the wheel) and accepting a U-lock.

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. (http://www.bicyclinginfo.org/pdf/bikepark.pdf)

Adopt a Bicycle Parking Ordinance with Design Requirements

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.

The City of Riverside should adopt a bicycle parking ordinance to ensure that new bicycle parking facilities are installed with new development. The city should consider including specific design requirements for bicycle parking in the 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.

In addition, the City may want to update Section 10.64.210 of the Municipal Code, which requires businesses to seek a hearing before City Council and file an application with City Clerk before installing bicycle racks in front of their place of business. This ordinance was established in 1942. A more streamlined approval process, one that does not require a hearing before City Council, may be more appropriate.

Sample language for a bicycle parking ordinance is provided in **Appendix B**.

SAFE ROUTES TO SCHOOL

The City of Riverside's two school districts, Riverside Unified School District and Alvord Unified School District do not currently have Safe Routes to Schools programs. Safe Routes to Schools programs encourage walking and biking to school through parent and student education and incentives. Programs generally address the safety concerns of parents by encouraging greater enforcement of traffic laws, educating the public, and redesigning streets to be safer. State and federal funding is available for Safe Routes to Schools Programs. Identifying and improving routes for children to walk or bicycle to school is one of the most effective means of reducing morning traffic congestion and addressing existing safety problems. School commute programs

that are joint efforts of the school district and city, with parent organizations adding an important element, are usually most effective.

RECOMMENDATION

Develop a Safe Routes to School Program

The City should encourage each public and private school in Riverside to conduct its own evaluation of school commute patterns, work with the city to identify corridor and crossing improvements within walking and biking distance of the school and to identify improvements to the drop-off/pick-up system. School commute routes are local in nature and require extensive and detailed examination of patterns and conditions and local input. The Safe Routes to School program should actively involve students' parents and should focus on making it safer for students to bicycle and walk to school.

School commute projects should be developed in a planning process that includes (a) school administrators and teachers, (b) local Parent Teacher Associations and other groups, (c) neighborhood groups and the public, (d) local law enforcement, and (e) City transportation engineers. The City may want to consider establishing a staff person who is responsible for the organization of the Safe Routes to School Program, and may want to consider hiring outside consultants for development of the plan.

CONSTRUCTION AND MAINTENANCE

Public workshop participants identified improved maintenance of Riverside's bikeways as a high priority. Both on-street and off-street bikeways need regular maintenance. Typical tasks include repairing damaged and potholed roadway surfaces, clearing plant overgrowth and debris and sweeping bike lanes and paths. Although these tasks are generally associated with routine roadway maintenance, on-street bikeways require specialized maintenance and, in general, greater attention to detail. Bicycles are more susceptible than motor vehicles to roadway irregularities such as potholes and loose gravel. For example, after repaving, a roadway lip between a gutter pan and asphalt does not affect a motor vehicle, but can easily catch a bicycle tire and possibly result in a cyclist loosing control of the bicycle.

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

Ongoing construction activities in Riverside present additional maintenance requirements. Construction affects cyclists through increased roadway wear due to heavy vehicle traffic and increased debris such as sand and gravel from construction equipment. In addition to maintenance issues, construction activities may also hinder bicyclists as Class II lanes are closed off or obstructed, due to road or other construction activities. Special accommodations may be made to provide for cyclists during construction periods.

RECOMMENDATIONS

Develop a Funding Source for the Bicycle Facility Maintenance Program

Bicycling is an integral part of Riverside'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.

Develop a Maintenance Policy that Addresses the Special Needs of Bicyclists

The City of Riverside should evaluate its current street maintenance and repair policies to ensure that they reflect the needs of bicyclists. Specific measures to review include:

Street sweeping. As motor vehicles travel along the roadway, debris is pushed to the outside lanes and shoulder. Debris also collects at the center of intersections. Roads striped with bike lanes or designated as bicycle routes should be swept more frequently than roads without designated bikeways. Street sweeping on these roadways should include removing debris on the shoulder and at intersections.

Minor repairs and improvements. Potholes and cracks along the shoulder of roadways primarily affect bicyclists and should be repaired within a timely manner. All repairs should be flush to the existing pavement surface.

Street resurfacing. When streets with bikeways are resurfaced, utility covers, grates and other in-street items should be brought up to the new level of pavement. Similarly, the new asphalt should be tapered to meet the gutter edge and provide a smooth transition between the roadway and the gutter pan.

Proactive identification of and response to maintenance needs. The City currently uses Riverside Connected (a phone hotline) to identify needed repairs to roadways and bikeways. In addition to this hotline, the City should proactively identify locations in need of maintenance. Maintenance needs should include street sweeping, minor repairs and improvements, identification of hazards such as sunken utility covers or drainage grates with openings parallel to the roadway, and identification of bikeway facilities in need of restriping or resigning.

Calibrate bicycle loop detectors. As part of general maintenance, the City should test and calibrate bicycle-sensitive loop detectors to ensure that they are working properly. Loop detectors are described in more detail below.

Actively coordinate with maintenance workers. The City should ensure that maintenance workers are aware of new bicycle related maintenance policies. Maintenance workers should be involved in the development of bicycle related

maintenance policies in order to ensure that City staff and maintenance workers understand each other's needs and limitations. After establishing policies, the City should follow up with the maintenance staff to verify compliance and to modify policies or provide additional support, if necessary, to ensure future compliance.

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

Construction activities present challenges for cyclists; even the most experienced cyclists may feel anxiety when the bike lane is unexpededly blocked by construction activites and they are forced out into travel lanes with vehicles that may be traveling in excess of 45 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:

- 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.

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

- Where necessary, provide detour routes around areas undergoing construction.

- The city should sign and enforce reduced speed limits around construction zones to ensure that motorists passing these areas are traveling at a safe speed.

Detailed guidelines are provided in **Appendix C** for accommodating bicycles in construction zones.

BICYCLE SIGNAL DETECTION

In-pavement Loop Detectors are used at signalized intersections to allow motorists to trigger a traffic light. Certain loop detectors can be calibrated to respond to the presence of a bicycle. The following recommendations are intended to improve bicycle detection at signalized intersections.

RECOMMENDATONS

Install Bicycle Loop Detectors at Signalized Intersections

The City should install and mark bicycle loop detectors at intersections during roadway construction. It is recommended that the City use Type D for lead loops in all lanes except bike lanes, where a narrow Type C may be appropriate. Details of saw cuts and winding patterns for inductive detector loop types appear on Caltrans Standard Detail ES5B. Loop types B (5' square diamond), C (quadruple), D (diagonal-slashed), Q and modified Type E (circle with a slash) can reliably detect bicycles across their full width. Type D loop is preferred as it has a good, uniform response to bicycles across its area. Types A (6' square) and E (unmodified circle) are not bike-sensitive in their center.

Apply Pavement Stenciling Above Bicycle Loop Detectors Where Service Must be Actuated by Detection

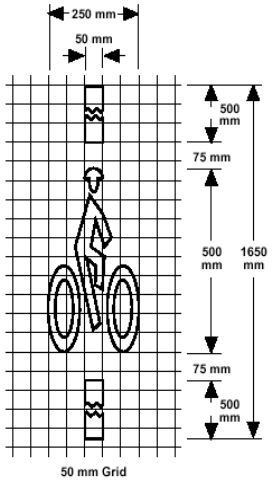


Figure 6-2: Caltrans Standard Plan A24C bicycle detection marking

At some signalized intersections, vehicles (motor vehicles and bicycles) need to trigger loop detectors in order to activate a green light. Since most bicyclists, as well as other motorists, do not know how loop detectors work, it may be necessary at some locations to mark a pavement stencil that shows cyclists where to stop to activate the loop. Stencils should be repainted when needed. As opportunities arise, loop detector stencils should be installed in coordination with striping maintenance or resurfacing projects.

Standard bicycle detection markings should be applied in the center of the appropriate lane for all bicycle loop locations to show cyclists the best place to wait. (For inductive detection this implies that the loop must sense bicycles in its center). As part of the loop detector testing program, the City should ensure that the markings are placed in the proper location above the detector. The State standard bicycle detection marking appears on Caltrans Standard Plan A24C.

To increase understanding about how to use bicycle loop detectors, the City may want to include information about how to activate a bicycle loop detector in its bicycle educational materials.

Regularly Calibrate Bicycle Loop Detectors

While bicycle detector loops facilitate faster and more convenient bicycle trips, if they aren't calibrated properly, or stop functioning, they can frustrate cyclists waiting for signals to change, unaware that the loop is not working. The City should ensure that all bicycle loops are tested and are calibrated and operable as part of routine signal maintenance.

BICYCLE ENFORCEMENT

In order to encourage safe cycling in Riverside, facility improvements must be accompanied by enforcement of California Vehicle Code regulations pertaining to bicycles and bicycling. The City of Riverside currently enforces bicycle-related violations of the California Vehicle Code.

RECOMMENDATION

Support Police Department in Enforcement Efforts

The City of Riverside 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. The Police Department should reinstate it's safety cite program, in which young cyclists "caught" following bicycle laws are positively reinforced with a Safety Citation and entry in an annual drawing. (The Safety Cite program is described in more detail in Chapter 3, Section 3.5 Enforcement and Education Programs.)

SIGNAGE AND STRIPING

All bikeway signage on public roadways in Riverside should conform to the signage identified in the 2003 Manual on Uniform Traffic Control Devices (MUTCD) and California Supplement. These documents give specific information on the type and location of signing for bicycle facilities in California. Samples of suggested signage and striping are outlined in **Appendix D**.

RECOMMENDATIONS

"SHARE THE ROAD" Signage

For all Class III Bike Route implementation, the City should install "SHARE THE ROAD" signs (MUTCD W16-1) along with the standard "BIKE ROUTE" signage (MUTCD D11-1).

Designated Bikeway Signs

The installation of bikeway signs on all designated bicycle facilities is important to heighten motorist awareness of cyclists and help cyclists find their way. The City should ensure that all bikeways are signed per the 2003 Manual on Uniform Traffic Control Devices and California Supplement.

Destination Signage

Destination signage provides 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 should design and install custom destination signage on major bikeways. A signage plan should be developed to ensure that destination signage is complete, coherent and does not result in sign clutter. Destination signage in Riverside could direct bikeway network users to destinations such as the Santa Ana River Trail, Downtown Riverside, the Metrolink stations, schools, and local and regional parks.

Standard destination signs can be customized to reflect Riverside's character

Incorporate Bicycle Facilities into Circulation Element Cross Sections

The City should consider revising the standard street cross-sections within the Circulation Element of the General Plan to include bicycle facilities. Adding bicycle facilities to the cross sections institutionalizes their construction and makes it more likely that construction on existing roads and newly developed roadways will include bicycle facilities.

Sample modifications to the 88 foot arterial are shown in Figure 6-3.

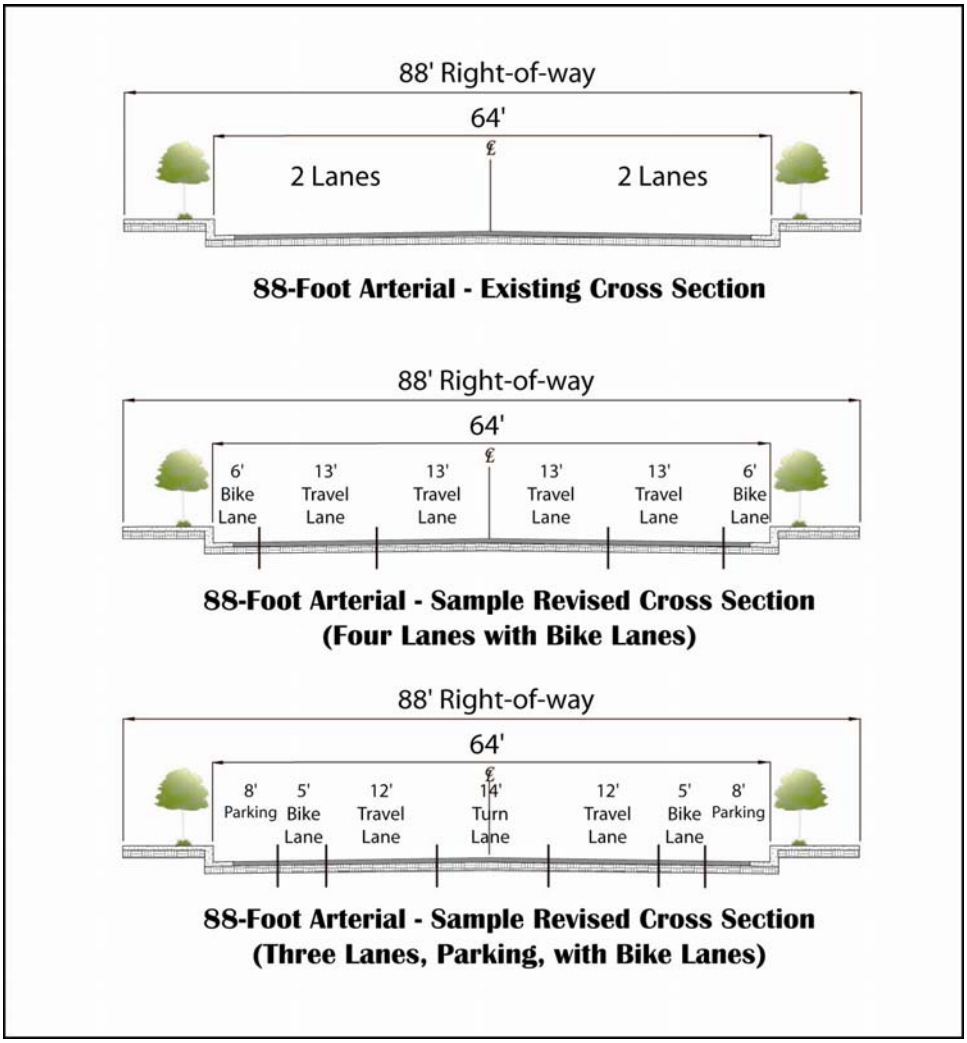


Figure 6 - 3 Sample Modifications to the Circulation Element Arterial Cross Section

MULTI-MODAL CONNECTIONS

Connecting bicycles to transit consists of three key elements: providing bicycle access to transit stops, providing bicycle parking facilities at transit stops and accommodating bicycles on trains and buses. The City of Riverside can affect the first two of these three elements by ensuring that the proposed bikeway

network connects to existing transit stops and providing bicycle parking at major train and bus transit stops.

RECOMMENDATIONS

Improve Bicycle Access to Major Transit Centers

Recommendations for improving bicycle access to transit stops include:

- All actuated traffic signals near Riverside's existing and future train stations and major bus transfer centers should be able to be activated by cyclists. Actuation should be provided in left-turn lanes as well as through lanes. If the actuation is provided by a bicycle loop detector, a stencil should be placed over the loop detector instructing cyclists where to wait. If the actuation is provided by a push button, it should be oriented toward the street, and allow cyclists to push the button without dismounting.

- Streets leading to the transit stop should have bike lanes or at the minimum, wide shoulders. Bike paths leading to transit stops are another option, and should be designed to ensure access to the transit stop is safe, direct, and does not conflict with motor vehicles.

- Bicycle access to transit stops should minimize conflicts with pedestrians and motorists.

- Destination signs indicating direction and distance to the transit stop should be located on sidewalks, bikeways, and major arterials.

- Local area maps showing bicycle and pedestrian facilities and local destinations should be posted at the transit stations.

- Warning signs notifying drivers of bicycle and pedestrian crossing should be installed at transit stop driveway crossings, bikeway crossings, pathway crossings, and other places with potential user conflicts. Similarly, appropriate regulatory signage should be installed for cyclists and pedestrians.

- Safe, direct well-marked routes should be provided for cyclists and pedestrians through the station area to the platform, sidewalks, bikeways, ticketing area and bike parking.

Improve Bicycle Parking at Transit Stops

Providing ample secure bicycle parking at transit stops is essential to increasing bicycle mode share to transit. Bicycle parking is currently provided at both of Riverside's Metrolink Stations.

In general, bicycle parking should be provided as close to the transit stop as possible, without restricting pedestrian flow or ADA access. Signs should be placed directing cyclists to parking locations, and if "No Bicycle Parking" signs are used, they should be accompanied with signs directing cyclists to bicycle parking locations. Bicycle parking is not recommended outside the immediate station parking lot due to convenience and security issues.

When evaluating bicycle parking demand, agencies should take into account the quality and placement of parking supplies. If underused bike parking is moved to a more secure, visible and convenient location, use of the parking may increase. The following improvements have been shown to increase bicycle parking usage:

- Moving bike racks and lockers to locations that are more visible to potential users;
- Moving bike racks to locations that are more convenient to other services, such as customer service windows;
- Improving signage to let transit passengers know the process for renting bicycle lockers; and
- Advertising bicycle parking services in local bicycle publications.

Consider Electronic Bicycle Locker Program

The City of Riverside may want to consider implementing a pilot electronic locker program. Electronic locks allow cyclists to access a locker on a first-come-first-serve basis, without leaving the locker unsecured while not in use. This system allows more efficient use of lockers and allows the agency to identify locker usage at stations, identify people who abandon bicycles in lockers and prioritize placement of new lockers.

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 Riverside, Police Department, Riverside and Alvord Unified School Districts, and local bicycle groups such as the Riverside Bicycle Club.

The Riverside Police Department currently works in a variety of ways to educate children and adults on bicycle safety as described in Chapter 3.

RECOMMENDATIONS

Continue and Expand Existing Education Programs

Existing education programs offered by the Police Department's Traffic Education Coordinator should be continued and supported by a secure, regular funding source. Schools should be encouraged to include Police Department programming in their own bicycle education programs.

Provide Safety Handbook

The City should work with the Police Department's Traffic Education Coordinator to provide a safety handbook for distribution to local schools. One example of a good safety handbook is *From A to Z by Bike: The comprehensive guide to safe bicycling for kids and adults.*

Educate Motorists and Bicyclists through a Share the Road Campaign

A Share the Road campaign is 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. The campaign targets not just youth, but all residents and visitors to a community. The City of Riverside should work with the Police Department's Traffic Education Coordinator, the Riverside Bicycle Club and other partners to develop a Share the Road Campaign.[1] To establish a Share the Road campaign, the City of Riverside should:

- Develop Share the Road flyers, one targeted to cyclists and one to motorists, which outline safe and courteous behavior, collision reporting procedures and local cycling resources and hotlines.
- In conjunction with the Police Department, hold periodic traffic checkpoints during months with high bicycling rates. At checkpoints, motorists and cyclists are stopped, given a Share the Road flyer and have the opportunity to provide feedback to officers regarding the campaign ideas. Checkpoints could be held along local bikeways such as Victoria Avenue or the Santa Ana River Trail, and roadways commonly used by cyclists.
- Create public service announcements on radio and TV to promote the Share the Road campaign, including publicity about the Share the Road checkpoints. Promote the campaign through inserts in utility bills.
- Develop public PowerPoint presentations with the Share the Road message for presentation to the public.
- Develop adult bicycle safety classes and hold them at regular intervals.

[1] Other partners may include local hospitals, schools, or regional and state agencies. For example, the Marin County Bicycle Coalition has partnered with Marin General Hospital, Marin County Law Enforcement and National Highway Traffic Safety Administration to develop its Share the Road Campaign. Marin County Bicycle Coalition's Share the Road Campaign can be found at www.marinbike.org/Campaigns/ShareTheRoad/Index.shtml

ENCOURAGEMENT PROGRAMS

Encouragement programs are vital to the success of the Riverside Bicycle Master Plan. An encouragement programs key goal is to convince people to shift from driving to bicycling, which will help to reduce traffic congestion and air pollution, as well as improve the quality of life in Riverside. However, without community support, the City lacks the resources that are needed to ensure the success of encouragement programs over time. 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, to provide bicycle lockers and shower facilities, and to offer 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

The City should develop and implement encouragement programs for utilitarian and recreational purposes. The City of Riverside already co-sponsors the annual Riverside to Surfside bicycle ride. In addition to this event, the City could work with local businesses such as cafes to encourage customers to use a bicycle for their trips. Such efforts may include:

- Implement a "Bicycle Friendly Businesses" program. The City could recognize 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.
- Hold community events for families that promote bicycling.
- Support planning and implementation of an annual mass bicycling ride in Riverside 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, cable access television and utility bill inserts.

Bicycle Clunker and Parts Program, Bicycle Repair Program

The city should consider supporting the development of a bicycle clunker and parts program. This program involves obtaining donated, abandoned or unclaimed stolen bicycles and restoring them to working condition. Commonly set up as a non-profit, the program trains youth (ages 12 to 18) how to repair bicycles as part of a summer jobs training effort. The program is often staffed by volunteers from local cycling organizations and bicycle shops.

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 a 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. A local bike shop may adopt a bikeway by providing funding for the maintenance costs. For mixed-use paths, benches, fountains and other trailside amenities may be provided as part of a memorial program. The managers of an adopted bikeway may be allowed to post their name on bikeway signs throughout the bikeway in order to display their commitment to bicycling in Riverside.

Bike Fairs and Races

As mentioned above, the City of Riverside co-sponsors the annual Riverside to Surfside bicycle ride. Continuing to host this and other bicycle races and fairs in Riverside can raise the profile of bicycling in the area and provide entertainment for all ages. Bike fairs and races provide an opportunity to educate and encourage current and potential bicyclists. These events can also bring visitors to Riverside 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 Riverside. The map should show significant destinations, the location of bicycle parking facilities, connections to bicycle facilities in the neighboring communities. Local businesses may wish to advertise or sponsor the map, helping to offset printing costs, and the map could be produced in cooperation with the Riverside 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.

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

The City of Riverside 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 Riverside community that will encourage more and safer riding.

Marketing the Bicycle Master Plan

The success of the Riverside Bicycle 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 Riverside's future.

- Distribute copies of the Bicycle Plan to members of the City Council, and Planning Commission.
- Distribute copies of the Plan to City of Riverside's Community Development, Community Services and Public Works Departments, the Redevelopment Agency, and the Police Department.
- Provide copies of the Riverside bicycle network map to local schools, bicycle and recreational groups, Western Riverside Council of Governments, local bicycle shops, and major employers.

6.3. RECOMMENDED NETWORK PROJECTS

The recommended Riverside 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.

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

A Note on Bikeway Types

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 on 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 traffic, 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 "side paths," 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. Some cyclists feel that providing wide outside lanes is preferable to providing marked bike lanes. Again, this is generally based on personal comfort. 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 try bicycling 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, and 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 lanes and adjacent parking lanes are wide enough so that cyclists have enough room to avoid a suddenly opened vehicle door.

On streets with low traffic volumes and speeds (under 5,000 vehicles per day, 30 mph), striped bike lanes may not be needed at all. 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 may also include "Share the Road" signs at regular intervals along the route.

1. SAFETY ENHANCEMENT AND VISIBILITY SIGNAGE PROJECTS

Project Description and Location

At public workshops, Riverside community members identified visibility signage and safety enhancements as a top priority for improvement. Several existing bicycle corridors were identified as needing visibility signage, and spot locations were identified as needing safety enhancement. This project identifies general guidelines for safety enhancement and visibility signage to be used along these corridors.

Design Issues

Issues:

- Bicycle lanes are discontinuous due to variations in roadway width
- Sections of pavement are rough, buckled, or have abrupt level changes
- Narrow right-of-way at undercrossings and overcrossings of SR-91 and Metrolink Tracks
- Intersections where bicycle lane drops in favor of motor-vehicle right turn lane are not signed to indicate appropriate driver and cyclist operating behavior

Improvement Options:

- Install Bicycle Warning Sign (W11-1) and "Share the Road" signs (W16-1) where Class II bicycle lanes drop to Class III bicycle lanes.
- Stripe Class II bicycle lanes at gaps in Class II bicycle lane corridors where right-of-way does permit bicycle lanes.
- Install Class III bicycle route signs (D11-1) and "Share the Road" (W16-1)signs on segment gaps along Class II bicycle lane corridors where right-of-way does not permit bicycle lanes.
- Install "Bikeway Narrows" or "Narrow Bridge" signs at undercrossings or overcrossings where the bikeway narrows or drops. (See MUTCD Figure 9-3B.)
- Paint white obstruction pavement marking to designate drainage grates or other objects within the bicycle lane. (See design detail D8 in Appendix D and MUTCD Figure 9-C-8.)
- Spot check bicycle lanes to ensure they conform with Caltrans standards.
- Conduct additional field work to identify and prioritize locations and severity of rough, buckled pavement and abrupt level changes along identified bikeway corridors.
- Institutionalize an annual field check along major bicycle corridors to proactively identify maintenance and safety issues.
- Install "Begin Right Turn Lane Yield to Bikes" sign (R4-4) at intersections with right turn lanes along Class II bicycle lane corridors. (See design detail D4 in Appendix D and Figures 9-C- and 9-C4 of the MUTCD.)
- Stripe bicycle lane "pockets" for through cyclists to left of right turn only lanes along Class II bicycle lane corridors. (See design detail D4 in Appendix D and Figures 9-C- and 9-C4 of the MUTCD.)

Project Extents:

Corridors identified as needing Safety Enhancement and Visibility Signage Improvements are identified in Table 7-2.

Project Length:

Approximately 82 miles of corridors will be affected.

Graphic:

R4-4

W5-2

W5-4a

W11-1
W16-1

Cost Estimate

Total estimated cost: $3.6 million

2. ST. LAWRENCE BICYCLE PATH

Project Description and Location

The proposed St. Lawrence Bicycle path would establish a connection between Indiana Avenue, Victoria Avenue , the proposed Gage Canal Trail and Van Buren Boulevard. The route could be developed as a combination on-street Class III bike route and off-street Class I trail. St. Lawrence Street currently runs between Auto Drive and Victoria Avenue; south of Dufferin Avenue for approximately half a mile; and between the Gage Canal and Hermosa Drive. Gaps exist between Victoria Avenue and Dufferin Avenue, between ½ a mile south of Dufferin Avenue and the Gage Canal and between Hermosa Drive and Van Buren Boulevard.

Design Issues

Issues:

- Combined on-street and off-street pathways are needed to complete bikeway
- Proposed bikeway travels through agricultural land
- Bridge over Gage Canal will be required
- Half mile of bikeway is in Riverside County jurisdiction
- Topography between Hermosa Drive and Van Buren Boulevard

Improvement Options:

- Develop the project in phases, with Phase I connecting Victoria Avenue to Gage Canal Trail, Phase II connecting Gage Canal Trail to Hermosa (including bridge), Phase III connecting Hermosa to Van Buren Boulevard.
- Involve stakeholders in the project early in the planning stages to foster support for the project.
- Consider fencing and warning signage along Class I path adjacent to agricultural lands to discourage trespassing.
- Work with Riverside County to develop the project between Hermosa Drive and Van Buren Boulevard.

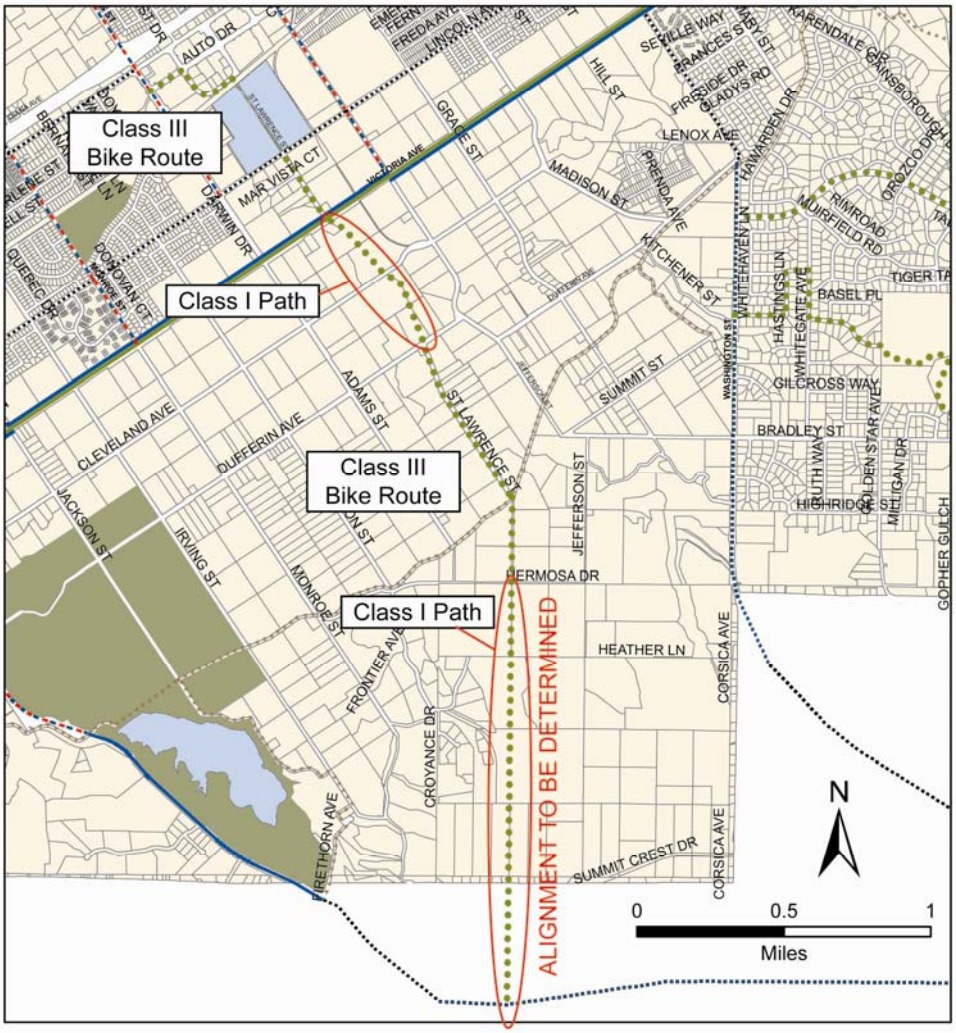
Project Extents:

St. Lawrence Street between Indiana Avenue and Van Buren Boulevard

Project Length:

Approximately 3.8 miles (1.3miles Class III bicycle route, 2.5 miles minimum Class I bicycle path)

Graphic



Proposed Alignment of St. Lawrence Bikeway

Cost Estimate

Total estimated cost: $4.4 million, including bridge over Gage Canal, with costs likely to increase pending final alignment of bicycle path between Hermosa Drive and Van Buren Boulevard.

3. WASHINGTON ST BIKE LANES (VICTORIA AVE TO VAN BUREN BLVD)

Project Description and Location

Washington Street provides a key route for longer regional cycling trips. This project proposes to stripe bicycle lanes along Washington Street between Victoria Avenue and Van Buren Boulevard. A portion of this roadway is in Riverside County jurisdiction.

Design Issues

Issues:

- Roadway width varies, from approximately 60' to approximately 30'. Most of the roadway would require road widening to accommodate bicycle lanes.
- Approximately 2 miles of the project is in Riverside County jurisdiction.

Improvement Options:

- Short-term: install Class III bicycle route signage and Share the Road Signs.
- Long-term: widen the roadway to accommodate bicycle lanes.
- Coordinate signage and striping improvements with Riverside County.

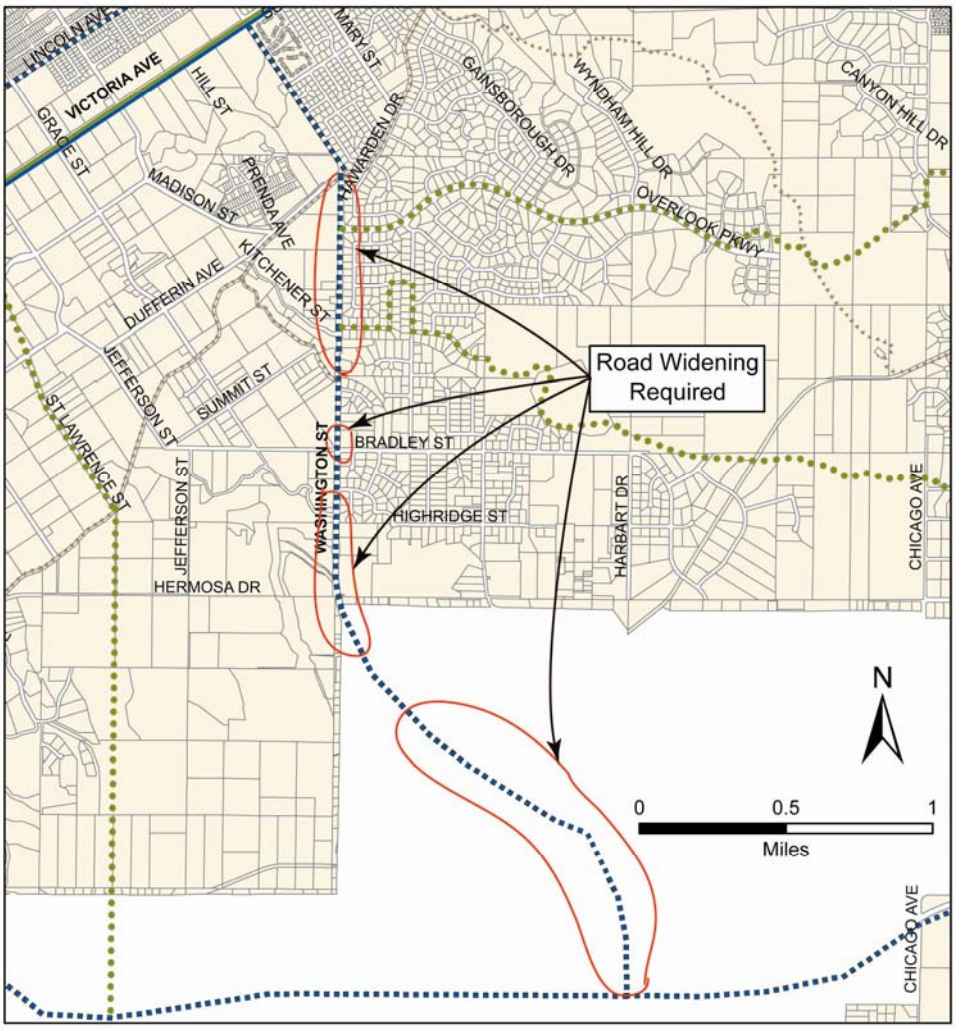
Project Extents:

Washington Street between Victoria Avenue and Van Buren Boulevard.

Project Length:

3.9 miles

Graphic



Washington Street Bicycle Lanes: Segments Requiring Roadway Widening

Cost Estimate

Total estimated cost: $2.3 million

4. COLUMBIA AVENUE: MT. VERNON AVE TO SANTA ANA RIVER TRAIL

Project Description and Location

The northern section of the Santa Ana River Trail (SART) within Riverside has been completed from Fairmount Park to its intersection with Main Street in Riverside County. This project will provide a bicycle route connecting planned bicycle lanes on Columbia Avenue and the existing Springbrook Wash Arroyo Trail to the Santa Ana River Trail. The project will take advantage of an existing access driveway from Salmon River Road.

Design Issues

Issues:

- Existing access driveway is paved and wide enough to accommodate a Class I bicycle path.
- Existing access driveway is close to adjacent homes.
- Possible neighborhood objections to establishing access point to trail in residential neighborhood.
- Connection to Santa Ana River Trail is not evident from Columbia Avenue.
- Columbia Avenue has low traffic volumes between Main Street and Salmon River Road, but it varies in width. Vehicles may speed on wider sections of road.

Improvement Options:

- Install bicycle route signage on Columbia Avenue between Main Street and SART entrance.
- Stripe wide shoulders to reduce the lane widths and calm traffic on wider sections of Columbia Avenue.
- Install bicycle wayfinding signage directing cyclists to the SART entrance at Main Street and Columbia Avenue, Salmon River Road and Columbia Avenue, Springbrook Wash Arroyo Trail and Columbia Avenue. Install bicycle wayfinding signage directing cyclists to Columbia Avenue, Main Street and Springbrook Wash Arroyo Trail on SART at exit to Salmon River Road, at exit from SART at Salmon River Road, at Columbia Avenue and Salmon River Road, at Columbia Avenue and Springbrook Wash Arroyo Trail.

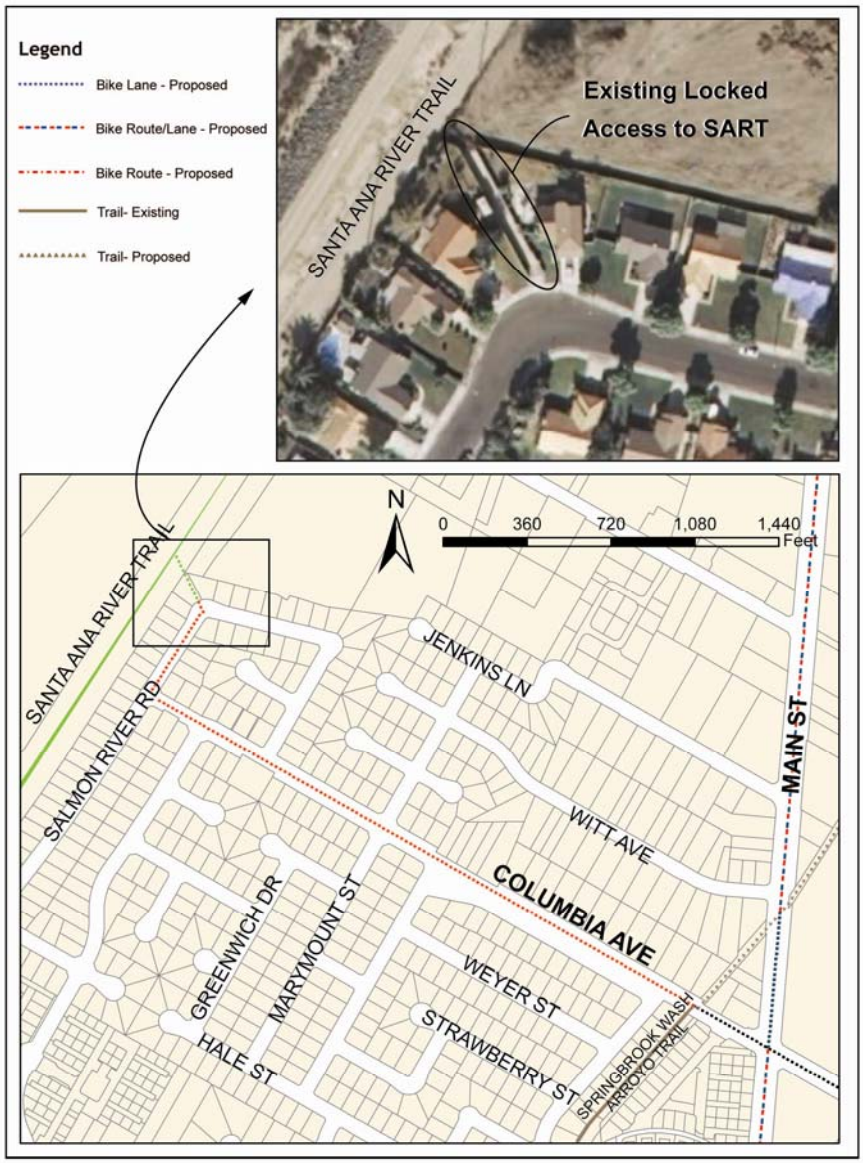
Project Extents:

Columbia Avenue between Main Street and Salmon River Road. (Class III bicycle route and wayfinding signage)
Salmon River Road between Columbia Avenue and SART entrance (Class III bicycle route and wayfinding signage)
Driveway access between Salmon River Road and SART (Class I path and wayfinding signage)

Project Length:

Approximately 3500 feet Class III bicycle route, 190 feet Class I bicycle path.

Graphic



Cost Estimate

Total estimated cost: $75,000

5. MAGNOLIA AVENUE-MARKET STREET BIKEWAY IMPROVEMENTS

Project Description and Location

The backbone of the City's bicycle network is a 10-mile corridor along Magnolia Avenue and Market Street that is striped with Class II bike lanes. This route provides access to downtown Riverside, Fairmount Park, Riverside City College, Ramona High School, California Baptist College, Sherman Indian High School, and numerous shopping and employment districts. This project lists several key improvements that can be made to improve the quality of the existing bicycle facilities along this corridor.

Design Issues

Issues:

- Faded bicycle lane striping in many sections
- Gaps in bicycle lanes at 3rd Street, in front of Ramona High School, and south of Van Buren Boulevard
- Bicycle lanes striped on sidewalk just north of Van Buren Boulevard
- Bicycle lane treatment at right turn pockets does not always meet Caltrans standards

Improvement Options:

- Install Bicycle Warning Sign (W11-1) and "Share the Road" signs (W16-1) where Class II bicycle lanes drop to Class III bicycle route.
- Restripe bicycle lanes along entire corridor.
- Reconfigure bicycle lanes at right turn lanes to meet Caltrans standards.
- Stripe bicycle lanes at gaps in corridor, where right-of-way allows. Where right-of-way constraints exist, install Bicycle Warning Sign and Share the Road signs to notify drivers and cyclists of bike lane drop..

Project Extents:

Market Street between Fairmount Park entrance and Arlington Avenue
Magnolia Street between Arlington Avenue and Buchanan Street

Project Length:

Approximately 9.5 miles.

Graphic

Incorrect striping of bike lane with turn lane

Correct striping of bike lane with turn lane

Cost Estimate

Total estimated cost: $453,000

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 completion of the improvements will vary from project to project, but typically include:

1. Conceptual design (with consideration of possible alternatives and environmental issues) and cost estimate for individual projects as needed.
2. Secure outside funding and any applicable environmental approvals.
3. Approval of the project by the City Council.
4. Completion of final plans, specifications and estimates, advertising for bids, receipt of bids and award of contract(s).
5. Construction of Project.

7.2. PROJECT PRIORITIZATION

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.

For the Riverside Bicycle Master Plan, City staff evaluated the recommended projects based on feasibility, safety, future roadway construction plans and citizen input from the public meetings. Staff then divided the projects into three implementation tiers, outlined in Table 7-1.

Table 7-1
Implementation Tiers

Tier	Notes	Estimated Cost
Tier 1: Safety Enhancement and Visibility Signage (short term)	Inventory the areas where safety could be improved and give a high priority to completing the needed/missing improvements within one to two years Install advisory signs along major bicycle routes to state "Be Friendly to Bicyclists – Share the Road"	$3.6 million
Tier 2: Current and Future Planned Construction (mid-term)	Projects are already under construction or are planned for construction with other planned projects, including: Capital Improvement Projects Private Development Projects	$3.9 million Some costs borne by private developers.
Tier 3: Grant Funded Projects (long-term)	Class I Bike Paths and Roadway improvements not related to Tier 1 or Tier 2.	$24.4 million Some costs borne by County.

Note that a bikeway project may have different segments listed under different implementation tiers. A list of Tier 1 projects is provided in Table 7-2. General recommendations for Tier 1 projects are outlined in Project Sheet 1 in Chapter 6.

The lists of 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. Riverside 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.

Table 7-2
Tier 1: Safety Enhancement and Visibility Signage Projects

Project Number	Location	From	To	Type	Miles	Estimated Cost	Implementation Notes
1	Main St	North City Limits	3rd St	Class 2/3	2.2	$103,295	some segments planned for construction
4	Palmyrita Ave	Iowa Ave	East City Limits	Class 2	1.5	$71,637	
8	Market St/Spruce St	North City Limits	Spruce St	Class 2/3	1.1	$67,342	some segments planned for construction
9	3rd St	Redwood Ave	Market St	Class 2	0.1	$6,641	some segments planned for construction
		Vine St	Park Ave	Class 2/3	0.5	$23,601	
		Eucalyptus Ave	Ottawa Ave	Class 2/3	0.1	$6,641	
9	3rd St	Redwood Ave	Market St	Class 3	0.5	$6,802	some segments planned for construction
10	Palm Av	Market St	Arlington Ave	Class 2	1.0	$48,704	some segments planned for construction
		3rd St	Market St	Class 2/3	2.5	$117,637	some segments planned for construction
11	University Ave (east)	Eucalyptus Ave	Ottawa Ave	Class 2	0.4	$18,596	some segments planned for construction
16	University Av	Brockton Ave	Park Ave	Class 3	0.7	$10,995	
12	Brockton Av	Arlington Ave	Jurupa Ave	Class 2	1.0	$48,298	some segments planned for construction
		Jurupa Ave	3rd St	Class 2/3	2.3	$108,057	some segments planned for construction
13	Olivewood Ave/Lime St Jurupa	4th St	Jurupa Ave	Class 2/3	2.0	$94,169	some segments planned for construction

Project Number	Location	From	To	Type	Miles	Estimated Cost	Implementation Notes
14	Martin Luther King Blvd/14th St	Redwood Ave	Brockton Ave	Class 2	0.3	$13,892	some segments planned for construction
		Kansas St	Ottawa Ave				
		Brockton Ave	Kansas St	Class 2/3	1.7	$79,886	
19	Victoria Ave	Myrtle Ave	Arlington Ave	Class 2	0.7	$35,459	
19	Victoria Ave	Martin Luther King Blvd	Myrtle Ave	Class 3	1.0	$15,649	
20	Panorama/Ivy/Myrtle	Olivewood Ave	Victoria Ave	Class 2	1.0	$48,759	
22	Box Springs Blvd	Martin Luther King Blvd	Alessandro Blvd	Class 2	4.5	$213,319	
24	Canyon Crest Dr	Central Ave	Alessandro Blvd	Class 2	2.2	$107,046	some segments planned for construction
25	Central Ave	Magnolia Ave	Victoria Ave	Class 2/3	1.5	$71,360	some segments planned for construction
26	Jurupa Av	Van Buren Blvd	Olivewood Ave	Class 2	4.5	$213,355	some segments planned for construction
27	Arlington Av	Airport Drive	Streeter Ave	Class 2/3	1.3	$60,669	some segments planned for construction
		Murray St	Neil St	Class 2	0.3	$163,811	some segments planned for construction
29	Arlington Av	in front of Norte Vista High School		Class 2/3	0.3	$14,122	
28	Mary St	Arlington Ave	Victoria Ave	Class 2	1.2	$55,636	some segments planned for construction
30	Jefferson St	Arlington Ave	Victoria Ave	Class 2/3	2.0	$96,954	some segments planned for construction

Project Number	Location	From	To	Type	Miles	Estimated Cost	Implementation Notes
32	Adams St	California Ave	Magnolia Ave	Class 2	0.5	$24,809	
		Magnolia Ave	Dufferin Ave	Class 2/3	1.8	$87,707	some segments planned for construction
38	Van Buren Blvd	California Ave	Gage Canal	Class 2/3	2.9	$137,944	some segments planned for construction
42	Monroe St	Arlington Ave	California Ave				
		Magnolia Ave	Indiana Ave	Class 2	1.4	$67,665	some segments planned for construction
		Indiana Ave	Gratton St				
		California Ave	Magnolia Ave	Class 2/3	2.8	$135,630	
43	Jackson St	Van Buren Blvd	Irving St	Class 2	4.5	$215,244	
46	California Av	Van Buren Blvd	Jackson St	Class 2	0.5	$24,578	some segments planned for construction
47	Collett Av	Pierce St	Hole St	Class 2	1.7	$79,457	
48	Tyler St	North City Limits	Indiana Ave	Class 2	4.4	$210,715	
		Victoria Ave	South City Limits	Class 2			some segments planned for construction
		Gramercy Place	Wells Ave				
50	La Sierra Av	Magnolia Ave	Indiana Ave		2.3	$111,471	
53	La Sierra Av	Western Hills Drive	West City Limits	Class 2	1.3	$59,853	some segments planned for construction
56	Dufferin Ave	McAllister St	Washington St	Class 2	4.1	$194,997	some segments planned for construction
57	McAllister St	Victoria Ave	South City Limits	Class 2	0.8	$37,095	
18	Cridge St/Carlton Pl/Prince Albert Dr/Ottawa Ave	Olivewood Ave	Martin Luther King Blvd	Class 3	2.4	$112,510	
31	Lincoln Av	Harrison St	Victoria Ave	Class 3	5.1	$76,416	some segments planned for construction

Project Number	Location	From	To	Type	Miles	Estimated Cost	Implementation Notes
44	Cypress Ave	La Sierra Ave	Van Buren Blvd	Class 3	2.5	$38,018	some segments planned for construction
45	Gramercy Place	Tilden Pl	Bryant Park	Class 3	3.1	$47,131	some segments planned for construction
61	Mt. Rubidoux Access Road	Gate at 9th St	Gate at 9th St	Class 3	1.7	$26,043	
				TOTAL	**82.5**	**$3,609,618**	

7.3. COST BREAKDOWN

A summary of cost estimates for the recommended bicycle network provided by this plan is presented in Table 7-3 below. The cost of the recommended projects is estimated to be about $21 million for Class I bike path projects, $7.5 million for Class II bike lane projects, and $342,565 for Class III bike route projects, for a combined total system build out cost of about $28.5 million. Cost estimates include costs for survey and design, construction, administration and contingencies. The majority of the estimated cost (74%) is due to the high cost of constructing Class I bike paths. The majority of the proposed network (128 miles of on-street bikeways) can be constructed for $7.6 million.

Most of the proposed bikeways were carried over from Riverside's prior bikeway plans. Several segments identified as proposed Class II bike lanes have been revised to Class II/III. Fieldwork showed that existing conditions on these roadways would make it difficult to stripe Class II bike lanes. Some of the Class II/III segments may require road widening, reduction in travel lanes, or reduction in parking to accommodate Class II bike lanes. For cost estimate purposes, this plan assumes Class II/III bikeways are built out as Class III bike routes. These bikeways should be considered for Class II bike lanes if future roadwork allows. The cost of building Class II bike lanes on these segments is likely to be greater than the estimates provided in this plan.

Proposed unpaved trails are not considered in this Bicycle Master Plan, and are not included in the bikeway plan cost estimates, as they do not meet Caltrans design standards for bike paths. However, many unpaved trails are used by cyclists, and this plan supports the City's efforts to construct additional unpaved trails. Note that the paved portion of the proposed Gage Canal Bikeway is included in this plan, while the longer, unpaved section, is not.

Table 7-3
Construction Cost of Recommended Bikeway Projects: Class I Bike Paths

Project Number	Location	From	To	Type	Miles	Estimated Cost	Notes	Implementation Notes
2	Access Driveway to SART	Salmon River Road	SART	Class 1	190 ft	$56,000		3
5	Gage Canal Bikeway	University Ave	Central Ave	Class 1	4.2	$6,719,581		3
15	Tequesquite Connector Trail	Santa Ana River Trail	Palm Ave	Class 1	1.0	$1,561,823		3
35	St. Lawrence St Bike Path	Auto Drive	Van Buren Blvd (Riverside County)	Class 1	3.8	$6,083,534		3
41	Santa Ana River Trail - South	Van Buren Blvd	West City Limits	Class 1	4.0	$6,297,419		3
TOTAL CLASS I BIKE PATHS					**13.1**	**$20,718356**		

Notes: Implementation Notes:
1: Tier 1 projects identified for safety enhancement and visibility signage.
2: Tier 2 projects which can be implemented in conjunction with other planned projects.
3:Tier 3: Grant-funded projects.
Costs are based on 2006 dollars.
Project numbers were assigned geographically, from northeast to southwest.

Table 7-4
Construction Cost of Recommended Bikeway Projects: Class II Bike Lanes

Project Number	Location	From	To	Type	Miles	Estimated Cost	Notes	Implementation Notes
1	Main St	North City Limits	3rd St	Class 2/3	2.2	$103,295		1, 2
2	Columbia Ave	Main Street	Mt. Vernon Ave	Class 2	2.6	123,833		2
3	Iowa Ave	North City Limits	Martin Luther King Blvd	Class 2	3.1	$145,484		2
4	Palmyrita Ave	Iowa Ave	East City Limits	Class 2	1.5	$71,637		1,3
6	Chicago Ave	Columbia Ave	Central Ave	Class 2	3.1	$145,866		2
8	Market St/Spruce St	North City Limits	Spruce St	Class 2/3	1.1	$67,342		1, 2
9	3rd St	Redwood Ave	Market St	Class 2	0.1	$6,641	Additional segments of project listed under Bike Routes.	1, 2
		Vine St	Park Ave	Class 2/3	0.5	$23,601		
		Eucalyptus Ave	Ottawa Ave	Class 2/3	0.1	$6,641		
10	Palm Av	Market St	Arlington Ave	Class 2	1.0	$48,704		1, 2
		3rd St	Market St	Class 2/3	2.5	$117,637		1, 2
11	University Ave (east)	Eucalyptus Ave	Ottawa Ave	Class 2	0.4	$18,596		1, 2
12	Brockton Av	Arlington Ave	Jurupa Ave	Class 2	1.0	$48,298		1, 2
		Jurupa Ave	3rd St	Class 2/3	2.3	$108,057		1, 2
13	Olivewood Ave/Lime St Jurupa	4th St	Jurupa Ave	Class 2/3	2.0	$94,169		1, 2
14	Martin Luther King Blvd/14th St	Redwood Ave	Brockton Ave	Class 2	0.3	$13,892		1, 2
		Kansas St	Ottawa Ave					
		Brockton Ave	Kansas St	Class 2/3	1.7	$79,886		1,3
19	Victoria Ave	Myrtle Ave	Arlington Ave	Class 2	0.7	$35,459	Segment of project listed under Bike Routes.	1
20	Panorama/Ivy/Myrtle	Olivewood Ave	Victoria Ave	Class 2	1.0	$48,759		1
21	Le Conte Bike Lanes	Chicago Ave	Future Gage Canal Bikeway	Class 2	0.6	$26,384		3
22	Box Springs Blvd	Martin Luther King Blvd	Alessandro Blvd	Class 2	4.5	$213,319		1
23	Big Springs Rd	Watkins Dr	Box Springs Mountain Reserve	Class 2	1.3	$59,839		2
24	Canyon Crest Dr	Central Ave	Alessandro Blvd	Class 2	2.2	$107,046		1, 2

Project Number	Location	From	To	Type	Miles	Estimated Cost	Notes	Implementation Notes
25	Central Av	Van Buren Blvd	Chicago Ave	Class 2	3.8	$179,859	Does not include segment between Magnolia & Victoria	2
		Magnolia Ave	Victoria Ave	Class 2/3	1.5	$71,360		1, 2
26	Jurupa Av	Van Buren Blvd	Olivewood Ave	Class 2	4.5	$213,355		1, 2
27	Arlington Av	Van Buren Blvd	Airport Drive	Class 2	0.5	$22,852		2
		Airport Drive	Streeter Ave	Class 2/3	1.3	$60,669	Does not include segment between Murray St and Neil St.	1, 2
		Murray St	Neil St	Class 2	0.3	$163,811	Needs widening.	1, 2
28	Mary St	Arlington Ave	Victoria Ave	Class 2	1.2	$55,636		1, 2
29	Arlington Av	in front of Norte Vista High School		Class 2/3	0.3	$14,122		1
30	Jefferson St	Arlington Ave	Victoria Ave	Class 2/3	2.0	$96,954		1, 2
32	Adams St	California Ave	Magnolia Ave	Class 2	0.5	$24,809		1
		Magnolia Ave	Dufferin Ave	Class 2/3	1.8	$87,707		1, 2
33	Washington St	Victoria Ave	Van Buren Blvd (Riverside County)	Class 2	3.9	$2,250,848	Requires widening.	3
34	Overlook Pkwy	Washington St	Alessandro Blvd	Class 2	2.9	$139,910		2
36	Woodcrest Reservoir Bike Lanes	Washington St	Trautwein Rd	Class 2	4.2	$198,231		3
37	Van Buren Blvd	Firethorn Ave	Wood Rd	Class 2	4.6	$219,337		2
38	Van Buren Blvd	California Ave	Gage Canal	Class 2/3	2.9	$137,944		1, 2
39	Van Buren Blvd	Jurupa Ave	Arlington Ave	Class 2	1.1	$50,748		3
40	Magnolia Ave	Meyers St	Farnham Place	Class 2	0.9	$41,955		2
		Jefferson St	Madison St					
42	Monroe St	Arlington Ave	California Ave	Class 2	1.4	$67,665	Total project extends from Arlington Ave to Gratton St	1, 2
		Magnolia Ave	Indiana Ave					
		Indiana Ave	Gratton St	Class 2/3	2.8	$135,630		1, 3
		California Ave	Magnolia Ave					

Project Number	Location	From	To	Type	Miles	Estimated Cost	Notes	Implementation Notes
43	Jackson St	Van Buren Blvd	Irving St	Class 2	4.5	$215,244		1, 3
46	California Av	Van Buren Blvd	Jackson St	Class 2	0.5	$24,578		1, 2
47	Collett Av	Pierce St	Hole St	Class 2	1.7	$79,457		1
		North City Limits	Indiana Ave	Class 2	4.4	$210,715		1
48	Tyler St	Indiana Ave	Victoria Ave	Class 2/3	0.8	$35,805		2, 3
49	Indiana Av	Adams St	South City Limits	Class 2	6.4	$305,826		2, 3
		Victoria Ave	South City Limits					1, 2
		Gramercy Place	Wells Ave	Class 2				
50	La Sierra Av	Magnolia Ave	Indiana Ave		2.3	$111,471		
51	Pierce St	Hole Ave	Indiana Ave	Class 2	1.1	$51,538		2
52	Wells Av	La Sierra Ave	Van Buren Blvd.	Class 2	2.5	$116,843		2
53	La Sierra Av	Western Hills Drive	West City Limits	Class 2	1.3	$59,853		1, 2
54	Santa Ana River Trail Connector - Fairmount Park	Santa Ana River Trail	Scout Ln	Class 2/3	0.7	$32,808		2
56	Dufferin Ave	McAllister St	Washington St	Class 2	4.1	$194,997		1, 2
57	McAllister St	Victoria Ave	South City Limits	Class 2	0.8	$37,095		1,3
58	Marlborough Ave	Iowa Ave	Northgate St	Class 2	0.5	$23,980		2
59	Northgate St	Marlborough Ave	Columbia Ave	Class 2	0.3	$11,946		2
60	Rustin Ave	Spruce St	Marlborough Ave	Class 2	0.5	$23,844		2
TOTAL CLASS II BIKEWAYS					**110.3**	**$7,483,789**		

Notes: Class 2/3 indicates segments that require additional fieldwork to determine the feasibility of striping bicycle lanes. Installing bicycle lanes on these segments may require lane reduction, road widening, or other major adjustments to the roadway. Cost of constructing these segments may be significantly higher than the estimated costs presented here.

Implementation Notes:

1: Tier 1 projects identified for safety enhancement and visibility signage.

2: Tier 2 projects which can be implemented in conjunction with other planned projects.

3: Tier 3: Grant-funded projects.

Costs are based on 2006 dollars.

Project numbers were assigned geographically, from northeast to southwest. All costs in 2006 dollars.

Table 7-5
Construction Cost of Recommended Bikeway Projects: Class III Bike Routes

CLASS III BIKE ROUTES								
Project Number	Location	From	To	Type	Miles	Estimated Cost	Notes	Implementation Notes
2	Columbia Ave/Salmon River Rd	SART	Main Street	Class 3	0.6	$9,000		3
9	3rd St	Redwood Ave	Market St	Class 3	0.6	$6,802	Segment of project listed under Bike Lanes.	1, 2
16	University Av	Brockton Ave	Park Ave	Class 3	0.7	$10,995		1
18	Cridge St/Carlton Pl/Prince Albert Dr/Ottawa Ave	Olivewood Ave	Martin Luther King Blvd	Class 3	2.4	$112,510		1,3
19	Victoria Ave	Martin Luther King Blvd	Myrtle Ave	Class 3	1.0	$15,649	Segment of project listed under Bike Lanes.	1
31	Lincoln Av	Harrison St	Victoria Ave	Class 3	5.1	$76,416		1, 2
44	Cypress Ave	La Sierra Ave	Van Buren Blvd	Class 3	2.5	$38,018		1, 2
45	Gramercy Place	Tilden Pl	Bryant Park	Class 3	3.1	$47,131		1, 2
61	Mt. Rubidoux Access Road	Gate at 9th St	Gate at 9th St	Class 3	1.7	$26,043		1,3
TOTAL CLASS III BIKE ROUTES					**17.7**	**$342,565**		

Notes: Class 2/3 indicates segments that require additional fieldwork to determine the feasibility of striping bicycle lanes. Installing bicycle lanes on these segments may require lane reduction, road widening, or other major adjustments to the roadway. Cost of constructing these segments may be significantly higher than the estimated costs presented here.
Implementation Notes:
1: projects identified for safety enhancement and visibility signage.
2: Projects that can be implemented in conjunction with other planned projects.
3:Grant-funded projects.

All costs in 2006 dollars.

The total annual maintenance cost of the primary bike path system is estimated to be about $350,000 per year when it is 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 7-6
Annual Maintenance Cost Estimates for Recommended Bikeway Network

Facility/ Program	Unit Cost ($)	Description	Miles	Cost	Notes
Class I Maintenance	8,500	Annual Cost per Mile	13.1	$ 111,366	Lighting maintenance and debris and vegetation overgrowth removal.
Class II Maintenance	2,000	Annual Cost per Mile	110.3	$ 220,616	Repainting lane stripes and stencils, sign replacement as needed
Class III Maintenance	1,000	Annual Cost per Mile	17.7	$17,696	Sign and shared use stencil replacement as needed
		Average Cost Per Year		**$ 349,678**	
		Estimated 10-year Cost		**$ 4,613,889**	Ten-year cost includes one time cost of pavement seal coat at $10,000 per mile for class I bikeways and estimates inflation rates calculated using conversion factor of 1.282.

Maintenance costs for the bikeway network may be higher than estimates if the City implements the expanded maintenance program proposed in Chapter 6. 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 7-6, 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

Funding that can be used for bicycle projects, programs and plans comes from all levels of government. This section covers federal, state, regional and local sources of bicycle funding, as well as some non-traditional funding sources that may be used for bicycle projects.

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 (for staff time), and regional, State and Federal sources. The primary funding sources are described below.

FEDERAL FUNDING SOURCES

The primary federal source of surface transportation funding—including bicycle and pedestrian facilities—is the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users. This Federal bill is the third iteration of the transportation vision established by Congress in 1991 with the Intermodal Surface Transportation Efficiency Act and renewed in 1998 and extended in 2003 through the Transportation Equity Act for the 21st Century and the Safe, Accountable, Flexible, and Efficient Transportation Equity Act of 2003. Also known as the Federal Transportation Bill, the $286.5 billion bill was passed in 2005 and authorizes Federal surface transportation programs for the five-year period between 2005 and 2009.

Federal funding is administered through the state (Caltrans and the State Resources Agency) and regional planning agencies. Most, but not all, of these funding programs are oriented toward transportation versus recreation, with an emphasis on reducing auto trips and providing inter-modal connections. Many Federal programs require a local match of 11.47 %. Federal funding is intended for capital improvements and safety and education programs and projects must relate to the surface transportation system.

Specific funding programs under the federal transportation bill for bicycle and pedestrian facilities include:

- Congestion Mitigation and Air Quality Improvement Program – funds projects that are likely to improve ambient air quality.
- Federal Lands Highway Funds—Approximately $1 billion dollars are available nationally through 2009 for planning and construction of bicycle and pedestrian projects built in conjunction with roadways
- Transportation, Community and System Preservation Program—$270 million nationally through 2009 for projects that improve the efficiency of the transportation system, reduce the impact on the environment, and provide efficient access to jobs, services and trade centers
- Recreational Trails Program—$370 million nationally through 2009 for non-motorized trail projects
- Safe Routes to School Program—$612 million nationally through 2009 for bicycle, pedestrian and education programs that implement safer routes to schools (Described under State Funding Sources, below.)

APPLICATION DEADLINE	Varies
TYPE OF PROJECTS FUNDED	▪ Construction ▪ Planning ▪ Safety and Education Programs
TYPE OF BIKEWAYS ELIGIBLE	▪ Bike Routes ▪ Bike Lanes ▪ Bike Paths
LINK TO PROGRAM	http://www.fhwa.dot.gov/safetealu/index.htm

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 Riverside County Transportation Agency.

Federal Lands Highway Funds

Federal Lands Highway Funds may be used to build bicycle and pedestrian facilities in conjunction with roads and parkways at the discretion of the department charged with administration of the funds. The projects must be transportation-related and tied to a plan adopted by the State and Metropolitan Planning Organization. Federal Lands Highway Funds may be used for planning and construction.

APPLICATION DEADLINE	Varies
TYPE OF PROJECTS FUNDED	▪ Planning ▪ Construction
TYPE OF BIKEWAYS ELIGIBLE	▪ Bike Routes ▪ Bike Lanes ▪ Bike Paths
LINK TO PROGRAM	http://www.fhwa.dot.gov/flh/flhfs051028.htm

Transportation, Community and System Preservation Program

The Transportation, Community and System Preservation Program provides federal funding for transit oriented development, traffic calming and other projects that improve the efficiency of the transportation system, reduce the impact on the environment, and provide efficient access to jobs, services and trade centers. The program is intended to provide communities with the resources to explore the integration of their transportation system with community preservation and environmental activities. The Program funds require a 20 % match.

APPLICATION DEADLINE	Varies
TYPE OF PROJECTS FUNDED	▪ Planning ▪ Construction
TYPE OF BIKEWAYS ELIGIBLE	▪ Bike Routes ▪ Bike Lanes ▪ Bike Paths
LINK TO PROGRAM	http://www.fhwa.dot.gov/tcsp/pi_tcsp.htm

Recreational Trails Program

The Recreational Trails Program of the federal transportation bill provides funds to states to develop and maintain 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. In California, the funds are administered by the California Department of Parks and Recreation. Recreational Trails Program funds may be used for:

- Maintenance and restoration of existing trails;
- Purchase and lease of trail construction and maintenance equipment;
- Construction of new trails; including unpaved trails
- 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).

APPLICATION DEADLINE	October
TYPE OF PROJECTS FUNDED	▪ Planning ▪ Property Acquisition ▪ Construction ▪ Safety and Educational Programs ▪ Maintenance and Restoration of Existing Trails
TYPE OF BIKEWAYS ELIGIBLE	▪ Bike Paths ▪ Unpaved Trails
LINK TO PROGRAM	http://www.fhwa.dot.gov/environment/rectrails/index.htm http://www.parks.ca.gov/?page_id=21362

Land and Water Conservation Fund

Land and Water Conservation Fund is a federally funded program that provides grants for planning and acquiring outdoor recreation areas and facilities, including trails. The Fund is administered by the National Parks Service and the California Department of Parks and Recreation and has been reauthorized until 2015.

Cities, counties and districts authorized to acquire, develop, operate and maintain park and recreation facilities are eligible to apply. Applicants must fund the entire project, and will be reimbursed for 50% of costs. Property acquired or developed under the program must be retained in perpetuity for public recreational use. The grant process for local agencies is competitive, and 60% of grants are reserved for Southern California.

APPLICATION DEADLINE	May 1
TYPE OF PROJECTS FUNDED	▪ Planning
TYPE OF BIKEWAYS ELIGIBLE	▪ Bike Paths ▪ Unpaved Trails
LINK TO PROGRAM	http://www.parks.ca.gov/?page_id=21360

STATE FUNDING SOURCES

The State of California uses both federal sources and its own budget to fund the following bicycle and pedestrian projects and programs.

Bicycle Transportation Account

The Bicycle Transportation Account provides state funding for local projects that improve the safety and convenience of bicycling for transportation. Because of its focus on transportation, Bicycle Transportation Account projects must provide a transportation link. Funds are available for both planning and

construction. Bicycle Transportation Account funding is administered by Caltrans and cities and counties must have an adopted Bicycle Transportation Plan in order to be eligible. Riverside's Bicycle Master Plan must be approved by the Riverside County Transportation Commission prior to Caltrans approval. The maximum amount available for projects through the Bicycle Transportation Account is $1.2 million dollars

APPLICATION DEADLINE	December 1
TYPE OF PROJECTS FUNDED	▪ Planning ▪ Construction ▪ Maintenance
TYPE OF BIKEWAYS ELIGIBLE	▪ Bike Routes ▪ Bike Lanes ▪ Bike Paths
LINK TO PROGRAM	http://www.dot.ca.gov/hq/LocalPrograms/bta/btaweb%20page.htm

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).

California Conservation Corps

The California Conservation Corps is a public service program, which occasionally provides assistance on construction projects. The Corp may be written into grant applications as a project partner. In order to utilize Corp labor, project sites must be public land or be publicly accessible. Corp labor cannot be used to perform regular maintenance; however, they will perform annual maintenance, such as the opening of trails in the spring.

APPLICATION DEADLINE	Not Applicable
TYPE OF PROJECTS FUNDED	▪ Construction ▪ Bike Paths
TYPE OF TRAILS ELIGIBLE	▪ River Access and Trailheads ▪ Unpaved
LINK TO PROGRAM	http://www.ccc.ca.gov

Safe Routes to School (SR2S)

In September 2004, with the passage of Senate Bill 1087 (Soto), the State extended Safe Routes to School legislation to January 1, 2008. This program is meant to improve the safety of walking and cycling to school and encourage students to walk and bicycle to school through identification of existing and new routes to school and construction of pedestrian and bicycle safety and traffic calming projects. Caltrans is currently evaluating California's Safe Routes to School funding, in light of the new federal Safe Routes to Schools Program. Federal legislation, which requires each state's Department of Transportation to designate a Safe Routes to Schools Coordinator, also contains a Safe Routes to Schools program, but as of this printing, whether or not these programs will be combined in California or will remain autonomous has not yet been determined.

APPLICATION DEADLINE	Currently unknown due to program reorganization
TYPE OF PROJECTS FUNDED	▪ Planning ▪ Construction
TYPE OF BIKEWAYS ELIGIBLE	▪ Bike Routes ▪ Bike Lanes ▪ Bike Paths
LINK TO PROGRAM	http://www.dot.ca.gov/hq/LocalPrograms/saferoute2.htm

Environmental Justice: Context Sensitive Planning Grants

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

APPLICATION DEADLINE	October 14
TYPE OF PROJECTS FUNDED	▪ Planning
TYPE OF BIKEWAYS ELIGIBLE	Not Applicable
LINK TO PROGRAM	http://www.dot.ca.gov/hq/tpp/offices/opar/titleVIand%20EJ.htm

Office of Traffic Safety Grants

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

APPLICATION DEADLINE	January 31
TYPE OF PROJECTS FUNDED	Safety Programs
TYPE OF BIKEWAYS ELIGIBLE	Not Applicable
LINK TO PROGRAM	http://www.ots.ca.gov/grants/default.asp

Community Based Transportation Planning Demonstration Grant Program

This fund, administered by Caltrans, provides funding for projects that exemplify livable community concepts including bicycle and pedestrian improvement projects. Eligible applicants include local governments, metropolitan planning organizations and regional transportation planning agencies. A 20% local match is required and projects must demonstrate a transportation component or objective. There are $3 million dollars available annually statewide.

APPLICATION DEADLINE	October
TYPE OF PROJECTS FUNDED	Planning
TYPE OF BIKEWAYS ELIGIBLE	Not Applicable
LINK TO PROGRAM	http://www.dot.ca.gov/hq/tpp/offices/ocp/cbtpg.htm

REGIONAL FUNDING SOURCES

Regional bicycle and pedestrian grant programs come from a variety of sources, including federal funding, the State budget and vehicle registration fees.

Regional Surface Transportation Program

The Regional Surface Transportation Program is a block grant program, which provides funding for bicycle and pedestrian projects, among many other transportation projects. Under this program, the Riverside County Transportation Commission, prioritizes and approves projects, which will receive these funds. The Riverside County Transportation Commission distributes these funds to local jurisdictions. Metropolitan planning organizations can transfer funding from other federal transportation sources to the RSTP program in order to gain more flexibility in the way the monies are allocated. In California, 62.5 % of RSTP funds are allocated according to population. The remaining 37.5 % is available statewide.

APPLICATION DEADLINE	Varies.
TYPE OF PROJECTS FUNDED	▪ Construction ▪ Safety and Education Programs ▪ Planning
TYPE OF TRAILS ELIGIBLE	▪ Bike Routes ▪ Bike Lanes ▪ Bike Paths
LINK TO PROGRAM	http://www.dot.ca.gov/hq/transprog/reports/Official_RSTP_Web_Page.htm

Regional Transportation Improvement Program

The Regional Transportation Improvement Program is the region's part derivative of the State Transportation Improvement Program and identifies projects, which are needed to improve regional transportation. Such projects may include bicycle and pedestrian facilities, safety projects and grade separation, among many others. Project planning, programming and monitoring may be funded up to 5 % of total regional improvement funds in urbanized regions and 2% of total regional improvement funds in non-urbanized regions. Each regional transportation-planning agency prepares a Regional Transportation Improvement Plan, consisting of projects to be funded through the Station Transportation Improvement Plan. The Regional Transportation Improvement

Plan helps prioritize projects for the program. Regional Transportation Improvement Plans must be approved by the California Transportation Commission.

APPLICATION DEADLINE	Regional agency coordinates with local agencies
TYPE OF PROJECTS FUNDED	▪ Planning (up to 5% of funds in urbanized areas, 2% in nonurbanized areas) ▪ Construction
TYPE OF TRAILS ELIGIBLE	▪ Bike Routes ▪ Bike Lanes ▪ Bike Paths
LINK TO PROGRAM	No web link available

LOCAL FUNDING SOURCES

Transportation Development Act

Transportation Development Act Article 3 funds are state block grants awarded annually to local jurisdictions for transit, bicycle and pedestrian projects in California. Funds for pedestrian projects originate from the Local Transportation Fund, which is derived from a ¼ cent of the general state sales tax. Local Transportation Funds are returned to each county based on sales tax revenues. Article 3 of the Transportation Development Act sets aside 2% of the Local Transportation Funds for bicycle and pedestrian projects. Eligible pedestrian and bicycle projects include: construction and engineering for capital projects; maintenance of bikeways; bicycle safety education programs (up to 5% of funds); and development of comprehensive bicycle or pedestrian facilities plans. A city or county may use these funds to update their bicycle and pedestrian plan not more than once every five years. These funds may be used to meet local match requirements for federal funding sources. Riverside County's Transportation Development Act funds are administered by the Riverside County Transportation Commission.

APPLICATION DEADLINE	Varies. Administered by the Riverside County Transportation Commission
TYPE OF PROJECTS FUNDED	▪ Planning ▪ Construction ▪ Maintenance ▪ Safety and Education
TYPE OF BIKEWAYS ELIGIBLE	▪ Bike Routes ▪ Bike Lanes ▪ Bike Paths
LINK TO PROGRAM	http://www.rctc.org

Impact Fees

One potential local source of funding is developer impact fees, typically tied to trip generation rates and traffic impacts produced by a proposed project. A

developer may attempt to reduce the number of trips (and hence impacts and cost) by paying for on- and off-site pedestrian improvements designed to encourage residents, employees and visitors to the new development to walk rather than drive. Establishing a clear nexus or connection between the impact fee and the project's impacts is critical for avoiding a potential lawsuit.

Mello-Roos Community Facilities Act

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

APPENDIX A: PUBLIC MEETING NOTICES AND MINUTES

The City of Riverside held two public meetings to gather public input on the Bicycle Master Plan. The first public meeting was held on Tuesday, July 18, 2006 from 6:30 to 8:30 pm. At this first meeting, attendees were asked to mark up maps of the City and provide their input for how they would like to improve bicycling in the City. The second public meeting was held on Monday, November 6, 2006 from 6:00 pm to 8:30 pm. At this meeting, the recommended programs and bikeway network were presented, and attendees were asked to provide input on projects, as well as help prioritize the recommended bikeway projects.

Flyers, agendas, and summaries of both meetings are presented in this appendix.

Figure A-1: Flyer for the First Public Meeting

AGENDA

CITY OF RIVERSIDE BICYCLE MASTER PLAN

Tuesday, July 18, 2006
6:30 p.m. to 8:30 p.m.
Fairmount Park Boathouse
2801 Fairmount Blvd

Welcome **6:30**

Sign in, eat snacks and browse these booths to learn about biking in Riverside:

- **Existing Conditions Map:** Map of the City's bike lanes, routes and paths
- **Bicycling Toolbox** Examples of tools that can be used to make bicycling safer and more enjoyable.
- **Goals of the Bicycle Master Plan**
- **Timeline of the Bicycle Master Plan**

Overview of Walking and Biking in Riverside **6:50**

Introductions

Review Purpose and Goals of the Bicycle Master Plan, Existing Conditions, Timeframe and Tools

Workgroup Mapping, Discussion and Feedback : 7:00

Participants split up into small groups

Each group, guided by a facilitator, will brainstorm opportunities for improving biking in Riverside. Group members will mark on a large map to locate improvements.

Report Ideas to Larger Group : 8:00

A spokesperson from each group will report the group ideas back to the whole group.

Summary, Next Steps and Questions: **8:25**

Brief summary of the meeting and next steps. City Staff and Consultants will be available for questions.

Adjourn **8:30**

RIVERSIDE PUBLIC MEETING #1 NOTES FROM WORKING GROUPS: JULY 18, 2006

The notes below are transcriptions from the working group brainstorming sessions. These notes have been summarized in Chapter 5: Needs Analysis.

Group 1

Velodrome – UCR sponsored
Grates on side of road have to be turned correctly or marked with line
Safe routes to school emphasis on safety to get parent buy in
    Secure places for bikes/lockers. Fenced in area
    Safe routes
    Separate care entrance from bike entrance
Smoother roads in general
More education for motorists re: bicycles and right of way
Repave bike lane when repaving road – eliminates lips in gutter
    Lincoln blvd between Victoria "& Mary street is example of bad gutter
Better quality pothole repair (smother, more frequent)
Water stops/fountains incorporated into bus stops, on Victoria/magnolia/Arlington at top of a hill
Utility covers stick up out of street or are below street surface
White ring or something around covers to identify them
Published bicycle events- family friendly especially during daylight savings time, even events just for kids will get parents out
More and wider bike lane
Setter enforcement of no parking in bike lanes
Clean and maintain bike lanes we have
    BAD = mission and Rubidoux street calming.
Sweep bike lanes is a top priority
Remark bike lanes
Class I paths to connect Santa Ana to Victoria
More entrances to bike paths
Roads with fewer stops/lights
Raised bike path all the way through town
Connect bike lanes to schools and public transportation
Bike path place next to freeway, next to railroad tracks
Have developers incorporate bike paths and bike lanes when building
Better approaches to rail road tracks – diagonal RR on magnolia at "Piere Detorou" needs to be cleaned
    Need warning sign, lots of accidents there
Bike route around Lake Matthews needs improvement, currently no shoulder. Good place to train
Magnolia by high school bike lane is in gutter
Want street sweeping in intersections more frequently
Arlington needs to be fixed for bikes
    After the mall is bad. bike lanes narrow or nonexistent discontinuous
Want warning signs for cars share the road full use of lane
Center between magnolia and Victoria not bike friendly, poles in sidewalk
Push buttons for signals need to be closer to bike lane good = Victoria and Van Buren south side
Bicycle loop detectors where can't put button.
Pressure sensor for intersection
Bike map
Bike lanes with parking adjacent need to be wider- Watkins is bad example – mission and 5th is bad
Shade trees along bike paths and water fountains

Restroom facilities
Bike lanes disappear at intersections.

Group 2

Provide and improve bike path access and parking
Maintain existing bike lanes; surface conditions and debris
Improve awareness of ": share the road" and proper use of bikeways signs and arrows
Repave Mt.. Rubidoux trail
Provide email contact for specific problems
Warning signs on roads of intersecting bikeways
Signal activation by bikes or easier access to buttons
Provide bike route detours during construction
Provide continuous routes for class 2 bike routes that connect with class 1 routes
Publish bikeway map of riverside

Group 3

Magnolia Ave bike lane needs maintenance
Stop sign in bike lane on Victoria at Victoria bridge
Need bike friendly signals length of magnolia
Signals at la sierra/Victoria and Van Buren/Victoria hard to access
Bike lane Calif and Tyler needs maintenance
2 bike lanes on Victoria-label one walker one bikes
Hot line to report bike lane problems
Educate elementary schools
    Helmets-safety awareness
    Police-be in charge
    Parks – summer programs
Planning & redevelopment of roadways prioritize to bike lanes too
Repave Mt. Rubidoux road (clean off sediment)
Better bicycle detection
Dreams
    Motorist yield to bicyclist signs
    Incentives by city to business to use alternatives, tax breaks
    Lockers and showers
    Santa Ana – north main street 20 ft signage
        -parking
    Village bicycles
    UCR contribute
    Eliminate on street parking at apartments
Need to have shoulder
Linking designated bike paths with other cities
Need – action prioritize in 2-3 years
dream – developers concrete sidewalks wider sidewalks Yucaipa Chapman ranch
    like Victoria
Dreams
Wide occupancy lanes
Signage
Change culture
Widen major streets

Education on city channel, utility bills, map of trails, at schools, school districts
Needs – bike lanes are dangerous,
signs on major routes
brighter signs
share the road signs
welcome to riverside, a bicycle-friendly town
Striping for education
Street sweeping
RUSD ride bikes where prohibited

Group 4

Set schedule for cleaning bike lanes dependent on time of year
Need north/south routes
Central and Arlington need consistent bike routes
Share the road signs – bike lane signs on entire route
McAllister bike lane (Currently unsafe)
bike trail access from Eastridge Ave to Sycamore Canyon bike trail
Safe routes to school
Bike lane on Chicago
Develop circular route around city over to Mt Vernon and up Pigeon Pass in Moreno valley
Proposed signage: bike route, bike lane ahead/ends, share the road, signal detector stencils, bike lane stencils.
Once a month bike event at Fairmont park – cyclists only
Additional biking facilities i.e. Benches, bathrooms, water
Trail system signage –
Campaign aimed at drivers to give cyclists a brake and room to ride
Stress to cyclists road safety i.e. red light means stop
Staging areas into SART (several)

Group 5

Dogs- Gratton/Jackson
Driver/biker rules, education
Victoria clean up
Victoria – walkers vs. bikers
Trautwein not smooth since expansion, too close to curb
Roads we like to travel on (on map)
Encourage lead other nearby cities to collaborate and create bike plans
Coordinate with county i.e. Lake Matthews
Don't sweep into bike lanes, clean bike lane educate street sweeper regarding bike lane use
McAllister closing maintain bike access (2007)
Maintain "small town" feel in spite of growth (i.e. Irvine)
Construction signs in bike paths are dangerous
Bright share the road signs
Cameras on Van Buren to slow traffic
Wider bike lane on Van Buren
City management should be educated to include bikers' needs with any road development
Large employers should be required to provide lockers/showers i.e. UCR
City can provide possible incentives to do so
Agreement with health clubs and gyms for shower/locker rental

Table A-1: Location-Specific Recommendations from First Public Meeting

Type of Request	Group	Request
construction	group 1	Better approaches to rail road tracks – diagonal Rail Road on Magnolia needs to be cleaned,
construction	group 5	Trautwein not smooth since expansion, too close to curb
construction	group 5	McAllister closing-- maintain bike access (2007)
design	group 1	Magnolia by high school bike lane is in gutter
design	group 1	Arlington needs to be fixed for bikes, After the mall is bad bike lanes narrow or nonexistent discontinuous
design	group 1	Center between Magnolia and Victoria not bike friendly, poles in sidewalk
design	group 1	Push buttons for signals need to be closer to bike lane good = Victoria and Van Buren south side
design	group 1	Bike lanes with parking adjacent need to be wider- Watkins is bad example – Mission and 5th is bad
design	group 3	stop sign in bike lane on Victoria at bridge
design	group 3	need bike friendly signals length of Magnolia
design	group 3	signals at La Sierra/Victoria and Van Buren/Victoria hard to access
design	group 4	McAllister bike lane (Currently unsafe)
design	group 5	Cameras on Van Buren to slow traffic
design	group 5	Wider bike lane on Van Buren
facilities	group 1	Bike route around lake Matthews needs improvement, currently no shoulder. Good place to train
facilities	group 4	bike trail access from Eastridge Ave to Sycamore Canyon bike trail
facilities	group 4	bike lane on Chicago
location	group 3	dream – developers concrete sidewalks wider sidewalks Yucaipa Chapman ranch, like Victoria
location	group 4	Central and Arlington need consistent bike routes
location	group 5	Coordinate with county i.e. Lake Matthews
maintenance	group 3	Magnolia Ave bike lane needs maintenance
maintenance	group 3	bike lane California and Tyler needs maintenance
maintenance	group 3	Repave Mt. Rubidoux road (clean off sediment)
maintenance	group 5	Victoria clean up
problem	group 5	Dogs- Gratton/Jackson

SECOND PUBLIC MEETING

On November 6, 2006, the City hosted a second public workshop to present the recommendations of the Draft Plan and to gather citizen input for prioritizing recommended bikeways. Nineteen community members attended the workshop. During the first half of the meeting, the recommended bikeways and programs were presented to the group, along with an overview of the bikeway projects that are tied to future development.

In preparation for this meeting, the City divided recommended projects into three tiers. The tiers were developed based on input from the prior workshop and are:

Tier 1: Safety Enhancement and Visibility Signage

> Inventory the areas where safety could be improved and give a high priority to completing the needed/missing improvements within one to two years
>
> Install advisory signs along major bicycle routes to state "Be Friendly to Cyclists – Share the Road"

Tier 2: Projects that can be completed in conjunction with other planned projects

Capital Improvement Projects

Private Development Projects

Tier 3 Projects – Grant Funded Projects

- Class I Bike Paths and roadway improvements not related to Tier 1 or Tier 2.

During the second half of the workshop, attendees were asked to divide into smaller groups and prioritize the grant-funded projects (Tier 3) and to move any specific projects to the safety and visibility list (Tier 1). At the conclusion of the meeting, each table presented their recommendations to the group.

Recommendations from Working Groups

Of the grant-funded (Tier 3) projects, completion of the Santa Ana River Trail was listed as a high priority for all groups. The other projects, listed in order, were Woodcrest Reservoir Bike Path, Columbia Avenue between Mt. Vernon Ave and the Santa Ana River Trail, the St. Lawrence Bicycle Path, and Washington Street between Victoria Avenue and Van Buren Boulevard.

In terms of programmatic and policy priorities, the group confirmed the importance of ensuring that loop detectors at signalized intersections be calibrated so that they can be actuated by bicycles. Additional bicycle parking in the downtown area, near the University of Riverside, and at cafes, restaurants, stores and other destinations was identified as being a high priority, as was creation of a bicycle parking ordinance that establishes bicycle parking requirements for new development. The group

also supported bicycle education programs such as Safe Routes to Schools and bicycle education classes and recommended that these classes be offered in Spanish and English.

APPENDIX B: SAMPLE BICYCLE PARKING CODE 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 Riverside 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.

B.1. 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 For all additional units, 2 spaces per unit, of which one space must be covered	None 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 Director of Planning and Community Environment.

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. 10,000-19,999 sq. ft. 20,000-49,999 sq. ft. 50,000 sq. ft. and up	No requirement 1 2 4
Retail, personal and eating and drinking services.	0-24,999 sq. ft 25,000-49,999 sq. ft. 50,000-99,999 sq. ft. 100,000 sq. ft. and up	No requirement 1 2 4

B.2. 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)

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. However, often bicycle-related issues are overlooked in construction zones. 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 are addressed 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.

C.1. LANE CLOSURES

The needs of bicyclists are often neglected when roadway lanes are closed for construction activities. Guidelines should consider the needs of bicyclists and motorists since both are roadway users. 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 Manual for Uniform Traffic Control Devices (MUTCD), the Caltrans Traffic Control Manual, 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 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 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 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.

C.2. 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.

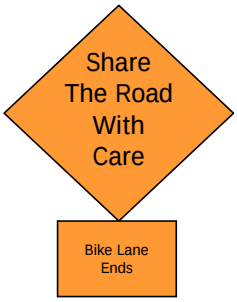
Signage alerting roadway users of construction activities can provide for motorists and bicyclists alike. However, signage specific for bicyclists should be employed if the circumstances warrant it. Such circumstances may include a detour route that is different for bicyclists and motorists, loss of 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 be a tricky issue 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.
- Recommended 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 signs are not found in MUTCD or Caltrans manuals:

Signs that may be used in coordination with construction activities are listed in the Caltrans Traffic Control Manual and 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.



C.3. 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

- On new construction, the finished surface of bikeways should not vary more than 6 mm from the lower edge of a 2.4 m long straight edge when laid on the surface in any direction.
- 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 workers should inspect the pavement two to four months after trenching construction activities are completed to ensure that excessive settlement did not occur.

C.4. 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 make it difficult for 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 Traffic Engineering Division 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.

C.5. TRENCHING AND PLATE USE

Recent years have seen the installation of fiber-optic cables 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 bicyclists to lose control due to the shock of the vertical transition. Also, lack of coordination among different trenching entities can compound the problems. 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 important to minimizing the impact of trenching upon bicyclists.

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.

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.

C.6. GUTTER-TO-PAVEMENT TRANSITION

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.

C.7. 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.

APPENDIX D: BIKEWAY DESIGN GUIDELINES

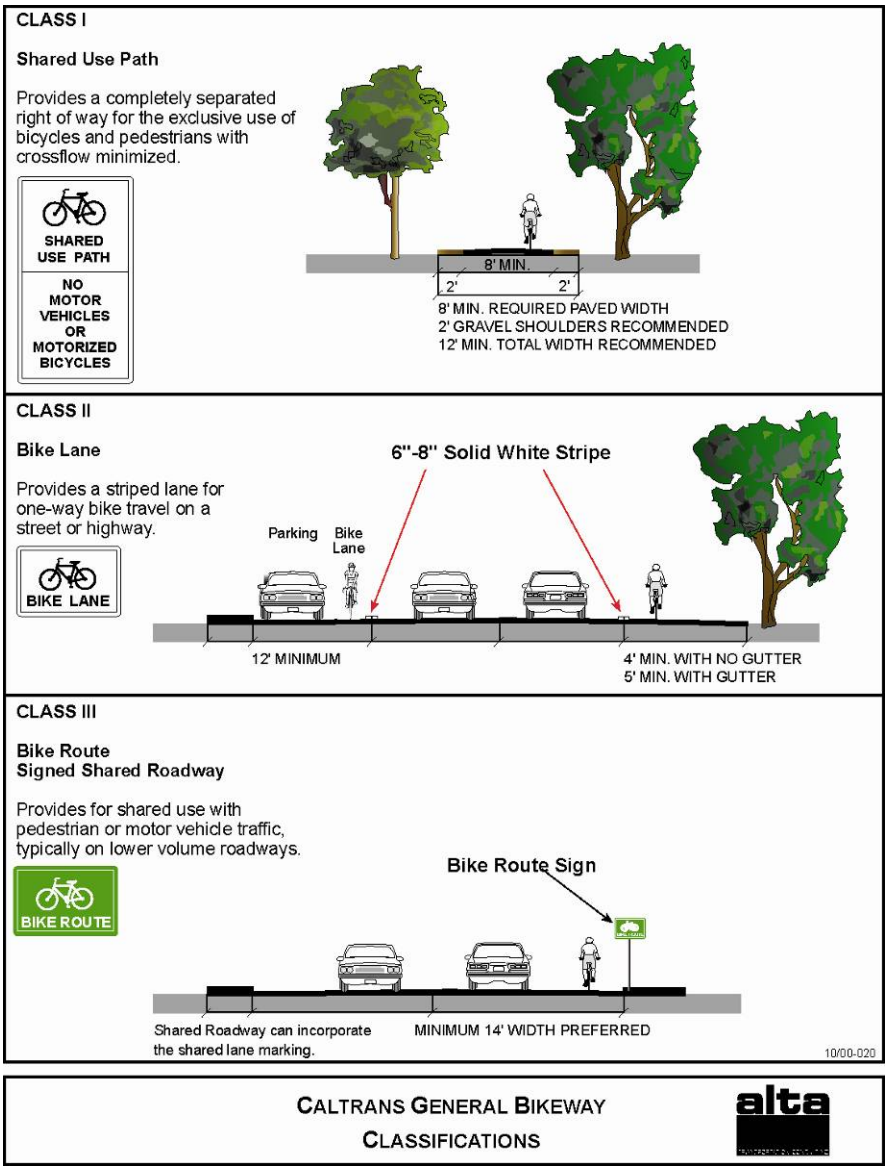
The design guidelines presented in this chapter are a combination of minimum standards outlined by the California Highway Design Manual's Chapter 1000 (Chapter 1000) and the Manual on Uniform Traffic Control Devices (MUTCD) California Supplement, as well as supplemental design solutions tailored to the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

D.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 Riverside Bikeway Network includes segments of Class I and Class II bikeways.

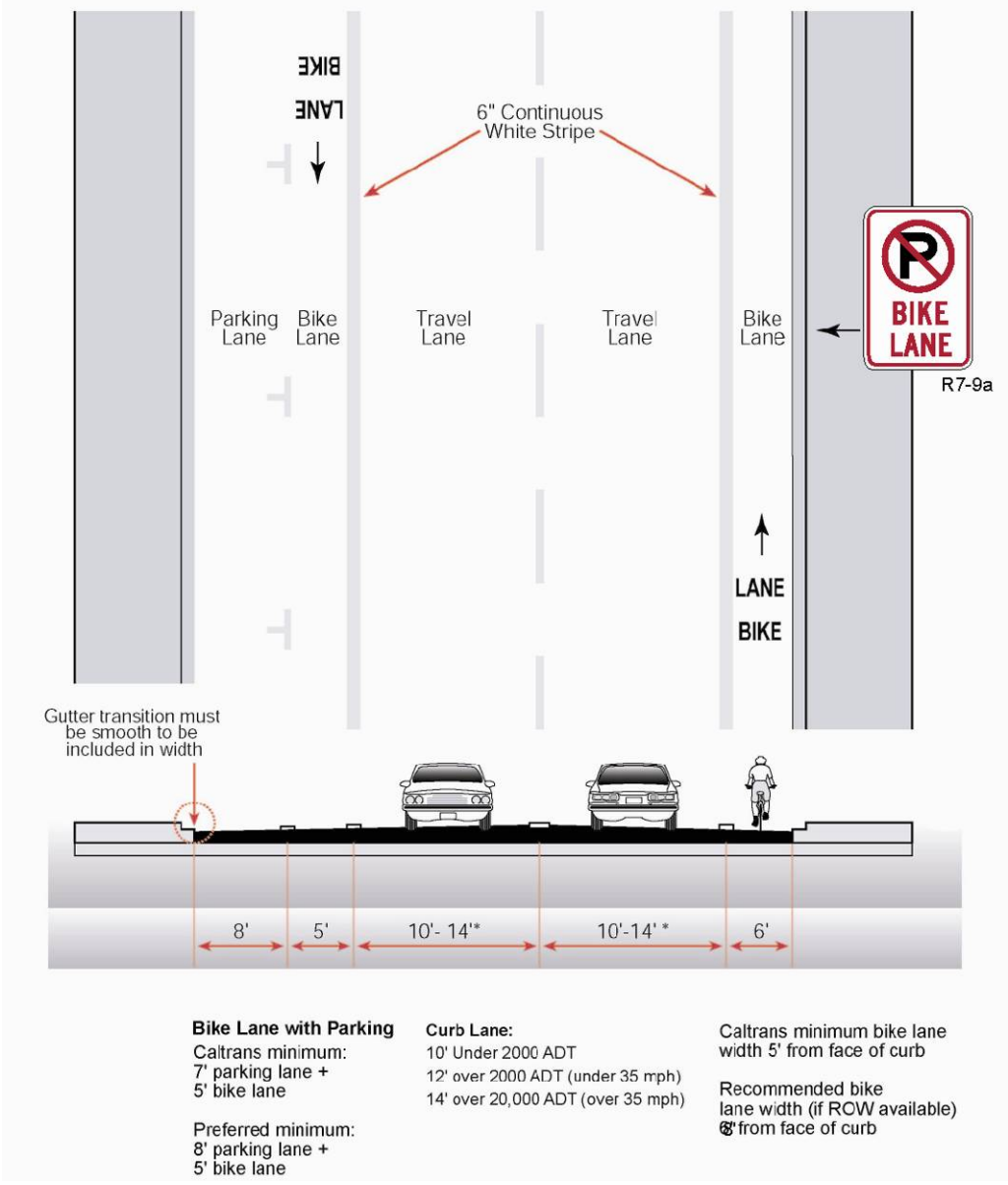
Graphic



D.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

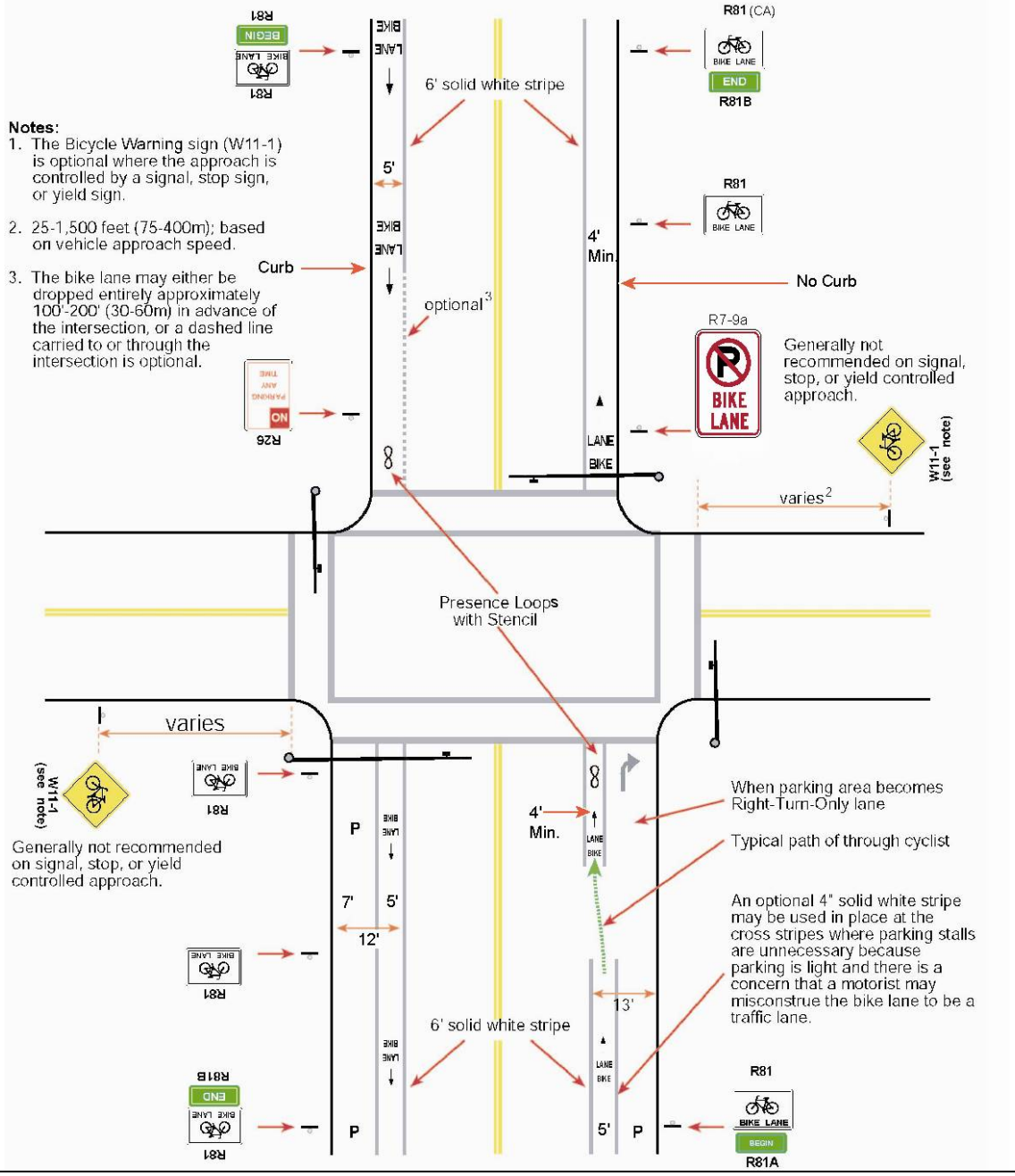
- Bicycle lanes shall be one way facilities, running with the direction of traffic.

- 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 2003 California Supplement to the MUTCD.

D.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.

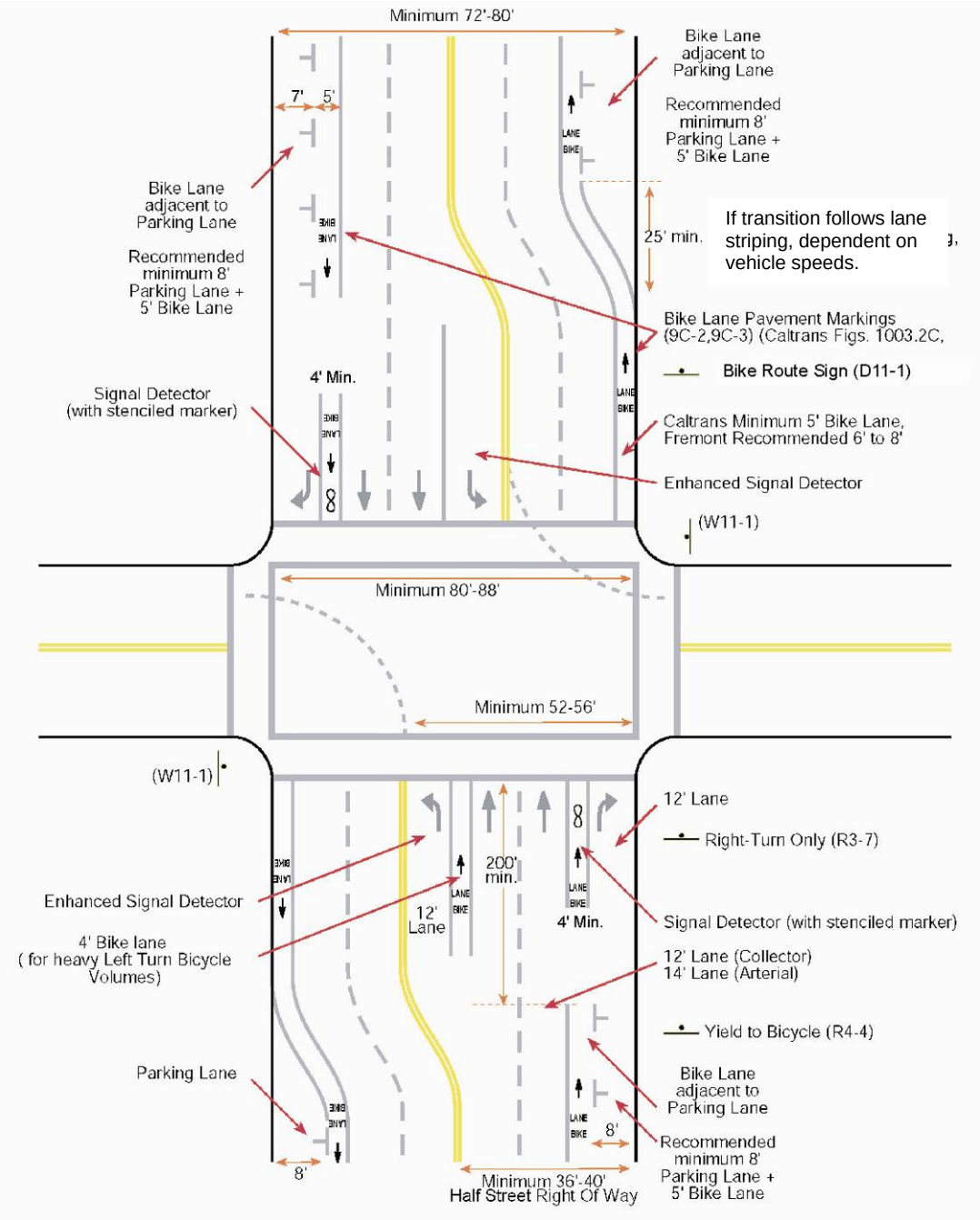
Graphic



D.4. DEDICATED BIKE TURN LANES AT AN 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

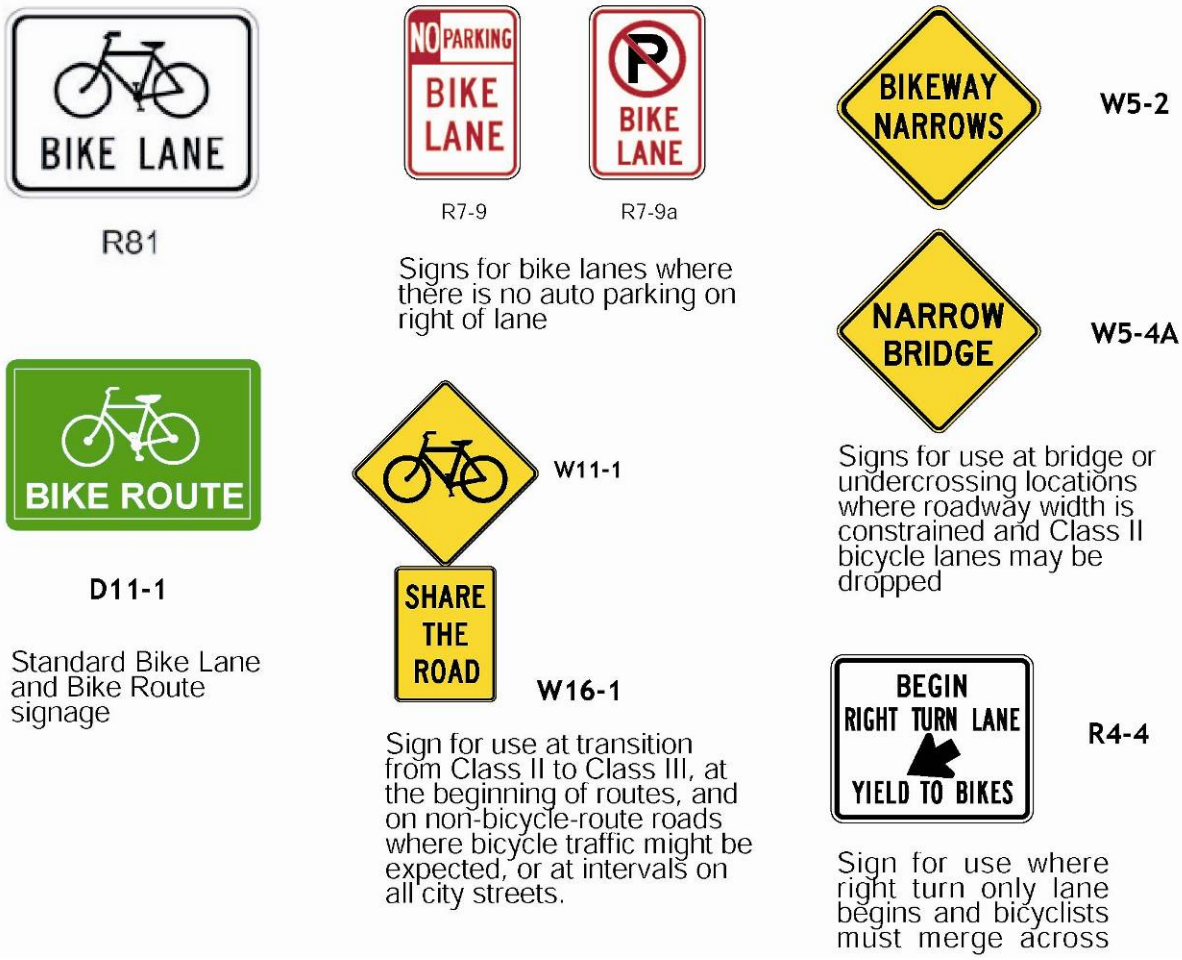


D.5. ON-STREET BIKEWAY REGULATORY & WARNING SIGNAGE

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 Chapter 9 of the 2003 MUTCD, California Supplement.

Potential Applications

Various situations, specific to each site. The City may 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 .25 mile intervals along the designated route.

Guidelines

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

D.6. RIVERSIDE BIKEWAY NETWORK 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.

Graphic

Potential Applications
Along bicycle network streets throughout Riverside Bikeway Network.

Guidelines
1. Signs are used to establish unique routes within the City. 2. Destination signage should be installed with enough frequency to effectively guide cyclists throughout the Riverside Bikeway Network. Installation of signage every ¼ to ½ mile, depending on the route, is recommended. Placement of signage at key decision points is recommended. Many communities are developing customized signage along bikeways to accommodate both commuter and recreational users.

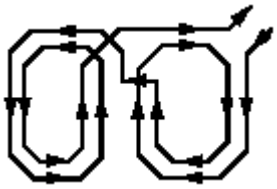
D.7. BICYCLE LOOP DETECTORS

Description

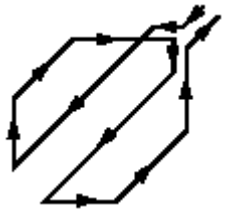
Bicycle loop detectors activate traffic signals at intersections, similar to standard loop detectors used for auto traffic. Where bicycle loop detectors are not present, bicyclists are forced to wait for a motor vehicle to trigger a signal; where motor vehicle traffic is infrequent, they may cross against 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 Riverside Bikeway Network.

Guidelines

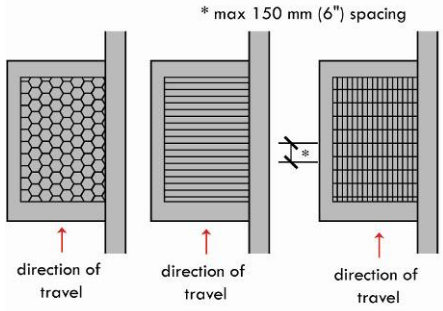
1. Pavement markings should identify proper cyclist position above the loop detector.
2. Loop detectors should provide adequate time for cyclists to cross the intersection, keeping in mind the slower travel speed (10-15 mph) of bicyclists.

D.8. DRAINAGE GRATES AND UTILITY COVERS

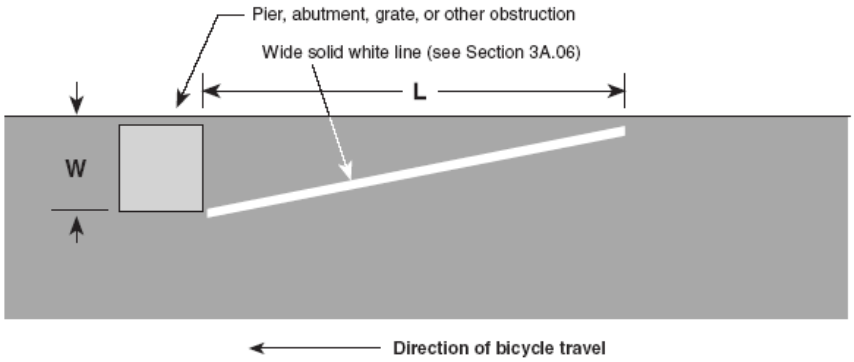
Description

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.



For metric units:
L = 0.6 WS , where S is bicycle approach speed in kilometers per hour

For English units:
L = WS , where S is bicycle approach speed in miles per hour

Example of Obstruction Pavement Marking (Figure 9C-3 in MUTCD)

Potential Applications

Wherever drainage grates or utility covers are located along on-street bikeways within Riverside.

Guidelines

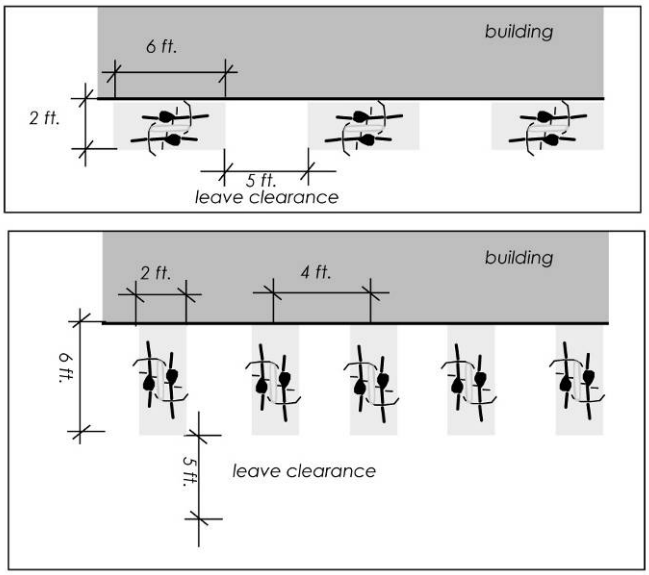
1. Grates must feature crossbars or a grid that prevents bicycle tires from catching or slipping through.
2. Metal covers used in construction zones must have a non-slip coating.
3. Drain grates and other obstructions that cannot be converted to a bicycle-friendly utility should be striped with obstruction pavement markings.

D.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 Riverside such as shopping centers, recreation and beach areas and schools.

Graphic



Potential Applications

Throughout the Riverside 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

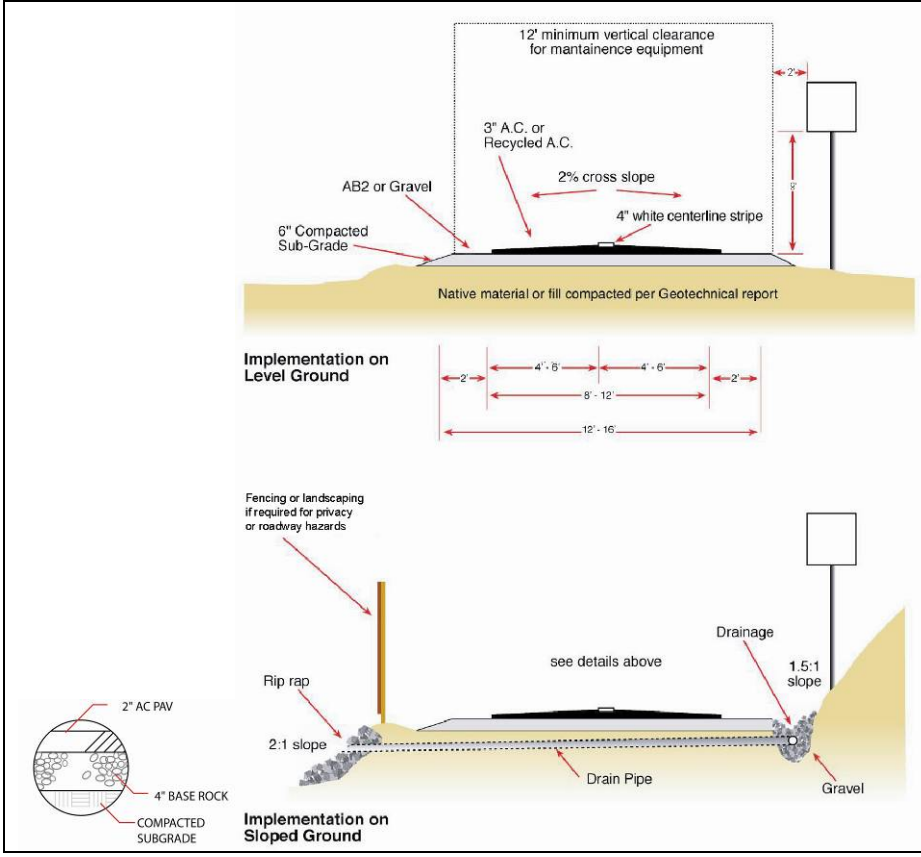
elements. Long-term parking should always be protected.

D.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.

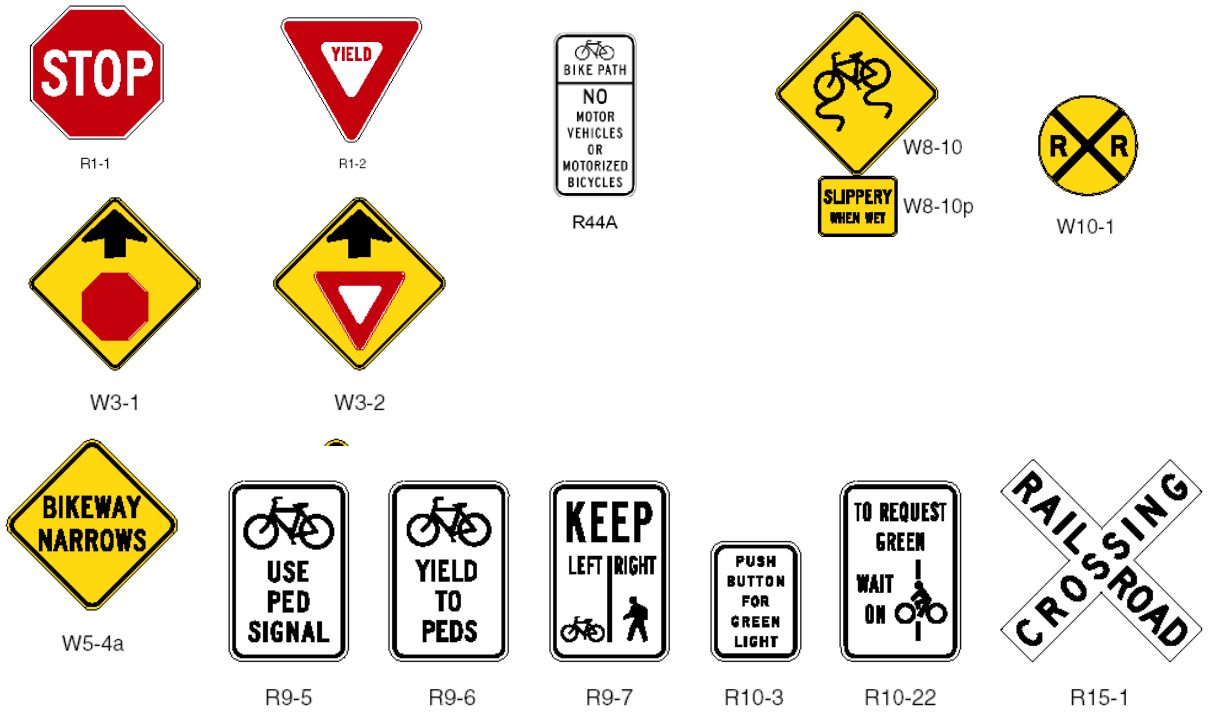
Guidelines

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.

D.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 Chapter 9 of the 2003 MUTCD, California Supplement.

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.