

# *Final Report:* **Bicycle Master Plan**

September 2003



*Prepared for:*

**The City of Manteca**

1021-1898



**FEHR & PEERS**  
TRANSPORTATION CONSULTANTS

3685 Mt. Diablo Blvd. Suite 301

Lafayette, CA 94549

925-284-3200

Fax: 925-284-2691

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## EXECUTIVE SUMMARY

The City of Manteca *Bicycle Master Plan* was prepared by Fehr & Peers in collaboration with the City of Manteca Public Works Department. The *Bicycle Master Plan* was prepared to set forth a blueprint for developing a system of bikeways within the City of Manteca. The envisioned system builds upon existing on-street and off-street bicycle facilities throughout the City with enhancements to overall connectivity, support facilities, safety and education programs. This document satisfies the requirements of the *California Bicycle Transportation Act (BTA;1994)*, enabling the City of Manteca to obtain eligibility for state bicycle funding.

Through discussions with City staff and members of the public, it was clear there were three critical overall issues for consideration in the preparation of the *Bicycle Master Plan*. First, the community desires a comprehensive bikeway system that provides a network of facilities serving destinations in and around the City. This desire translated into the proposed bikeway system. Second, the community needs safe linkages across the traditional bicycle barriers of State Route 120 (SR 120) and State Route 99 (SR 99). Third, as the community continues to grow, new developments should be integrated into and extend the bikeway system. Each of these three critical issues is further described below.

### Proposed Bikeway System

The proposed bikeway system for the City of Manteca was developed based on the City's current *Bicycle Route Master Plan*, direct input from the public, and guidance by the City's Public Works department.

Figure ES-1 illustrates the proposed bikeway system that resulted from community input, development, and the refinement process.

The proposed system includes a total of approximately 54 miles of new bikeway facilities in addition to the 44 miles currently in place. Table ES-1 shows the number of existing and proposed miles for each bikeway classification.

<b>Bikeway Classification</b>	<b>Existing</b>	<b>Proposed</b>	<b>Total</b>
Class I	5.7	15.0	20.7
Class II	20.1	33.7	53.8
Class III	18.3	5.7	24
<b>TOTAL</b>	<b>44.1</b>	<b>54.4</b>	<b>98.5</b>

A summary of system costs for each bikeway classification is presented in Table ES-2. Conceptual cost estimates for individual routes are provided in Appendix A.

<b>TABLE ES-2 Conceptual Cost Estimate Summary</b>	
<b>Bikeway Classification</b>	<b>Cost</b>
Class I Bike Path	\$11,200,000
Class II Bike Lane	\$10,100,000
Class III Bike Route	\$29,000
<b>TOTAL</b>	<b>\$21,329,000</b>

### Linkages Across SR 120 and SR 99

The proposed system includes several new connections across SR 120 and SR 99, as shown on Figure ES-1. To facilitate these connections, a conceptual cross-section (Figure ES-2) was developed to illustrate the key elements of these crossings. The major elements of this cross-section include: (1) Class I Bikeway; (2) End Point Connections; (3) Parallel Facilities; and (4) Directional Signing. Each of these elements should be considered in the design of each crossing and modified as necessary to fully address their unique characteristics.

### New Development Areas

As new development areas are planned and constructed, individual projects should be reviewed to ensure consistency with the proposed bikeway system. In addition, development projects should adhere to the policy statements below regarding access, mobility, and support facilities for bicyclists.

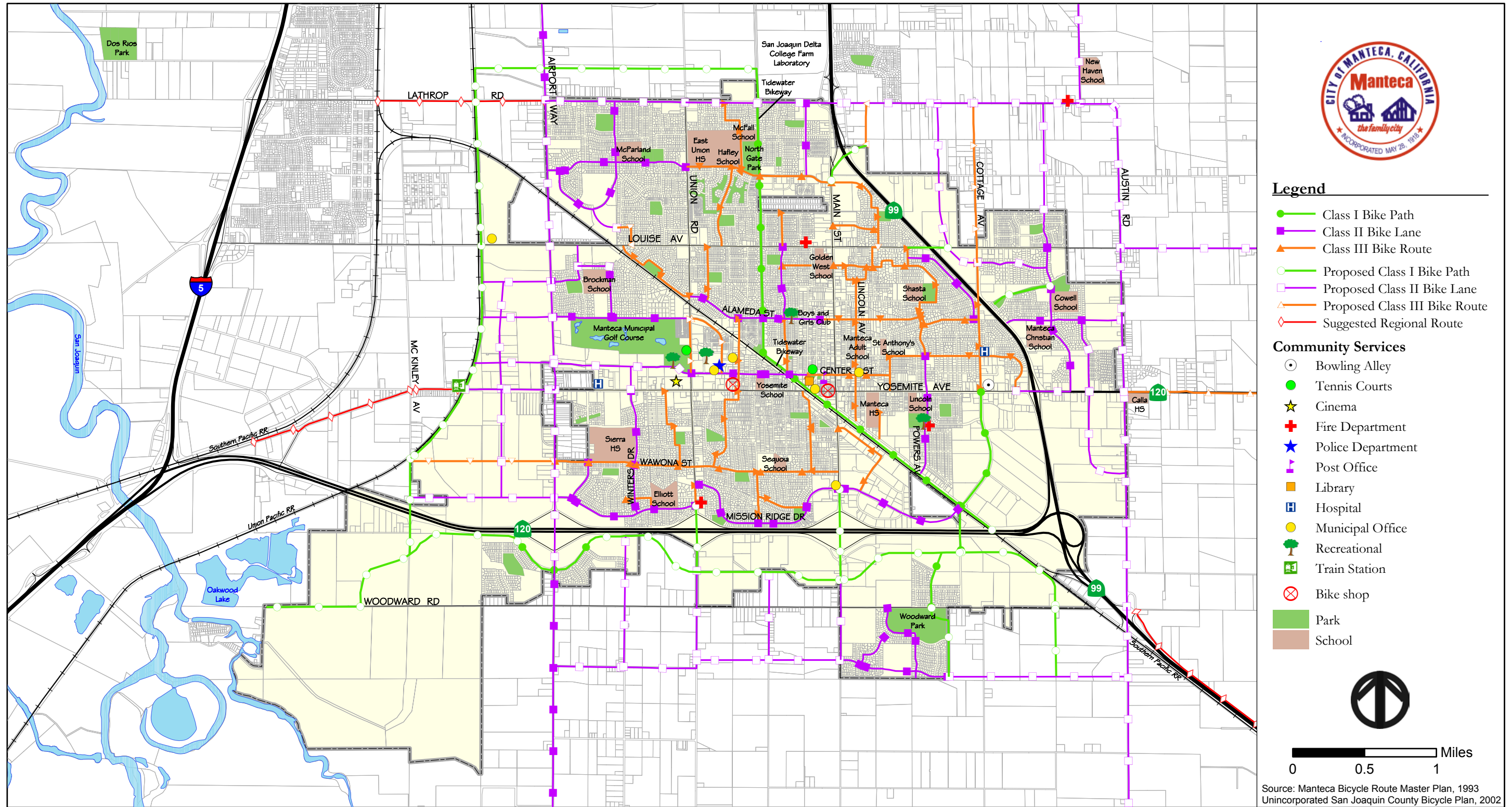
Goal: Include bikeway facilities in all new development projects within the City of Manteca to facilitate on-site circulation for bicycle travel, on-site bicycle planning, and connections to the proposed bikeway system.

Objective: Maximize the number of daily trips made by bicycle to and from new development projects within the City by providing approximately four miles of Class II bike lanes per square mile within all new residential development projects. Figure ES-3 illustrates a typical residential development that satisfies this objective.

Policies:

- Ensure consistency with the *City of Manteca General Plan* and consider landowner concerns when planning and acquiring bikeway easements.
- Require new development to construct bikeways included in the proposed system along all roadways included within or adjacent to that development.
- Require new development to provide support facilities such as bicycle racks, personal lockers, and showers at appropriate locations such as parks, major recreational destinations, park-and-ride facilities, employment centers, schools, and commercial centers. Consider amending Ordinance 17.15.050 to include the requirements for these facilities.
- Provide bicycle crossings at appropriate intervals along new roadways that will adequately serve new large-scale commercial, office, industrial, and residential development.

- Require new development to incorporate parks and schools as important destinations for bicyclists when designing circulation plans for subdivisions and other developments.
- Develop an implementation program for monitoring new residential development projects to ensure consistency with the above objective. The consistency finding should recognize that this objective establishes general guidelines and is not considered a design standard. City staff interpretation of consistency shall be based on the unique circumstances associated with each development proposal.












**SAMPLE DIRECTIONAL SIGNS**

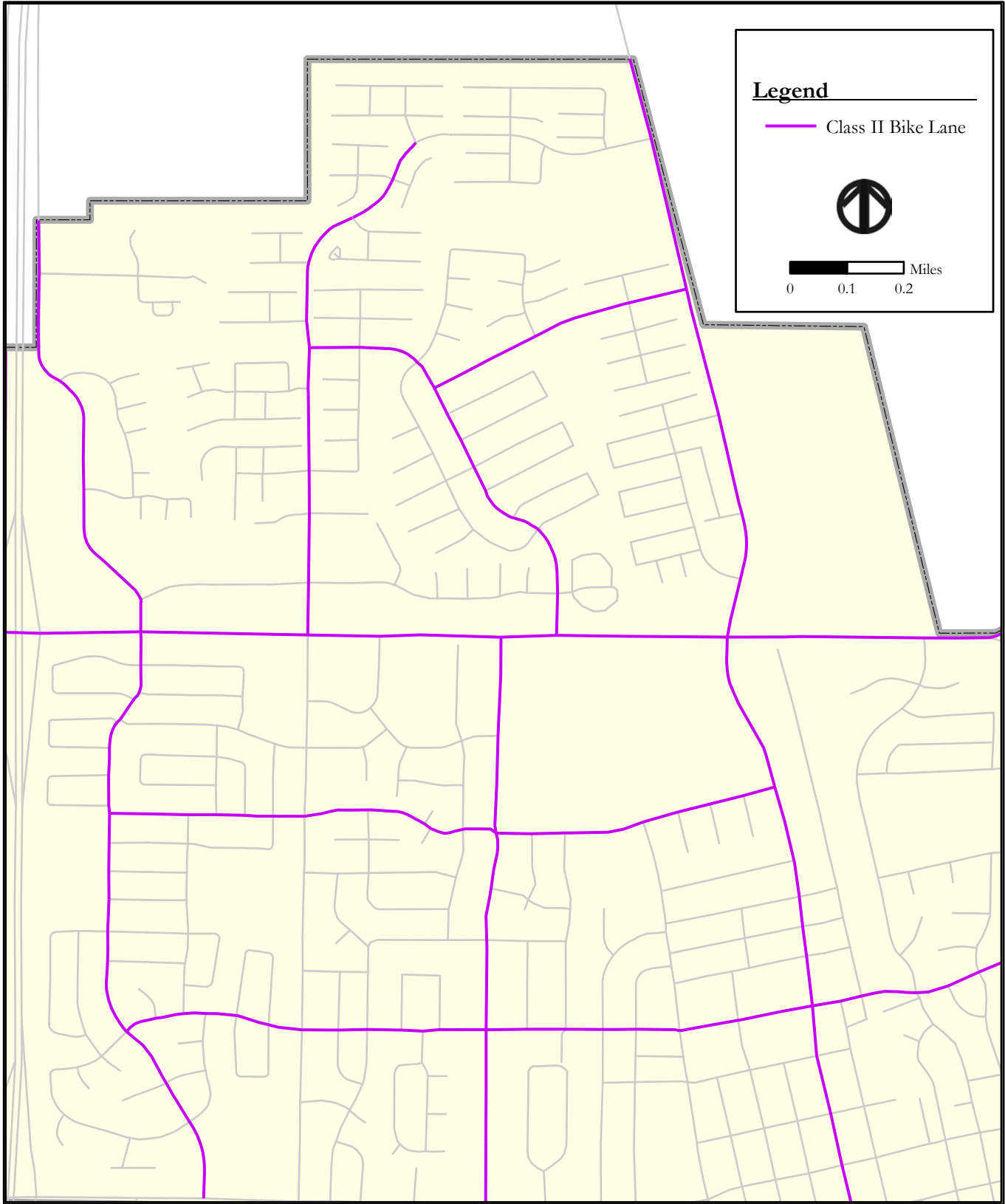


**LEGEND:**

-  = Class I Bikeway
-  = Connecting Facilities
-  = Parallel Facilities
-  = End Point Connection at Traffic Signal
-  = Directional Sign Location

Manteca Bicycle Route Master Plan  
**FREEWAY CROSSING  
 CONCEPTUAL LAYOUT**

**FIGURE ES-2**



Manteca Bicycle Route Master Plan



## I. INTRODUCTION

The City of Manteca *Bicycle Master Plan* was prepared by Fehr & Peers in collaboration with the City of Manteca Public Works Department. The *Bicycle Master Plan* was prepared to set forth a blueprint for developing a system of bikeways within the City of Manteca. The envisioned system builds upon existing on-street and off-street bicycle facilities throughout the City with enhancements to overall connectivity, support facilities, safety and education programs. This document satisfies the requirements of the *California Bicycle Transportation Act (BTA;1994)*, enabling the City of Manteca to obtain eligibility for state bicycle funding.

The planning area includes the City of Manteca and areas directly adjacent to the City in San Joaquin County (Figure 1). The planning area is generally flat and conducive to bicycle travel. Population, employment, and activity centers are dispersed throughout the City. The areas of San Joaquin County adjacent to the City limits consist primarily of agriculture uses. New development within the City is most likely to occur on the periphery in the agricultural areas to the south and west.

### Planning and Design

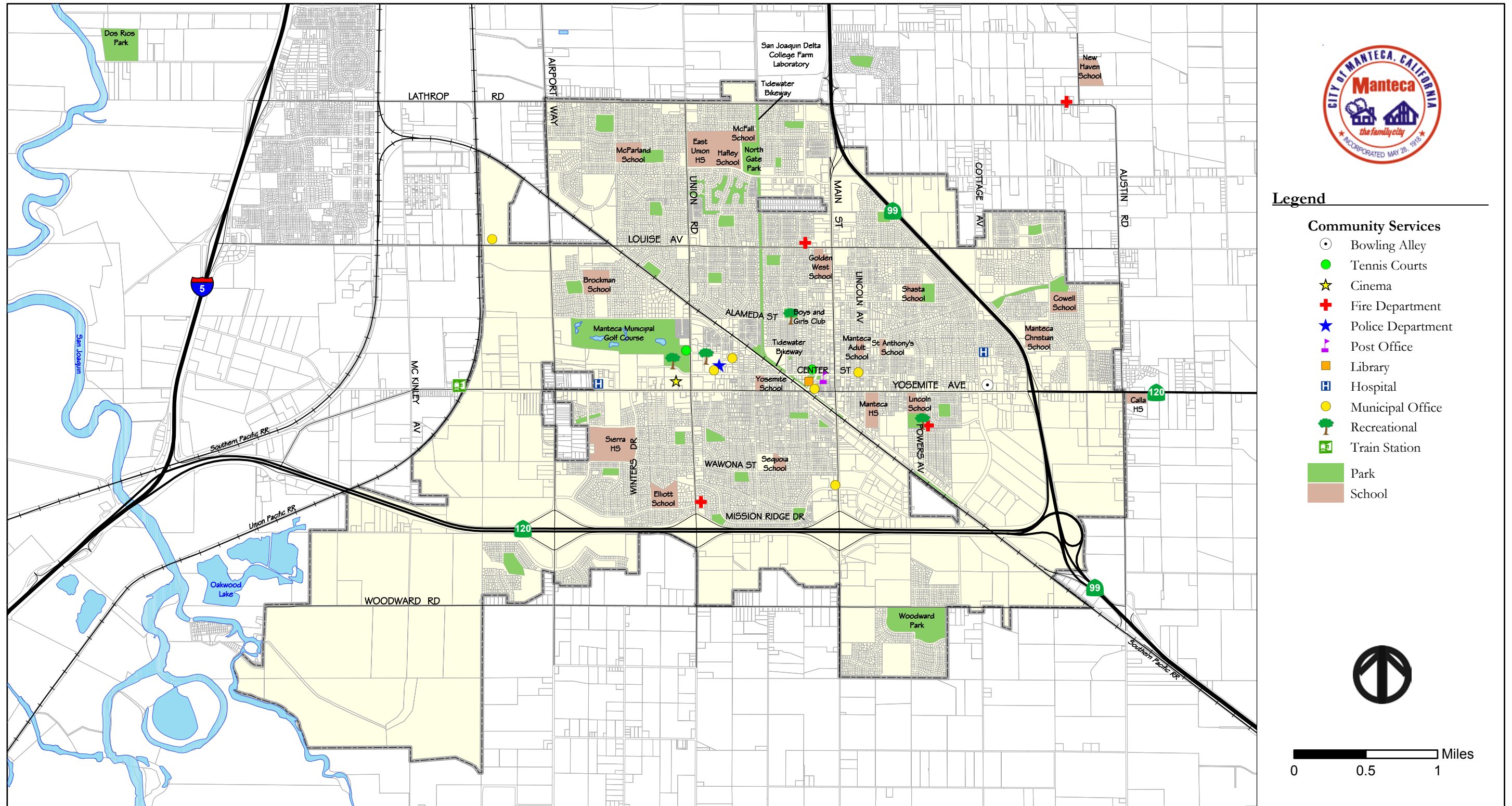
Policy, regulatory, and legislative documents that affect bikeway and pedestrian planning and design include the *California Streets and Highways Code*, *California Vehicle Code*, and the *BTA (1994)*.

The BTA re-codes the “Streets and Highways Code” (Chapter 517) and requires the California Department of Transportation (Caltrans) to adopt certain actions that promote bicycle programs. A key component of the BTA is the requirement that cities and counties applying for state funding complete a bikeway master plan consisting of 11 specific elements. Table 1 summarizes the 11 elements required by the BTA and their relationship to the City of Manteca’s *Bicycle Master Plan*.

Bikeway planning and design in California typically relies on the guidelines and design standards established by Caltrans as documented in “Chapter 1000: Bikeway Planning and Design” of the *Highway Design Manual (5<sup>th</sup> Edition, California Department of Transportation, January 2001)*. This chapter provides the basis for standards of the American Association of State Highway and Transportation Officials (AASHTO) and the Federal Highway Administration (FHWA), and identifies specific design standards for various conditions and bikeway-to-roadway relationships. The Caltrans standards provide for three distinct types of bikeway facilities, as generally described below and shown on Figure 2.

- **Class I Bikeway (Bike Path)** provides a completely separate right-of-way and is designated for the exclusive use of bicycles and pedestrians with vehicle and pedestrian cross-flow minimized.
- **Class II Bikeway (Bike Lane)** provides a restricted right-of-way and is designated for the use of bicycles with a striped lane on a street or highway. Vehicle parking and vehicle/pedestrian cross-flow are permitted.
- **Class III Bikeway (Bike Route)** provides for a right-of-way designated by signs or pavement markings for shared use with pedestrians or motor vehicles.

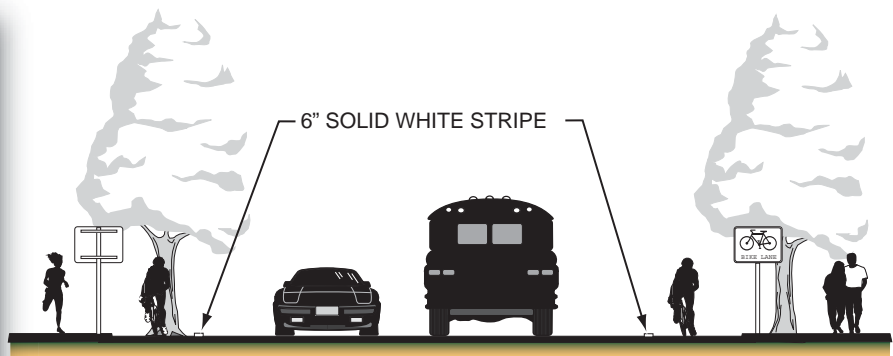






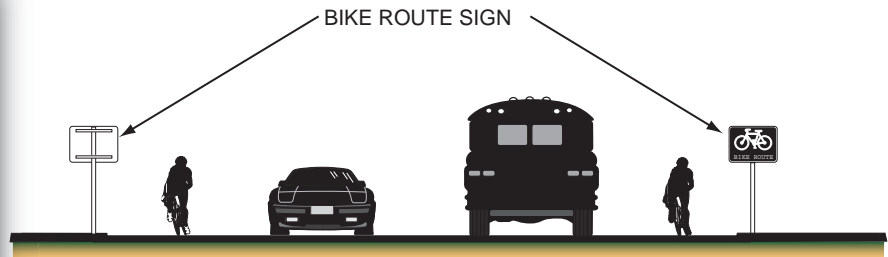
**CLASS I BIKEWAY (Bike Path)**

Provides a completely separated right-of-way for the exclusive use of bicycles and pedestrians with crossflow minimized.



**CLASS II BIKEWAY (Bike Lane)**

Provides a striped lane for one-way bike travel on a street or highway.



**CLASS III BIKEWAY (Bike Route)**

Provides for shared use with pedestrian or motor vehicle traffic.



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TRANSPORTATION CONSULTANTS

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Manteca Bicycle Route Master Plan

**GENERAL BIKEWAY CLASSIFICATIONS**

**FIGURE 2**

<b>TABLE 1 Relationship of California Bicycle Transportation Act (1994) to the City of Manteca Bicycle Master Plan</b>	
<b>California Bicycle Transportation Plan (1994)</b>	<b>Bicycle Master Plan</b>
1. Estimated number of existing and future bicycle commuters	Chapter VI
2. Map and description of land use and settlement patterns	Chapter VI Figure 8
3. Map and description of existing and proposed bikeways	Chapters V & VII Figures 6 & 8
4. Map and description of bicycle parking facilities	Chapters V & VII Figures 6 & 8
5. Map and description of multi-modal connections	Chapters V & VII Figures 6 & 8
6. Map and description of facilities for changing and storing clothes and equipment	Chapters V & VII Figures 6 & 8
7. Description of bicycle safety and education programs	Chapters V & VII
8. Description of citizen and community participation	Chapter III
9. Description of consistency with transportation, air quality, and energy conservation plans	Chapter II
10. Description of proposed bicycle projects and implementation priority	Chapter IX
11. Description of past expenditures and future financial needs for bicycle facilities	Chapter VIII

## Plan Organization

This report is divided into the following chapters:

- Chapter I - Introduction
- Chapter II – Consistency With Other Plans
- Chapter III – Community Participation
- Chapter IV – Goals, Objectives and Policies
- Chapter V – Existing Conditions
- Chapter VI – Analysis of Demand
- Chapter VII – Proposed System
- Chapter VIII – Cost and Funding Analysis
- Chapter IX - Implementation

As shown in Table 1, the information provided in this document is intended to fully satisfy all the requirements of the BTA. The information presented for each component is the result of data collection efforts by the City of Manteca and Fehr & Peers in collaboration with community members who participated in the public workshops conducted as a part of this effort.

## II. CONSISTENCY WITH OTHER PLANS

The *Bicycle Master Plan* was prepared to ensure consistency with other local and regional transportation and air quality plans. As such, preparation of this Plan included a review of several other relevant plans and programs. A summary of key elements of each plan and program reviewed is presented below.

### City of Manteca General Plan

The *City of Manteca General Plan* sets forth goals, policies and specific implementation items relevant to the *Bicycle Master Plan*. This plan was recently updated. The applicable items that were integrated into the envisioned system described in the *Bicycle Master Plan* are summarized below.

- Goal AQ-3: Expand transportation alternatives within the City, including public transit, walking, and bicycling.
- Goal AQ-4: Minimize traffic accidents and hazards.
- Goal AQ-6: Provide a safe and secure bicycle route system.
- Policy C-P-19: The City shall aggressively pursue State and Federal funding to implement the City's Circulation Plan.
- Policy C-P-33: The City should establish a safe and convenient network of identified bicycle routes connecting residential areas with recreation, shopping, and employment areas within the City.
- Policy C-P-36: Provide adequate bicycle parking facilities at commercial, business/professional and light industrial uses.
- Policy C-P-37: Improve safety conditions, efficiency, and comfort for bicyclists and pedestrians. Provide shade and/or protection from wind and other weather conditions when possible.
- Policy C-P-38: Wherever possible, bicycle facilities should be separate from roadways and walkways.
- Policy C-P-39: The City shall limit on-street bicycle routes to those streets where the available roadway width and traffic volumes permit safe coexistence of bicycle and motor vehicle traffic.
- Policy C-P-40: The City shall develop a "city-loop" bike path that links Austin Road, Atherton Drive, Airport Way and a route along or near Lathrop Road to the Tidewater bike path and its extensions.
- Policy C-P-41: The City shall extend the bicycle route along the Tidewater Southern Railroad right-of-way, and any branch or connecting link.
- Policy C-P-53: The City shall explore the opportunities for, and encourage the development of, a multi-modal bus/train/bike/auto facility in the downtown area.
- Implementation C-I-8: The City shall maintain a Bicycle Route Master Plan and appropriate bicycle lane and street standards.
- Implementation C-I-9: Install prominent signs at the major entries to the City warning motorists of the presence of pedestrians and bicyclists.



- Implementation C-I-10: Utilize the standards set forth in the California Traffic Manual for improvement and re-striping of collector streets to accommodate, at a minimum, a Class II bike lane in both directions.
- Implementation C-I-11: Increase bicycle safety by: providing bicycle paths and lanes that promote bicycle travel; sweeping and repairing bicycle lanes and paths on a continuing, regular basis; ensuring that bikeways are delineated and signed in accordance with Caltrans standards and lighting is provided, where needed; and ensuring that all new and improved streets have bicycle-safe drainage grates and are free of hazards such as uneven pavement and gravel.
- Implementation C-I-12: Add bike lanes whenever possible in conjunction with road reconstruction or re-striping projects and subdivision development and related off-site improvements.
- Implementation C-I-13: Encourage resident and visitor use of the bike trail system by preparing a map of the pedestrian and bike paths.

## **San Joaquin County Regional Master Plan**

The *San Joaquin County Regional Bicycle Master Plan* (Regional Bicycle Master Plan) was adopted in August 1994. The purpose of this Plan was to “*coordinate local and regional bicycle planning efforts to achieve a connected, countywide system for the bicycle commuter.*” The City of Manteca *Bicycle Master Plan* incorporates this purpose into its goals. The City’s plan also considers and provides linkages to regional bicycle facilities included in the Regional Bicycle Master Plan.

## **Unincorporated San Joaquin County Bikeway Plan**

The *Unincorporated San Joaquin County Bikeway Plan* (Unincorporated Bikeway Plan) was prepared in July 2002 and complements the Bikeway Plans prepared by incorporated cities within the County (including the City of Manteca) by identifying key connections to bikeway facilities within the local jurisdictions. The assessment of the existing and proposed bikeway system envisioned for the *Bicycle Master Plan* fully considers and provides linkages to the bikeway system set forth in the Unincorporated Bikeway Plan.

## **San Joaquin Valley Unified Air Pollution Control District Air Quality Attainment Plan**

Air quality in the San Joaquin Valley violates federal and state health standards. Under State and Federal requirements, the San Joaquin Valley is mandated to implement transportation control measures (TCMs) and other mobile source control measures to significantly decrease emissions. Bicycle programs are one of nine TCMs recommended in the San Joaquin County Transportation Control Measures Program.

Bicycle programs are also cited as a TCM in the 1990 Federal Clean Air Act Amendments, which call for “*...programs for secure bicycle storage facilities and other facilities, including bicycle lanes, for the convenience and protection of bicyclists, in both public and private areas...*” The *National Bicycling and Walking Study* (1994) found that “*Experience demonstrates that funded staffed bicycle programs able to provide bicycle transport infrastructure will boost levels of bicycling.*” As a result, the City of Manteca *Bicycle Master Plan* will support regional air quality attainment goals.

## Congestion Management Plan

The Congestion Management Program (CMP) is the State Legislature's effort to reduce congestion on California's highways and roads. The overall objective of the CMP is to plan for land use development in tandem with the necessary transportation improvements. One element of the CMP is Transportation Demand Management (TDM). The TDM element incorporates transportation control measures identified in the 1994 Transportation Control Measure Program, which is part of the San Joaquin Valley Unified Air Pollution Control District's Air Quality Attainment Plan. These transportation control measures promote alternative transportation methods that are designed to reduce trips and improve air quality. This *Bicycle Master Plan* is consistent with the CMP and TDM element, as bicycles are an alternative mode of transportation that can reduce the number of vehicle trips.

## 2001 Regional Transportation Plan

The 2001 Regional Transportation Plan (RTP) was adopted by the San Joaquin Council of Governments (SJCOG) to comply with State and Federal requirements for a comprehensive and long-range transportation plan and with new RTP guidelines adopted by the California Transportation Commission (CTC) in December 1999. The Non-Motorized Action Element of the RTP includes the following goals, objectives, and policies related to bicycle planning:

Goal: To develop a countywide system of bicycle facilities that will provide a safe and convenient means of transportation for the user.

Objective: Support the improvement or expansion of bicycle facilities that can be used as alternatives to the automobile, emphasizing improvements to "primary facilities," before more recreational type facilities.

Policies:

- Identify primary roadways for bicycle travel by preparing a Regional Bicycle Facilities Plan, updating the Bicycle Plan for San Joaquin County.
- Make primary roadways safer for bicyclists by improving to a 4-foot shoulder.
- Identify Federal, State, and local funding sources and assist agencies in applying for these potential funds to improve primary roadways.
- Identify and assist local governments to secure abandoned rights-of-way that can be converted to bicycle uses.
- Assist local governments in applying for Federal and State funding for bicycle improvements.

## Measure K Expenditure Plan

On November 6, 1990, the voters of San Joaquin County passed the Measure K sales tax initiative. This Measure calls for a ½-cent county-wide sales tax to be collected for 20 years, to pay for various transportation projects that are needed throughout the County. Approximately \$20 million is collected annually, of which approximately \$250,000 is earmarked for bicycle projects. To date, over \$3 million has been spent on bicycle projects, including construction of the 3.4-mile Tidewater Bikeway in Manteca.

## Regional Transit Systems Plan

The San Joaquin Regional Transit Systems Plan (SJRTSP) was adopted in October 1992. The primary goal of the SJRTSP is to *“Develop a Transit System for San Joaquin County, which provides the transit opportunities and modes available to improve mobility.”* This plan is consistent with the following bicycle-related strategies to improve mobility:

*“The integration of increased density developments and transit services which supports the walk-to transit and bike-to-transit trips;” and*

*“Local support for all alternative modes including transit, rideshare, vanpools, bicycling and telecommuting.”*

### III. COMMUNITY PARTICIPATION

Community participation was an important component in the development of the *Bicycle Master Plan*. Input on bicycle destinations, routes traveled, support facilities, safety hazards, problem areas, and the proposed bikeway system was obtained and presented at two public workshops. These workshops were hosted at the City Council Chambers on March 31, 2003 and June 25, 2003. In addition, a survey was conducted to more fully understand the community's needs and attitudes regarding bicycle activities.

The purpose of the first workshop was to inform Manteca residents of the *Bicycle Master Plan* update and provide them an opportunity to voice their comments and concerns on the current and future bikeway system in Manteca. Participants visited five separate stations to discuss bicycle destinations, routes, support facilities, problem areas, and a bicycling "wish list." Each station was staffed with City and/or consultant personnel who answered questions, discussed suggestions, and recorded comments on large maps. Participants were invited to complete the "Needs and Attitudes Survey" at this first workshop. The information gathered was combined with comments received by mail and are summarized below.

#### General Comments

- Spreckles Road trees are too close to the bike path; future root growth could damage it
- Please send published bicycle route maps to citizens
- Create an educational program about motorized wheelchairs/bikes
- Include bicycle safety educational information in schools/newspapers
- Irrigation maintenance on Tidewater Bike Path
- Maintain the Tidewater Bike Path

#### Safety

- Supply reflective materials to section off bike paths at intersections
- Add flashing yellow lights at bike path intersections
- Issue warning citations to vehicles that do not obey bike/pedestrian signs and laws
- Activate bicycle crossing warning beacons with signals
- Provide purple lights at emergency call boxes for night riders
- Curtail vandalism at the Tidewater Bike Path and Joseph Street
- Repaint barrier posts on the Tidewater Bike Path at Spreckles Road to make more visible

#### Intersection Safety

The following intersections were identified as problem areas mainly due to high speeds and/or narrow widths:

- Elm Street/Center Street/Railroad/Tidewater Bike Path
- Main Street and Louise Avenue
- Tidewater Bike Path and Yosemite Avenue
- Tidewater Bike Path and Main Street/Moffat Avenue
- Library/Post Office Complex
- Spreckles Park and Yosemite Avenue
- Yosemite Avenue and Union Street
- Alameda Avenue and Main Street



- Lathrop Road and Cottage Avenue
- Lathrop Road and Route 99
- Louise Avenue and Route 99
- South Powers Avenue at the Tidewater Bike Path
- Spreckles Road at the Tidewater Bike Path (existing drainage problem)
- Main Street and the Tidewater Bike Path
- Louise Avenue and the Tidewater Bike Path
- Wawona Street and Airport Road

### **Roadway Safety**

The following roadways were identified as problem areas mainly due to high speeds and/or narrow widths:

- Airport Way
- Moffatt Avenue
- Yosemite Avenue
- Louise Avenue
- Main Street
- Center Street
- Union Street
- North Street
- Cottage Avenue

### **Facility Design**

- Accommodate sidewalks and paths with handicap ramps
- Improve signal activation for bicycles
- Add more directional signage for bicycle routes

### **New Routes/Support Facilities**

#### ***Bicycle Paths/Lanes/Routes***

- Provide new path in Route 99 right-of-way north of Lathrop Road
- Continue bike path into new areas south on Spreckles Road and connect back at Main Street/Tidewater Bike Path
- Continue bike path east on Lathrop Road and south on Cottage Avenue to connect to the Spreckles Road Class I bike path
- Continue bike path west on Lathrop Road and south on Union Road connecting to the Tidewater Bike Path at Center Street
- Provide new connections to South Manteca
- Provide new connections to East Manteca
- Add a Class I bike path on Airport Road and Lathrop Road
- Provide access to Spreckles Park from South Powers Avenue
- Provide loop trail around Manteca Golf Course
- Add a route connecting schools in the Northgate Park area
- Provide new underpasses at Route 99 at Button Avenue and Ward Street
- Connect Cowell School to the Tidewater Bike Path
- Provide new underpass at Route 120 and Union Road

### **Support Facilities**

- Provide bike carriers on buses
- Provide wheelchair charging station
- Provide portable restrooms near recreation facilities (including skate park areas)
- Provide bicycle lockers for all-day bike parking at bus stops
- Provide benches on the Tidewater Bike Path
- Provide bicycle racks throughout the town
- Provide trash cans on the Tidewater Bike Path
- Provide telephones on the Tidewater Bike Path
- Provide parking at a Class I staging area

### **New Facility Designs**

- Add lighting to the Tidewater Bike Path
- Create pull-out areas for walkers on Class I bicycle paths
- Provide and maintain smooth bike lanes (Airport Way and Yosemite Avenue)
- Provide bike detector loops at intersections
- Provide grade separation at highway crossings
- Provide improved crossing at Route 99 and Yosemite Avenue/Louise Avenue

The comments summarized above were compiled and reviewed by the consultant team and City staff and incorporated into this *Bicycle Master Plan*, where appropriate. A number of these concerns have been addressed by City staff. As the current design, layout, and amenities of the existing Class I bike paths were developed in collaboration with affected residents, new facilities on and changes to existing paths will not be implemented without first consulting with the area residents.

## **Bicycle Needs and Attitudes Survey**

Participants at the first public workshop completed a bicycling “Needs and Attitude Survey” (as shown on Figure 3). The goal of this survey was to obtain information on the use of the current bikeway system. Questions were asked related to the types of bicycling activities (i.e., commuter, recreational, etc.) that occur, frequency and maximum distance of bicycling trips, major destinations, and problem areas along the bikeway system. The information gathered from the survey was used to match the layout of the proposed bikeway system to current needs and behaviors of bicyclists. Table 2 summarizes the survey results that were compiled and reviewed by the consultant team and City staff and incorporated into this *Bicycle Master Plan*, as appropriate.

The survey results shown in Table 2 illustrate that the majority of bicyclists are recreational riders. The average recreational rider travels over 30 miles per week. Major destinations include the Tidewater Bike Path, South Manteca, and the downtown shopping area. The lack of safe crossings on Route 99 and Route 120 are concerns for residents living in east and south Manteca.

### **Second Public Workshop**

The purpose of the second workshop was to present the residents of Manteca with the summarized results from the first workshop and a draft of the proposed bikeway system and *Bicycle Master Plan*. The suggestion maps created from the first workshop were made available and their adaptation into the proposed bikeway system was presented. This allowed residents to view the new bikeway system and provide their comments and concerns before finalizing the *Bicycle Master Plan*. Specific comments received from the first workshop were reviewed by City and consultant staff and discussed at this workshop.



# Bicycle Survey



The City of Manteca is conducting a bicycle master plan update. The purpose of the plan will be to identify the safest and most convenient routes for bicyclists throughout the city. We need your input into this process by completing this survey and leaving it here for us or mailing to:

Fehr & Peers Associates, 3685 Mt. Diablo Blvd., Suite 301, Lafayette, CA, 94549

Please answer the questions on this page and complete the map on the reverse side.

1. What type of bicyclist are you? (You may mark more than one)

Casual recreation \_\_\_\_\_ Mountain biking \_\_\_\_\_ Occasional commuter \_\_\_\_\_  
Regular commuter \_\_\_\_\_ Club bicyclist \_\_\_\_\_ Racing/ Touring \_\_\_\_\_

2. Please indicate the frequency and maximum distance of bicycling trips for the following purposes:

	Work	School	Recreation	Errands
2 or more days/wk	_____	_____	_____	_____
Once a week	_____	_____	_____	_____
1 - 3 days/month	_____	_____	_____	_____
Less than once/month	_____	_____	_____	_____
Never	_____	_____	_____	_____
Maximum distance	_____ miles	_____ miles	_____ miles	_____ miles

3. Please indicate some of your major destinations for bicycle trips?

\_\_\_\_\_  
\_\_\_\_\_

4. Please identify physical constraints and/or problem locations for bicycling and the nature of the problem.

Problem Location:	Nature of Problem:
_____	_____
_____	_____

5. To get to your destination, do you prefer traveling the most direct route even if it is a busy route versus traveling a less direct route with less traffic?

Yes \_\_\_\_\_ No \_\_\_\_\_

6. Do you ride your bike through 120 or 99 crossings? If so, where?

\_\_\_\_\_

7. Please provide us with additional comments about bicycling in Manteca you may have? (If necessary, use the back of the sheet)

\_\_\_\_\_  
\_\_\_\_\_



**TABLE 2**  
**Bicycle Needs and Attitudes Survey Results<sup>1</sup>**

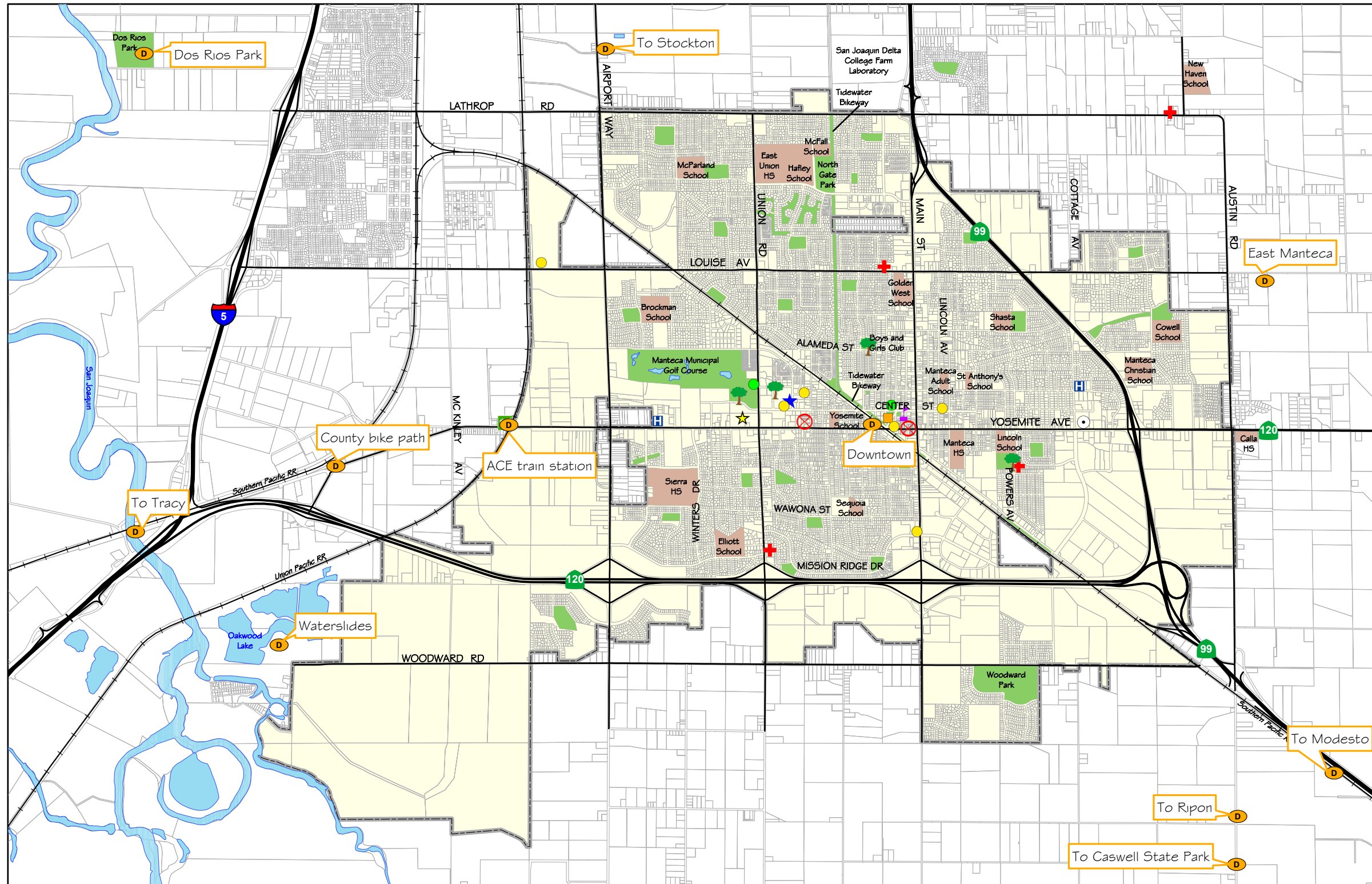
1. What type of bicyclist are you?  
Recreational (non-commuters) = 87%  
Commuter = 13%
  
2. Indicate the frequency and maximum distance of bicycling trips.  
Approximately 75% of the recreational bicyclists ride at least once a week with an average trip distance of 30 miles.  
Approximately 75% of the commuter bicyclists ride at least once a week with an average trip distance of 8.5 miles.
  
3. What are the major destinations of your trips? (see Figure 4 for a destinations map)
  - Tidewater Bike Path
  - Lathrop Road
  - County Park
  - East and South Manteca
  - Tracy
  - Modesto
  - Ripon
  - Manteca downtown shopping area
  
4. Identify constraints or problem areas? (See First Public Workshop section for a complete list)
  - Yosemite Avenue & Highway 99
  - Louise Avenue & Lathrop Road
  - Union Street & Highway 120
  - Louise Avenue & Joseph Street
  - East of Highway 99
  - Northgate Avenue
  - Tidewater Bike Path
  
5. To get to your destination do you prefer traveling the most direct route even if it is a busy route versus traveling a less direct route with less traffic?  
No = 82%  
Yes = 18%
  
6. Where do you currently cross Highway 99 or Highway 120?  

Highway 99 at	Highway 120 at
Yosemite Avenue	Union Street
Center Street	
Lathrop Road	
Austin Road	
  
7. Additional comments were included in the comments list from the First Public Workshop section.

Note

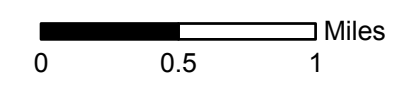
1. Information gathered from 2003 Bicycling Survey.





**Legend**

- Community Services**
- Bowling Alley
  - Tennis Courts
  - Cinema
  - Fire Department
  - Police Department
  - Post Office
  - Library
  - Hospital
  - Municipal Office
  - Recreational
  - Train Station
  - Bike shop
  - Other Destinations
  - Park
  - School



Source: Manteca Bicycle Master Plan Update public meeting 3/31/03.

Manteca Bicycle Route Master Plan

## IV. GOALS, OBJECTIVES, AND POLICIES

The development of goals, objectives, and policies for this *Bicycle Master Plan* is intended to provide specific direction on the necessary actions involved in planning, designing, funding, and constructing bikeway facilities. The following information relies on an understanding of the relationship between the proposed bikeway system, key issues facing implementation of specific routes, and the requirements of local, state, and federal funding programs.

These goals, objectives, and policies are grouped and presented according to the following topic areas.

- Overall System
- New Development Areas
- Commuting
- Recreation
- Safety & Education
- Environmental Considerations
- Funding

The purpose for topic organization is to provide City staff, decision makers, and citizens with a clear and concise direction on how to implement the bikeway facilities proposed in the *Bicycle Master Plan*. Each topic area includes an overall goal, measurable objective, and policies. Each policy consists of action statements related to the development of specific facilities or programs within the City of Manteca. The goals and policies described above are consistent with the *City of Manteca General Plan* and the other plans as discussed in Chapter II.

### Overall System

Goal 1: To expand transportation alternatives within the City of Manteca, establish a comprehensive, convenient, and safe bikeway system for travel within the City and connection to the rest of the region.

Objective: Implement a network of bikeways within the City connecting residential areas with schools, recreation, shopping, and employment areas.

Objective: Emphasize bicycle travel within low vehicular traffic corridors as an alternative to high volume roadways.

Objective: Construct priority bikeways identified in the proposed system and provide for the maintenance of both existing and new facilities.

Objective: Minimize barriers and hazards for bicycles resulting in reduced bicycle collision rates throughout the City.

Objective: Coordinate with San Joaquin County departments, cities, and other government entities to create continuity and consistency with existing and planned bikeway systems.

Policies:

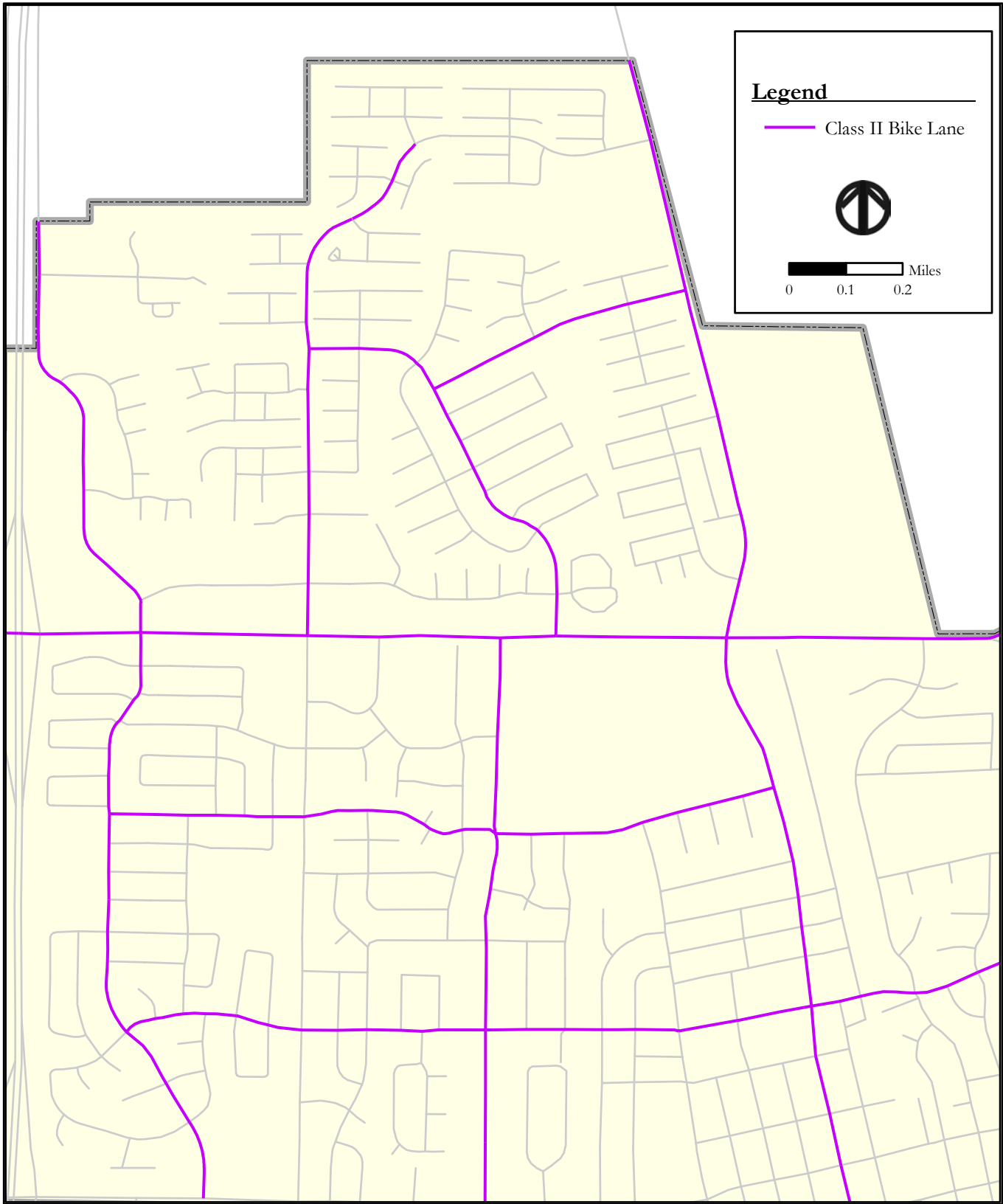
- 1.1 Prepare and maintain a bikeway plan that identifies existing and future needs, and provides specific recommendations for facilities and programs including adequate provisions for bicycle use to, within, and from the City of Manteca.
- 1.2 Construct the recommended bikeway system in a way that respects property rights and minimizes the potential for conflicts with other vehicles, pedestrians, and users.
- 1.3 Emphasize travel along corridors parallel to roadways with high traffic volumes and/or high bicycle collision rates.
- 1.4 Require all bikeways to conform to design standards contained in the latest version of the *Highway Design Manual*, Chapter 1000: "Bikeway Planning and Design", Caltrans, unless otherwise established by the City.
- 1.5 Minimize vehicular crossing points (i.e., driveways and cross-streets) on Class I bikeways to the greatest degree possible.
- 1.6 Meet the requirements of the Americans with Disabilities Act when constructing facilities contained in the proposed system, where applicable.
- 1.7 Coordinate with San Joaquin County and other communities regarding the timing of implementation of the proposed system.
- 1.8 Provide bicycle connections that allow for regional bicycle travel between the City of Manteca and other San Joaquin Valley communities and destinations.
- 1.9 Integrate bicycle planning with other community planning, including land use and transportation planning.
- 1.10 As funding allows, implement the proposed bikeway system.

### **New Development Area**

As new development areas are planned and constructed, individual projects should be reviewed to ensure consistency with the proposed bikeway system. In addition, development projects should adhere to the policy statements below regarding access, mobility, and support facilities for bicyclists.

Goal 2: Include bikeway facilities in all new development projects within the City of Manteca to facilitate on-site circulation for bicycle travel, on-site bicycle planning, and connections to the proposed bikeway system.

Objective: Maximize the number of daily trips made by bicycle to and from new development projects within the City by providing approximately four miles of Class II bike lanes per square mile within all new residential development projects. Figure 5 illustrates a typical residential development that satisfies this objective.



Manteca Bicycle Route Master Plan



Policies:

- 2.1 Ensure consistency with the *City of Manteca General Plan* and consider landowner concerns when planning and acquiring bikeway easements.
- 2.2 Require new development to construct bikeways included in the proposed system along all roadways included within or adjacent to that development.
- 2.3 Require new development to provide support facilities such as bicycle racks, personal lockers, and showers at appropriate locations such as parks, major recreational destinations, park-and-ride facilities, employment centers, schools, and commercial centers. Consider amending Ordinance 17.15.050 to include the requirements for these facilities.
- 2.4 Provide bicycle crossings at appropriate intervals along new roadways that will adequately serve new large-scale commercial, office, industrial, and residential development.
- 2.5 Require new development to incorporate parks and schools as important destinations for bicyclists when designing circulation plans for subdivisions and other developments.
- 2.6 Develop an implementation program for monitoring new residential development projects to ensure consistency with the above objective for Goal 2. The consistency finding should recognize that this objective establishes general guidelines and is not considered a design standard. City staff interpretation of consistency shall be based on the unique circumstances associated with each development proposal.

## **Commuting**

Bicycles can represent a larger percentage of total commute trips if a comprehensive network of interconnected bikeway facilities is developed. This Plan proposes to implement such a system as defined by the following goal and policy statements.

Goal 3: Develop a bikeway system that enhances connections to employment, schools, shopping and other centers of activity within the City of Manteca.

Objective: Increase bicycle trips to reduce vehicle congestion, improve air quality, and conserve energy use.

Policies:

- 3.1 Maintain access for cyclists from proposed bikeway system to residential/commercial centers.
- 3.2 Provide and maintain support facilities such as bicycle racks, personal lockers, and showers at appropriate locations to promote bicycle use.
- 3.3 Encourage employees to consider bicycling as an alternative mode for commuting to and from employment centers.
- 3.4 Coordinate with area transit providers to allow bicycle transport on buses or to provide bike racks on transit vehicles.
- 3.5 Provide connections to the proposed bikeway system from all existing and future transit facilities, stations, and terminals to the greatest degree feasible.
- 3.6 Explore opportunities for, and encourage development of, a multi-modal bicycle station facility in the downtown area.

## Recreation

Recreational bicycle travel for personal health, well-being, and enjoyment can be enhanced by a safe and comfortable system of bikeway facilities. This plan proposes to enhance recreational opportunities for bicyclists as defined by the following goal and policy statements.

Goal 4: Develop a bikeway system that is safe and comfortable for a wide range of users to improve personal physical fitness, health, and enjoyment for all residents and visitors of the City of Manteca.

Objective: Provide a bikeway system that residents and visitors utilize and enjoy.

Policies:

- 4.1 Create a bikeway system map to encourage use of the system by residents and visitors.
- 4.2 Create a “city loop” off-street bike path that links the Tidewater Bikeway to paths south of SR 120, along Airport Way, and along Lathrop Road.
- 4.3 Implement informational and directional guide signing on bikeway facilities.
- 4.4 Provide shade and protection from wind and other weather conditions wherever possible.
- 4.5 Maximize connections to off-street bikeway facilities from area neighborhoods.
- 4.6 Establish staging areas that provide vehicle parking, restrooms, and telephones at access locations to off-street bikeway facilities.

## Safety and Education

Safety and education are important aspects of increasing bicycle use. If bicyclists perceive that a bikeway system is unsafe, they will be discouraged from using it. The following goals and policies are intended to improve the public’s safety while using the bikeway system.

Goal 5: Improve bicycling conditions in the City of Manteca by implementing safe bikeways and providing educational resources to facilitate their use.

Objective: Educate and inform all residents and users of the bikeway system about how to use the system safely.

Policies:

- 5.1 Incorporate standard signing and traffic controls as established by Caltrans to ensure a high level of safety for bicyclists and motorists.
- 5.2 Implement special signing to minimize wrong-way/side bicycle travel. Figure 14 in Chapter IX illustrates signing successfully implemented in other communities.
- 5.3 Use available collision data to monitor bicycle-related collision levels annually and to achieve a 25 percent reduction over the next 10 years.
- 5.4 Maintain educational brochures and develop a bicycle education program that is available to all residents and visitors of the City.

- 5.5 Develop and implement a School Bicycle Safety Program targeting all children within the City.
- 5.6 Coordinate with the City of Manteca Police Department to enforce laws related to bicycle travel, including the bicycle helmet law; identify actions recommended by the Police Department to improve bicycle safety.
- 5.7 Integrate bicycle safety information into published bikeway system route maps.
- 5.8 Limit on-street bikeways to locations where the available roadway width and traffic volumes permit safe coexistence of bicycle and motor vehicle traffic.
- 5.9 Install prominent signs at major City entries alerting motorists to the presence of bicyclists.
- 5.10 Repair and sweep bikeways on a regular basis.
- 5.11 Provide safe drainage grates and roadways surfaces on all new and improved streets.

## **Environmental Considerations**

Bikeway facilities are generally considered to benefit the environment as their use reduces demand for motorized travel and promotes beneficial lifestyle changes. Nevertheless, the construction of specific facilities may adversely affect the physical environment. The following goal and policy statements have been developed to avoid and minimize potential impacts to the environment.

Goal 6: Avoid adverse environmental impacts associated with implementation of the proposed system.

Objective: Mitigate potentially significant impacts to a less-than-significant level whenever possible.

Policies:

- 6.1 Conduct site-specific environmental review, consistent with the California Environmental Quality Act (CEQA), for individual bicycle projects as they advance to the implementation stage of development.
- 6.2 Avoid areas of sensitive habitats for plants and wildlife when constructing facilities contained in the proposed bikeway system.
- 6.3 Solicit and consider community input in the design and locations of bikeway facilities that connect to neighborhoods.
- 6.4 Consider the effect on other transportation facilities such as travel lane widths, turn lanes, on-street parking, and on-site circulation when planning and designing on-street bikeways.

## Funding

To obtain the funding required to implement the proposed system, the City of Manteca must take advantage of funding sources at the State and Federal level. It will also require a commitment of local funding.

Goal 7: Acquire sufficient funding to construct the proposed bikeway system within the next 20 years.

Objective: Maximize the amount of local, State, and Federal funding sources for bikeway facilities that can be used by the City of Manteca for the implementation of the proposed bikeway system.

Policies:

- 7.1 Maintain and periodically update current information regarding regional, State, and Federal funding programs for bikeway facilities along with specific funding requirements and deadlines.
- 7.2 Aggressively pursue State and Federal funding and submit completed funding applications.
- 7.3 Where feasible, consider joint grant applications with other agencies such as San Joaquin County, the City of Lathrop, and/or the City of Ripon.
- 7.4 Pursue funding for education and enforcements efforts through programs such as the Congestion Mitigation and Air Quality Improvement Program (CMAQ); National Recreational Trails Fund; National Highway Safety Act Section 402 funds; Highway Safety, Research, and Development Fund; and the Safe Routes to School program.

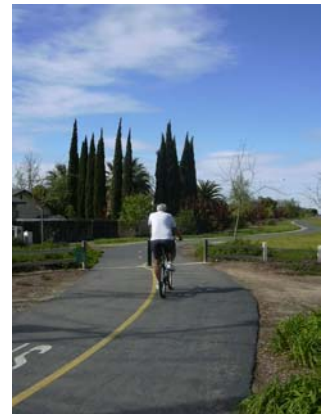
## V. EXISTING CONDITIONS

The summary of existing conditions describes the current bicycle route structure and facilities that support the system throughout the City. This discussion will focus on the location and type of bikeway, regional and multi-modal connections, and support facilities and programs.

### Existing Bikeway Facilities

Figure 6 displays the existing bicycle route system and support facilities currently in Manteca. This information was taken from the current *Bicycle Master Plan* and was verified with City staff and through field visits. The current system is dispersed throughout the central core of the City with the Tidewater Bike Path acting as the “backbone” of the system. In addition, the City currently has approved implementation of the following segments:

- Class I trail on Industrial Park Drive connecting with Tidewater Bike Path, Spreckles Bike Path and the future Atherton Road Bike Path.
- Class II bike lane on Center Street between Winters Drive and the Union Pacific Railroad.
- Class III bike route on North Cherry Street between Center Street and Union Road.



### Regional and Multi-Modal Connections

The development of a bicycle system that connects to regional bikeways and other travel modes (bus, rail, carpool, etc) was a priority of the *Bicycle Master Plan*. These regional connections encourage bicycle use and allow riders to expand their riding area, taking them to destinations outside the City. The extent of the existing regional and multi-modal connections is discussed below.

#### **Regional Connections**

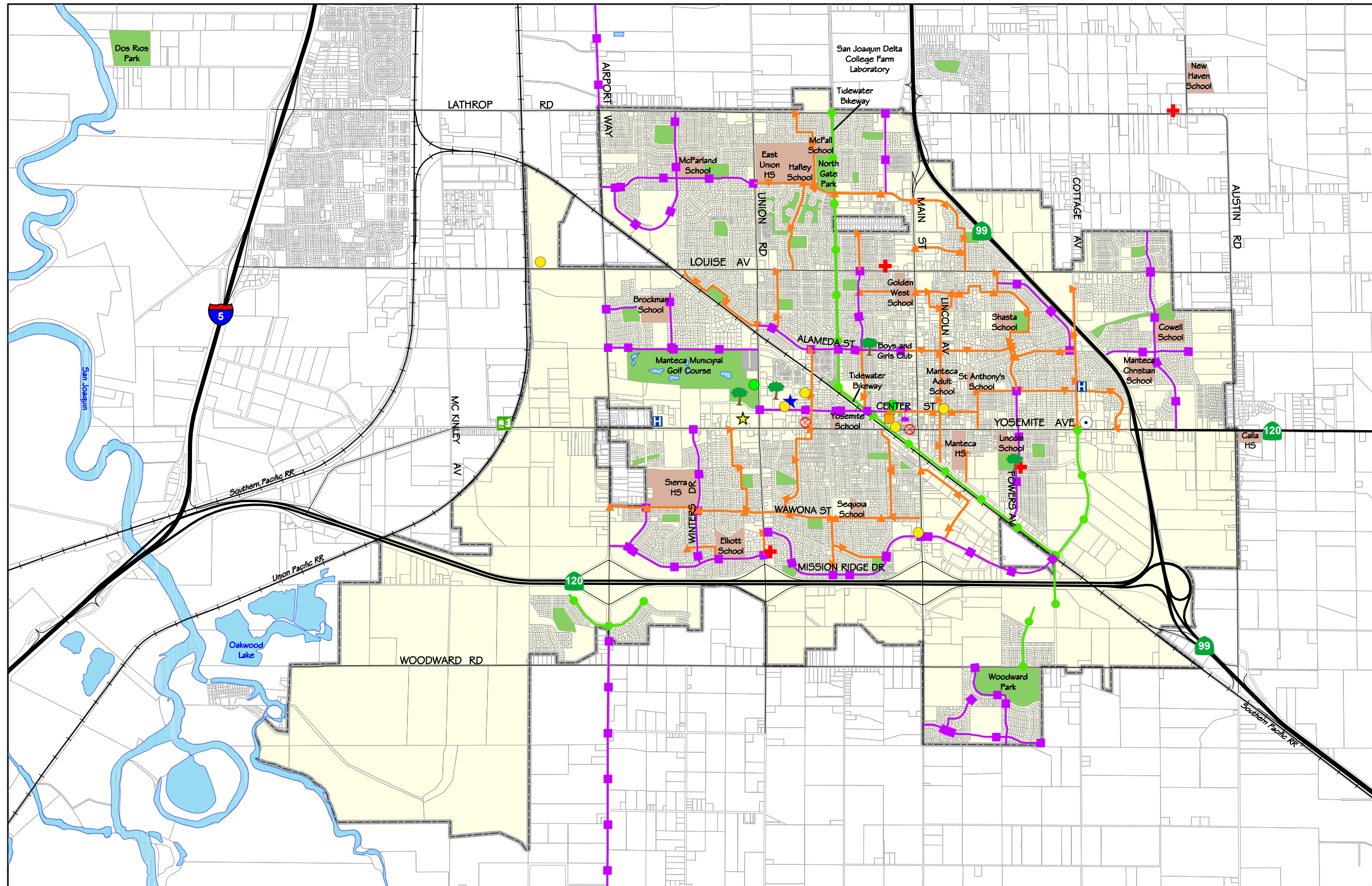
The City of Manteca is bordered by the City of Lathrop and unincorporated portions of San Joaquin County. The only existing regional bicycle route connecting the City to the surrounding region is a Class II bicycle lane on Airport Way to the north of Lathrop Road and south of the City limit.

#### **Multi-Modal Connections**




Multi-modal facilities are areas where bicyclists can connect with another mode of travel to reach their intended destination. These facilities are essential to bicycling as they enable riders to access public transit and other transportation modes in situations where roadway obstacles (i.e., rail lines or freeways) might prevent continuous bicycle travel.

The San Joaquin County Regional Transit District (SJRTD) has mounted exterior bicycle racks on all fixed route inter-regional bus routes. The Route 20 and 21 buses connect the City of Manteca to other San Joaquin County cities. The Altamont Commuter Express (ACE) train connects San Joaquin County to the Bay Area. Bicycles are allowed on designated passenger cars. The Manteca ACE station is located at the corner of the Union Pacific Railroad and Yosemite Avenue. By allowing bikes on buses and trains, an intermodal link has been created at both ends of a transit trip, which thereby increases the range of service to passengers with destination that are outside walking distance of transit stops.



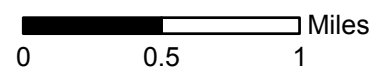


**Legend**

-  Class I Bike Path
-  Class II Bike Lane
-  Class III Bike Route

**Community Services**

-  Bowling Alley
-  Tennis Courts
-  Cinema
-  Fire Department
-  Police Department
-  Post Office
-  Library
-  Hospital
-  Municipal Office
-  Recreational
-  Train Station
-  Bike shop
-  Park
-  School



Source: Manteca Bicycle Route Master Plan, 1993  
 Unincorporated San Joaquin County Bicycle Plan, 2002

Manteca Bicycle Route Master Plan

## Support Facilities

Support facilities include physical infrastructure designed to accommodate and encourage the use of bicycles. These facilities include bicycle racks, lockers, restrooms, showers, and clothes lockers. The City is committed to providing bicycle support facilities where possible.

In general, all of the schools, parks, and public buildings are equipped with bicycle racks. The downtown shopping area is currently installing bicycle racks along the sidewalks. Restrooms are provided in Northgate Park, Lincoln Park, and at the Library.

In 1997, the City of Manteca Ordinance 17.15.050 was established to provide sufficient bicycle parking in non-residential areas. This ordinance states: *“Bicycle parking shall be provided in commercial and industrial projects. Such parking should be located in highly visible locations and should be lockable”*. Table 3 demonstrates the relationship of automobile parking spaces to bicycle parking spaces for non-residential areas.

<b>TABLE 3 Required Bicycle Parking Spaces (City of Manteca Ordinance 17.15.050)</b>	
<b>Total Parking Spaces</b>	<b>Minimum # of Bicycle Spaces Required</b>
1 – 4	0
5 – 14	1
15 - 29	2
30 – 44	3
45 –59	4
60 – 74	5
75 – 99	6
100 – 199	7
200 – 299	8
300 – 399	9
400 and greater	10

## Bicycle Safety

To evaluate bicycle safety, available existing collision data was reviewed to identify collision trends and locations within the City limits.

### **Collision Data**

Collision data was provided by the California Highway Patrol Statewide Integrated Traffic Record System (SWITRS) statistics. This data represents all reported<sup>1</sup> bicycle-related collisions occurring in the City of Manteca between 1999 and 2001. Table 4 characterizes the collision data by year, party at fault, and primary factor leading to the collision. Table 5 summarizes the severity of the collision and average age of the injured party.

<sup>1</sup> The actual number of bicycle-related collisions is probably higher than reported. This data reflects reported collisions only, and does not include unreported collisions and under-counted non-automobile-related collisions. For example, bicycle-bicycle or bicycle-pedestrian collisions tend to be less severe and consequently under-reported.

**TABLE 4**  
**City of Manteca Bicycle Collision Characteristics<sup>1</sup>**

Year	Total No.	Fault			Factor							
		Bicycle	Driver	Unknown	Wrong Side	Stop Sign/Sign	Improper Turn	R-O-W Auto	Unsafe Speed	Driver Alc/Drg	Other Hazard	Other/Unknown
1999	38	23	10	5	7	5	4	4	4	3	5	6
2000	38	30	5	3	14	1	2	6	0	3	6	6
2001	23	17	6	0	9	2	0	5	1	2	2	2

Note:

1. Record of collisions occurring between 1999 and 2001.

Source: California Highway Patrol Statewide Integrated Traffic Record System (SWITRS) Statistics.

**TABLE 5**  
**City of Manteca Bicycle Collision Severity<sup>1</sup>**

Year	Total No.	Avg. Age of Injured	Extent of Injury				
			Fatality	Severe Injury	Other Visible Injury	Complaint of Pain	Unknown
1999	38	26	0	2	15	19	2
2000	38	19	2	2	17	10	7
2001	23	27	0	3	16	4	0

Note:

1. Record of collisions occurring between 1999 and 2001.

Source: California Highway Patrol Statewide Integrated Traffic Record System (SWITRS) Statistics.

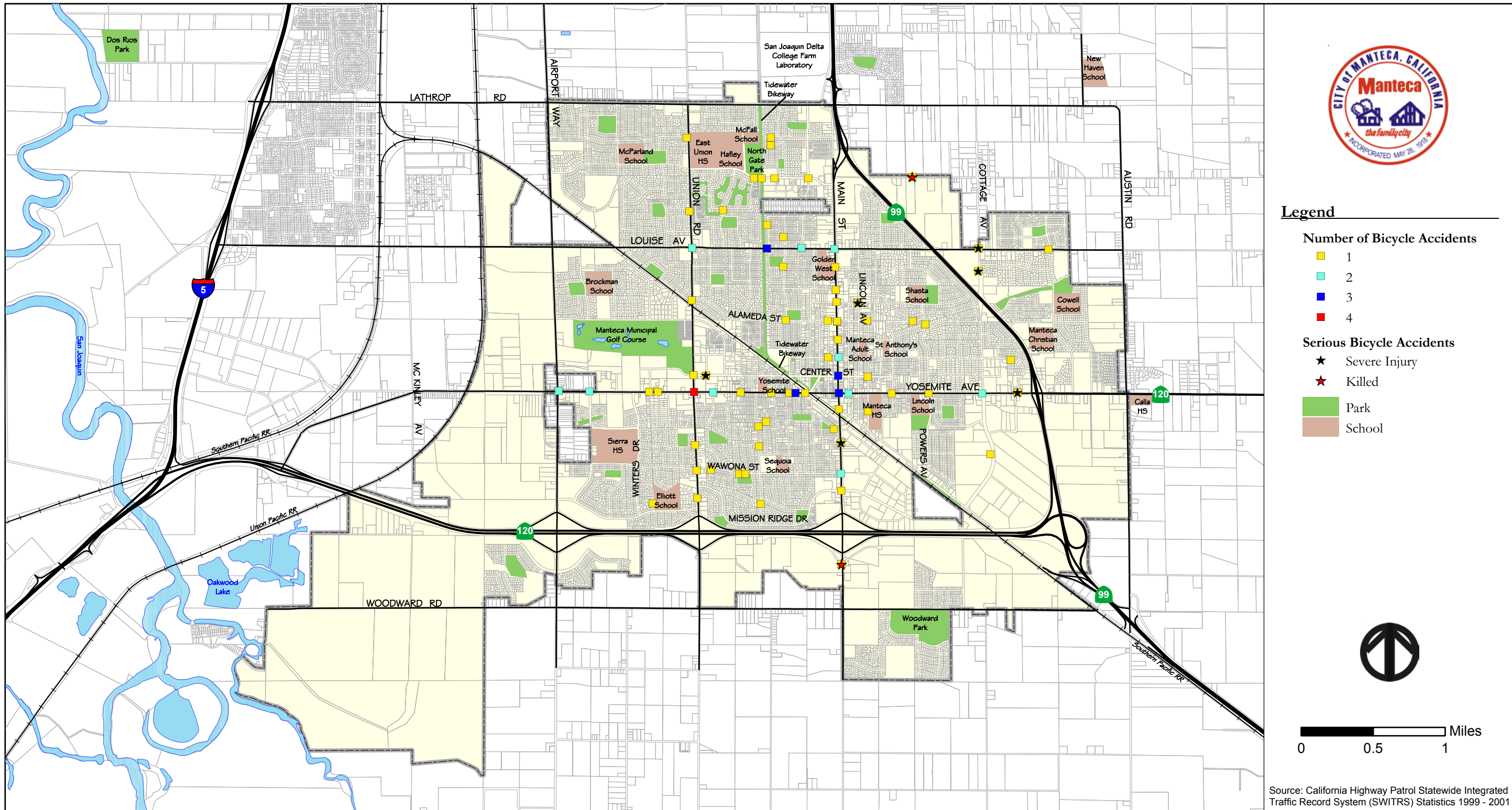
### **Trends and Comparisons**

As shown in Table 4, a total of 99 bicycle collisions were reported during the 3-year period from 1999 to 2001. Primary causes of these collisions were bicyclists riding on the wrong side of the road, right-of-way violations, bicyclists encountering other hazards, and other vehicle code violations by drivers and bicyclists. Two fatalities occurred in 2000, and 88 of the collisions resulted in injuries. Bicyclists were at fault in approximately 77 percent of the collisions, and almost half of the collisions involved riders under the age of 18. This information suggests that increased education and enforcement could be an important tool to decreasing collisions involving cyclists.

Figure 7 illustrates the distribution of bicycle collisions throughout the City<sup>2</sup>. The intersection of Union Road and Yosemite Avenue showed the highest occurrence of collisions with four during the 3-year-period. Three intersections had three reported collisions: Main Street/Yosemite Avenue, Main Street/Center Street, Yosemite Avenue/Jessie Avenue. In addition, three collisions occurred at the Louise Avenue crossing of the Tidewater Bike Path. One to two collisions occurred at several other locations throughout the City, as shown on Figure 7; however, the highest concentration of collisions is found on Yosemite Avenue (between Union Road and Main Street) and Main Street (between Yosemite Avenue and Louise Avenue).

<sup>2</sup> Due to incomplete data, 9 of the 99 collisions could not be geographically located.





To compare the rate of bicycle collisions in the City of Manteca with other California communities, Table 6 was prepared and provides bicycle collision rates per 1,000 persons throughout various communities. As shown, the calculated bicycle collision rate for the City of Manteca is typical of similar California communities.

Because several factors (i.e., street density, household density, traffic volumes, and bicycle facility provisions), may affect the number of collisions that occur within a community, the information provided in Table 6 can be used solely for comparison purposes and is not demonstrative of any statistical relationships. Also, this data only reflects reported collisions.

<b>TABLE 6</b>			
<b>Comparison of Bicycle Collision Rates on Local Roads</b>			
<b>(Selected California Cities)</b>			
<b>City</b>	<b>Population</b>	<b>Collisions per Year</b>	<b>Collisions per 1,000 Persons</b>
City of Oakdale <sup>1</sup>	15,000	8	0.53
City of Livermore <sup>2</sup>	63,000	43	0.68
<b>City of Manteca<sup>3</sup></b>	<b>49,000<sup>5</sup></b>	<b>33</b>	<b>0.69</b>
City of Marysville <sup>2</sup>	13,000	10	0.77
City of Yuba City <sup>2</sup>	32,000	38	1.19
City of Lincoln <sup>4</sup>	10,000	15	1.50
Notes:			
1. Reported collisions, 3 year average (1998-2000).			
2. Reported collisions, 3 year average (1996-1998).			
3. Reported collisions, 3 year average (1999-2001).			
4. Reported collisions, 3 year average (1997-1999).			
5. Year 2000 Census			
Source: Local Police Reports and California Highway Patrol Statewide Integrated Traffic Record System (SWITRS) Statistics.			

### **Safety Program**

Safety is a major concern of both existing and potential users of the bikeway system. User perceptions regarding safety are one of the main reasons individuals do not bicycle more often. This concern is understandable given the potential for serious injuries to bicyclists that are involved in collisions with vehicles.

Many bicyclists, of all ages, lack the proper instruction for riding on roadways. This is very evident from analyzing bicycle collision data within the City of Manteca. During the 3-year analysis period, 77 percent of the reported collisions were the fault of a bicyclist. Riding on the wrong side of the road accounted for nearly half of these collisions. This information suggests that increased safety education and enforcement would be an important tool in decreasing bicycle-related collisions.

Existing bicycle and pedestrian safety programs in the region were reviewed as part of this planning effort. There is no mandatory bike safety program administered by the Manteca Unified School District; however, some schools organize their own bicycle-safety presentations in cooperation with the police department. The police department typically uses handouts, demonstrations, and interactive media to teach bicycle safety.

## VI. ANALYSIS OF DEMAND

The objective of analyzing bicycle travel demand is to identify the following travel characteristics:

- Level of existing bicycle trips
- Patterns of travel for bicycle trips
- Level of future bicycle trips
- Possible methods of stimulating additional bicycle trips

This section identifies the location of existing major activity centers likely to attract bicycle trips and provides information on population and employment trends and their influence on bicycle travel demand.

### Existing Major Activity Centers

One purpose of the *Bicycle Master Plan* is to provide improved linkages from residential areas to employment, commercial, educational, and recreational centers. These linkages support bicycle travel demand for both commute and recreation trips. Figure 4 illustrates major activity centers that currently are, or could potentially be, bicycle destinations, including those identified by City staff and residents at the public workshops. These activity centers include the downtown business district, large employment centers and residential developments, schools, parks, and recreational attractions.

### Growth Trends

Table 7 provides estimates of existing and forecasted future population and employment levels, and also presents the effects of such growth on the road network. This data can be used to identify trends and to assess demand for bikeway facilities.

The 2000 United States Census population data shows a current population of about 49,000 for the City of Manteca. Because Manteca and other San Joaquin County communities are experiencing the effects of out-migration from the Bay Area, the population is expected to almost triple by year 2025. Employment levels (referring to the actual jobs located in Manteca rather than the number of residents employed) are expected to grow at an even faster rate. The combined effect is forecasted to be a tripling of daily vehicle trips.

Future growth and development can assist bikeway facilities planning in two ways: (1) new developments often require upgrades to existing roadways that may create opportunities to construct new bikeway facilities; and (2) changes in land use patterns can allow for better access and connectivity.

<b>TABLE 7</b>			
<b>Population and Employment Growth in the City of Manteca</b>			
	Existing	Proposed General Plan (2025) <sup>1</sup>	Percent Growth
Population	49,258 <sup>2</sup>	142,524	189%
Employment	16,000	99,000	519%
Total Daily Person Trips	514,000	1,614,000	214%
Note: 1. This data represents build-out of the currently proposed General Plan. 2. Year 2000 Census			
Source: <i>City of Manteca General Plan Transportation Analysis</i> , May 2003.			

## Bicycle Travel Demand

Bicycle ridership levels for an entire region are not easily measured or projected without extensive data collection efforts. Existing and available data is currently limited to the 2000 Census data. With a limited amount of information, the following discussion describes both existing and future ridership levels and their relationship to the future development of a comprehensive bikeway system.

### Existing Demand

A common term used in describing demand for bicycle facilities is “mode split.” Mode split refers to the form of transportation a person chooses to take, such as walking, bicycling, public transit, or driving. Mode split is often used in evaluating commuter alternatives such as bicycling, where the objective is to increase the percentage of people selecting an alternative means of transportation to the single-occupant (or drive-alone) automobile.

Table 8 presents 2000 Census data for the journey-to-work mode split for the City of Manteca.

<b>TABLE 8</b> <b>Journey-to-Work Mode Split for the</b> <b>City of Manteca 2000 Census</b>	
<b>Mode</b> <b>(Home-based work trips)</b>	<b>Split</b> <b>(Percentage)</b>
Drive Alone	76.5%
Carpool	16.3%
Public Transit	1.5%
Bicycling	0.7%
Walking	1.7%
Other Means	0.6%
Work at Home	2.7%
Source: 2000 Census, SF-3.	

As shown in Table 8, bicycle trips represent less than one percent of home-based work trips in Manteca. This should not be misinterpreted as the bicycle mode share of all trips for several reasons:

- Journey-to-work data only represents commute trips which tend to be longer trips than shopping, school, recreation, and other trips and are therefore less compatible with bicycling.
- Census journey-to-work data fails to capture people who commute by bicycle one or two days per week.
- No separate accounting of shopping, school, or recreational trips is made in the Census; these trips make up more than half of the person trips on a typical weekday and a significantly greater proportion on weekend. These trips also tend to be short- to medium-length, which are very well suited for bicycle trips.
- Journey-to-work reports information for adult work trips, but does not request data on school trips, which are much more likely to be bicycling trips as school-aged individuals cannot drive until the latter half of their high school years.

To adjust for the under-counting of bicycle mode split in the Census journey-to-work, the 0.7 percent bicycle mode share has been increased by 50 percent to 1.05 percent. Total daily bicycle trips can be estimated using the mode split and an estimate of total daily person trips. According to Census 2000, a total of 514,000 person trips occur each day in Manteca. Assuming a 1.05 percent bicycle mode split, this corresponds to a total daily bicycle trip estimate of 5,400 trips.

### **Future Demand**

Future bicycle trips will depend on a number of factors such as demographics, the availability of well-connected facilities, and location, density, and type of future land development. As shown in Table 7, the population and number of jobs in Manteca is expected to increase by nearly 200 and 500 percent, respectively, between 2000 and 2025. The number of daily person trips is forecasted to increase to over 1.6 million, an increase of over 200 percent. These types of growth trends will place enormous burdens on the regional and local transportation facilities and its many users. This will play a major role in the need for alternative modes of travel, including bicycling, which will become a more attractive option.

With appropriate bicycle facilities in place and implementation of employer trip reduction programs, the bicycle mode split could increase above its current rate. However, assuming the split remains unchanged, an estimated 17,000 or more daily bicycle trips could be expected in 2025.

The FHWA has a goal to double the number of bicyclists over the next 10 years. In communities like Manteca, provision of bicycle facilities can help achieve this objective, but equally important is the development of land use patterns that are conducive to bicycling. These include compact, mixed-use development focusing on in-fill prior to continued development on the periphery. If these types of bicycle (and pedestrian and transit) supportive uses are constructed in addition to continued development of the bicycle network, the FHWA goal could likely be met in Manteca resulting in 34,000 daily bicycle trips.

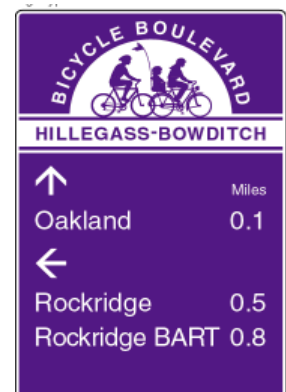


## VII. PROPOSED SYSTEM

The proposed bikeway system for the City of Manteca was developed based on the City's current *Bicycle Route Master Plan*, direct input from the public, and guidance by the City's Public Works department. Key criteria used in developing and refining the proposed system is listed below.

- Advocacy Planning – Rely on members of interested agencies, organizations, City Staff, and community in the plan development process.
- Public Input – Solicit and consider public information in the bikeway planning process.
- Coverage – Provide balanced access from all portions of the City's population and employment centers for both commuting and recreation routes.
- Safety – Provide the highest level of safety possible while eliminating major safety concerns such as bikeways on high traffic volume and/or narrow roadways.
- Connectivity – Provide connections to major activity centers, multi-modal transfer locations, and to routes that provide access to neighboring communities. Activity centers include residential neighborhoods, schools, regional parks, shopping centers, employment centers, government centers, transit centers, and other recreational destinations.
- Gaps & Barriers – Eliminate or improve connections through major gaps and barriers. Major gaps and barriers include narrow bridges, freeway crossings, railroad crossings, and high traffic volume roadways along bikeway facilities.
- On-Street Bikeways – Provide Class II bike lanes as the preferred on-street bikeway facility. Class III bike routes should be used when Class II bike lanes are not feasible due to existing physical or environmental constraints. The designation of on-street bikeways should indicate to bicycles that there are particular advantages to using these facilities as compared with alternative routes. This means that responsible agencies have taken actions ensure that these facilities are suitable to be shared with vehicular traffic and will be maintained in a manner consistent with the needs of bicyclists.
- Off-Street Bikeways – Class I bike paths should be implemented at strategic locations to maximize the recreational benefit of the proposed system. These bikeways provide a higher degree of recreational benefit than bikeways located on streets. They can also become linear parks, adding to the range of amenities for the community.
- Bike Boulevards – Consider transforming Class III bike routes to bike boulevards to encourage bicycle travel within alternative corridors parallel to roadways with high traffic volumes and/or high bicycle collision rates. Bicycle Boulevard is an unofficial classification, and is not included in Chapter 1000 of the *Highway Design Manual*.

Several jurisdictions have installed bike boulevards starting with Palo Alto on the Bryant Street corridor in the 1980s. Berkeley and Eugene, Oregon have newer bike boulevards. Since there is no standardized definition for a bike boulevard, they all differ from one another, but what these facilities have in common is that they are implemented on low volume (generally less than 5,000 ADT), low speed (25 MPH) streets paralleling busy arterials. The intent is to provide the cyclist with a parallel bike route so that they can avoid traveling on the busier arterials, but still enjoy the route directness afforded by the arterials. With some exceptions,



such as 9<sup>th</sup> Street in Berkeley which has striped bike lanes, bike boulevards do not have a dedication of space for bicyclists. That is, there is no area of the roadway that is set aside for use by bicyclists. Instead, the low volume and low speed nature of the road allows bicyclists to share the road with other users.

Bicycles are generally given priority on bike boulevards, meaning that bicyclists are given first importance when considering the design of the road. Key features that benefit cyclists are “flipped stop signs” (i.e., the practice of having side-streets to the bike boulevard stop but allowing users of the bike boulevard to continue without stopping), and special crossing treatments for arterials including the use of bicycle signal heads. In Berkeley, bike boulevards also have special pavement legends and signs that inform the motoring public and bicyclists that they are on a bicycle-priority street.

Lincoln Avenue in Manteca, which parallels the Main Street, is a good example of a roadway that could be considered for conversion to a bike boulevard.

Figure 8 illustrates the proposed bikeway system that resulted from the community input, development, and refinement process.

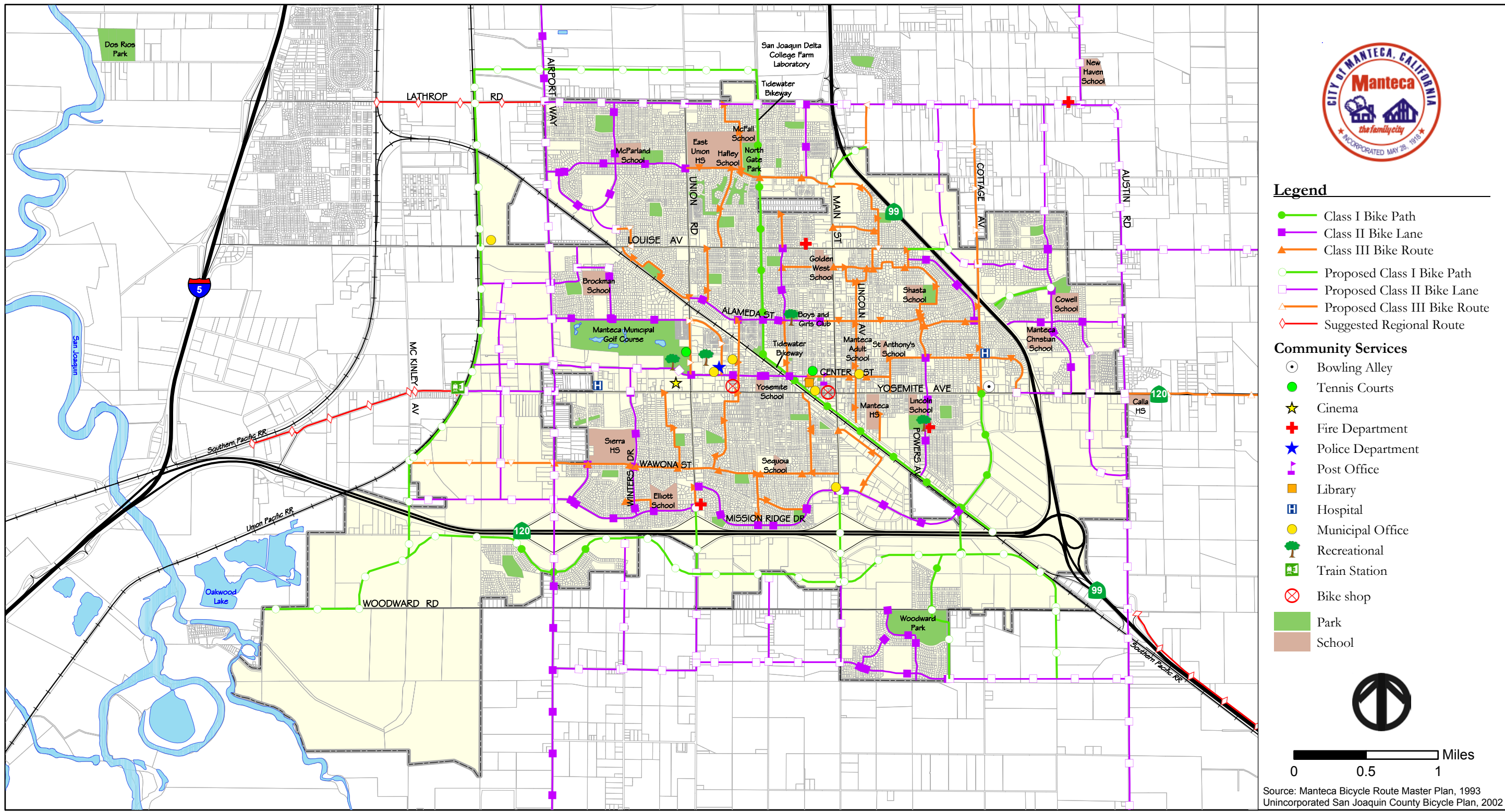
The proposed system includes a total of approximately 54 miles of new bikeway facilities in addition to the 44 miles currently in place. Table 9 shows the number of existing and proposed miles for each bikeway classification.

<b>TABLE 9</b>			
<b>Length (Miles) of System by Bikeway Classification</b>			
<b>Bikeway Classification</b>	<b>Existing</b>	<b>Proposed</b>	<b>Total</b>
Class I	5.7	15.0	20.7
Class II	20.1	33.7	53.8
Class III	18.3	5.7	24
<b>TOTAL</b>	<b>44.1</b>	<b>54.4</b>	<b>98.5</b>

Each route is classified according to the standards as was shown on Figure 2. However, the Class III bike route standards do not specify a minimum shoulder width or roadway lane width. For the purpose of this *Bicycle Master Plan*, a minimum shoulder width of 3 feet is desirable; however, physical conditions may dictate a narrower lane width for individual projects depending on the findings from the City. Further, the minimum width for a Class I bike path shall be 10 feet; however, 12 feet is desirable due to the potential for multiple types of users (i.e., in-line skaters, pedestrian, etc.) on these paths. In addition, buffer/shoulder areas of 3 feet shall be provided on each side of the Class I bike paths.

### Linkages Across SR 120 and SR 99

Eliminating or improving conditions at barriers to bicycle travel within the City of Manteca was a major goal in developing the proposed bikeway system. Due to the constrained conditions on local roadways and interchanges, the most challenging bicycle barriers within the City are SR 120 and SR 99. Improving conditions between the central Manteca area to the north and west of these freeways with the developing areas to the east and south is critical to improving overall connectivity of the proposed system.





The proposed system includes connections across SR 120 and SR 99 at several locations, as shown on Figure 8. Crossings of SR 120 are provided at McKinley Avenue, Airport Way, Union Road, Main Street, and Spreckles Road. Crossings of SR99 are provided at Yosemite Avenue/SR 120, Cottage Avenue, Louise Avenue, Main Street extension, and Lathrop Road.

To facilitate these connections, a conceptual cross-section (Figure 9) was developed to illustrate the key elements of these crossings. The major elements of this cross section are: (1) Class I Bikeway; (2) End Point Connections; (3) Parallel Facilities; and (4) Directional Signing. Each of these elements should be considered in the design of each crossing and modified as necessary to fully address the unique characteristics of each.

- **Class I Bikeway** – A Class I bikeway is used to carry bicyclists across the freeway/interchange area. The Class I bikeway is utilized to consolidate the facility to one side of the roadway in the event of right-of-way or roadway alignment constraints. Alternatively, if these constraints are not present at a given location, a Class II bikeway should be considered on a case-by-case basis.
- **End Point Connections** – Safe access to the Class I bikeway at both sides of the freeway/interchange is critical. Since the Class I bikeway will be located on one side of the roadway, many bicyclists will need to cross the major street to access/egress the facility at ends. These end point connections to the Class I bikeways should be at locations where safe crossings would be possible. In most cases, this will require the end point connections to be located at signalized locations.
- **Connecting & Parallel Facilities** – An emphasis of the proposed bikeway system is to provide bikeways on low volume neighborhood streets in lieu of higher volume arterials. However, most of the crossings of SR 120 and SR 99 are located on arterials. Therefore, the end point connections should provide access to parallel facilities on both sides of the freeway crossing. In many cases, connecting facilities will be collector streets which ideally would provide Class II bike lanes.
- **Directional Signing** – As envisioned, the crossings of SR 120 and SR 99 will provide improved connectivity across these two freeways; however, this access will not be direct for many bicyclists. Bicyclists will need effective directional signing to guide them to/from parallel facilities via the identified end point connections to the Class I bikeway facility through the freeway/interchange area. Without directional signing, bicyclists may not be aware of the facilities provided leading to confusion or lack of use.

## Regional and Multi-Modal Connections

Regional connections include those bikeway facilities that connect the City of Manteca with surrounding communities. Multi-modal connections allow bicyclists and pedestrians to transfer to other modes of transportation. These components are important to consider for developing a bikeway system that provides a high degree of accessibility and mobility.



**SAMPLE DIRECTIONAL SIGNS**



- LEGEND:**
- = Class I Bikeway
  - = Connecting Facilities
  - = Parallel Facilities
  - = End Point Connection at Traffic Signal
  - = Directional Sign Location

Manteca Bicycle Route Master Plan  
**FREEWAY CROSSING  
 CONCEPTUAL LAYOUT**



### **Regional Connections**

Connectivity of individual facilities with existing or planned facilities in surrounding communities was assessed in the development of the proposed bikeway system. As previously discussed, limited facilities exist that offer continuous bicycle connections to surrounding communities; however, San Joaquin County has identified future regional connections to the City of Manteca in their *Unincorporated San Joaquin County Bikeway Plan*. The proposed system was developed to ensure connectivity with these regional bikeways (as shown on Figure 8).

### **Multi-Modal Connections**

The proposed bikeway system includes routes that connect with the existing transit centers and overlap with existing transit routes. To facilitate use of these routes by bicyclists, all transit buses and major transit stations should be equipped with bike racks. In addition, this *Bicycle Master Plan* encourages the development of a multi-modal bicycle station facility in the downtown area, at the intersection of Main Street and Moffatt Avenue adjacent to the Tidewater Bike Path.

### **Support Facilities**

Support facilities are an important element of the proposed bikeway system. Key facilities include bicycle parking, showers, and locker facilities. These support amenities can encourage bicycling by reducing the threat of theft and providing riders with additional conveniences. Properly designed bike racks should be available at major bicycle destinations. For the most part, these facilities should be required for all new developments that are likely to experience a demand for bicycle parking (i.e., commercial areas, parks, libraries, schools, and major employers). In addition, bicycle parking facilities should be added at selected existing activity centers. The type of parking facility (short-term easy-to-access and long-term secure) should be selected based on cost, ease of use, and ability to prevent theft.

Access to shower and locker facilities may help encourage people to commute by bicycle. Many jobs require employees to wear specific uniforms or formal attire. By having shower and locker facilities available, employees have the option to shower and dress at work. This is an important consideration for bicycle commuters as they cannot control their travel environment and are much more dependent on support facilities that are located at the workplace.

The following actions are recommended for increasing the number of locations with bicycle parking, shower, and locker facilities.

- Require new developments to provide support facilities (i.e., bicycle racks, personal lockers, and showers) at appropriate locations such as parks, major recreational destinations, park-and-ride facilities, employment centers, schools, and commercial centers. The City should consider amending Ordinance 17.15.050 to include these requirements.
- Provide and maintain support facilities (i.e., bicycle racks, personal lockers, and showers) at appropriate existing activity centers to promote and encourage bicycle use.

## Crossing Protection

Bikeway facility intersections connecting with area roadways require special measures to provide and enhance safety. Nationally, about 75% of bicycle collisions take place at intersections. The following steps are recommended to enhance safety at these locations.

- Utilize signing, striping, flashing beacons, and bicycle-actuated signals at street crossings with high levels of bicycle demand when warranted by engineering standards.
- Install detectors at signalized intersections along the bikeway system as signal systems are upgraded. Detectors should be located within the striped bike lane either along the curb or between the right-turn lane and through lane.
- Provide adequate sight distance and crossing times at all bikeway intersections.
- Incorporate traffic calming measures, where appropriate, to slow vehicular traffic.

## Educational Programs

Programs to teach bicyclists on the fundamentals of bicycle riding are important to establishing good riding habits. In addition, they encourage bicycle use by making new riders more comfortable and safe. Elementary school children in Manteca receive some informal bicycle-riding safety education by law enforcement officials upon request by area schools.

The following steps are recommended to build on this effort:

- Continue and expand the current bicycle education program for school children (i.e., some existing programs are currently offered upon request). A coordinated proactive effort between the City's police department, school district, and recreation department would improve the overall effectiveness of safety education.
- Establish an adult bicycle education program through the park and recreation department that teaches adults how to ride defensively and encourages individuals to bike to work.
- Provide training to the City's police officers regarding bicycle safety and bicycle collision assessment/reporting.
- Include bicycle safety information as part of visitor packages offered through visitor centers, bicycle shops, local chamber of commerce, etc.

## VIII. COSTS AND FUNDING ANALYSIS

Implementation of the proposed bikeway system will require funding from local, State, and Federal sources. Successful acquisition of capital from these funding sources will require coordination with other agencies such as Caltrans, San Joaquin County, and SJCOG. To facilitate funding efforts, this section presents conceptual construction cost estimates for the proposed system along with a brief description of past expenditures for bikeway facilities.

### Cost Estimates

Table 10 provides a unit cost summary for the construction of bikeway facilities in the region. These estimates are based on actual costs experienced in communities throughout the State. More detailed estimates should be developed following the preliminary engineering stage as individual projects advance towards implementation.

For purposes of this *Bicycle Master Plan*, conceptual construction costs for the proposed system were based on the following assumptions:

- New Class I facilities would be constructed on generally flat right-of-way with minimal grading needed given the existing topography within the City.
- New Class II facilities would require moderate roadway improvements due to the relatively narrow roadways and prevailing pavement conditions within the City.
- New Class III facilities would require signing only.

<b>TABLE 10</b>	
<b>Conceptual Unit Cost Estimates for Bikeway Construction</b>	
<b>Facility Type</b>	<b>Estimated Cost per Mile</b>
<b>Class I Bike Path</b> – Construct path with minimal grading needed	\$750,000
<b>Class II Bike Lane</b> – Signing/stripping plus moderate roadway improvement	\$300,000
<b>Class III Bike Route</b> – Signing only	\$5,000

A summary of system costs for each bikeway classification is presented in Table 11. Conceptual cost estimates for individual routes are provided in Appendix A.

<b>TABLE 11</b>	
<b>Conceptual Cost Estimate Summary</b>	
<b>Bikeway Classification</b>	<b>Cost</b>
Class I Bike Path	\$11,200,000
Class II Bike Lane	\$10,100,000
Class III Bike Route	\$29,000
<b>TOTAL</b>	<b>\$21,329,000</b>

## Potential Funding Sources

As shown in Table 11, the total cost for construction of the proposed bikeway system would be approximately \$21,329,000. The cost of the proposed system would be prohibitive to fund solely from local sources; however, many funding opportunities are available at the Federal and State levels for constructing bikeway facilities. A general description of these sources is provided below. More detailed information regarding funding opportunities can be found in the *Guide to Bicycle Program Funding in California, Planning and Conservation League, February 2002*.

Most funding programs are transportation versus recreation oriented, with an emphasis on reducing auto trips and providing inter-modal connections. These funding sources typically require completion and adoption of a bikeway master plan, quantification of the costs and benefits of the system, proof of public involvement and support, environmental compliance, and commitment of local resources.

### Federal Funding Sources

The following federal sources provide funding that could be utilized by the City of Manteca for implementation of bicycle projects.

Transportation Equity Act for the 21st Century (TEA- 21) - TEA-21 provides funding for roads, transit, safety, and environmental enhancements. These are generally state and local improvements for highways and bridges that accommodate additional modes of transit. Improvements include capital costs, publicly owned intercity facilities, and bicycle and pedestrian facilities. Cities, counties, and transit operators can apply for TEA-21 funds. A 20 percent local match is required for these funds.

Surface Transportation Program Fund, Section 1108 (STP) – STP are block grant funds that are used for roads, bridges, transit capital, pedestrian, and bicycle projects. Eligible bicycle projects include bicycle transportation facilities, bike-parking facilities, equipment for transporting bicycles on mass transit facilities, bike activated traffic control devices, preservation of abandoned railway corridors for bicycle and pedestrian trails, and improvements for highways and bridges. TEA-21 allows the transfer of funds from other TEA-21 programs to the STP Fund. Cities, counties, metropolitan planning organizations (MPO), and transit operators can apply for TEA-21 funds. A 20 percent local match is required for these funds when used for bicycle projects.

National Highway System Fund (NHS) – NHS funds provide for an interconnected system of principal arterial routes. The goal of the program is to afford access to major population centers, international border crossings, transportation systems, meet national defense requirements, and serve interstate and inter-regional travel. This travel includes access for bicyclists and pedestrians. Facilities must be located and designed pursuant to an overall plan developed by each metropolitan planning organization (MPO) and state, and incorporated into the RTP. Both state and local governments can apply for NHS funds. A 20 percent local or state match is required for these funds.

Congestion Mitigation and Air Quality Improvement Program, Section 1110 (CMAQ) – CMAQ funds are available for projects that will help attain National Ambient Air Quality Standards (NAAQS) identified in the 1990 Federal Clean Air Act Amendments. Projects must be located within jurisdictions in non-attainment areas. Eligible projects include bicycle and pedestrian transportation facilities intended for transportation purposes, bicycle route maps, bike-activated traffic control devices, bicycle safety and education programs, and bicycle promotional programs. Cities, counties, MPO, state, and transit operators can apply for TEA-21 funds. A 20 percent local or state match is required for these funds.

Transportation Enhancements Program, Section 1201(TE) – The TE Program is a 10 percent fund set aside from the STP. Projects must have a direct relationship to the intermodal transportation system through function, proximity, or impact. This program has 12 activities that are eligible for funding. Two enhancement activities are specifically bicycle related: 1) provision of facilities for bicyclists and pedestrians, and 2) preservation of abandoned railway corridors (including the conversion and use thereof for bicycle or pedestrian trails). Local, regional, and state public agencies, special districts, non-profit and private organizations can apply for TE funds. Cities, counties, or transit operators must sponsor and administer the proposed projects. A 12 percent local match is required for these funds.

Scenic Byways Program Fund – This program provides funding for the planning, design, and development of a State Scenic Byways Program. Priority is given to designated scenic byways, proposals with specific intent, and projects established under partnerships. Funds may be used for the construction of facilities along the highway for the use of pedestrians and bicyclists, including pedestrian/bicycle access, safety improvements, and rest areas. The local jurisdiction and the MPO must formally support the byway. Cities can apply for these funds. A 20 percent local match is required for these funds.

Bridge Repair and Replacement Program (BRRP) – BRRP funds are available for bridge rehabilitation and replacement. When a highway bridge deck is being replaced or rehabilitated with federal funds, the bridge-deck must provide bicycle accommodations, if access is not fully controlled. Bridge projects must be incorporated into the Regional Transportation Improvement Program (RTIP). Cities may apply for these funds. No local match is required specifically for bicycle accommodations.

National Recreational Trails Fund, Section 1112 – Funds are available for recreational trails for use by bicyclists, pedestrians, and other non-motorized and motorized users. Projects must be consistent with a Statewide Comprehensive Outdoor Recreation Plan (SCORP). Projects include development of urban trail links, maintenance of existing trails, restoration of trails damaged by use, trail facility development, provision of access for people with disabilities, administrative costs, environmental and safety education programs, acquisition of easements, fee simple title for property, and construction of new trails. Private individuals/organizations, cities, counties, and other governmental agencies can apply for these funds. There are no specific local match requirements for these funds.

National Highway Safety Act, Section 402 – The Highway Safety Program is a non-capital safety project grant program under which states may apply for funds for certain approved safety programs and activities. There is a priority list of projects for which an expedited funding mechanism has been developed; bicycle and pedestrian safety programs have been included on this list. Eligible states must adopt a Highway Safety Plan (HSP) reflecting state highway problems. Eligible projects include pedestrian and bicycle safety programs, program implementation, and identification of highway hazards. State departments, cities, counties, and school districts may apply for these funds. No local match is required.

Transit Enhancement Activity, Section 3003 – The Transit Enhancement Activity fund can be used for bicycle access to mass transportation, including bicycle storage facilities and installation of equipment for transporting bicycles on mass transportation vehicles. Regional transportation planning agencies, state, and local agencies may apply for these funds. A 5 percent local match is required for these funds.



Highway Safety, Research, and Development Fund, Section 2003 – This fund can be used to improve bicycle safety through education, police enforcement, and traffic engineering. Projects must be incorporated into the RTIP. Cities, counties, and state agencies can apply for these funds. A 25 percent local match is required for these funds.

Section 3 Mass Transit Capital Grants – This fund can be used for mass transit station access including bicycle access, bicycle parking facilities, bicycle racks, and other equipment for transporting bicycles on transit vehicles. States, regional, local governments, and transit operators can apply for these funds. A 10 percent local match is required for bicycle related projects using these funds.

### **State Funding Sources**

The following State of California sources provide funding that could be applicable for the City of Manteca.

Bicycle Transportation Account (BTA) – The state BTA is an annual program available for funding bicycle projects. These funds can be used for a wide range of bicycle projects; however, emphasis is on projects that benefit bicycling for commuting purposes. Cities and counties with approved bikeway plans can apply for these funds. A 10 percent local match is required for these funds.

Environmental Enhancement and Mitigation (EEM) Program – This program benefits bicycle projects that offset environmental impacts of new or modified transportation facilities. Local and non-profit agencies can apply for these funds. There is no local match required.

Flexible Congestion Relief (FCR) Program – This program is designed to reduce congestion on major transportation corridors by adding capacity to roadways. These funds can be used for bikeway projects if they are consistent with the RTP and included in the RTIP. There is no local match required for these funds.

Safe Routes to School – This fund was established by Assembly Bill 1475. These funds can be used for bikeways near California schools.

State Highway Operations and Protection Program (SHOPP) – This program is state-funded and used by Caltrans to maintain and operate state highways. Local jurisdictions are encouraged to work with Caltrans to help define projects, including bikeway projects on state highways.

### **Local Funding Sources**

A variety of local sources may be available for funding bikeway improvements; however, their use is often dependent on political support.

Local Transportation Fund (LTF), TDA Article 3 – This fund was established by the California legislature under the state Transportation Development Act of 1972. LTF revenues are derived from return of ¼-percent of the 7¼ state sales tax to the county of origin. Local jurisdictions can apply for these funds which can be used for transit and bicycle projects. Up to 2 percent of funding can be set aside for bicycle facilities and 5 percent can be used for supplementing other funds to implement bicycle safety education programs. These funds are collected at the state level but are administered by SJCOG.

Measure K – On November 6, 1990, the voters of San Joaquin County passed the Measure K sales tax initiative. This measure established a ½-cent county-wide sales tax for transportation projects throughout the County. A portion of these funds are available for bikeway projects.

**New Construction** – Future road widening and construction projects are one means of providing on-street bikeways. To ensure that roadway construction projects provide bikeway facilities where needed, roadway design standards are required to include adequate minimum cross-sections. Further, the review process for new development should include input pertaining to consistency with the proposed bikeway system.

**Assessment Districts** - Different types of assessment districts can be used to fund the construction and maintenance of bikeway facilities. Examples include Mello-Roos Community Facility Districts, Infrastructure Financing Districts (SB 308), Open Space Districts, or Lighting and Landscape Districts. These types of districts have specific requirements relating to the establishment and use of funds.

### **Other Funding Sources**

Local sales taxes, developer or public agency land dedications, private donations, and fund-raising events are other local options to generate funding for bikeway projects. Creation of these potential sources usually requires substantial local support.

## **Funding Strategy**

Understanding the City's investment in the existing bikeway system and what is required to complete the system is important in developing a funding strategy. The City of Manteca currently expends approximately \$5,000 annually for maintenance of bikeways within the City. Since 1996, approximately \$4 million has been expended for new or improved bikeway facilities in the City of which approximately \$3.4 million were local funds.

With an approximate length of over 44 miles, the existing system represents a substantial investment. Implementation of the proposed system, consisting of an additional 54 miles would require an additional investment of approximately \$21.3 million, which equates to an annual cost of approximately \$1.1 million per year over 20 years, in constant 2003 dollars. Although a portion of the proposed system would be constructed as new development or re-development occurs, a substantial amount of the total cost will rely on public funding.

With this understanding, the following options should be considered by the City for fulfilling the funding commitment necessary to complete the proposed system:

- Prepare joint applications with other local and regional agencies for competitive funding programs at the State and Federal levels. Joint applications often increase the competitiveness of projects for funding; however, coordination amongst the participating jurisdictions is often challenging. The City should consider acting as the lead agency, with a strong emphasis on coordination between participating jurisdictions, on important projects to ensure they are implemented as quickly as possible.
- Use existing funding sources as matching funds for State and Federal funding.
- Include bikeway projects in local traffic impact fee programs and assessment districts.
- Include proposed bikeways as part of roadways projects involving widening, overlays, or other improvements.

The City should also take advantage of private contributions, if appropriate, in developing the proposed system. This could include a variety of resources such as volunteer labor during construction or monetary donations towards specific improvements.

## IX. IMPLEMENTATION

Implementation of the proposed bikeway system will require effective planning and execution. To facilitate these efforts, the phasing and priorities for implementing specific routes are discussed below. In addition, typical design standards for each bikeway classification are also presented.

### Bikeway System Planning

The specific implementation of any given bikeway facility, with all factors considered equal, should be based on the following criteria:

- Where an opportunity, such as a roadway or development project, makes implementation a part of a larger effort.
- Where an imminent loss of an opportunity, such as sale of a key right-of-way, makes implementation necessary.
- Where resolution of a major obstacle or safety concern, makes implementation necessary.
- Where the facility is connected to and readily accessible from the rest of the bikeway system.

In many situations, the most needed bikeway improvement may not be the first implemented. Often, external factors, such as the construction of new roads, create opportunities to provide new bikeway facilities without the consideration for need. Therefore, the proposed system does not include a ranking of specific routes, but includes the following list of high priority bikeway projects.

### Priority Projects

Priority bikeways were selected based on connectivity potential improvements to safety. The identified priority projects were separated into two categories: 1) priority projects the City could implement when funding is available; and 2) priority projects that would require resolution of significant issues prior to implementation. Figure 10 shows the location of each priority project. Table 12 lists each project (not in priority order) and presents a decision matrix showing the key attributes of each priority project.

In general, these bikeway facilities should be considered first when applying for funding or advancing a project from the planning to the design stage. City staff should also periodically review this list of priority projects to determine if any bikeway facilities should be removed due to various constraints or routes added as necessary to facilitate construction.

### Bikeway Design Standards

The Caltrans *Highway Design Manual* and AASHTO *Guide for the Development of Bicycle Facilities* provide extensive detail on bikeway design for bikeways. These design standards provide a solid framework for future implementation, but may not always be feasible considering the constraints within a given corridor.

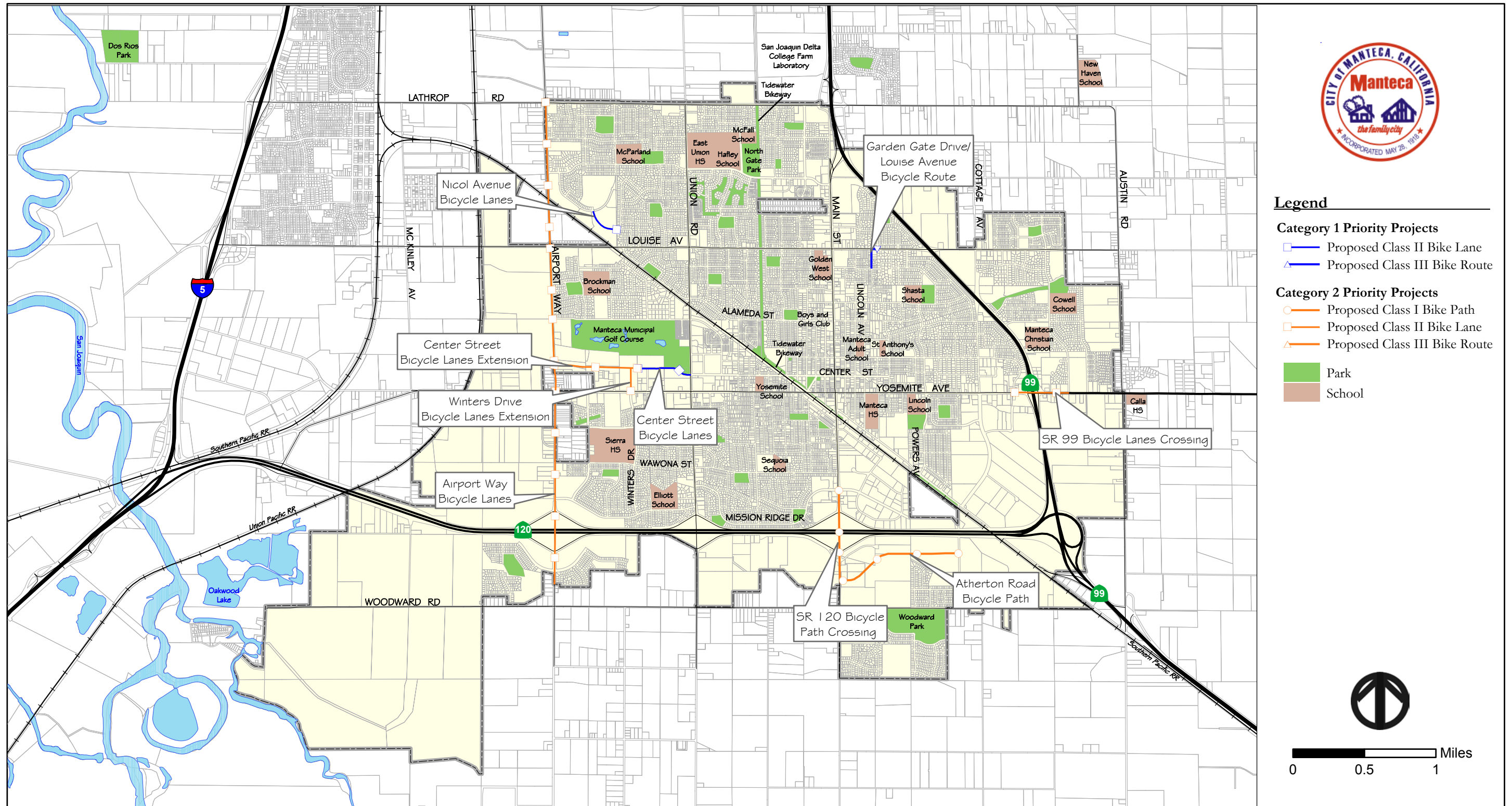
Bikeway design and planning standards are continually changing and expanding. For example, there is pressure from the bicycling public to allow bike lanes that are narrower than current standards to be installed on existing streets. However, local jurisdictions must be protected from liability concerns, therefore, most agencies adopt the Caltrans or AASHTO standards as a minimum.

Examples of typical design treatments for Class I, Class II, and Class III bikeways are shown on Figures 11, 12, and 13. This information is provided to assist the City of Manteca in the design and construction of future bikeway facilities. With these standards and other information provided in this *Bicycle Master Plan*, the City can proceed with the next step in advancing bikeway projects from the planning stage to the design and construction phase.

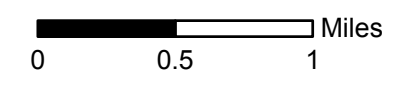
To minimize wrong-way/side bicycle travel within the City, special signing is recommended. An example of such signing is shown on Figure 14. This type of signing has successfully been implemented in several jurisdictions resulting in decreased bicycle collision rates.

<b>TABLE 12</b>				
<b>Priority Project Decision Matrix</b>				
	Enhances Safety	Eliminates Gap/Barrier	Regional System Integration	Ease of Implementation
<b><i>Category 1 Priority Projects – Implemented When Funding is Available</i></b>				
Garden Gate Drive/Louise Avenue Bike Route	✓	✓		✓
Nicol Avenue Bicycle Lanes to London Avenue		✓		
Center Street Bike Lane Extension to Winters Drive Extension	✓	✓		✓
<b><i>Category 2 Priority Projects – Resolution of Significant Issues Required Prior to Implementation</i></b>				
Center Street Bike Lane Extension to Airport Way	✓	✓		
Winters Drive Bike Lane Extension to Center Street		✓		
Airport Way Bike Lanes		✓	✓	
SR 99 Bike Lane Crossing at Yosemite Avenue Interchange	✓	✓	✓	
SR 120 Bike Path Crossing at Main Street Interchange	✓	✓		
Atherton Road Bike Path from Main Street to Spreckles Road		✓		



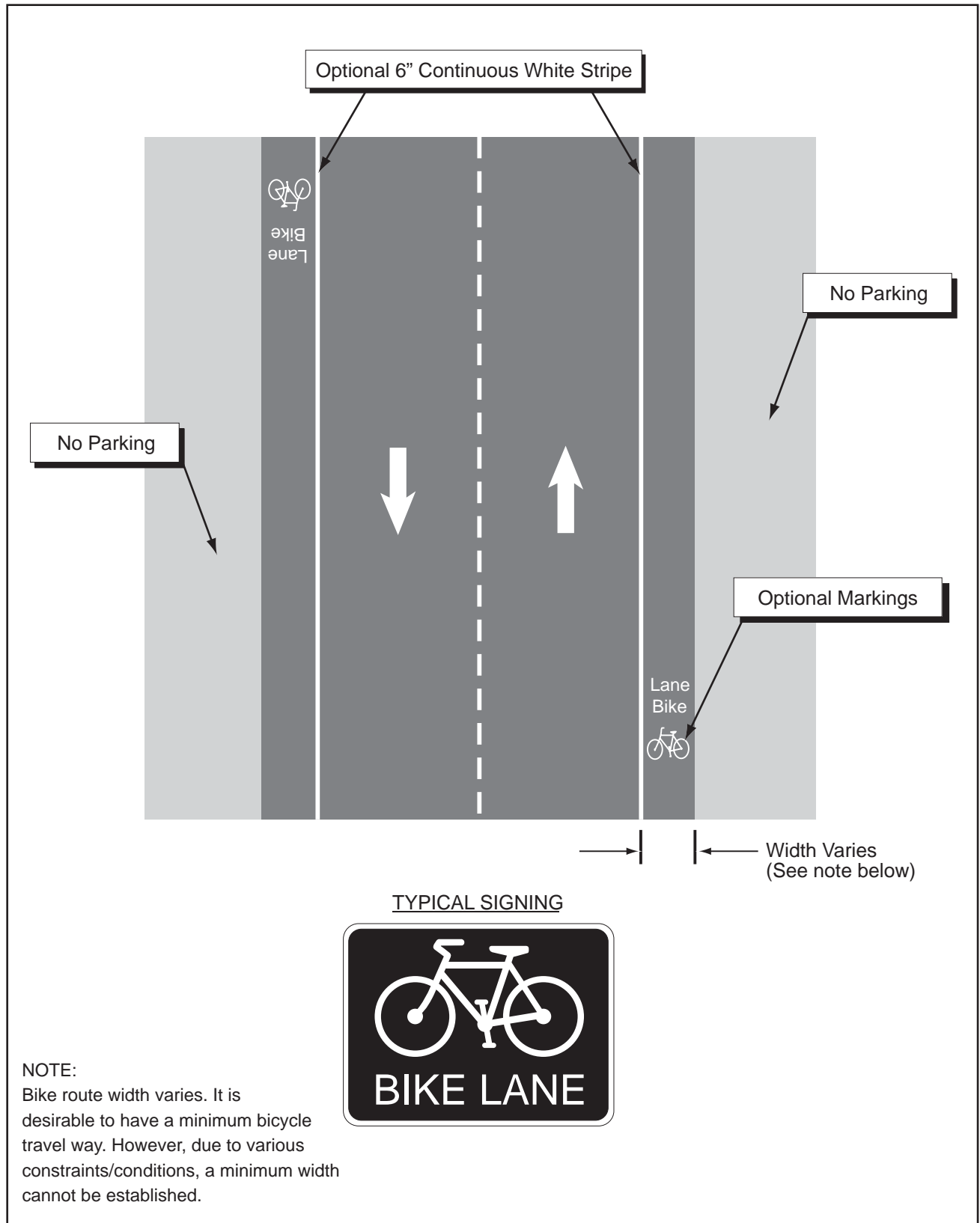


- Legend**
- Category 1 Priority Projects**
    - Proposed Class II Bike Lane
    - △ Proposed Class III Bike Route
  - Category 2 Priority Projects**
    - Proposed Class I Bike Path
    - Proposed Class II Bike Lane
    - △ Proposed Class III Bike Route
  - Park
  - School



Manteca Bicycle Route Master Plan





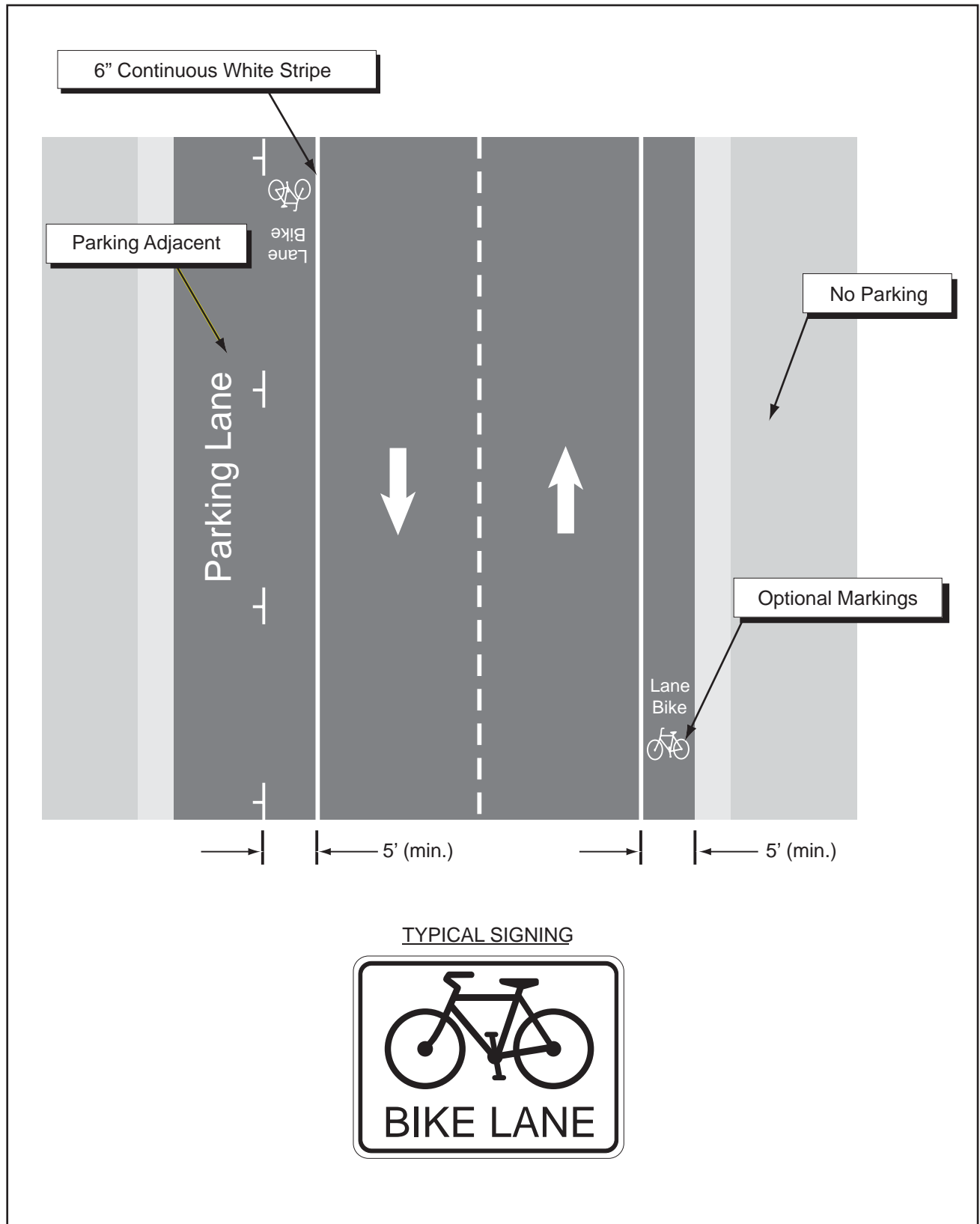
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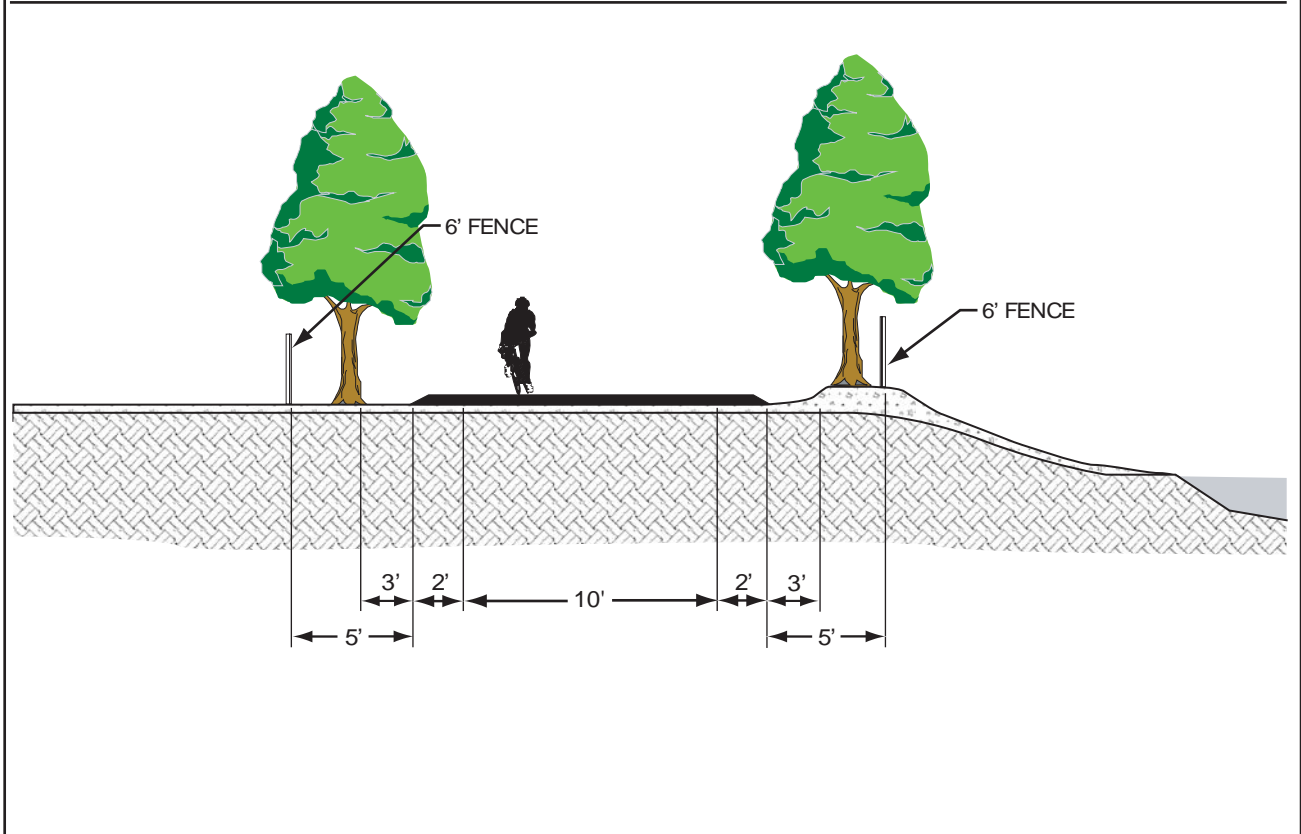
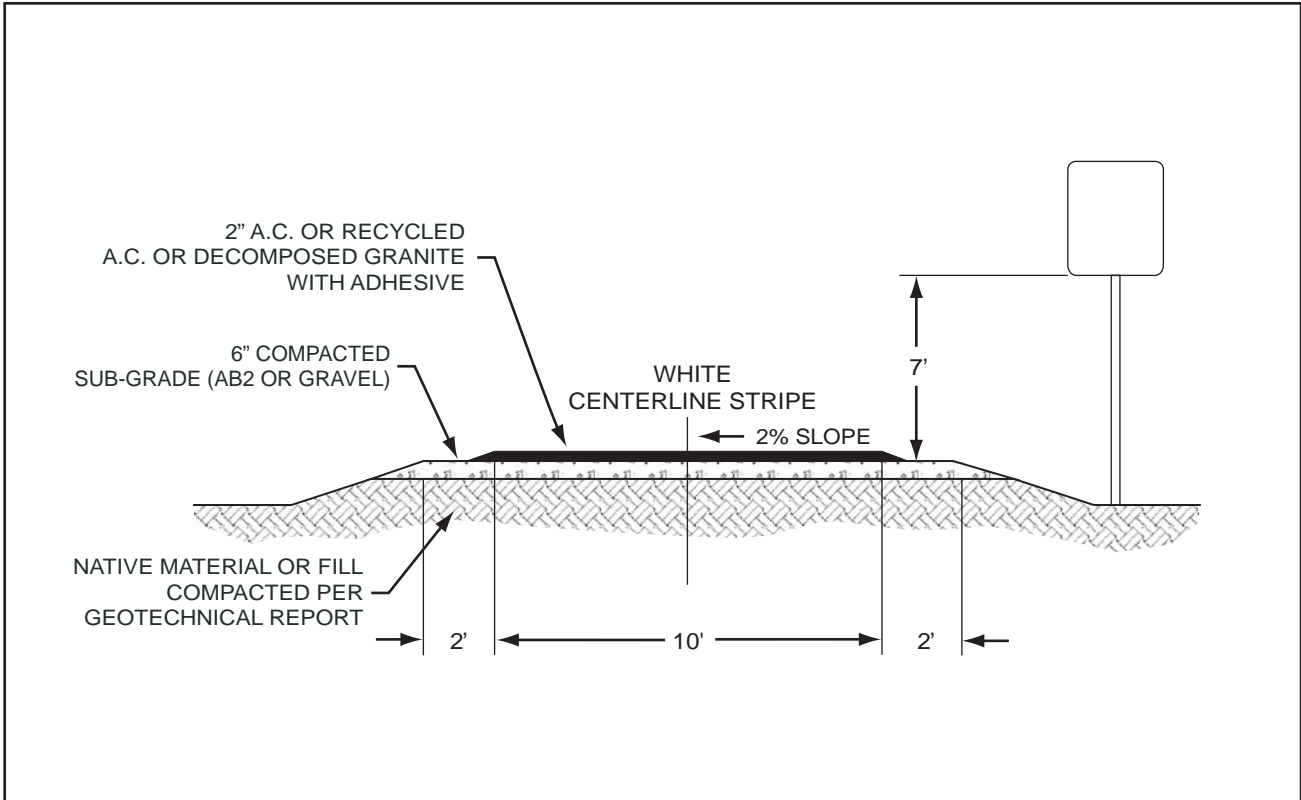
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Manteca Bicycle Route Master Plan

TYPICAL CLASS III BIKE ROUTES

FIGURE 13





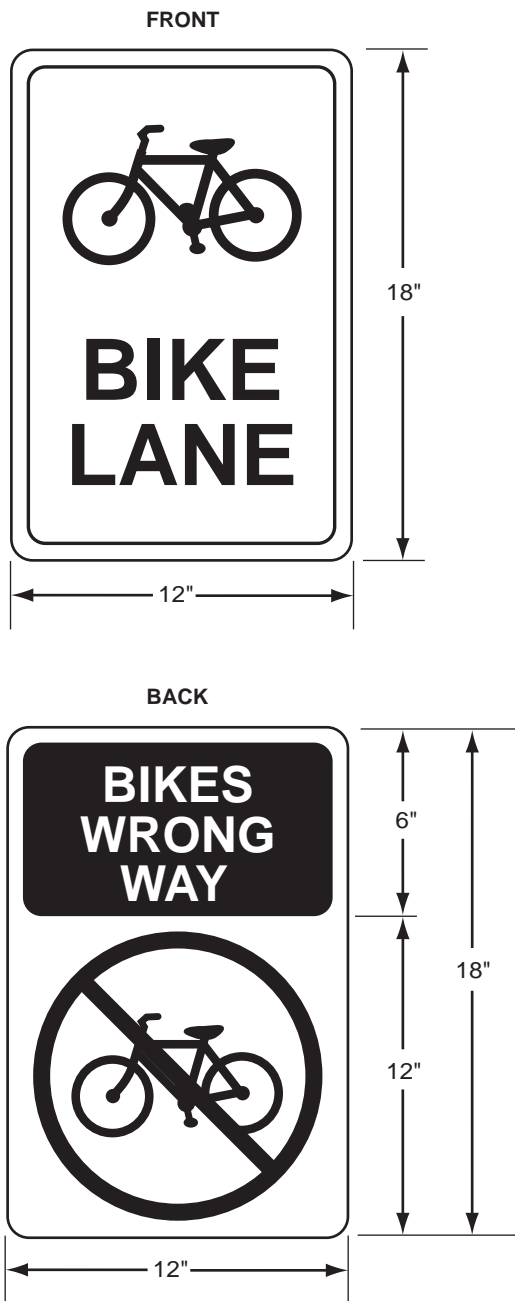
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Manteca Bicycle Route Master Plan

TYPICAL CLASS I BIKE PATH

FIGURE 11



**NOTE:**

- 1 - Sign should be side mounted so both sides are readable.
- 2 - If an R81A or an R81B is installed with the R81-MOD sign, it should be side mounted.
- 3 - Front section is a modified R81 sign.
- 4 - Bike symbol section of the back panel is a modified R95 sign.
- 5 - Text section of the back panel is a modified R11A sign.



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Manteca Bicycle Route Master Plan

**SAMPLE WRONG-WAY BIKE SIGNING**

**FIGURE 14**

## **APPENDIX A**

### **CONCEPTUAL COST ESTIMATES FOR INDIVIDUAL ROUTES**



**APPENDIX A  
CITY OF MANTECA BICYCLE MASTER PLAN CONCEPTUAL CONSTRUCTION COST ESTIMATES**

<b>ROAD NAME</b>	<b>FROM</b>	<b>TO</b>	<b>LENGTH (MILES)</b>	<b>BIKEWAY CLASS</b>	<b>CONSTRUCTION COST PER MILE</b>	<b>TOTAL COST</b>
Tidewater Bike Path	S Spreckles Rd	HWY 120	0.28	1	\$750,000	\$211,425
Atherton Road	End of existing Class 1	Woodward Rd	1.39	1	\$750,000	\$1,042,891
Atherton Road	Spreckles Road	Woodward Rd	0.90	1	\$750,000	\$672,515
Atherton Road	Woodward Road	Tannehill Road (east ext)	0.47	1	\$750,000	\$352,391
Atherton Road	Spreckles Road	Class 1 on Atherton Rd	2.81	1	\$750,000	\$2,107,627
Cowell School Park			0.42	1	\$750,000	\$315,294
HWY 99 ramp (West ext)	N Main St	Lathrop Rd	0.38	1	\$750,000	\$283,095
Loop north of Lathrop Rd	Lathrop Rd	Tidewater Bike Path	2.42	1	\$750,000	\$1,818,640
Louise Avenue	Souza Blvd	West of Cottage Avenue	0.29	1	\$750,000	\$214,968
McKinley Ave	Union Pacific RR	Atherton Rd	0.67	1	\$750,000	\$503,374
S Main St	Mission Ridge Dr	HWY 120 S On Ramp	0.43	1	\$750,000	\$320,142
S Main St	HWY 120 south On Ramp	Tannehill Rd	0.19	1	\$750,000	\$145,616
Union Pacific RR ROW	Yosemite Ave	McKinley Ave	0.62	1	\$750,000	\$461,675
Union Pacific RR ROW	Louise Ave	McKinley Ave	1.02	1	\$750,000	\$762,671
Union Pacific RR ROW	Lathrop Rd	Louise Ave	1.00	1	\$750,000	\$746,764
Union Rd	Daniels St	Atherton Rd	0.45	1	\$750,000	\$338,271
Woodward Park	Woodward Rd	Tannehill Rd	0.57	1	\$750,000	\$426,731
Woodward Road	Atherton Road	Eastbound City Limits	0.66	1	\$750,000	\$493,471
		<b>Subtotal</b>	<b>14.96</b>			<b>\$11,217,561</b>
N Vasconcellos Ave	E Nehemiah Dr	HWY 120	0.51	2	\$300,000	\$151,761
Airport Way	Yosemite Ave	City Limit (south)	1.35	2	\$300,000	\$405,143
Airport Way	Lathrop Rd	Louise Ave	1.02	2	\$300,000	\$305,676
Airport Way	Lathrop Rd	W Crom St	0.49	2	\$300,000	\$147,751
Airport Way	W Crom St	Yosemite Ave	0.50	2	\$300,000	\$150,885
Brookdale Way	Cottage Ave	N Pestana Ave	0.49	2	\$300,000	\$148,070
Brookdale Way (North ext)	Lathrop Rd	Cottage Ave	1.26	2	\$300,000	\$376,999
Daniels St (west ext)	Airport Way	McKinley Ave	1.01	2	\$300,000	\$302,032
E Louise Ave	S Austin Rd	S Jack Tone Rd	2.01	2	\$300,000	\$603,494
E Nehemiah Dr	N Vasconcellos Ave	S Austin Rd	0.27	2	\$300,000	\$81,637
Fox Fire Dr	Zurich Dr	N Silverado Dr	0.22	2	\$300,000	\$67,239
Lathrop Rd	Tidewater Bike Path	S Hwy 99 East Frontage Rd	0.62	2	\$300,000	\$185,899
Lathrop Rd	Airport Way	Union Rd	0.98	2	\$300,000	\$293,648
Lathrop Rd	Union Rd	Tidewater Bike Path	0.50	2	\$300,000	\$150,800
Lathrop Rd	S Hwy 99 East Frontage Rd	Cottage Ave	0.88	2	\$300,000	\$265,317
Lathrop Rd	S Hwy 99 East Frontage Rd	North Austin Rd	0.74	2	\$300,000	\$221,527
Lathrop Rd	N Austin Rd	S Austin Rd	0.25	2	\$300,000	\$75,093
N Austin Rd	Union Pacific RR	Lathrop Rd	1.45	2	\$300,000	\$435,435
N Pestana Ave (North ext)	Lathrop Rd	City Limit (north)	0.74	2	\$300,000	\$221,106
Nicol Way (west ext)	London Ave	Nicol Way	0.23	2	\$300,000	\$70,016
Oleander Avenue	Atherton Road	Peach Avenue	0.91	2	\$300,000	\$273,462
Peach Avenue	Union Road	Airport Way	1.05	2	\$300,000	\$316,485
S Austin Rd	HWY 120	Woodward Ave	1.49	2	\$300,000	\$446,968
S Austin Rd	Woodward Rd	West Ripon Rd	2.52	2	\$300,000	\$755,937
S Austin Rd	Lathrop Rd	Louise Ave	0.99	2	\$300,000	\$296,076
S Austin Rd	E Louise Ave	HWY 120	1.00	2	\$300,000	\$300,111
S Main St	HWY 120 south On Ramp	Tannehill Rd	0.56	2	\$300,000	\$169,239
S Vasconcellos Ave	HWY 120	S Austin Rd	0.77	2	\$300,000	\$230,812
State Route 120	Northwoods Avenue	Pestana Avenue	0.38	2	\$300,000	\$114,922
Swanson Rd & (north ext)	Geneva Way	Yosemite Ave	0.74	2	\$300,000	\$222,823
Swanson Rd (south ext)	Yosemite Ave	Wawona St (east ext)	0.50	2	\$300,000	\$149,658
Swanson Rd (south ext)	Wawona Street	Daniels Street	0.25	2	\$300,000	\$75,562
Tannehill Rd (east ext)	Birdwell Ave	Austin Rd	1.25	2	\$300,000	\$374,001
Tannehill Rd (west ext)	S Main St	S Union St	1.00	2	\$300,000	\$299,871
Tinnin Road	Atherton Road	Tannehill Road	0.62	2	\$300,000	\$186,039
Union Road	Atherton Road	Tannehill Road	0.62	2	\$300,000	\$187,485
W Center St	Union Pacific RR ROW	Airport Way	0.55	2	\$300,000	\$166,062
W Center St	Airport Way	S Union Rd	0.97	2	\$300,000	\$291,529
W Crom St (west ext)	Union Pacific RR ROW	Airport Way	0.50	2	\$300,000	\$148,562
W Geneva Way (west ext)	Union Pacific RR ROW	Airport Way	0.48	2	\$300,000	\$144,128
Winters Dr (north ext)	Yosemite Avenue	Center Street	0.16	2	\$300,000	\$49,260
Yosemite Ave	Airport Way	UPRR	0.63	2	\$300,000	\$188,945
Zurich Dr	Louise Ave	Geneva Way	0.24	2	\$300,000	\$71,577
		<b>Subtotal</b>	<b>33.73</b>			<b>\$10,119,042</b>
Wawona St (west ext)	Airport Way	McKinley Ave	1.00	3	\$5,000	\$5,015
Garden Gate Dr/Louise Ave	Jason St	Springtime Ave	0.18	3	\$5,000	\$914
HWY 120	S Austin Rd	S Jack Tone Rd	2.01	3	\$5,000	\$10,042
N Cherry Ln	Union Rd	Center St	0.51	3	\$5,000	\$2,557
Cottage Ave	Lathrop Rd	Brookdale Way	1.11	3	\$5,000	\$5,550
S Union Rd	W Crom St	W Center St	0.38	3	\$5,000	\$1,899
Nicol Way	N London Ave	Margarite Ave	0.10	3	\$5,000	\$481
N Margarite Ave	Nicol Way	Louise Ave	0.12	3	\$5,000	\$619
HWY 99 ramp (West ext)	N Main St	Lathrop Rd	0.29	3	\$5,000	\$1,455
		<b>Subtotal</b>	<b>5.71</b>			<b>\$28,533</b>
		<b>TOTAL BIKEWAY MILES</b>	<b>54.39</b>			<b>\$21,365,136</b>