



Final
City Of Hughson Non-Motorized Transportation Plan



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October 2008
WC06-2281 Task 2

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EXECUTIVE SUMMARY

This Plan addresses bicycle and pedestrian needs for the City of Hughson. On December 12, 2005, the City of Hughson adopted a *General Plan* that directs the creation of a bicycle master plan to guide the development of new bicycle facilities. This document meets the goals, policies, and action items of the *General Plan* by establishing a blueprint for completing a system of walkways and bikeways, support facilities (such as bicycle parking) and education programs. The Plan is divided into a Pedestrian Network, Bicycle Network, Safety and Education, and Funding and Implementation.

PEDESTRIAN NETWORK

The Plan describes existing pedestrian conditions in Chapters 3 and 5 and proposes recommendations for improvements in Chapter 7 that are prioritized in Chapter 10. The existing condition of the pedestrian network varies based on location. The older neighborhoods of the city have gaps in the sidewalk network and are dark at night. Most of these neighborhoods are located around the Downtown, but also include the residential developments west of Santa Fe Avenue. While not many accidents were reported in the past five years in the City of Hughson, most of the reported accidents occurred in these residential areas. Many of these neighborhood streets are not lit at night, which is reflected in some of the accident reports. Access for the disabled and impaired is also not complete. The two railroad crossings on Tully Road and Whitmore Avenue lack any pedestrian accommodations.

Proposed Improvements for the pedestrian network focus on the need for sidewalks in the older neighborhoods and across the railroad tracks. The plan identifies 10 sidewalk projects, which are prioritized into two phases. *Phase I* improvements may occur within the next five years and include projects that would provide a minimum of one sidewalk per street, except on busy arterials where pedestrians should not cross mid-block to access the sidewalk; *Phase II* improvements include projects that would complete the network of sidewalks. These projects only include sidewalks, additional study is needed for street lighting, curb ramps, crosswalks, railroad crossings, and other pedestrian facilities.

Other elements contained within the Plan concerning the Pedestrian network include recommendations for sidewalk design, street lighting, crosswalks, and railroad crossings. A crosswalk policy is proposed for controlled and uncontrolled locations. The uncontrolled crosswalk policy includes a decision flow chart and thresholds for various types of uncontrolled crosswalk designs, including high-visibility crosswalks with various devices to warn motorists and provide refuge for pedestrians and whether a pedestrian signal or bridge is warranted.

BICYCLE NETWORK

The Plan describes existing bicycle conditions in Chapters 3 and 4 and proposes recommendations for improvements in Chapter 8 that are prioritized in Chapter 10. Currently there are two bicycle facilities totaling 0.85 miles in length that provide limited connectivity to only a few residents. Two bicycle accidents were reported in Downtown residential areas.

The Plan proposes a network of 25.4 miles of bikeways that would accommodate both recreational bicyclists and commuters. The bicycle network would connect all Hughson neighborhoods to all the major destinations, including Downtown, future commercial centers, major parks, the industrial area to the west, and the regional bikeways proposed by StanCOG. Due to the build-out of the proposed bikeway network and the land use estimates in the *General Plan*, the percent of total



trips in Hughson made by bicycle is estimated to increase from approximately 1.2% today (220 daily trips) to approximately 3.2% in the future (1,400 daily trips at the build-out of the *General Plan*).

The proposed bicycle network includes 5.1 miles of Class I multi-use paths adjacent to expressways, 15.95 miles of Class II on-street bicycle lanes, and 4.35 miles of Class III shared on-street bikeways (mixed bicycle and vehicle travelways). Each proposed bikeway is described and many of the descriptions include a conceptual typical cross-section that illustrates how bikeways can be accommodated on existing and future roadways.

The plan identifies 19 bikeway projects, which are prioritized into three phases and six sub-phases. Each bikeway project was evaluated and ranked using a points system based on four elements: access to activity centers, transit access, connectivity, and relative ability to implement. This evaluation was conducted assuming the full development of each bikeway. However, the proposed phasing scheme includes other factors, such as the availability of funds for projects, expected development, and connections to the network. This result is some bikeway projects are split into smaller projects to reflect the development of the City over time.

The Plan also incorporates design standards for typical bikeways, bicycle lanes at intersections and approaching right-turn-only lanes. Other elements incorporated in the Plan include a sample signage standard and guidelines for the placement of bicycle parking.

SAFETY AND EDUCATION

The Plan describes collision data from the previous 5 years and evaluates existing education programs. Most of the reported bicycle and pedestrian-related collisions occurred in the Downtown residential neighborhoods. While not all collisions are reported, the data show that special attention should be paid to pedestrian and bicycle facilities in the Downtown area. The data also suggest that a community bicycle shop and additional education programs may be beneficial, such as bicycle rodeos, a bicycle helmet program, an adult bicycle education program, a bicycle license program, and educating drivers about the rights of bicyclists. The Plan also addresses security issues regarding off-street multi-use paths.

FUNDING AND IMPLEMENTATION

The Plan presents a substantial investment in pedestrian and bicycle infrastructure. The Plan presents conceptual unit cost estimates for bikeways and for sidewalks and presents conceptual cost estimates for each phase of the bicycle and the pedestrian projects. The investment in bikeways amounts to \$190,000 in Phase I, \$130,000 in Phase II, and \$2.78 million in Phase III, for a total of \$3.1 million. The investment in sidewalks amounts to \$1.21 million in Phase I and \$847,000 in Phase II, for a total of \$2.06 million. The total investment in bikeways and sidewalks amounts to \$5.16 million over the life of the Plan, or \$258,000 per year over 20 years. A funding strategy is presented that describes options and funding sources available.



1. INTRODUCTION

BACKGROUND

This Plan addresses bicycle and pedestrian needs for the City of Hughson. The City of Hughson *General Plan* requires the creation of a bicycle master plan to guide the development of new bicycle facilities. This Plan also addresses the state of pedestrian facilities in Hughson to formulate a *Non-Motorized Transportation Plan*. This is the official policy document addressing the development of facilities to enhance bicycling and walking as transportation choices for Hughson residents.

The City and its consultant have prepared this *Non-Motorized Transportation Plan* to fulfill the following objectives:

- Inventory existing, programmed, and planned pedestrian and bicycle facilities, including documentation of the environment surrounding the existing facilities and whether the facilities meet current standards
- Review existing pedestrian and bicycle safety and education programs
- Review and analyze pedestrian and bicycle-related collisions from the past five (5) years, and create a pedestrian and bicycle collisions database
- Prepare a pedestrian and bicycle needs assessment to provide a non-motorized network and programs consistent with the goals and policies outlined in the Transportation and Circulation Element of the *General Plan*
- Develop a prioritized pedestrian and bicycle project list
- Identify possible funding sources to pay for pedestrian and bicycle facility improvements



This report addresses each objective listed above and contains the technical information used in developing the proposed pedestrian and bicycle improvements. This document is the first step in implementing the bicycle and pedestrian improvement recommendations of the Transportation Element, the Land Use Element, and the Conservation and Open Space Element of the *General Plan*. Readers should note that this report focuses solely on bicycle and pedestrian facilities as the *City of Hughson General Plan* addresses other components of the transportation system such as travel via public transit and automobile in the Transportation Element.

RELATIONSHIP TO OTHER PLANS

This non-motorized transportation plan is consistent with plans and policies at a Federal, State, and local level.

Federal Policies

There are four key policy sources at the Federal level:

- The Safe, Accountable, Flexible, Efficient Transportation Equity Act - A Legacy for Users (SAFETEA-LU)
- The Federal Highway Administration's (FHWA) Joint Statement, *Accommodating Bicycle and Pedestrian Travel: A Recommended Approach*
- The American Association of Transportation Official's (AASHTO's) *Guide for the Development of Bicycle Facilities* and the *Guide for the Planning, Design, and Operation of Pedestrian Facilities*
- The Americans with Disabilities Act Accessibility Guidelines (ADAAG)

SAFETEA-LU, passed in 2005, integrates bicycle and pedestrian travel into the mainstream transportation system. This builds on previous federal transportation bills, beginning with ISTEA (passed in 1991), and TEA-21 (passed in 1998). Since SAFETEA-LU is set to expire in 2009, new legislation that would be valid until 2015 is anticipated to be passed in 2009 that may include changes to existing programs and the introduction of new programs. The legislation asserts that bicycle and pedestrian facilities should offer a viable transportation choice while prioritizing the safety of all road users. SAFETEA-LU requires that bikeways and pedestrian walkways be considered as the rule rather than the exception in all federally funded transportation projects. SAFETEA-LU also includes a Safe Routes to School program, which provides funding for safety and access projects that improve conditions for children walking or bicycling to school.

The Federal Highway Administration's Joint Statement, *Accommodating Bicycle and Pedestrian Travel: A Recommended Approach* offers a base for bicycle and pedestrian planning. The statement establishes overall policy as well as performance measures. The three key principles contained in the statement are as follows:

- Bicycling and walking facilities will be incorporated into all transportation projects unless exceptional circumstances exist
- Municipalities should use approaches to achieving the policy that have worked elsewhere as a model
- Public agencies, professional associations, or advocacy groups should adopt several action items to improve the overall conditions for bicycling and walking

The AASHTO *Guide for the Development of Bicycle Facilities* offers design guidance for accommodating bicycle facilities into transportation projects. The Guide is currently being updated, scheduled for release in 2009. The AASHTO the *Guide for the Planning, Design, and Operation of Pedestrian Facilities* offers guidance for the development of pedestrian facilities.

The *Americans with Disabilities Act Title III* is legislation enacted in 1990 that provides thorough civil liberties protections to individuals with disabilities with regards to employment, state and local government services, and access to public accommodations, transportation, and telecommunications. Title III of the Act requires places of public accommodation to be accessible and usable to all people, including those with disabilities. While the letter of the law applies to "public accommodations," the spirit of the law applies not only to public agencies but to all facilities serving the public, whether they are publicly or privately funded. The following is a description of the Americans with Disabilities Act Accessibility Guidelines (ADAAG):



The Americans with Disabilities Act (ADA) establishes design requirements for the construction and alteration of facilities in the private and public realm. These requirements are known as the ADA Accessibility Guidelines or "ADAAG." ADAAG contains requirements for new construction and alterations. The Access Board develops the requirements as "guidelines" to serve as a basis for "standards" enforced by the Department of Justice (DOJ) and the Department of Transportation (DOT). ADAAG derives from an earlier Federal standard, the Uniform Federal Accessibility Standards (UFAS).¹

State Policies

Regional and State policies that relate to this *Non-Motorized Transportation Plan* include:

- California Department of Transportation (Caltrans) *Highway Design Manual*
- California Vehicle Code
- California MUTCD
- Deputy Directive 64: *Accommodating Non-Motorized Travel*

The Caltrans *Highway Design Manual* is the main source for design standards for bicycle facilities in California. It is also a source for minimum design standards for pedestrians. Chapter 1000: Bikeway Planning and Design, sets the basic minimums for bicycle lane and trail widths. It also establishes policies for the type and placement of signs. Chapter 100, Topic 105 sets basic minimums for sidewalk widths, pedestrian grade separation, and curb design and placement. The *Project Development Procedures Manual*, Chapter 31: Non-Motorized Transportation Facilities defines the means by which local jurisdictions may receive Caltrans approval for State-funded projects. The *Project Development Procedures Manual* includes information about State grant programs, following the State mandate in the *Streets and Highways Code* that the State disburse a *minimum* of \$7.2 million annually to bicycle projects as part of the Bicycle Transportation Account.

The *California Vehicle Code* includes several sections related to bicycle operation and pedestrian right-of-way, while allowing local jurisdictions leeway to create their own policies. For example, Section 21200 establishes bicyclists' right to share the road with vehicles, and makes them subject to the same rules and regulations as drivers, while Section 21956 establishes where pedestrians are allowed to walk in the absence of a pedestrian facility. The vehicle code also defines conditions under which a bicyclist may "take the lane," instances when drivers are allowed in bicycle lanes, and instances when a pedestrian may cross the street without a marked crosswalk.

The *California Manual on Uniform Traffic Control Devices* sets standards for striping and markings, signing, signals and placement of bicycle and pedestrian facilities. The standards established in this plan were made to comply with California MUTCD, such as bicycle lane treatments at intersections and roadway signage for pedestrian crossings. The standards regarding pedestrian and bicycle facilities are mostly contained in Part 4: Highway Traffic Signals, Part 7: Traffic Controls for School Areas, Part 8: Traffic Controls for Highway-Rail Grade Crossings, and Part 9: Traffic Controls for Bicycle Facilities.

Caltrans issued *Deputy Directive 64: Accommodating Non-Motorized Travel*, which establishes bicycling and walking as central components of the state's transportation network. It also adopts

1. U.S. Access Board. "Using ADAAG." <http://www.access-board.gov/adaag/about/using%20adaag.htm>



the *US DOT Policy Statement on Integrating Bicycling and Walking into Transportation Infrastructure*. The US DOT policy statement provides policy guidance and design resources.

Regional Policies

This *Non-Motorized Transportation Plan* is consistent with regional and neighboring cities' bicycle plans and The Stanislaus Council of Governments' (StanCOG) *Bicycle Action Plan* (2001). Bicycle network maps for Stanislaus Council of Government (StanCOG) and the cities of Modesto, Ceres and Turlock were reviewed and considered in developing Hughson's recommended network in order to promote a coordinated regional bicycle system. The Stanislaus Council of Governments is currently updating the StanCOG Bicycle Action Plan. The 2001 *Bicycle Network* map shows bicycle facilities on the following roadways through Hughson: Santa Fe Avenue, Geer Road, Whitmore Avenue, and Tully Road/Roeding Road. Additional information is provided about these planned facilities in Chapter 6, Proposed Bicycle Network.

Local Policies

The City of Hughson General Plan contains guidelines for bicycle and pedestrian facilities. In the Land Use Element under Goal LU-3, the General Plan sets policy regarding the design and connectivity of pedestrian and bicycle facilities in new developments "in order to encourage walking and biking."

The Circulation Element sets definitions, and sets several goals and policies that include consideration for pedestrians and bicyclists. Goal C-6 of the Circulation Element states that the City should "[p]rovide a bicycle and pedestrian network to encourage bicycling and walking for transportation and recreational purposes." Several policies and action items were specifically established to guide the City in meeting that goal. Action Item C-6.1 is the measure that calls for the creation of a Bicycle Master Plan. This document satisfies that action item.

The Conservation and Open Space Element of the General Plan states the City is working to include pedestrian and bicycle elements in parks plans and also establishes a policy that requires parks be easily accessible by pedestrians and bicyclists.

The following presents the City of Hughson General Plan Policies and Actions that relate to the Pedestrian and Bicycle network:

- Policy C-6.1** Safe, attractive and convenient bicycle and pedestrian facilities will be provided to link schools, parks, civic facilities, employment centers, shopping and Downtown, as well as provide a viable alternative to the automobile.
- Policy C-6.2** The City will explore ways to connect local bicycle and pedestrian routes to larger regional systems, including those established in the Regional Bicycle Action Plan, adopted in 2001 by the StanCOG to implement the Regional Bicycle Transportation Master Plan of 1996.
- Policy C-6.3** The City will work with the Burlington Northern/Santa Fe Railroad to improve railroad crossings to address pedestrian and bicyclist safety. Alternatives such as over and under-passes at major crossings will be explored.
- Policy C-6.4** New development will be required to provide sidewalks and connections to the community-wide bicycle and pedestrian network.



Policy C-6.5 The City will work to complete gaps in the sidewalk system within developed portions of the community. New funding sources, such as grants, will be identified to help fund the new sidewalk facilities.

Policy C-6.6 New bicycle and pedestrian facilities will be designed to incorporate visual features that define the routes and encourage their use, such as trees, signage, special paving materials and attractive light fixtures.

Policy C-6.7 Development shall meet the requirements of the Americans with Disabilities Act to further facilitate the mobility of persons with accessibility needs.

Action C-6.1 Create a Bicycle Master Plan that identifies appropriate locations for new bicycle facilities. Potential locations for new facilities include:

- Class II bicycle lanes along arterials and collectors.
- Off-street pedestrian and bicycle path along the Hatch Road irrigation canal.

CONFORMANCE WITH FUNDING REQUIREMENTS

The *Non-Motorized Transportation Plan* conforms to the California Bicycle Transportation Act (BTA), and the Transportation Development Act (TDA), which allows the City to pursue grant funds for bicycle projects from these sources. The requirements of the BTA funding source are generally considered the most challenging, so satisfying the BTA will also expand the City's opportunities to pursue a variety of Federal and State funding sources. TDA requires that the plan contain a list of prioritized projects approved by the City Council. These lists may be found in Chapter 10.

Table 1 summarizes the 11 elements required by the BTA and their relationship to the City of Hughson *Non-Motorized Transportation Plan*.



Table 1
Relationship Of the California Bicycle Transportation Act (1994)
to the City Of Hughson Non-Motorized Transportation Plan

California Bicycle Transportation Act (1994)	Hughson Non-Motorized Transportation Plan
1. Estimated number of existing and future bicycle commuters	Estimates in Chapter 4, page 22.
2. Map and description of land use and settlement patterns, including shopping centers, City buildings, and employment centers	Description in Chapter 3, page 13. Land use map shown on Figure 2.
3. Map and description of existing and proposed bikeways	Description of existing bikeways in Chapter 3, page 13. Description of proposed facilities in Chapter 6, page 32. Existing and proposed bikeways shown on Figures 1 and 3, respectively.
4. Map and description of bicycle parking facilities	Description in Chapter 8, page 71. Bicycle parking facilities shown on Figure 2B.
5. Map and description of multi-modal connections	Description in Chapter 3, page 16. Multi-Modal Connections shown on Figure 2B.
6. Map and description of facilities for changing and storing clothes and equipment	Description in Chapter 8, page 71.
7. Description of bicycle safety and education programs	Description in Chapter 9, page 73.
8. Description of citizen and community participation, including letters of support.	Description in Chapter 6, page 29.
9. Description of consistency with transportation, air quality, and energy conservation plans, including incentives for bicycle commuting	Description in Chapter 1, page 1.
10. Description of proposed bicycle projects and implementation priority	Description of proposed facilities in Chapter 6, page 32. Prioritization discussed in Chapter 10, page 76.
11. Description of past expenditures and future financial needs for bicycle facilities	Description in Chapter 11, page 85.
Source: Bicycle Transportation Act and Fehr & Peers, 2008.	

The remainder of this report contains the following sections:

- Chapter 2 - Goals and Policies** describes goals and policies that relate to the creation of a bicycle and pedestrian network.
- Chapter 3 - Existing Conditions** describes the existing bicycle and pedestrian networks in the City of Hughson.
- Chapter 4 - Bicycle Network Needs Analysis** documents the existing bicycle network, including accident data and opportunities and constraints.
- Chapter 5 - Pedestrian Network Needs Analysis** documents the existing pedestrian network, including accident data and opportunities and constraints.
- Chapter 6 - Proposed Bicycle Network** presents the proposed bicycle network within and connecting to the City of Hughson.
- Chapter 7 - Pedestrian Recommendations** presents a summary of the recommendations for the pedestrian network.
- Chapter 8 - Bicycle Support Facilities** discusses the recommended bicycle support system.
- Chapter 9 - Safety and Education** discusses measures to increase safety of the bicycle and pedestrian network.
- Chapter 10 - Prioritization of Projects** presents methods to prioritize non-motorized transportation improvements.
- Chapter 11 - Funding and Implementation** discusses funding mechanisms available to facilitate implementation of improvements and maintenance.



2. GOALS AND POLICIES

The *Non-Motorized Transportation Plan* contains goals and policies for developing and implementing a non-motorized transportation system that fall into three general categories:

- Provide a viable transportation alternative to the automobile and thus offer transportation choices for Hughson residents
- Improve safety for bicyclists and pedestrians
- Provide residents with access to open space, trails, and other recreational amenities and encourage cycling and walking for health and recreation.

These goals and policies are outlined below:

1. VIABLE ALTERNATIVE TO THE AUTOMOBILE

- 1.1. **Safe and Attractive Comprehensive System of Connections to Destinations:** "Safe, attractive and convenient bicycle and pedestrian facilities will be provided to link schools, parks, civic facilities, employment centers, shopping and Downtown, as well as provide a viable alternative to the automobile" (*General Plan Policy C-6.1*).
- 1.1.1. **Transit:** Provide convenient connections between the non-motorized system and transit.
- 1.1.2. **Arterials and Collector Bikeways:** "Potential locations for new facilities include...Class II bicycle lanes along arterials and collectors" (*Excerpt from General Plan Action C-6.1*).
- 1.1.3. **Address Barriers to Bicycling,** such as the lack of secure bicycle parking, showers and changing rooms for bicycle commuters, and signals that detect bicycles.
- 1.2. **Connect to the Region:** "The City will explore ways to connect local bicycle and pedestrian routes to larger regional systems, including those established in the Regional Bicycle Action Plan, adopted in 2001 by the StanCOG to implement the Regional Bicycle Transportation Master Plan of 1996" (*General Plan Policy C-6.2*).
- 1.3. **Connect to New Development:** "New development will be required to provide sidewalks and connections to the community-wide bicycle and pedestrian network" (*General Plan Policy C-6.4*).
- 1.3.1. **Encourage development concepts that reduce automobile use** for short commutes, errands, and recreation trips
 - 1.3.1.1. *Minimize Physical Barriers* in the non-motorized transportation network
 - 1.3.1.1.1. **Cul-De-Sacs:** Provide connections between streets and cul-de-sacs that form a traditional grid for non-motorized users.
 - 1.3.1.1.2. **Sound Walls:** Provide multi-use paths through sound walls
 - 1.3.2. ***Incorporate into Project Approval:*** As a condition of project approval, require development projects to construct adjacent bicycle facilities included in the proposed bicycle system.



- 1.4. **Complete the Sidewalk System:** "The City will work to complete gaps in the sidewalk system within developed portions of the community. New funding sources, such as grants, will be identified to help fund the new sidewalk facilities" (*General Plan Policy C-6.5*).
- 1.5. **Design for Definition and Encouragement:** "New bicycle and pedestrian facilities will be designed to incorporate visual features that define the routes and encourage their use, such as trees, signage, special paving materials and attractive light fixtures" (*General Plan Policy C-6.6*).
- 1.6. **Marketing:** Develop a coordinated marketing strategy to encourage bicycling and walking and to increase awareness of the importance of regular physical activity.
 - 1.6.1. **Distribute a Bikeway and Trails Map:** Develop and update a Bikeway and Trails Map showing bicycle and multi-use facilities for public distribution both in print and via the City's website.
 - 1.6.2. **Educate Community Groups:** Provide information about the advantages and opportunities afforded by the bicycle system to groups who may help publicize the system.
- 1.7. **Mobility for the Disabled:** "Development shall meet the requirements of the Americans with Disabilities Act to further facilitate the mobility of persons with accessibility needs" (*General Plan Policy C-6.7*).
- 1.8. **Maximize Funding:** Maximize the amount of state and federal funding for bicycle and pedestrian transportation improvements for which Hughson is eligible.
 - 1.8.1. **Multi-Jurisdictional Applications:** Pursue multi-jurisdictional funding applications with neighboring cities, Stanislaus County, and Stan COG.
 - 1.8.2. **Encourage Reliable Funding Sources:** Encourage the formation of reliable local, regional, and state funding sources that can be used to leverage federal funds.
 - 1.8.3. **Safe Route to Transit:** Take advantage of the Safe Routes to Transit funding source to provide strong bicycle and pedestrian connections to transit.
 - 1.8.4. **Safe Route to School:** Take advantage of the Safe Routes to School funding source to provide strong bicycle and pedestrian connections to schools.
- 1.9. **Incorporate the Plan with Other City Plans,** such as the *General Plan*.
 - 1.9.1. **Incorporate into CIP:** Incorporate the recommended Bicycle and Pedestrian projects into the larger annual Capital Improvement Project (CIP) update that the City undertakes for all projects.
 - 1.9.1.1. *Pedestrian Projects Ranking:* As part of the next CIP update, develop criteria for ranking pedestrian projects and a project description for top priority projects.
 - 1.9.2. **Include Pedestrians and Bicycles in Roadway Planning**
 - 1.9.2.1. *Consult the Recommended Bikeways Map* prior to implementation of street improvement projects.



- 1.9.2.2. *Conduct Pedestrian and Bicycle Counts* and surveys whenever vehicle counts are conducted to gauge the effectiveness of various improvements and programs.
- 1.9.2.3. *Bicycles at Signals*: Install bicycle stencils and bicycle-sensitive loop detectors (or other detector type) on bikeways as part of all new signals.
- 1.9.2.4. *Construction*: Provide appropriately-signed detours for bicyclists and pedestrians during construction projects.
- 1.9.3. **Off-Street Parking Ordinance**: Revise the existing off-street parking ordinance as necessary to address the community need for bicycle parking.
- 1.10. **Update the Plan** (every five years) and ensure that it is consistent with all existing city, regional, state, and federal policy documents. This Plan should be updated before an updated General Plan is approved or up to one year prior to the initiation of the General Plan update process.

2. IMPROVE SAFETY

- 2.1. **Balance Convenience and Safety**: Balance user convenience with safety concerns. Where needed, develop a dual system that serves both the experienced and inexperienced bicyclist.
- 2.2. **Railroad Crossings**: "The City will work with the Burlington Northern/Santa Fe Railroad to improve railroad crossings to address pedestrian and bicyclist safety. Alternatives such as over and under-passes at major crossings will be explored" (*General Plan Policy C-6.1*).
- 2.3. **Education Programs**: Partner with school district and law enforcement officials to expand existing education programs.
 - 2.3.1. **Special Events**: Coordinate with other agencies on annual bicycle and pedestrian events such as "Bike to Work Day," "Walk to School Day", and bicycle and pedestrian safety courses.
- 2.4. **Monitor Collisions** that are pedestrian and bicycle-related annually.
- 2.5. **Scheduled Maintenance**: Develop a maintenance schedule, budget, and long-term maintenance funding sources for each bicycle and pedestrian project before project approval.

3. PROVIDE RECREATIONAL AMENITIES

- 3.1. **Use Open-Space Corridors for Trails**: Encourage the use of existing natural and man-made corridors such as creeks, canals, and other open space corridors for future multi-use trail alignments.
 - 3.1.1. **Hatch Road**: "Potential locations for new facilities include...Off-street pedestrian and bicycle path along the Hatch Road irrigation canal" (*Excerpt from General Plan Action C-6.1*).
- 3.2. **Connect recreational destinations with recreation-focused facilities**: Develop a recreational route system that uses low-volume streets and off-street multi-use trails to serve recreational destinations such as parks and open space.



3. EXISTING CONDITIONS

The following chapter discusses the existing bicycle and pedestrian networks in the City of Hughson.

BICYCLE NETWORK

The bicycle facilities in the City of Hughson are currently categorized into one of three functional classifications per the City's *General Plan* as shown in Table 2.

An inventory of existing bikeway segments in Hughson was conducted. Hughson has 0.85 miles of Class II bicycle lanes on Charles Street and 6th Street. The Existing Bikeway Network map on Figure 1 illustrates the locations of existing bikeways. The existing bikeways do not form a functional bicycle network.

Table 2 Bicycle Facilities Classifications		
Functional Class	Facilities in Hughson	Function
Class I Bikeway (Bicycle Path)	<ul style="list-style-type: none"> None 	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 (Bicycle Lane)	<ul style="list-style-type: none"> 6th St (north of Whitmore Ave) Charles St (Hughson Ave - Fox Rd) 	Provides a restricted right-of-way and is designated for the use of bicycles with a striped land on a street or highway. Vehicle parking and vehicle/pedestrian cross-flow are permitted.
Class III (Bicycle Route)	<ul style="list-style-type: none"> None 	Provides for a right-of-way designated by signs and/or pavement markings for shared use with pedestrians or motor vehicles.
Source: City Hughson <i>General Plan</i> , Dec. 2005, and Fehr & Peers, 2008.		



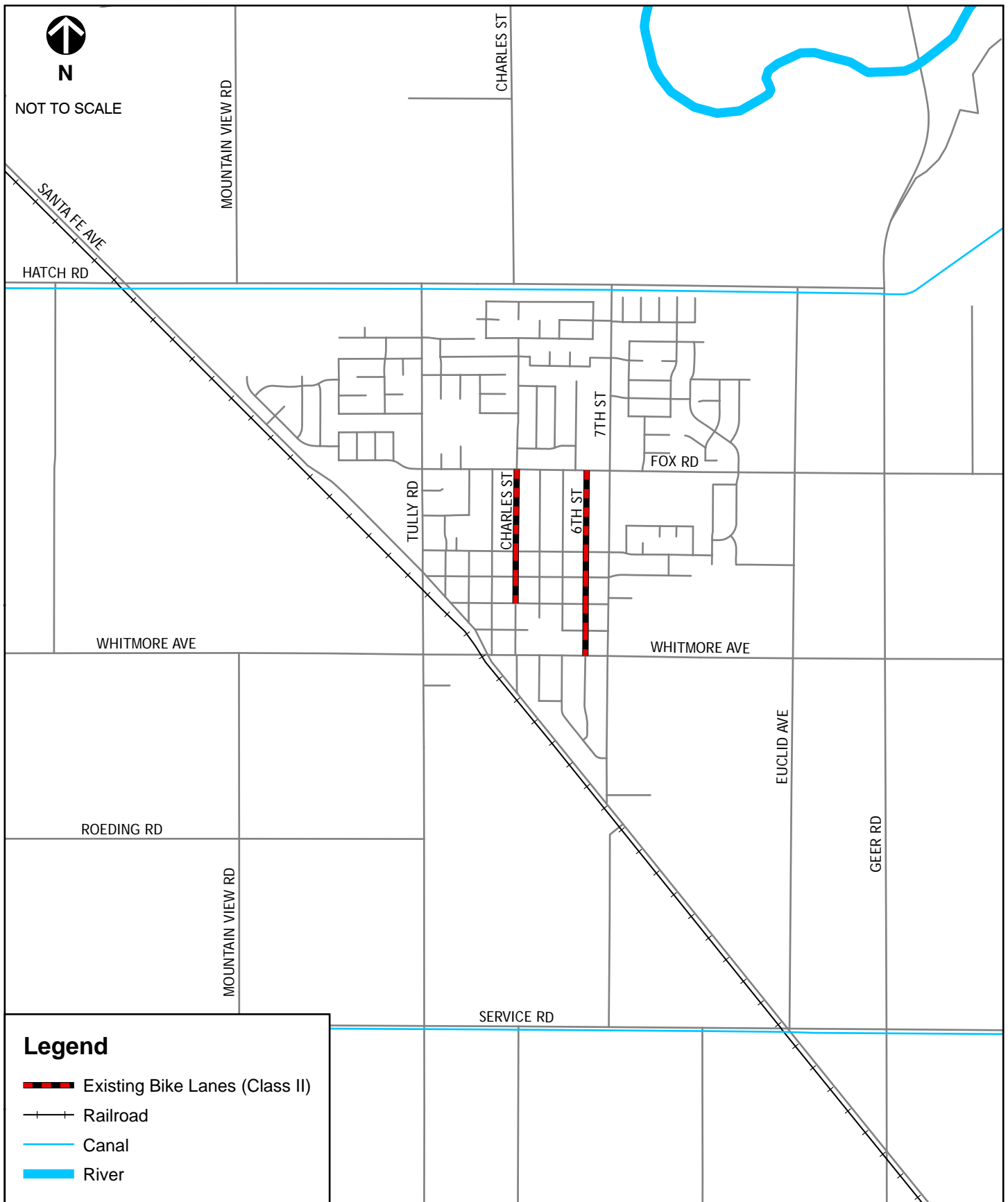
Class I Bikeway (Bike Path)



Class II Bikeway (Bike Lane)



Class III (Bike Route)



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City of Hughson Non-Motorized Transportation Plan

EXISTING BIKEWAY NETWORK

Figure 1

Land Use and Settlement Patterns

Figures 2A and 2B locate major bicycle activity centers such as residential zones, institutions, and parks. Figure 2A shows the City of Hughson 2005 *General Plan* land use map and Figure 2B shows the location of local trip attractors, the bus stop in the City, and bicycle parking facilities. The City of Hughson has a variety of land uses including residential (1,890 households as of January 1, 2006), commercial (Downtown shops and restaurants), and industrial (East Whitmore area, and along Santa Fe Avenue). The school system includes two public elementary schools, a public middle school, a public high school, a continuation high school/adult school, and a private school. Recreational sites include the Tuolumne River and Fox Grove Park. These activity centers throughout and beyond the City are potential generators of commute and recreational bicycle trips. Continued development of the bikeway system could encourage some current drivers to switch to bicycles.

Existing Bicycle Routes

Currently there are two Class II north-south bicycle lanes in the City of Hughson:

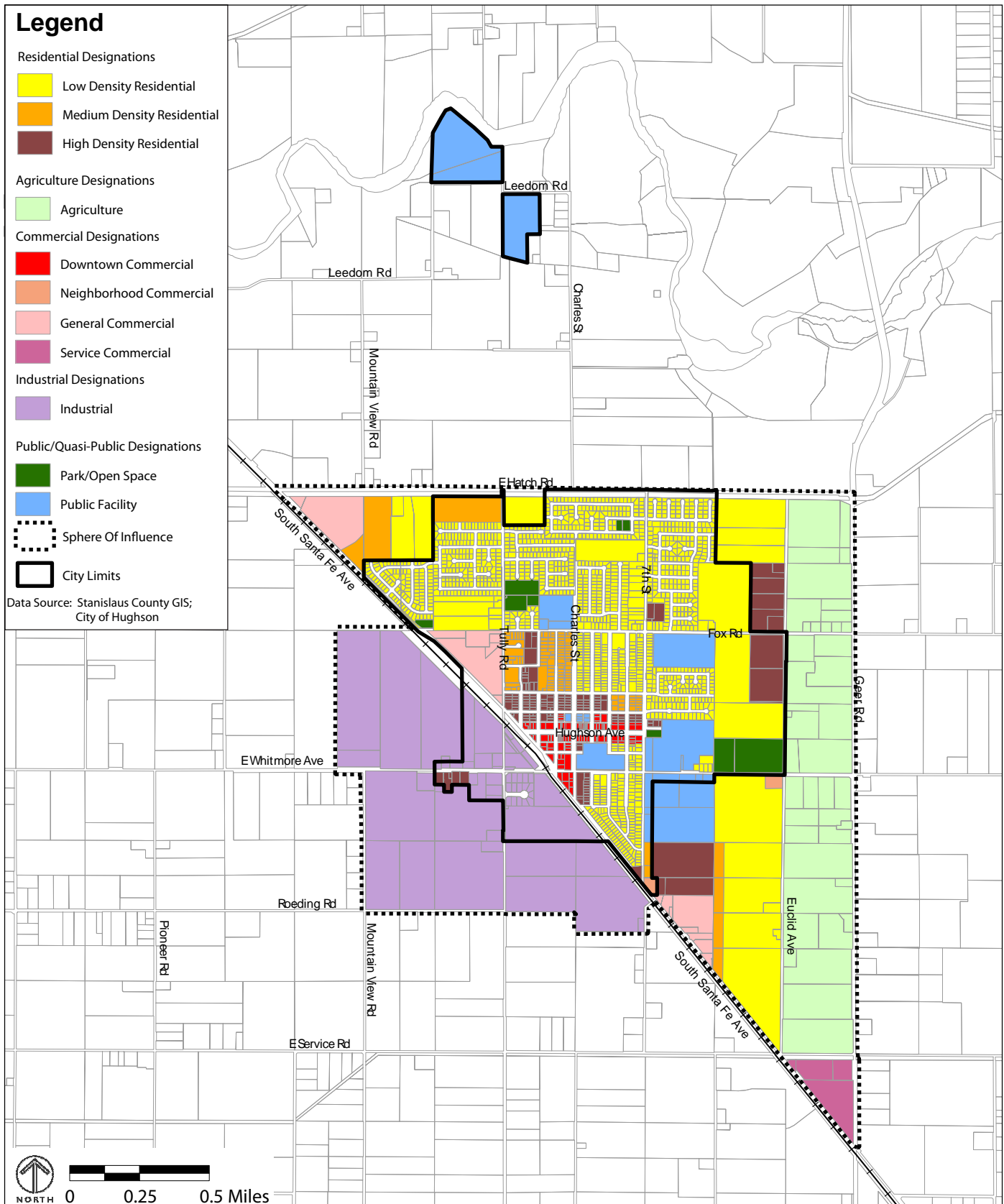
- **Charles Street** is a functional bikeway with Class II bicycle lanes for approximately 0.35 miles from Hughson Avenue to Fox Road. The lanes are marked: "Bike Lane" although there is no complimentary signage. This bikeway connects the northern residential area to Downtown. However, there are no bikeways connecting this bikeway to the individual northern neighborhoods, nor are there bikeways in the rest of Downtown to accommodate bicyclists. This bikeway was installed as part of a Downtown improvement plan that included installing angled parking and making pedestrian improvements such as curb extensions at intersections and benches.
- **6th Street** functions as a bikeway with Class II bicycle lanes for approximately 0.5 miles from Whitmore Avenue to Fox Road. The markings could be improved to designate the bicycle/parking lanes. This bikeway connects northern neighborhoods to southern neighborhoods and schools in and adjacent to Downtown. However, there are no bikeways connecting this bikeway to the individual northern and southern neighborhoods, nor are there bikeways around the schools to safely accommodate bicyclists.



*6th Street:
Class II Bicycle Lanes*



*Charles Street:
Class II Bicycle Lanes*



City of Hughson Non-Motorized Transportation Plan

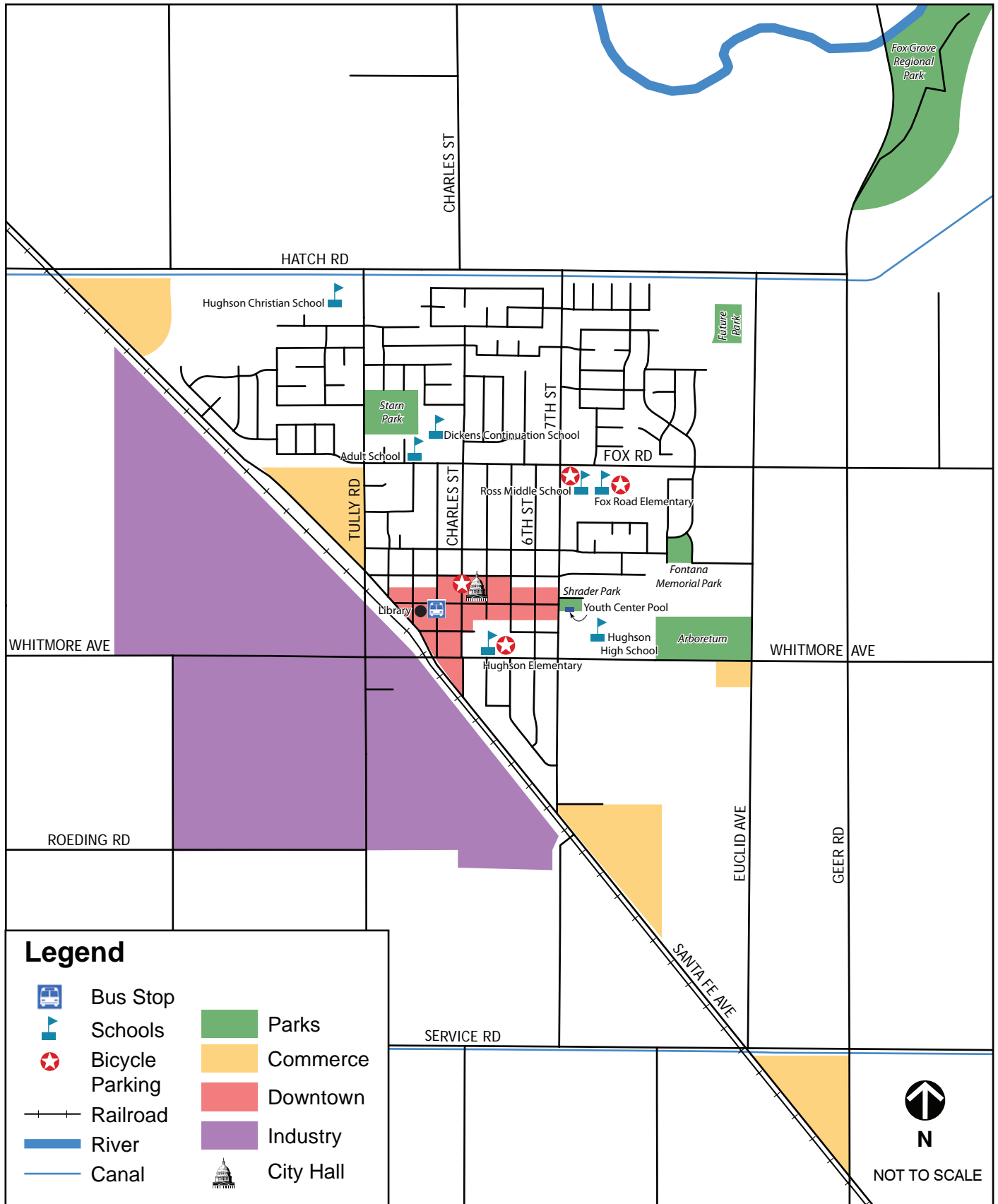


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LAND USE

Figure 2A



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LOCAL TRIP ATTRACTORS

Figure 2B

Multi-Modal Connections

The Stanislaus Regional Transit District (StaRT) provides bicycle racks on all their buses and shuttles. StaRT operates two types of bus service in Hughson - Dial-A-Ride and Runabouts. The Dial-A-Ride service provides curb-to-curb service and requires users to call in ahead of time to schedule trips. The runabout service is a hybrid of the Dial-A-Ride Service and an express fixed-route bus line. The runabouts stop at designated fixed stops on a fixed schedule, while also providing curb-to-curb service. However, the curb-to-curb service is only to those who call in ahead of time to schedule their trips; users who board at fixed locations must be dropped-off at other fixed locations. The designated runabout stop location in Hughson is on 3rd Street at Hughson Avenue. No long-term bicycle parking is provided at this location, but bicyclists can use bicycle racks attached to the buses and shuttles.



Gaps in the Bikeway Network

The Existing Bikeway Network Map shows that installation of bicycle lanes on Charles Street and 6th Street has begun the process of creating a bikeway system through the City. These lanes provide the beginnings of a bicycle network, but do not yet comprehensively serve commuters and students, nor provide accommodations for recreational users. A commuter and student bicycle network would provide designated bikeways on neighborhood collector streets that link residences, regional bikeways, and commuter and student destinations. Recreational bicyclists need connections to regional paths and trails, while more casual bicyclists need a long path and/or a loop that preferably avoid automobiles. The existing bikeways are not yet sufficient to meet the Policy statements in the City's *General Plan* and the proposed *Non-Motorized Transportation Plan* goals. Key gaps include:

- East-west connections. The City needs a continuous ride from east to west that would connect the industrial East Whitmore area to the rest of the City. The City's *General Plan* provides zoning for additional industrial uses in the East Whitmore area, which would encourage its growth as an employment center. Safe bicycle facilities linking East Whitmore and residences in Hughson could encourage biking to work.
- Consistent north-south connections. The Charles Street bikeway is a good component of a longer bikeway facility because it is a continuous street that connects many of the neighborhoods and Downtown.
- Recreational facilities. There are not currently any recreational bicycle facilities besides the existing on-street bicycle lanes. Connections to regional bikeway and recreational facilities, as well as off-street paths would better provide for recreational riders.

Upcoming Projects

No bikeway projects are currently planned or funded. However, the City has installed a bicycle parking rack as part of its city hall expansion.



PEDESTRIAN NETWORK

An inventory of the existing pedestrian network within Hughson was conducted through field observations and aerial photography. Sidewalks are found through most neighborhoods and all recently constructed neighborhoods in the City, although there are pockets in the older Downtown area where sidewalks are not present. Many of these sidewalks are not ADA compliant due to insufficient width or passing zones and insufficient connections to the streets. Additionally, there are painted crosswalks at many of the intersections in the Downtown area and high-visibility crosswalks near schools. Locations where sidewalks are not provided on at least one side of the street are identified in detail in Chapter 7 and on Figure 15.

The key pedestrian nodes are in and around the Downtown area. The Downtown is currently the central location of commerce in the City. In the future, commerce is planned along the Santa Fe Avenue corridor. There is also some commerce and industry located to the west of Santa Fe Avenue near the intersection of Tully Road and Whitmore Avenue and additional industry is planned for this area. Pedestrian travel from neighborhoods to these areas can be challenging and unsafe due to the gaps in the sidewalk network, especially across the railroad tracks. Safety and personal security concerns may result from only pockets of street lighting and street tree cover at night.

Gaps in the Pedestrian Network

The existing pedestrian network provides for pedestrian travel for many areas in the City, but additional investment in pedestrian infrastructure is needed. A functional, safe and pleasing pedestrian network would build on the existing community character to include pedestrian paths to all residences, shops, parks, and employment centers. Sidewalks serve all of the community. They are essential to promoting walking, a City goal. The existing pedestrian facilities are not yet sufficient to meet the Policy statements in the City's *General Plan* and the proposed *Non-Motorized Transportation Plan* goals. Key gaps include:

- **Railroad Crossings.** Defined pedestrian crossings separate from vehicles and bicyclists are needed. Pedestrians should be controlled by gates and advised by warning signs. Residents and businesses are located on both sides of the tracks. The Tully Road and Whitmore Avenue crossings are of particular concern. The *General Plan* provides zoning for additional industrial uses in the East Whitmore area, which would encourage its growth as an employment center. Safe pedestrian facilities linking East Whitmore and residences in Hughson could encourage walking to work. The Hatch Road, Service Road and Geer Road crossings are also of concern, and would become greater concerns as commerce develops near these crossings as identified in the *General Plan*.
- **Connecting Parks and Schools.** Schools and parks are complimentary land uses and should be connected with pedestrian paths as appropriate. Starn Park and the Adult/Continuation School site are not well connected by a pedestrian path.

Upcoming Projects

No pedestrian projects are currently planned or funded. However, the City has installed pedestrian facilities along Charles Street between Hughson Avenue and Pine Street complete with street furniture, directional curb ramps and reduced crossing lengths.



4. BICYCLE NETWORK NEEDS ANALYSIS

The *Non-Motorized Transportation Plan* sets forth a blueprint for initiating a system of bikeways and support facilities within the City of Hughson. The current *General Plan* sets policies and action items related to providing a bicycle network to encourage bicycling for transportation and recreational purposes. The *General Plan* suggests potential locations for new bicycle facilities, including a specific off-street pedestrian/bicycle path and on-street bicycle lanes. The City's first 0.85 miles of bicycle lanes have been installed within the past five years. This *Non-Motorized Transportation Plan* builds upon these existing on-street bicycle facilities to create a comprehensive vision for the network that focuses on access to the regional bikeway Network established by StanCOG², City and regional parks, Downtown, education centers, employment centers, and shopping centers. This plan proposes to create a 25.4 mile bikeway network within the City's current limits and sphere of influence area.

Hughson has many qualities favorable to bicycle riding, including flat terrain and climate that is temperate in the spring and fall, relatively cool to mild in the winter, and hot and dry in the summers. There are scenic recreational resources nearby along the Tuolumne River, including the Fox Grove Park on Geer Road. The grid street system in the core area allows for easy navigation, while the grid of collectors and arterials in the new developments provide convenient connections to the core area and to surrounding developments.



Northbound Santa Fe Avenue at Pine Street/Tully Road

Many arterial roadways feeding into and surrounding the city are not designed to accommodate bicyclists and high-speed vehicles simultaneously. Santa Fe Avenue is a prime example of a roadway that provides great connectivity (it bisects the city roadway grid), but that is not designed to accommodate bicyclists.

The roadways that feed directly into Hughson either are too narrow to accommodate bicyclists (i.e., Service Road; Whitmore Avenue west of the strip mall and east of the High School; Fox Road east of Euclid Avenue) or where adequate width is provided, do not provide any designation for bicyclists (i.e., Whitmore Avenue between the strip mall and the High School; Fox Road west of Euclid Avenue; Tully Road south of Santa Fe Avenue).

The surrounding roadways (i.e., Hatch Road and Geer Road) have painted shoulder lines and unpaved shoulders that do not serve bicyclists well. Major east-west connectors such as Hatch Road and Whitmore Avenue; and north-south connectors such as Santa Fe Avenue, Geer Road, and Tully Road all are forecasted to carry high traffic volumes (10,000 to 20,000 per day) not conducive

2. See Stanislaus Council of Governments' (StanCOG) *Regional Bicycle Action Plan* (2001)

to a friendly bicycling environment³. For bicyclists traveling within the developed areas of the City, some arterial roadways can generally be avoided by using more bicycle-friendly neighborhood streets due to the grid street network. Other arterials cannot be easily avoided due to breaks in the grid network due to new development patterns and large school sites.

In addition to busy streets, other constraints unique to Hughson include six railroad crossings, farming activities, and irrigation canals. Other than the major arterials, many streets in the developed areas of the city are generally wide enough to accommodate bicycles and vehicles.

BICYCLE TRIP TYPES

Bikeways, like streets and sidewalks, are used by a wide range of people--children riding to school, commuters riding to work, people exercising, racing, or touring. This analysis takes into account the different user groups to design a comprehensive bicycle system that meets their needs in Hughson.

Related to the user groups mentioned above is trip purpose, which helps identify common needs among the groups. In general, bicycle trips can be broken down into recreational (including all discretionary trips), commuter (whether to work or school) or shopping trips. The biggest difference between these groups is that while recreational riders may be interested in routes leading to parks or other areas of interest, or continuous routes that provide opportunities for exercise, commuters and shoppers are interested in the shortest and safest route between two points.

Existing and Future Bicycle Commuters

A common term used in describing demand for bicycle facilities is "mode split." Mode refers to the form of transportation a person chooses to take, such as walking, bicycling, public transit, or driving. Mode split describes the percentage of people who choose each mode. The term 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 3 presents 2000 Census data for the journey-to-work mode split for the City of Hughson. Table 4 compares Hughson's bicycle commute mode-split to other Cities in the Central Valley.

Bicycle trips represent approximately 0.62 percent of commute trips by Hughson residents, similar to other Central Valley communities and higher than the national average. 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 that are less compatible with bicycling than shopping, school, recreation, and other trips.
- Journey-to-work data fails to capture people who commute by bicycle one or two days per week.
- Journey-to-work data does not account for commuters with multiple modes of travel to and from work, such as commuters that ride a bicycle to bus stop before transferring to transit for the remainder of their journey to work.

3. See City of Hughson *Streets Master Plan* (May 2007)



Table 3
Journey-To-Work Mode Split
for City Of Hughson Year 2000

Mode (Home-based work trips)	Mode Split
Drive Alone	78.9 percent
Carpool	14.7 percent
Motorcycle	0.3 percent
Public Transit	0.3 percent
Bicycling	0.6 percent
Walking	1.7 percent
Other Means	0.8 percent
Work at Home	2.7 percent
Source: 2000 U.S. Census.	

Table 4
Journey-To-Work Bicycle Mode Split
for Central Valley Communities Year 2000

City	Percent Bicycle Commute Trips
Hughson	0.62
Fresno	0.79
Modesto	0.75
Bakersfield	0.53
Ceres	0.78
Turlock	1.07
Waterford	0.00
National Average	0.38
Source: 2000 U.S. Census.	

- The Census does not capture shopping, school, or recreational trips; 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, and as a result up to 85 percent of all trips may not be captured.⁴ The survey does not request data on school trips, which are much more likely to be bicycling and walking trips as school-aged individuals cannot drive until the latter half of their high school years.

School trips, recreation trips and other non-work related trips make the percent of total trips made by bicycle higher than 0.62 percent, and may be closer to 1.2 percent.⁵

According to US Census data, Hughson grew rapidly between 2000 and 2005, growing by 47 percent from 1,252 households in 2000 to 1,836 households in 2005. The 2005 Census Population Estimate showed comparable population growth of 49 percent from 3,980 persons in 2000 to an estimated 5,942 persons in 2005. The 2006 Census Population Estimate showed rapid growth of 7 percent from 2005 to an estimated 6,351 persons in 2006. The Building Department documented that 1,890 constructed households (1,683 were single-family units and 207 multi-family units) existed in Hughson on January 1, 2006. Assuming approximately 9.6 daily trips per single-family household and approximately 6.6 daily trips per multi-family household⁶, Hughson residents make a total of

4. Federal Highway Administration. "National Bicycling and Walking Study: Ten Year Status Report." Oct 2004.

5. Barnes, Krizek. *Tools for Predicting Usage and Benefits of Urban Bicycle Network Improvements*. Minnesota Department of Transportation, Research Services Section. December 2005. This report presents the following formula for determining total bicycle trip mode share using the commute mode share as an input.

The formula: $C = \text{Commute Mode Share}$, $T = \text{Total Mode Share}$, $T = 1.5 \times C + 0.3\%$

6. City of Hughson. *2005 General Plan EIR*. June 30, 2005.



approximately 17,000 daily trips. This corresponds to approximately 110 to 220 daily bicycle trips (assuming the percent of total trips made by bicycle is between 0.62 percent and 1.2 percent).

Future bicycle trips will depend on a number of factors such as the availability of well-connected facilities, and location, density, and type of future land development. With appropriate bicycle facilities in place and implementation of employer trip reduction programs, the bicycle mode split could increase above its current rate. According to a 1993 report commissioned by the Federal Highway Administration “[c]ities with higher levels of bicycle commuting have on average 70 percent more bikeways per roadway mile and six times more bicycle lanes per roadway mile.”⁷ The study classified cities with a percent of work trips made by bicycle of 1 percent or more as having higher levels of bicycle commuting. Table 5 shows a comparison of average conditions of the communities studied in the 1993 report to existing and proposed conditions in Hughson (at the completion of Phase I and Phase II bicycle projects). The comparison shows that Hughson’s proposed bikeway coverage would be greater than the average bikeway coverage for communities with higher levels of bicycle commuting. However, Hughson’s percent of work trips made by bicycle may be limited by its distance from surrounding job centers.

Table 5 Comparison of Hughson Bikeways and Commuting to Other Communities				
Variable	Communities Categorized by Percent Commute by Bicycle		Existing Hughson Bikeways	Proposed Hughson Bikeways
	Less than 1%	More than 1%		
Ratio of Bikeways to Street Miles	0.022	0.037	0.023	0.25
Ratio of Bicycle Lanes to Arterial Miles	0.012	0.076	--	0.40
Percent Commute Less than 5 miles	26%	36%	14% ¹	14% ¹
Average Bicycle Commuting Rate	0.4%	2.3%	0.62%	--
NOTES:				
1. Since Hughson is separated from the most nearby communities by a distance of 4 miles or more, for comparison purposes the percentage of Hughson resident who commute less than 5 miles was assumed to be a proxy for the percent of residents who work within the City of Hughson.				
Source: Goldsmith, 1993 ⁷ ; City of Hughson <i>General Plan</i> ⁶ ; and, Fehr & Peers, 2008.				

Bicycle Trips Forecast

With the proposed bikeway network in place, the commuting patterns of those residents working within Hughson may change. A study produced for King County in Washington State by DKS Associates developed “an index of accessibility for both bicycle access and pedestrian access based on the extent of physical infrastructure to accommodate commuting by the two modes.” The data for an Index Level of 2 (out of 6) in an urban area correlates well to existing conditions in Hughson with a percent of work trips made by bicycle of 0.6 percent from the King County data. The future

7. Goldsmith, Stewart A. “FHWA National Bicycling & Walking Study: Case Study #1: Reasons Why Bicycling and Walking Are and Are Not Being Used More Extensively as Travel Modes.” 2003.



conditions in Hughson correlates to an Index Level of 5 in an urban area with an associated percent of work trips made by bicycle of 1.9 percent.⁸ Assuming all of the bicycle commute trips are made within Hughson, 13.6 percent of within-City commuters are estimated to commute by bicycle, which is within reason in a bicycle-friendly environment. An estimate for the percent of total trips made by bicycle is 3.2 percent considering school, recreation and other non-work related trips.⁹

Expected projections of 20-year residential growth in the *2005 General Plan EIR* shows Hughson will more than double the number of residential units from 1,890 households in 2005 to 4,598 households in 2025.⁶ Based on information provided in the *2005 General Plan EIR* and subsequent analysis, new City residents will make approximately a total of 23,000 new daily trips. Combining the estimate of existing resident trips and projected new resident trips, approximately 40,000 daily trips will be made by City residents in 20 years. Table 6 shows the forecasted number of bicycle trips for existing and cumulative conditions for two scenarios: without and with implementation of this non-motorized transportation plan.

Table 6 Bicycle Trips Forecast				
Trip Type	Scenario	Percent of Trips ¹	Existing Conditions	Cumulative Conditions
Commute Trips	Without Plan	0.62%	110	270
	With Plan	1.9% ²	350	810
Estimated Total Trips	Without Plan	1.2% ³	220	500
	With Plan	3.2% ^{2,3}	600	1,400
<p>NOTES:</p> <p>1. The current "without plan" percent of commute trips made by bicycle is based on Year 2000 US Census data; all other percents are estimates (see Notes 2 and 3 below).</p> <p>2. The future "with plan" percent of commute trips made by bicycle is based on research in Washington State led by DKS Associates. This estimate assumes the future Hughson bicycle network would correspond to an Index Level of 5 (out of 6) for an urban area.</p> <p>3. The percent of estimated total trips made by bicycle (total mode share) is based on the following formula, which uses the percent of commute trips made by bicycle (commute mode share) as its input.</p> <p style="text-align: center;">$C = \text{Commute Mode Share}, T = \text{Total Mode Share}, T = 1.5 \times C + 0.3\%$</p> <p>Source: Loudon, Roberts, and Kavage, 2007⁸; Goldsmith, 1993⁷; and, Fehr & Peers, 2008.</p>				

8. Loudon, Roberts, and Kavage. "Testing the Effectiveness of Bicycle and Pedestrian Access Improvements in Reducing Commute Vehicle Trips." DKS Associates, 2007.

9. This estimate is based on the same equation used for determining the total mode share for existing trips. See Footnote 5.



RECREATION DESTINATIONS AND NEEDS

Recreational bicycling includes children riding to a nearby park, racers riding tours, casual cyclists riding in the evening for exercise, and senior citizens riding to a community center. The common attribute of all of these activities is that they are generally done for the pleasure of the ride itself; they have a recreational facility as a final destination; they are discretionary by nature; and they place speed and directness as less important than surroundings or relative comfort.



Recreation bicyclists can generally be categorized into two groups. The first group is casual bicyclists who typically have short trips and often include less experienced riders, particularly young children and older adults. The second group includes more experienced and athletic riders who generally seek scenic back roads as their favorite domain and typically have longer trips.

It is important to understand these distinct types of bicyclists because the proposed system must provide opportunities for both groups. For the person riding for exercise, the needs are for a relatively quiet route

with no stops, away from automobile traffic, if possible, preferably with visual interest and shades from the wind and sun. A loop configuration is preferred so that the rider ends up back at his/her starting point without backtracking. For the person going to another recreation destination (a park or a shopping center), the route may consist of fairly direct back streets that allow arrival with reasonable time through a comfortable environment. For other casual riders, following a route that leads through interesting neighborhoods, along creeks and rivers, and through parks offers the greatest interest.

COMMUTER/STUDENT DESTINATIONS AND NEEDS

Commuter and student destinations include employment centers, office parks, industrial areas, elementary, junior high and high schools, and colleges/universities. Targeting bikeway improvements to commuters is important because most roadway congestion and a significant portion of air contaminants are released during the a.m. and p.m. peak commute periods.



As an example of bicycling's potential to improve conditions for all travelers, bicycle commuters in the City of Davis have reduced peak hour traffic volumes by over 15 percent-to the point that many downtown streets that would normally require four traffic lanes (with no bicycle lanes) have only two traffic lanes and ample room for bicyclists. While Davis may be an anomaly, national surveys have shown that about 20 percent of the adult population would use a bicycle to ride to work, at least occasionally, if a properly designed bikeway system existed. In 2000, roughly 30 percent

of work trips in Hughson were under 15 minutes, and roughly 14 percent of working Hughson residents worked in the City.¹⁰ These percentages show that there is a target group for bicycle commuting.

Commuters and students have similar travel behavior, which is typically to take the most direct route from origin to destination. For elementary school students, this may consist of residential or collector streets, with few crossings of major arterials. For junior high and high school students, riders may have to cross five or six arterials to reach school. For college students and adult commuters, rides are most often less than five miles but may be as long as 10 or 15 miles. The nearest university/community colleges are California State University Stanislaus in Turlock and Modesto Junior College, both between 5 and 10 miles away.

Commuters and students (in the morning) travel during peak periods of traffic to destinations that may have high levels of congestion and speeds. For example, one of the most complex parts of a student's commute is the drop-off zone in front of the school where many vehicles search for parking or drop-off spaces.

Commuting bicyclists have different needs than recreational cyclists. They require bicycle lanes or wide curb lanes along arterials and collectors, loop detectors at signalized intersections, signals to cross busy arterials, periodic maintenance of the pavement, and adequate bicycle storage and lockers/showers at their destination points (see Chapter 8).

Most commute bicycle trips are less than five miles and are not regional trips, except for those commuters linking to another mode, such as buses and trains. Continuing to allow bicycles on other modes such as buses and or providing bicycle lockers at bus stops would help extend the range of commute bicyclists in Hughson.

10. City of Hughson. *2005 General Plan EIR*. Jun 30, 2005.



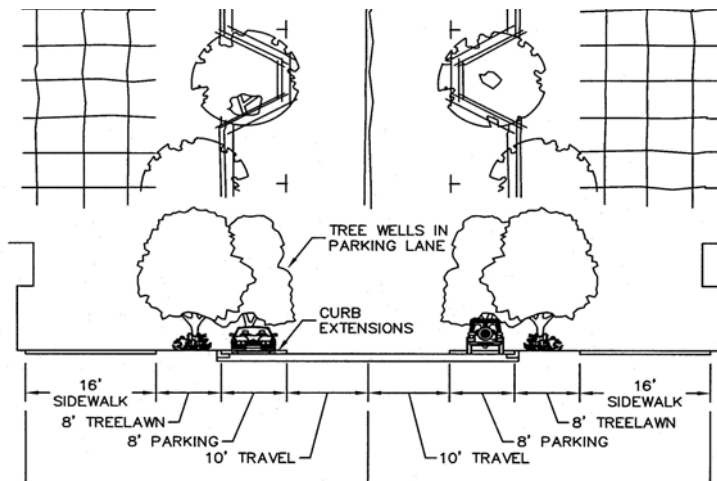
5. PEDESTRIAN NETWORK NEEDS ANALYSIS

Walkability is a qualitative measurement of the pedestrian environment. This chapter deals specifically with improving walkability throughout the pedestrian network. The pedestrian network includes sidewalks, trails, and crossing locations. It encompasses parking lot connections, transit access, and school pick-up and drop-off zones.



Walkable communities have¹¹:

- **Short block lengths** - no longer than 500 feet with few exceptions.
- **Frequent crossing opportunities** - at least every 300 feet near pedestrian trip generators such as restaurants, schools, parks, libraries, shopping centers, transit centers, employment centers, and medical facilities.
- **Different uses located within walking distance of one another** - neighborhoods within $\frac{1}{4}$ to $\frac{1}{2}$ mile of shopping centers and employment centers; all neighborhoods within $\frac{1}{4}$ to $\frac{1}{2}$ mile of a transit stop.
- **Frequent pedestrian amenities** - benches, water fountains, newspaper racks with consistent design and placement in pedestrian improvement areas.
- **Wide sidewalks with buffer zones** - sidewalks at least five to six feet wide with six-foot planting strips between the sidewalk and the road curb in pedestrian improvement areas.
- **Compact intersections** - with short crossing distances and pedestrians phases at signals.



The figure to the left shows the layout of a typical "main street." Main Streets are neighborhood centers and downtown areas. They typically have wide sidewalks, curb extensions, medians, planter strips, and narrow travel lanes to facilitate pedestrian crossings.

Walkability is essential in pedestrian districts, or areas with multiple pedestrian trip destinations. Pedestrian improvement areas are areas where walkability takes priority. Factors affecting walkability include proximity of uses, the presence of buffers from traffic, and sidewalks that are

11. Ridgway, Matthew and Michelle DeRobertis, University of California Berkeley Technology Transfer course, *Bicycle and Pedestrian Planning and Design*.

wide enough to share comfortably with others. Sidewalks are essential in the winter to provide pedestrians paths that are not muddy and to prevent pedestrians, especially children, from walking unsafely on streets shared with vehicles. Street lighting is an additional safety factor for both motorists and pedestrians during the dark hours of the day.

The City's *General Plan* has a Redevelopment component in its Land Use Element that includes plans to improve pedestrian facilities in selected areas. The Redevelopment Plan's goals are to reduce blight, provide affordable housing and generally improve the quality of life for City residents, with only voluntary participation of residential property owners. There are two types of areas identified: Redevelopment Project Areas and Principal Improvement Zones. Principal Improvement Zones are defined as locations the Redevelopment Agency can most effectively promote and facilitate immediate redevelopment activities.

PEDESTRIAN IMPROVEMENT AREAS

Pedestrian improvement areas that have been identified in the City of Hughson include:

- *Hughson Avenue (Downtown) Commercial Area* - Downtown, bounded generally to the north by Pine Street, to the southwest by Santa Fe Avenue, and to the east by Charles Street (south of Hughson Avenue) and 7th Street (north of Hughson Avenue), is identified in the City's *General Plan* as a Principal Improvement Zone. The City has planned a Downtown façade and improvement project that outlines a comprehensive strategy, including pedestrian facilities.

Downtown has the following pedestrian generators: Hughson Elementary School, Hughson High School, the Hughson Library, the Hughson Pool, Schrader Park, commercial services such as restaurants, stores, and gas stations, medical services, employment centers such as City offices and the Sheriff, and the only bus stop in Hughson. These services form the core of the City of Hughson's economy and community. It is important for the character and functionality of Downtown Hughson that the pedestrian components be considered and designed well.

The roadway grid system in this area provides many crossing opportunities and shorter walking distances due to block lengths of 300 feet or less, but several of the pedestrian crossings on Hughson Avenue are longer than necessary due to angled parking and wide travel lanes. While the traffic is currently light in this area, except for Santa Fe Avenue and Whitmore Avenue, additional development may create a less pedestrian-friendly environment, especially if motorists divert from the constrained arterials in the area if traffic volumes increase as projected. Additional pedestrian amenities could be provided, such as sidewalks, curb extensions, medians and landscape strips. By introducing some of these amenities, many crossings could be shorter, which would increase the safety and visibility of pedestrians. There are gaps in the sidewalk network on: Santa Fe Avenue, 2nd Street (a gap between Hughson Avenue and Pine Street), 5th Street (between Hughson Avenue and Fox Road), 3rd Street (a gap on the between Elm Street and Hughson Avenue), as shown in Chapter 7 on Figure 15. A plan to construct sidewalks and curb ramps consistent with the Americans with Disabilities Act of 1990 (ADA) on the remaining streets should be considered for Downtown.

- *Downtown Residential Area* - The residential area generally bounded to the south by Pine Street, to the east by 7th Street, to the north by Fox Road, and to the west by Tully Road is designated in the City's *General Plan* as a Redevelopment Project Area. The part of this residential area generally to the south of the Locust Street is called the Pine Street Residential Area in the City's *General Plan* and is specially designated as a Principal



Improvement Zone. These residences are part of the adjacent to the downtown core, which largely defines the character of the City of Hughson. This neighborhood's streets are often used to access the downtown area, a hub of pedestrian generators, from the north; gaps in the pedestrian network in this neighborhood affect people accessing downtown from the north.

There are gaps in the sidewalk network on: Santa Fe Avenue, Pine Street (between Santa Fe Avenue and 1st Street), Locust Street (between Santa Fe Avenue and 7th Street), Tully Road (between Pine Street and Fox Road), 2nd Street/Walker Lane (between Santa Fe Avenue and Fox Road), and 5th Street (between Hughson Avenue and Fox Road). A plan to construct sidewalks and curb ramps consistent with the Americans with Disabilities Act of 1990 (ADA) should be considered for this neighborhood.

Minimal street lighting is provided in this neighborhood. Installation of pedestrian scale street lighting, especially at intersections, would improve pedestrian visibility and safety. A street lamp plan would minimize possible obstruction of the street light due to objects (i.e., trees) that would make a shadow on pedestrian paths and crossings.

- *Whitmore Avenue* - This street serves as a main connector roadway to points east and west and provides an at-grade crossing of the railroad tracks between Downtown/southern neighborhoods and the East Whitmore area. It also provides access to Hughson Elementary School and Hughson High School. The City has installed high visibility crosswalks and stop signs at key pedestrian locations to the east of Santa Fe Avenue.

Immediately west of the Whitmore Avenue/Santa Fe Avenue intersection is an at-grade railroad crossing that does not provide pedestrian crossing facilities. East of the railroad crossing, there is one multi-family housing development located on the south side of the street and a mobile-home park located on the north side of the street. A designated pedestrian connection between downtown and this area should be considered. There is one sidewalk that was recently constructed east of the railroad crossing on the south side of the



*High Visibility Crosswalk - Westbound
Whitmore Avenue at 5th Street*



*Westbound Whitmore Avenue at Santa Fe
Avenue and railroad crossing*



*Discontinuous sidewalk - Looking Eastbound
on Whitmore Avenue east of the Santa Fe Railroad Tracks*

street in front of the new shopping strip mall. A comprehensive pedestrian improvement plan should be considered for Whitmore Ave from Santa Fe Avenue to the multi-family housing development and on Tully Road south of Santa Fe Avenue with additional attention to any future development in the East Whitmore Avenue area.

- *Starn Park/Fox Road Recreation Area* - The City's newest park is Starn Park on Tully Road, adjacent to the old Lebright School grounds, which are designated in the City's *General Plan* as the Fox Road Recreation Area. The new park serves recreational walkers with a loop path, but the school and park are not connected by a paved pedestrian path. The planned redevelopment of the Fox Road Recreation Area should include a pedestrian connection to Starn Park with special safety provisions, such as lighting, to provide safe pedestrian paths in the northern part of the City.
- *Fox Road* - This street serves as a connector between the northern parts of the City and points west. It functions as a neighborhood collector street and provides connections between northern neighborhoods. It also provides access to many pedestrian generators, including churches, the Fox Road Recreation Area, Fox Road Elementary School, Ross Middle School, Hughson Adult School, and the Dickens Continuation High School. There are several intersections along this street where additional crosswalks should be considered.
- *Hatch Road Class I Multi-Use Path* - The City's General Plan has identified a potential location for a new Class I Multi-Use Path next to the irrigation canal along Hatch Road. A path in this location would offer recreational use, a route for bicyclists traveling outside of Hughson, and a route to the Hughson Christian School on Tully Road. Special consideration should be given to the impact on the path of widening of Hatch Road, to providing a sufficient buffer between the path and vehicles moving at 50+ mph on Hatch Road, to locations where roadways intersect the path, and to discourage unauthorized access to the irrigation canal. This path is considered further in Chapter 6 - Proposed Bicycle Network.
- *7th Street* - This street serves as a connector between the northern and southern neighborhoods on the east side of the City, as a neighborhood street, and access for the Hughson Pool, Schrader Park, and Hughson High School. This street has gaps in its sidewalks between Fox Road and Rhapsody Lane/Chantilly Way.
- *Maintenance* - The City of Hughson has marked crosswalks, many of which are designed for high visibility. Crosswalks should be periodically inspected and maintained as needed. All crosswalks, especially the high-visibility crosswalks, should be inspected for appropriate signage and ground markings consistent with current standards such as the *California Manual on Uniform Traffic Control Devices* (California MUTCD) and ADAAG



6. PROPOSED BICYCLE NETWORK

The purpose of the recommended bikeway network is to designate bikeways where bicyclists are accommodated and to encourage bicycling as both an alternative to the automobile and as a recreational activity. The bikeway network is not designed to accommodate every bicyclist and bicycle trip in the City, but it should furnish more comfortable and direct travel paths for a majority of those bicycling within Hughson. A bikeway network consists of routes that are designed to be the primary system for bicyclists traveling through the City. It is important to recognize that, by law, bicyclists are allowed on all streets and roads regardless of whether they are a part of the bikeway network. The bikeway network is a tool that allows the City to focus and prioritize implementation efforts where they will provide the greatest community benefit. Streets or corridors selected for inclusion in the network should be targeted for specific improvements, such as the installation of bicycle lanes or wide curb lanes and signage.

The proposed system was developed according to the following planning criteria:

Coverage: The system should provide equitable, reasonable access from all residential neighborhoods to both commute and recreation routes. In essence, the system should provide a bicycle facility within one-half mile of any residential street.

System Rationale: Each link in the system should serve one or a combination of these purposes: recreation, connection, and commuting. Bikeway links should be continuous with a minimal number of arterial crossings and uncontrolled intersections.

Connection of Employment Centers: Downtown, business park, major retail, and other employment centers should be accessible from all neighborhoods by a reasonably direct system.

Connection of Schools and Parks: Schools and parks should be connected to surrounding residential neighborhoods by bikeways. While not serving every residential street, the bikeway system should serve as feeder routes where special safety features can be provided at busy intersections.

Connection to Regional Bikeways: The bikeway system should allow continuous access to potential regional bikeway routes and routes in adjacent communities.

The City held a public planning session to solicit feedback from the public concerning the *Non-Motorized Transportation Plan* as part of a regularly scheduled City Parks and Recreation Committee Meeting.¹² The session's agenda included discussion on the existing conditions of the bikeway and pedestrian networks, initial policy and program recommendations, discussion on where bicycle and pedestrian facilities needed improvement, and discussion on the prioritization of projects. Although the meeting was advertised via the internet and flyers, only one resident not serving on the Parks and Recreation Committee was in attendance. Comments were noted and evaluated for inclusion in this plan. Comments received to date are located in an appendix to this report.

The Proposed Bikeway Network map is illustrated on Figure 3. The proposed system includes a total of approximately 24.55 miles of new bikeway facilities in addition to the 0.85 miles currently in place. Table 7 shows the number of existing and proposed miles for each bikeway classification.

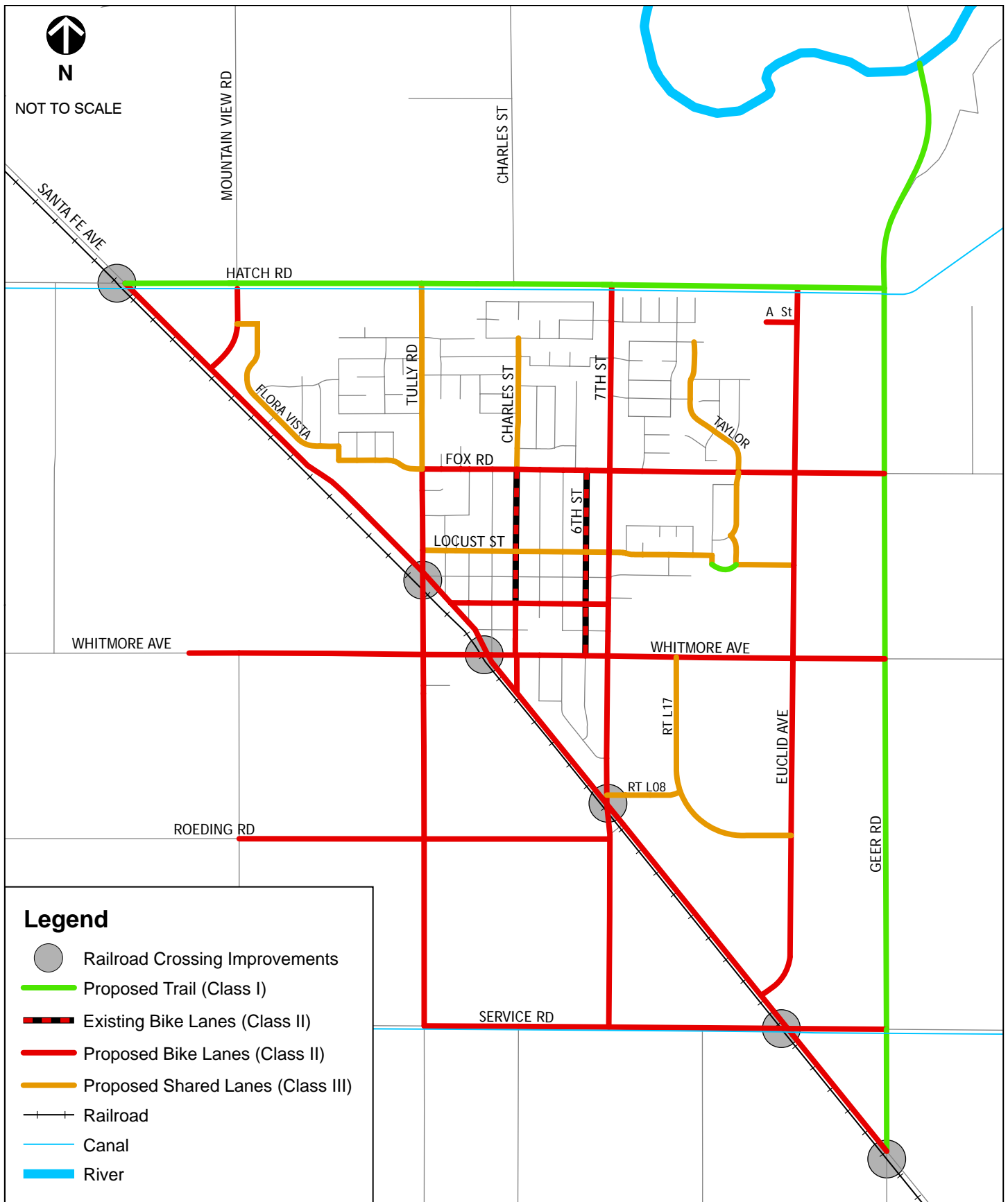
12. Hughson City Hall from 6:00 to 8:00 PM on Tuesday, December 11th, 2007



Table 7 Length (Miles) Of System By Bikeway Classification			
Bikeway Classification	Existing	Proposed	Total
Class I	--	5.10	5.10
Class II	0.85	15.10	16.15
Class III	--	4.35	4.15
TOTALS	0.85	24.55	25.40
Source: Fehr and Peers, 2008.			

Table 8 provides a list of the proposed on-street and off-street bikeway network projects, organized north to south and west to east, as well as the existing conditions along the project roadways. Some bikeway projects are fully or partially located on roadways that are identified for other improvements, as is documented in the Draft Capital Improvement Plan (Draft CIP). For a project that is marked in Table 8 by an asterisk, the Draft CIP should be consulted when an implementation plan is developed for that project to coordinate project, minimize disruptions to the traveling public, and potentially minimize costs.





FEHR & PEERS
TRANSPORTATION CONSULTANTS

August 2008
Task Order 2\Graphics\WC06-2281_3

City of Hughson Non-Motorized Transportation Plan

PROPOSED BIKEWAY NETWORK

Figure 3

Table 8
Bicycle Facilities Project List

ID	Project Name	Proposal	Class	Location	Existing Conditions	Length (miles)
Regional Facilities						11.4
R01*	Hatch Road Path	Multi-Use Path	I	Hatch Road from Santa Fe Avenue to Geer Road	2 lane arterial roadway and canal	2.05
R06*	Whitmore Ave Regional Route	Class II Bike Lanes & Class III Bike Route on Arterial	II/III	Class II: Whitmore Avenue from City Limits to west edge of Hughson Elementary loading zone, and 7 th Street to Geer Road; Class III: Whitmore Avenue from west edge of Hughson Elementary loading zone to 7 th Street	2 lane arterial roadway	II: 1.80 III: 0.20 TOTAL: 2.00
R07	Roeding Road Regional Route	Class II Bicycle Lanes	II	Roeding Road from City Limits to 7 th Street	2 lane local roadway/unimproved land	1.25
R10*	Santa Fe Regional Route	Class II Bicycle Lanes	II	Santa Fe Avenue from Hatch Road to Geer Road	2 lane arterial roadway	3.15
R19*	Geer Road Path	Multi-Use Path	I	Geer Road from Tuolumne River to Santa Fe Avenue	2 lane arterial roadway	2.95
Local Facilities						14.0
L02	Flora Vista/Fox Bikeway	Class II Bicycle Lanes on collector, Class III Bicycle Route on local	II/III	Class II: Fox Road from Tully Road to Geer Road; Class III: Flora Vista Drive from northern edge to Ester Marie Avenue, Ester Marie Avenue from Flora Vista Drive to Fox Road, Fox Road from Ester Marie Avenue to Tully Road	Class II: 2 lane collector roadway; Class III: 2 lane local roadways	II: 1.25 III: 0.80 TOTAL: 2.05
L03	"A" Street Bicycle Lanes	Class III Bicycle Route	II	Amber Place	Unimproved land	0.05
L04	Locust Bikeway	Class III Bicycle Route with Class I connector around park	I/III	Class I: South edge of Andrew Fontana Memorial Park; Class III: Locust Street, Mariposa Drive	Class I: Unimproved land; Class III: 2 lane local roadways	I: 0.10 III: 0.95 TOTAL: 1.05
L05*	Hughson Ave Bicycle Lanes	Class II Bicycle Lanes behind angled parking	II	Hughson Avenue from Santa Fe Avenue to 7 th Street	2 lane downtown collector roadway	0.45
L08	Neighborhood E-W Bicycle Route	Class III Bicycle Route	III	Neighborhood route, west end near the 7 th Street/Santa Fe intersection, east end the north-south neighborhood route L17	Unimproved land	0.20



Table 8
Bicycle Facilities Project List

ID	Project Name	Proposal	Class	Location	Existing Conditions	Length (miles)
<i>Local Facilities (continued)</i>						
L09	Service Road Bicycle Lanes	Class II Bicycle Lanes	II	Service Road from Tully Road to Geer Road	2 lane arterial roadway	1.25
L11	Mountain View Bicycle Lanes	Class II Bicycle Lanes	II	Mountain View Road from Hatch Road to Santa Fe Avenue	Unimproved land	0.25
L12	Tully Bikeway	Class II Bicycle Lanes and Class III Bicycle Route	II/III	Class II: Tully Road from Fox Road to Service Road; Class III: Tully Road from Hatch Road to Fox Road	2 lane collector roadway	II: 1.50 III: 0.50 TOTAL: 2.00
L13	Charles Bikeway	Sign Existing Bicycle Lanes, Extend Class II Bicycle Lanes South, and create Class III Route to North	II/III	Class II: Charles Street from Fox Road to Santa Fe Avenue; Class III: from Prelude Lane to Fox Road	Unsigned Class II Bicycle Lanes between Fox Road and Hughson Avenue; South of Hughson Avenue: 2 lane collector roadway; North of Fox Road: 2 lane local roadway	II: 0.60 III: 0.35 TOTAL: 0.95
L14	6 th Street Bicycle Lanes	Sign Existing Bicycle Lanes	II	6 th Street from Fox Road to Whitmore Avenue	Unmarked Bicycle Lanes	0.50
L15*	7 th Street Bicycle Lanes	Class II Bicycle Lanes	II	7 th Street from Hatch Road to Service Road	North of Santa Fe Avenue: 2 lane collector roadway; South of Santa Fe Avenue: 2 lane rural roadway	2.00
L16	Thomas Taylor Bicycle Route	Class III Bicycle Route	III	Thomas Taylor Drive from Morgan Lynn Lane to Orchard Lane; Orchard Lane from Thomas Taylor Drive to Locust Street	2 lane residential roadways	0.65
L17	Neighborhood N-S Bicycle Route	Class III Bicycle Route	III	Neighborhood route, north end at Whitmore Avenue between 7 th Street and Euclid Avenue, east end at Euclid Avenue south of Whitmore Avenue and North of Santa Fe Avenue	Unimproved land	0.70



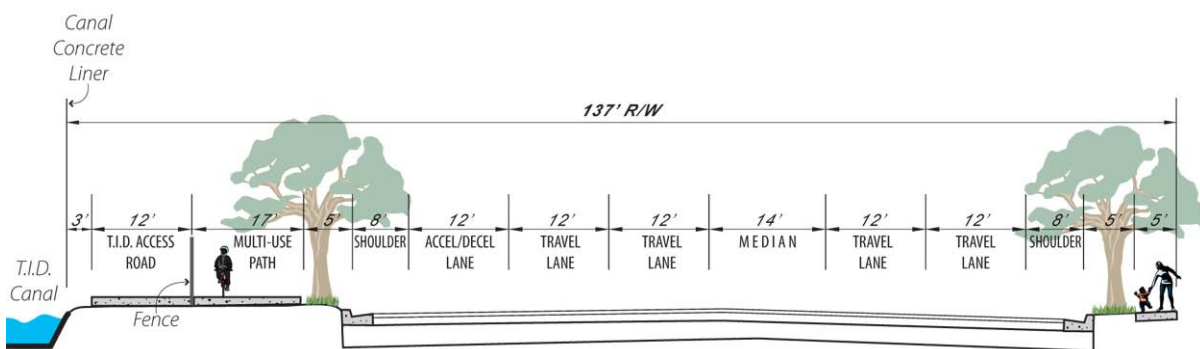
Table 8
Bicycle Facilities Project List

ID	Project Name	Proposal	Class	Location	Existing Conditions	Length (miles)
<i>Local Facilities (continued)</i>						
L18*	Euclid Bicycle Lanes	Class II Bicycle Lanes	II	Euclid Avenue from Hatch Road to Santa Fe Avenue	2 lane rural roadway	1.90
Total						25.4
NOTE:						
* Consult the Draft Capital Improvements Plan (Draft CIP) when an implementation plan is developed for this project because one or more projects identified in the Draft CIP may coincide with this project.						
Source: Fehr and Peers, 2008.						

PROPOSED REGIONAL FACILITIES

Several of the proposed routes overlap with routes planned by Stanislaus Council of Governments in the StanCOG Bicycle Action Plan. The City should also consult with neighboring cities and the County to work towards a comprehensive bicycle network. The 2001 *StanCOG Bicycle Network* map shows the following proposed facilities relating to Hughson:

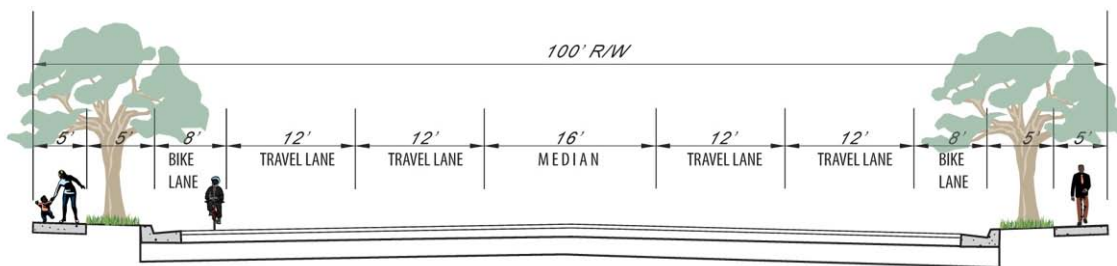
- R01. Hatch Road Path (2.05 miles) is a planned Class I multi-use facility for pedestrians and bicyclists. The path is planned to be built on the northern edge of the Turlock Irrigation District (TID) Ceres Main Canal and on the southern edge of Hatch Road, which is planned to be expanded from a two lane roadway to a four lane expressway. The dirt path on the southern edge of the canal is currently used for recreation and the planned paved path would provide for recreational users and commuters. The bikeway would provide access to a planned shopping center at Santa Fe Avenue and a school at Tully Road, as well as intersect six other planned bikeways, including two regional bikeways planned along Santa Fe Avenue and Geer Road. The Class I path would be intersected by four roadways between Santa Fe Avenue and Geer Road and would require special design treatments at those locations and at the two additional terminus locations at Santa Fe Avenue and Geer Road.



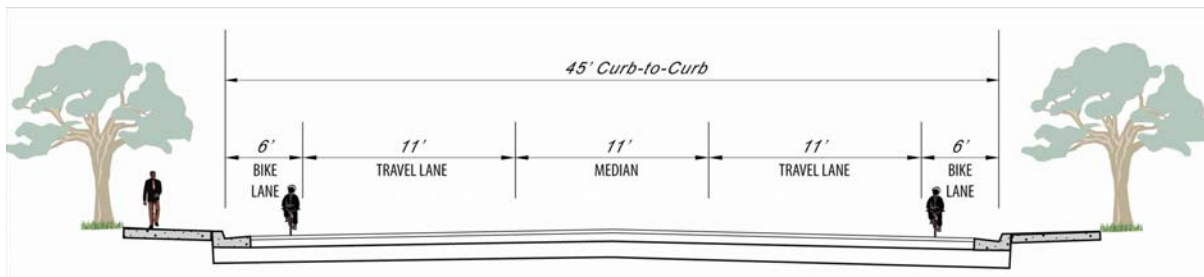
Hatch Road Typical Cross-Section

- R06. Whitmore Avenue Regional Route (2.00 miles) is planned to have Class II bicycle lanes through Hughson between the City Limits to the west and Geer Road to the east. The

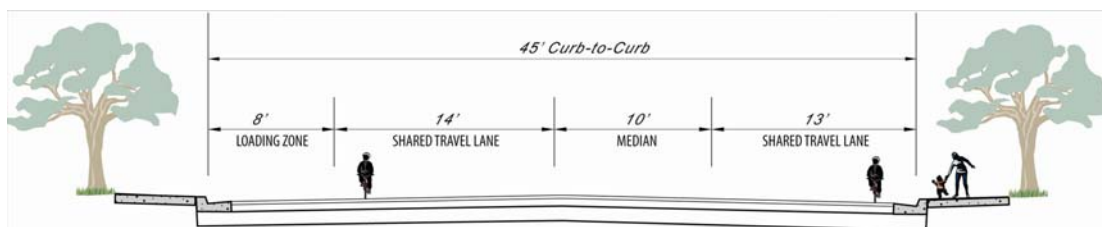
bicycle lanes west of Santa Fe Avenue and east of 7th Street should be installed as development and road improvements occur. The bicycle lanes between Santa Fe Avenue and 7th Street require further planning to address the vehicular and non-motorized improvements needed on the constrained roadway. The Hughson portion of the bikeway would provide access to the industrial area of Hughson, Downtown, two schools, the Arboretum, and a neighborhood shopping center at Euclid Avenue. The bikeway would cross the railroad tracks, which would require additional planning with the California Public Utilities Commission (PUC). The bikeway would also intersect eight bikeways, including two regional bikeways, the Santa Fe Regional Route and the Geer Path. The Stanislaus Council of Governments (StanCOG) shows the bikeway as a regional route extending west to Ceres. The City of Ceres plans for a combination of Class I and Class II facilities on Whitmore Avenue from Ustick Road to Faith Home Road.



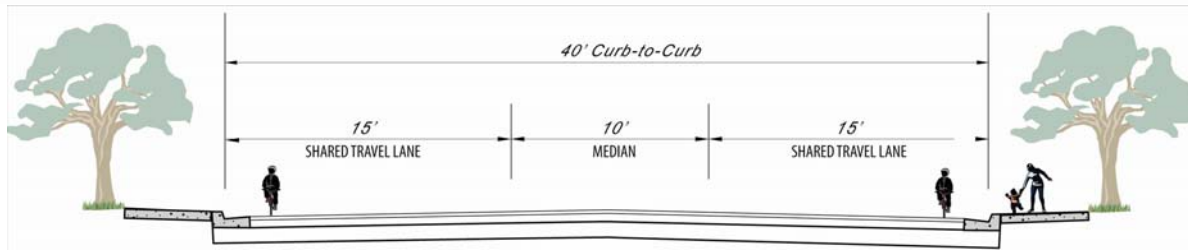
Whitmore Avenue Typical 4-Lane Cross-Section



Whitmore Avenue Typical Constrained 45' Curb-to-Curb Width Cross-Section

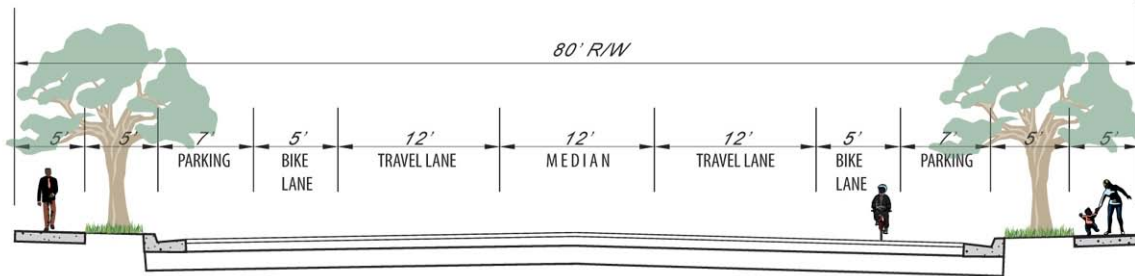


Whitmore Avenue Typical Constrained 45' Curb-to-Curb Width Cross-Section with Loading Zone



Whitmore Avenue Typical Constrained 40' Curb-to-Curb Width Cross-Section

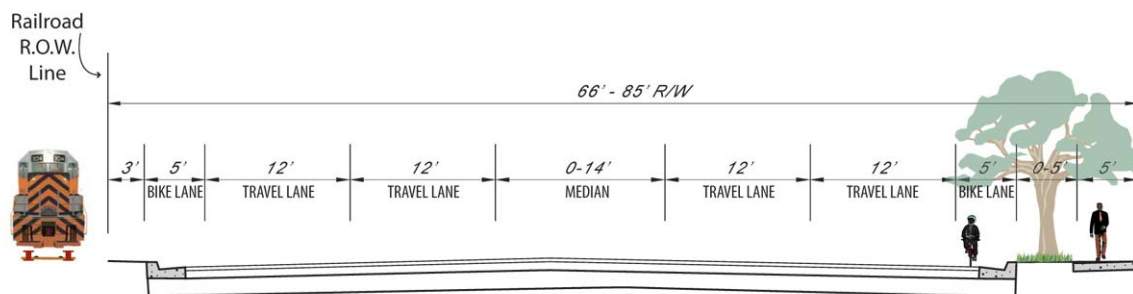
- R07. Roeding Road Regional Route (1.25 miles) is planned to have Class II bicycle lanes through Hughson between the western City limits and 7th Street. The bicycle lanes west of Tully Road would require roadway widening as planned development or roadway improvements are constructed. The planned bicycle lanes east of Tully Road are on a planned extension of Roeding Road from Tully Road. The Hughson portion of the bikeway would provide access to the industrial area of Hughson and to a planned commercial center at 7th Street/Santa Fe Avenue, as well as intersect two other planned bikeways in Hughson. StanCOG shows the bikeway as a regional route extending west to Ceres and terminating at Tully Road. However, only one short segment of Roeding Road in Ceres is proposed to be a Class II facility.



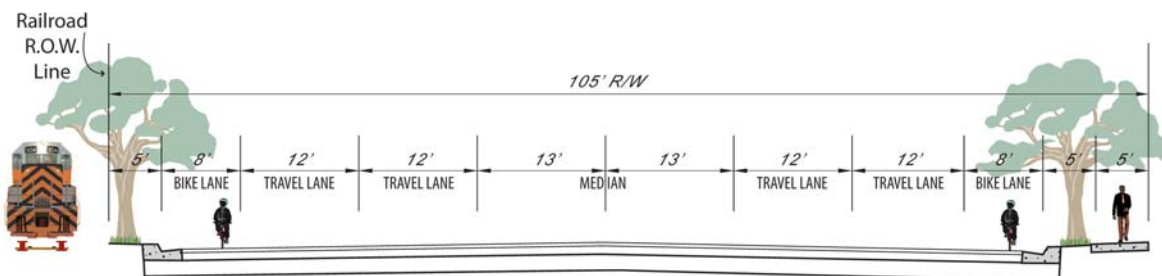
Roeding Road Typical Cross-Section

- R10. Santa Fe Regional Route (3.15 miles) is planned to have Class II bicycle lanes through Hughson between Hatch Road and Geer Road. Santa Fe Avenue is constrained due to the railroad on the west side and existing developments on the east side, and would require further study to accommodate the bikeway. This bikeway would bisect the City, providing convenience to many bicyclists. The Hughson portion of the bikeway would provide access to four planned commercial centers, Downtown and the nearby bus stop at 3rd Street/Hughson Avenue, as well as intersect ten other planned bikeways, including the Hatch Path and the Geer Path. StanCOG proposes the bikeway on Santa Fe Avenue from State Highway 132/Yosemite Boulevard (located north of the Tuolumne River) south to the southern Stanislaus County line. Other local plans propose a Class I facility on Santa Fe Avenue from Yosemite Boulevard to the Tuolumne River and that heads due west along the Tuolumne River from Santa Fe Avenue. The resulting facility would meet the needs of commuters, recreational and athletic bicyclists.

The City of Modesto proposes a bicycle and pedestrian bridge over the Tuolumne River on Santa Fe Avenue (the existing facility is only wide enough for vehicular travel lanes, which requires bicyclists to share the roadway with fast moving vehicles). StanCOG proposes a bikeway on Yosemite Boulevard that would connect Hughson to the Modesto bikeways network (the City of Modesto does not propose this in the City of Modesto Non-Motorized Plan). The City of Ceres proposes Class II facilities on Mitchell Road and on River Road, which would connect with the proposed Tuolumne River Class I facility. There is currently a bridge over the Tuolumne River on Mitchell Road that has wide enough shoulders to accommodate pedestrians and bicyclists separate from the roadway. The River Road facility is proposed to connect to the proposed 6th Street (Downtown Modesto) Class II/III facility via the Crows Landing Road/6th Street Bridge. The River Road facility would also connect with another proposed Class I facility on the Tuolumne River that extends west of Ceres.



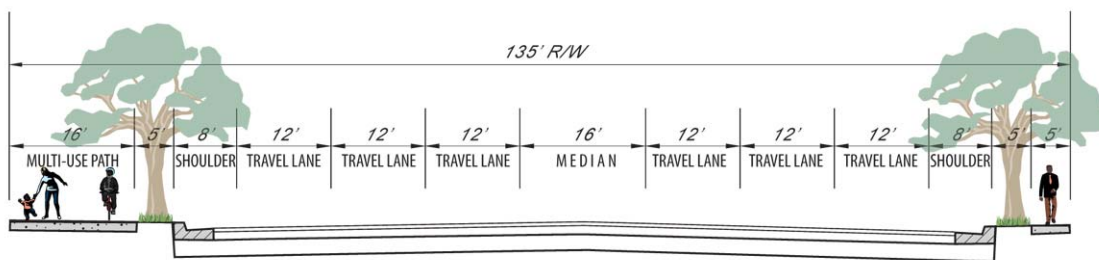
Santa Fe Avenue Typical Constrained Cross-Section



Santa Fe Avenue Typical Unconstrained Cross-Section

- R19. Geer Road Path (2.95 miles) is a planned Class I multi-use facility for pedestrians and bicyclists. The path is planned to be built on the western edge of Geer Road. Geer Road is currently a two lane arterial roadway, but is planned to be a six-lane expressway. The Hughson portion of the bikeway would connect to the Fox Grove Regional Park in the north, the Geer Road bridge over the Tuolumne River and to a proposed commercial center between Service Road and Santa Fe Avenue, as well as intersect five other planned bikeways, including the Hatch Path and Santa Fe Regional Route.

The Class I path would be intersected by three existing roadways between Hatch Road and Santa Fe Avenue and would require special design treatments at those locations and at the two additional terminus locations at Santa Fe Avenue and Geer Road. The need for additional intersections on the western edge of Geer Road should be balanced with the number of crossings with the bikeway. Development on the west side should be encouraged to provide direct pedestrian and bicycle connections to the Class I path. StanCOG proposes the bikeway on Geer Road/Albers Road/Twenty Six Mile Road/Lander Avenue from Woodward Reservoir, Oakdale and points north to Turlock and points south. This bikeway would also provide connections to eastern Modesto. No other local plans are designated on this stretch of bikeway except in Oakdale.

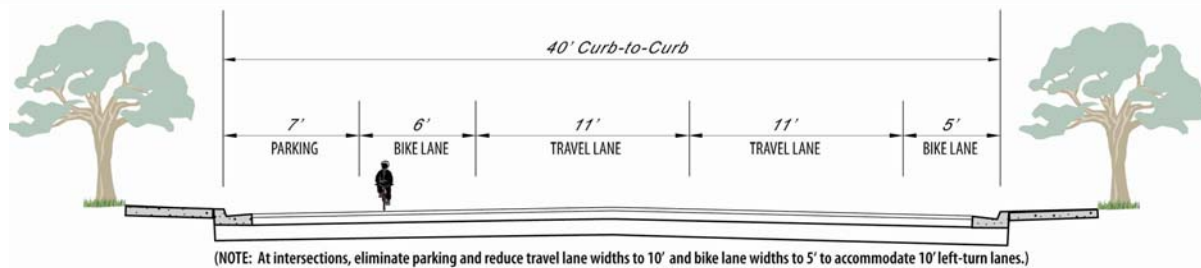


Geer Road Typical Cross-Section

PROPOSED LOCAL FACILITIES

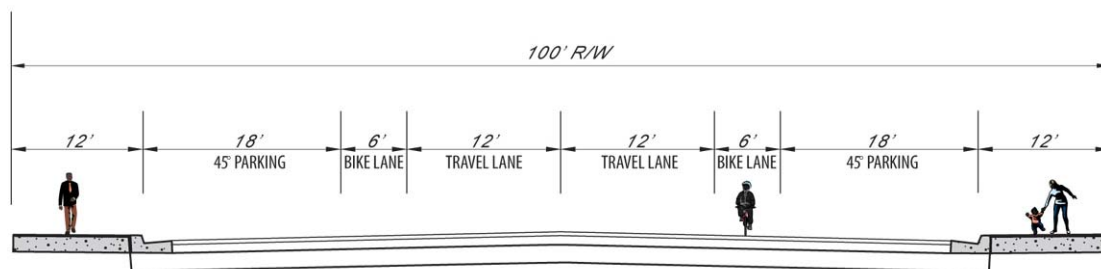
The following describes each proposed bikeway, including its classification, location, and connections to destinations and to other bikeways. Some routes with designated bicycle lanes or include a typical conceptual cross-section of the roadway to depict how the proposed bicycle facilities should be accommodated.

- L02. Flora Vista/Fox Bikeway (2.05 miles) is comprised of Class II (1.25 miles) and Class III (0.80 miles) facilities. Class II lanes are planned on Fox Road from Tully Road to Geer Road using the existing paved road, except between Euclid Avenue and Geer Road where the lanes may be built as development or road-widening occurs (a Class III route in this location may be an interim solution). A Class III signed route is planned west of Tully Road on Fox Road and other existing local streets, including Flora Vista Drive. The route is planned to extend north on Flora Vista Drive into a planned residential neighborhood with an ultimate terminus at the planned Mountain View Road at a planned shopping center. The bikeway would also provide access to two schools and a neighborhood park, as well as intersect seven other planned bikeways, including the Geer Road Path.



Fox Road Typical Constrained Cross-Section (west of Tully Road)

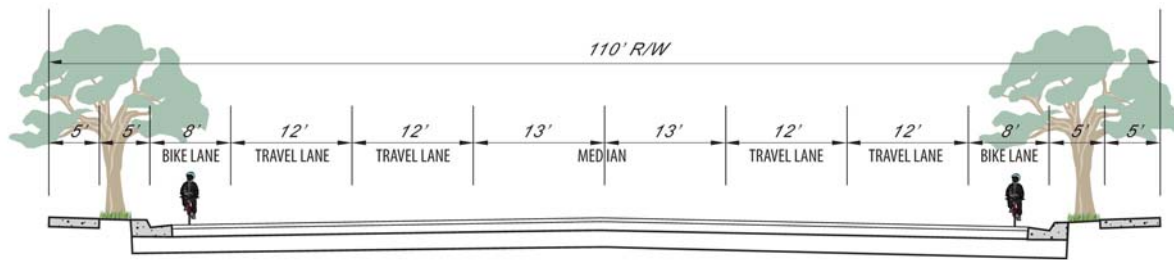
- L03. "A" Street Bicycle Lanes (0.05 miles) are short Class II lanes that would link a planned park to the west and the planned Euclid Bicycle Lanes to the east. These lanes should be striped as development occurs.
- L04. Locust Bikeway (1.05 miles) is a Class III bicycle route (0.95 miles) with a short (0.10 miles) Class I connector. A signed Class III route using existing pavement is planned on Locust Street, a residential street close to Downtown that is interrupted by the planned Andrew Fontana Memorial Park to the east. The planned Class I connector bikeway would link bicycle routes on both Locust Streets by providing a bicycle path to the south of the planned park. The route would provide access to a planned commercial center on the west side of Tully Road, to Downtown, the nearby bus stop at 3rd Street/Hughson Avenue, the High School, and the planned park, as well as intersect five other planned bikeways.
- L05. Hughson Avenue Bicycle Lanes (0.45 miles) are Class II lanes planned for Hughson's main street, Hughson Avenue, using existing pavement. The bicycle lanes would be placed behind angled parking. The angled parking occupancy and turnover should be evaluated for possibility of conflict between motorists and bicyclists when the bike lanes are installed as is recommended in the Bicycle Design Guidelines section located in this Chapter. The bicycle lanes would be six feet wide for increased bicyclist maneuverability. The bikeway would provide access within Downtown, to the bus stop at 3rd Street, to a school, and to the Pool Center, as well as intersect four other bikeways, including the planned regional bicycle lanes on Santa Fe Avenue.



Hughson Avenue Typical Cross-Section

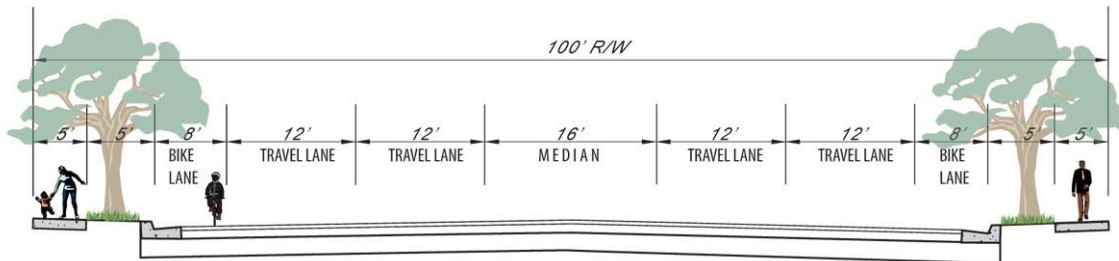
- L08. Neighborhood E-W Bicycle Route (0.20 miles) is a short Class III signed bicycle route planned in a neighborhood that has yet to be developed. When plans are developed for this area, the City should require the provision of bicycle facilities. The exact location and length of the facility have yet to be determined, but the map shows a possible location for the route. The route would connect two bikeways (7th Street Bicycle Lanes and L17) and provide access to a planned shopping center.

- L09. Service Road Bicycle Lanes (1.25 miles) are Class II lanes planned along an arterial road at the southern edge of Hughson. These Class II lanes are planned to be built as development or road improvement occurs. This facility would connect to four other bikeways, including the two regional routes planned along Santa Fe Avenue and Geer Road and would provide access to a planned commercial center between Santa Fe Avenue and Geer Road. The bikeway would cross the railroad tracks, which would require additional planning with the railroad company and the California Public Utilities Commission (PUC). Service Road also connects several north/south streets that end at Service Road. These streets are typically used by bicyclists traveling north/south because they have lower vehicular volumes. Class II lanes would provide room on this busy arterial for bicyclists to more safely facilitate north/south travel.



Service Road Typical Cross-Section

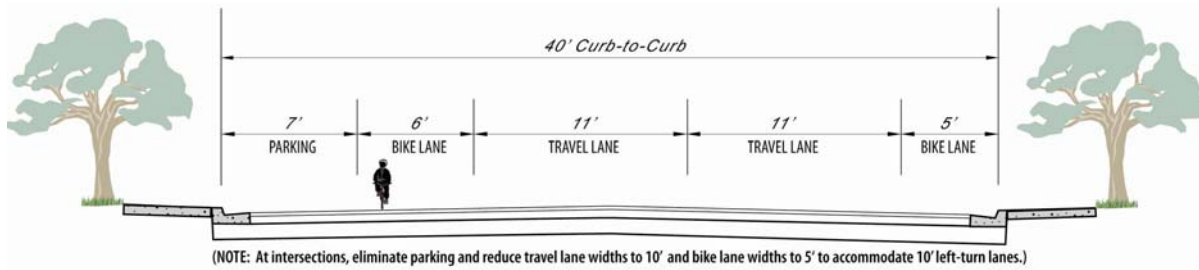
- L11. Mountain View Bicycle Lanes (0.25 miles) are Class II lanes planned along this planned arterial roadway. The lanes would provide access to the planned shopping center to the west of Mountain View Road and would connect three planned bikeways, including providing a short-cut between the Santa Fe Regional Route and the planned Hatch Road Path.



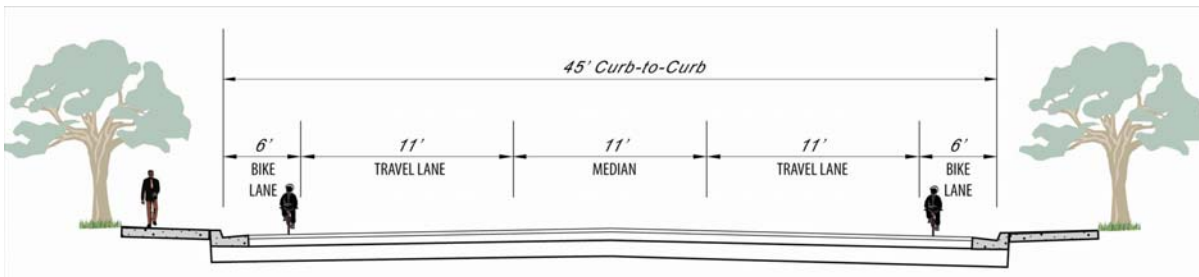
Mountain View Road Typical Cross-Section

- L12. Tully Bikeway (2.00 miles) is comprised of Class II (1.50 miles) and Class III (0.50 miles) facilities. The bikeway between Hatch Road and Fox Road is planned to be a signed Class III route on existing pavement due to the constrained roadway space and the need for parking for homes fronting both sides of Tully Road. The bikeway south of Fox Road to Service Road is planned to have Class II bicycle lanes and should be implemented as development and comprehensive road improvements occur. The bikeway would provide access to a school, a park, a planned commercial center and the industrial area to the southwest of the railroad tracks. The bikeway would cross the railroad tracks, which would require additional planning with the railroad company and the PUC. The bikeways would also intersect seven other planned bikeways, including the Hatch Path and the Santa Fe Regional Route. The Stanislaus Council of Governments (StanCOG) has designated part of the bikeway (from

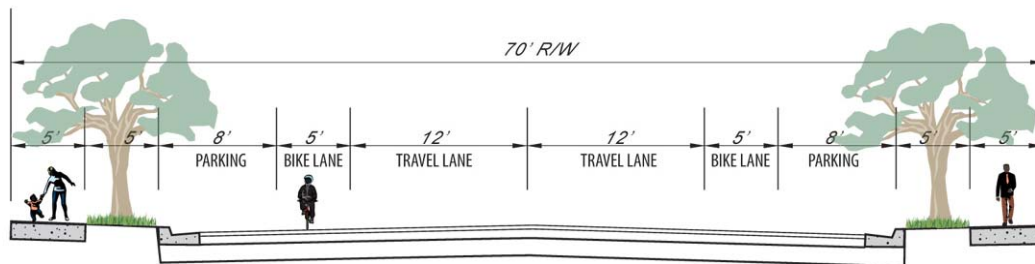
Whitmore Avenue to Roeding Road) as a regional bikeway, but for purposes of this plan the bikeway is considered to be a local facility.



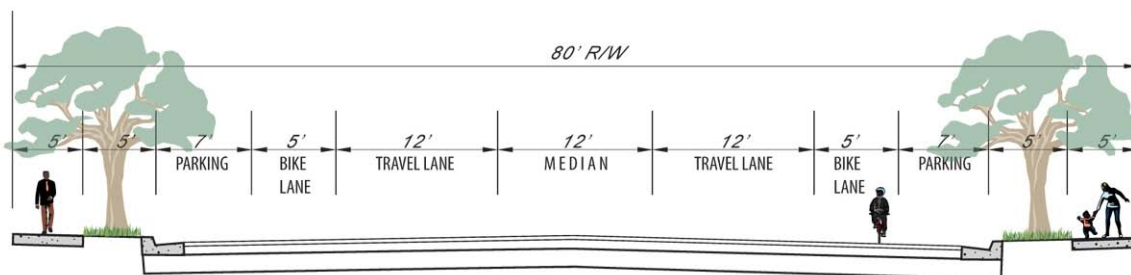
Tully Road Typical Constrained Cross-Section (Fox Road - Santa Fe Avenue)



Tully Road Typical Constrained Cross-Section (Santa Fe Avenue - Whitmore Avenue)

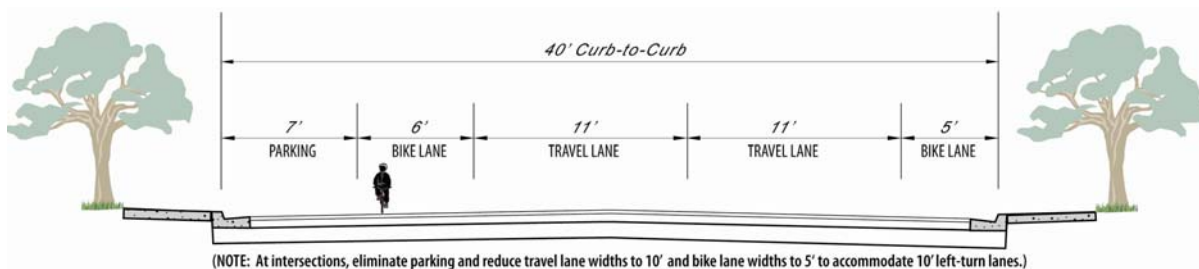


Tully Road Typical Constrained Cross-Section (South of Whitmore Avenue)

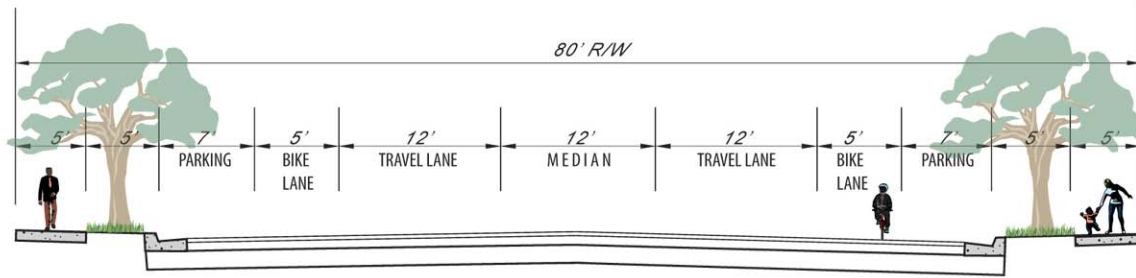


Tully Road Typical Cross-Section (South of Whitmore Avenue and existing development)

- L13. Charles Bikeway (0.95 miles) is an existing bikeway with planned extensions to the north of Fox Road to Prelude Lane (Class III, 0.35 miles) using existing pavement and to the south of Hughson Avenue to Santa Fe Avenue (Class II, 0.25 miles), also using existing pavement. The existing bikeway consists of Class II lanes (0.35 miles) that are marked on the pavement, but that should also be signed. The bikeway includes a stripe on the right edge of each travel lane for a combined bicycle and parking lane, but should include an additional stripe to delineate the bicycle lane from the parking lane. The existing bicycle lanes are placed behind angled parking. The angled parking occupancy and turnover should be monitored for possibility of conflict between motorists and bicyclists as is recommended in the Bicycle Design Guidelines section located in this Chapter. The bikeway would provide access to two schools, one park, Downtown, City Hall, and the nearby bus stop at 3rd Street/Hughson Avenue, as well as intersect five other planned bikeways, including providing a short-cut between the Santa Fe Avenue Regional Route and the Whitmore Avenue Regional Route.
- L14. 6th Street Bicycle Lanes (0.50 miles) comprise an existing Class II bikeway with no planned extensions. The bikeway includes a stripe on the right edge of each travel lane for a combined bicycle and parking lane, but should include an additional stripe to delineate the bicycle lane from the parking lane. Signage and pavement markings should be added to make the bikeway more visible to all roadway users (see Figure 6). The bikeway provides access to a school and Downtown, provides an alternative to the busier 7th Street, and intersects four other planned bikeways.
- L15. 7th Street Bicycle Lanes (2.00 miles) comprise a planned Class II bikeway from Hatch Road to Service Road. The bikeway south of Fox Road and north of Whitmore Avenue would use existing pavement and would require the removal of parking along the east side of the street. Further plans should be developed for the bikeway north of Fox Road since only the east side of the street has a curb, gutter and sidewalk. The bikeway south of Whitmore Avenue may be implemented as development or road improvement occurs. The bikeway would provide access to Downtown, the Pool Center, a school, a planned shopping center at Santa Fe Avenue and to the industrial area of Hughson. The bikeway would cross the railroad tracks, which would require additional planning with the PUC. The railroad crossing locations shown on the map reflects the planned change in configuration of 7th Street. The bikeway would also intersect nine other bikeways.

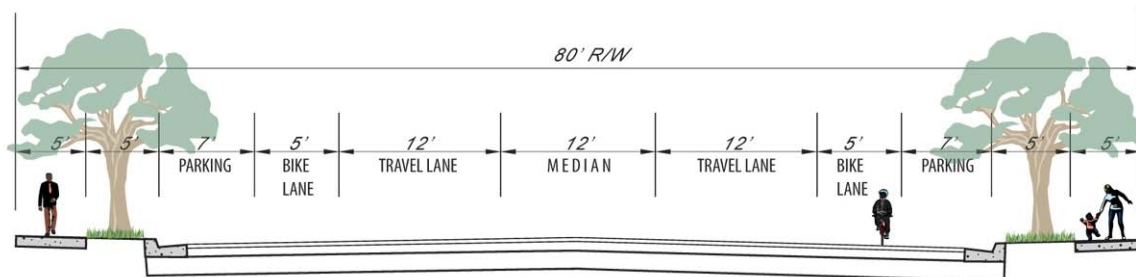


7th Street Typical Constrained Cross-Section (North of Santa Fe Avenue)



7th Street Typical Cross-Section (South of Santa Fe Avenue)

- L16. Thomas Taylor Bicycle Route (0.65 miles) is a planned Class III bikeway on Thomas Taylor Drive from Morgan Lynn Lane to Orchard Lane and on Orchard Lane from Thomas Taylor Drive to Locust Street using existing pavement. The bikeway would provide access to two parks (one on each end) and would intersect two other planned bikeways.
- L17. Neighborhood N-S Bicycle Route (0.70 miles) is a signed Class III bicycle route planned in a neighborhood that has yet to be developed. The exact location and length of the facility have yet to be determined, but the map shows a possible location for the route. The route would connect three bikeways, including the planned Whitmore Avenue Bicycle Lanes and the Euclid Avenue Bicycle Lanes. The route would also provide access to the Arboretum and school to the north of Whitmore Avenue between 7th Street and Euclid Avenue.
- L18. Euclid Bicycle Lanes (1.90 miles) are Class II bicycle lanes planned to extend from Hatch Road to Santa Fe Avenue. The bikeway is included in existing plans for the street and may be installed as development or road improvements occur. The bikeway map shows the planned change in configuration of the southern terminus of Euclid Avenue. The bikeway would provide access to a planned, small neighborhood shopping center and to the Arboretum, as well as intersect seven other planned bikeways, including the Hatch Path the Santa Fe Regional Route.



Euclid Avenue Typical Cross-Section

BICYCLE FACILITY DESIGN GUIDELINES

The following figures, located at the end of this chapter, provide design standards for bicycle facilities:

- Figure 4 Bikeway Facility Types - a comparison of Class I, II and III facilities
- Figure 5 Typical Class I Bicycle Path - typical design and signage standards
- Figure 6 Typical Class II Bicycle Lanes - typical striping and signage standards
- Figure 7 Typical Class III Bicycle Routes - typical striping and signage standards
- Figure 8 Bicycle Lanes at Intersections - typical striping and signage standards
- Figure 9 Bicycle Lanes Approaching Right-Turn-Only Lanes - typical striping and signage standards
- Figure 10 Sample Signage Standard - sample bicycle route number sign standard
- Figure 11 Guidelines for Bicycle Rack Placement in Parallel On-Street Parking Space - typical placement standards
- Figure 12 Bicycle Parking on Sidewalks - typical placement standards
- Figure 13 Guidelines for Placement of Bicycle Lockers - typical placement standards
- Figure 14 Guidelines for Placement of Inverted U-Rack - typical design and placement standards

The following resources should be consulted for the design and signage of bicycle and pedestrian facilities: *California Manual on Uniform Traffic Control Devices*, *Caltrans Highway Design Manual*, *AASHTO Guide for the Development of Bicycle Facilities*, *ITE Transportation Planning Handbook*, and the FHWA *Improving Conditions for Bicycling and Walking: A Best Practices Report*.

Bicycle Path Design Standards

Bicycle paths are separated from roads by distance or barriers. Cross traffic by motor vehicles should be minimized. Bicycle paths can offer opportunities not provided by the road system. They can provide recreational opportunities or serve as desirable commuter routes.

Two-way bicycle paths should be a minimum of 10' wide. Bicycle paths are usually shared with pedestrians and if pedestrian use is expected to be significant, the path should be greater than 10', preferably 12' wide. Where equestrians are expected a separate facility should be provided. A yellow centerline stripe may be used to separate opposite directions of travel. A centerline strip is particularly beneficial to bicycle commuters who may use unlighted bicycle paths after dark.

Sidewalks and meandering paths are usually not appropriate to serve as bicycle paths because they are primarily intended to serve pedestrians, generally do not meet Caltrans' design standards, and do not minimize motor vehicle cross flows.



Preferred Standards

Minimum width	10.0'
Minimum shoulders	2.0' each side of paved path
Vertical clearance	8.5' from roadbed
Horizontal clearance	14.0' (2.0' minimum from walls and fences)
Maximum cross slope	2.0%
Surface	Concrete / Asphalt

Bicycle Path Structures

Bollards

Entry structures using bollards are placed at bicycle path access points to separate the path from motor vehicles and to warn and slow bicyclists as they approach street crossings. A gate may be provided where service access is needed. The diagonal layout of bollards will make the space between the bollards appear narrower, slowing bicyclists and deterring motorcyclists from entering the trail. The bollards are spaced to provide access by people using wheelchairs. A trail sign post can be incorporated into the bollard layout.

Bridges

Bridges would be required wherever bicycle paths cross creeks and drainages. Crossings can utilize pre-fabricated bridges made from self-weathering steel with wood decks. Openings between railings should be four inches maximum. Railing height should be a minimum of 42 inches high.

Fences and Walls

Fencing and walls may be necessary on some bicycle paths to prevent path users from trespassing on adjacent lands, or to protect the user from dangerous areas. In areas where private residences are passed, privacy may be a concern. Screen fences should be used to maintain privacy of residents. Screen fences can be made of wood, concrete block or chain link if combined with vine planting. A minimum separation of two feet is recommended between a path and a fence or wall in order to allow for the full width of the path.

Bicycle Path Crossings

Most of the Class I bicycle paths proposed in this Plan are parallel to expressways with a minimal buffer zone. These paths should be incorporated into the design of the existing and future intersections of the expressways and their cross-streets, including bicycle signals (see the *California MUTCD*) and signage warning motorists and bicyclists to exercise caution (see sample pictures to the right). The design and signage of these intersections should accommodate pedestrians and bicyclists traveling in both directions and should



*Sample Parallel Bicycle Path
Caution Sign for Motorists*



Sample Bicycle Signal

give consideration for bicyclists who choose to use the expressway shoulder instead of the shared-use path. Example treatments for bicycles at intersections are indicated in Figures 8 and 9, and include bicycle lanes with traffic signal loop detectors between the through lanes and a right-turn lane, and bicycle ramps between a shoulder lane and the shared-use path approaching an intersection. Grade-separation of the shared-use path and cross-streets should be considered as appropriate. Additional information regarding uncontrolled trail crossings is provided in Chapter 7 in the Crosswalk Policy section.

Bicycle Signage and Striping

All bikeway facilities should include appropriate signage and striping to demarcate where bicyclists should ride, to confirm the route direction, distance and destination, and to increase bicyclists' visibility to motorists. On-street facilities should include signage at the beginning/end of bikeways, at all major changes in direction, at every arterial street, and at least every ½ mile along the bikeway.¹³ Signage should also be included on significant cross-streets to direct bicyclists on those streets to the designated bikeway. If there are connecting bicycle routes, directional signage should be installed. Numbering the major bikeways and mapping them may also prove valuable to bicyclists.

Where bicyclists are allowed to share the sidewalk with pedestrians (a discouraged practice) appropriate signage would inform bicyclists to use the sidewalk and inform bicyclists when they are ride in the wrong direction so as to encourage them to ride in the direction of traffic, as motorists would expect. Signage at these locations should also direct motorists to share the road with bicyclists.

Too much signage can be overwhelming and disregarded by users of the roadways and can reduce the desirable character of a place. To address this concern, signage should achieve balance between providing necessary information and introducing too many distractions, overwhelming users or diminishing the character of a street.

Striping of Class III bicycle routes may include using the sharrow (shared-use arrow). This marking reduces the chances that a bicyclist will be impacted by opening car doors, and alerts motorists and bicyclists where bicyclists should ride in the roadway. The current California MUTCD limits the use of this marking to shared-use lanes adjacent to parking stalls and does not allow for the marking where there are marked bicycle lanes or shoulders. It is anticipated that a forthcoming version of the California MUTCD will provide for the option to use the sharrow on shared-use lanes where no adjacent parking is provided.

Bicycle Lanes behind Angled Parking

There are possible conflicts between bikeways and conventional head-in/back-out angled parking. Drivers backing out of angled parking spaces are less likely to see bicyclists in the designated bikeway because adjacent vehicles block those drivers' view. On the corridors with both angled parking and either existing or proposed bikeways, the parking currently has relatively low turnover and low occupancy such that the possibility of this conflict is reduced. Where adjacent to a bikeway, conventional head-in/back-out angled parking adjacent should be monitored for an increase in occupancy and turnover. If the parking should experience high turnover and/or high occupancy, modifications should be considered, such as converting the conventional angled parking to back-in/head-out angled parking or moving the bike lanes.

13. Caltrans. *California Manual on Uniform Traffic Control Devices*. Sep 26, 2006.



Roadway and Path Surfaces

Since all roadways in Hughson are legal for bicyclists to use, all roadway surfaces provide for bicyclists' safety. Designated bikeways deserve special attention to ensure the roadway and path surfaces are smooth enough for bicycle tires. The design of drainage inlet grates is of particular concern because grates can be hazardous if they are not designed for bicycle safety. Grates with slots parallel to the bicycle lane/path or gaps between the frame and the grate can trap the front wheel of bike. Grates with slots perpendicular to the bicycle lane/path and grates with a grid of slots are better for bicycle tires.¹⁴ The Caltrans *Highway Design Manual* and the AASHTO *Guide for the Development of Bicycle Facilities* illustrate bicycle lane/path design.

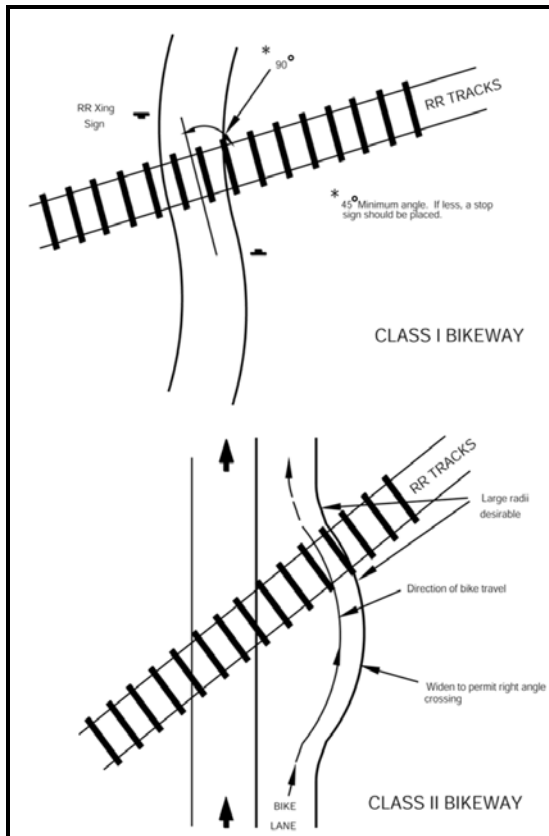
Railroad Crossings

According to the California Public Utilities Commission (PUC), an at-grade crossing of a railway and a pathway will require an engineering study that should involve at a minimum of the PUC and the parties responsible for the pathway and railway. The design should consider bicyclist safety for thin wheels crossing the tracks and, wherever possible, the crossing should be straight and at right angles to the rails. The following picture is an example bicycle-railroad crossing in Wisconsin. The locations for consideration are the following crossings along the Santa Fe Railroad: Hatch Road, Tully Road, Whitmore Avenue, Service Road, and Geer Road. These locations are highlighted in the bicycle projects phase figures in Chapter 10 (See Figures 17A-C).

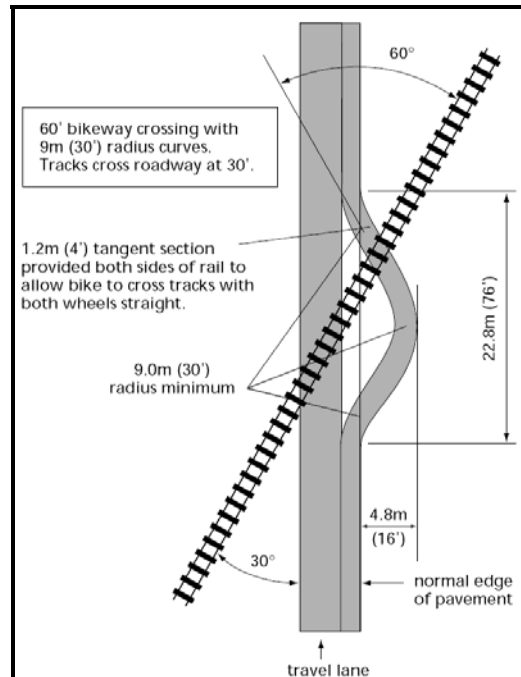


Sample Tapered Approach for Bicyclists to Cross the Railroad at a Safe Angle¹⁵

14. American Association of State Highway and Transportation Officials. *Guide for the Development of Bicycle Facilities*. 1999.
15. Wisconsin Department of Transportation. *Wisconsin Bicycle Planning Guidance*. 2003.



California MUTCD Railroad Crossings Figure¹⁶



Sample Railroad Crossing Design¹⁷

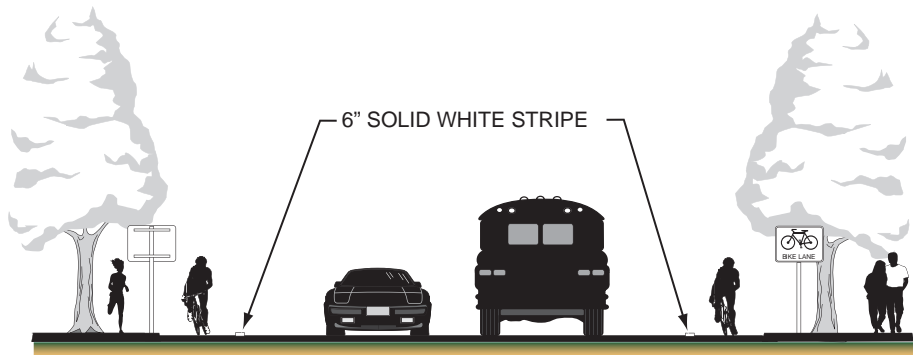
16. Caltrans. *California Manual on Uniform Traffic Control Devices*. Sep 26, 2006.

17. Oregon Department of Transportation. *Oregon Bicycle and Pedestrian Plan*. 1995.



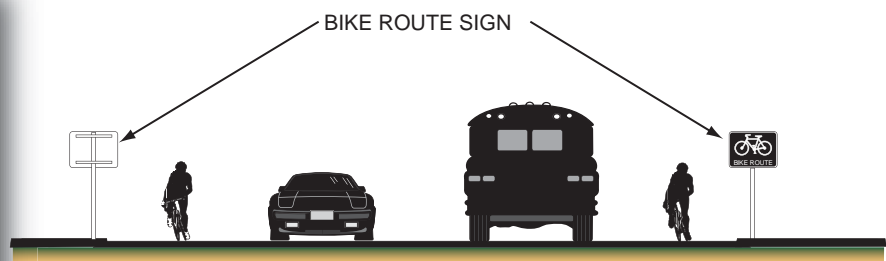
CLASS I BIKEWAY (Bike Path)

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.



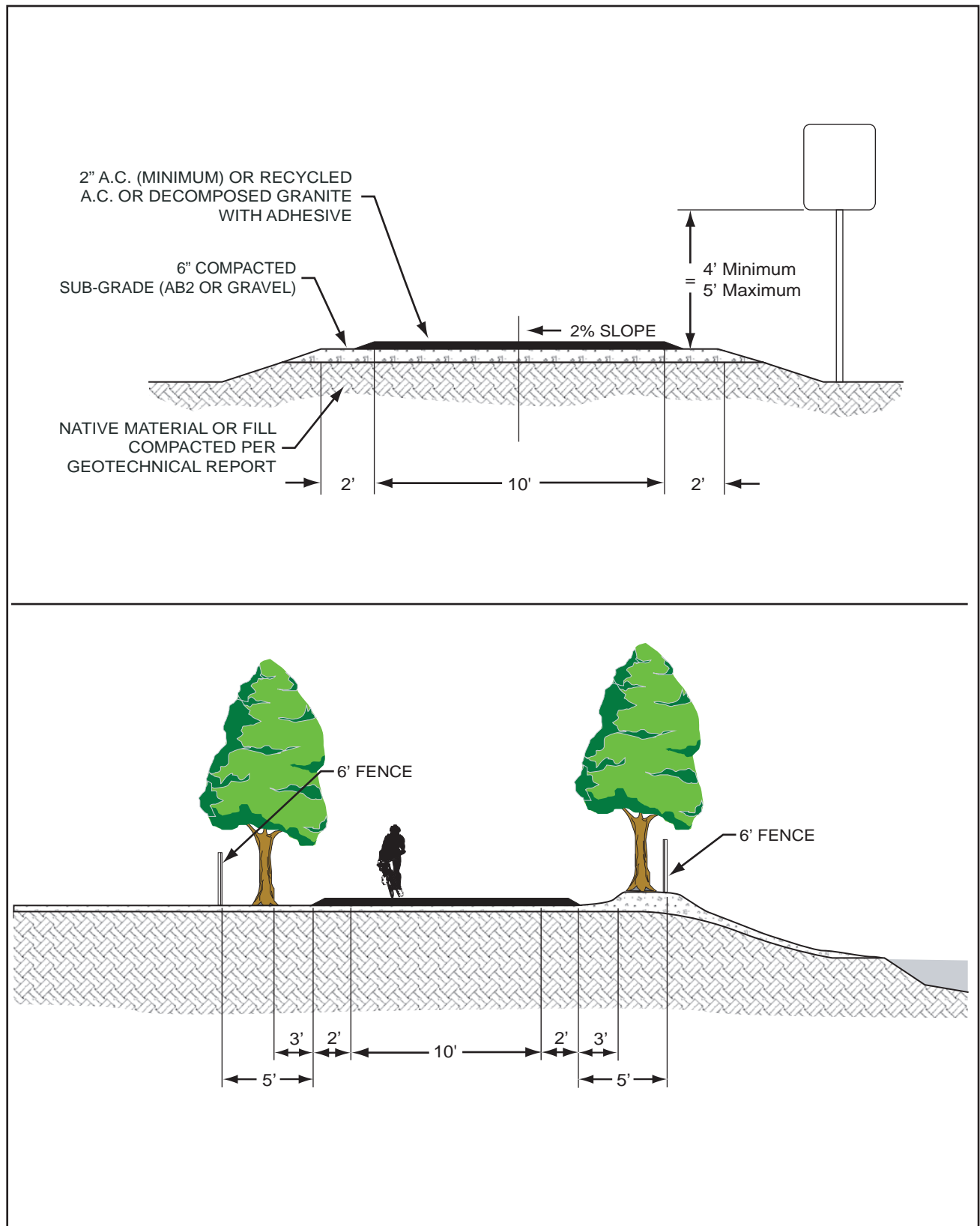
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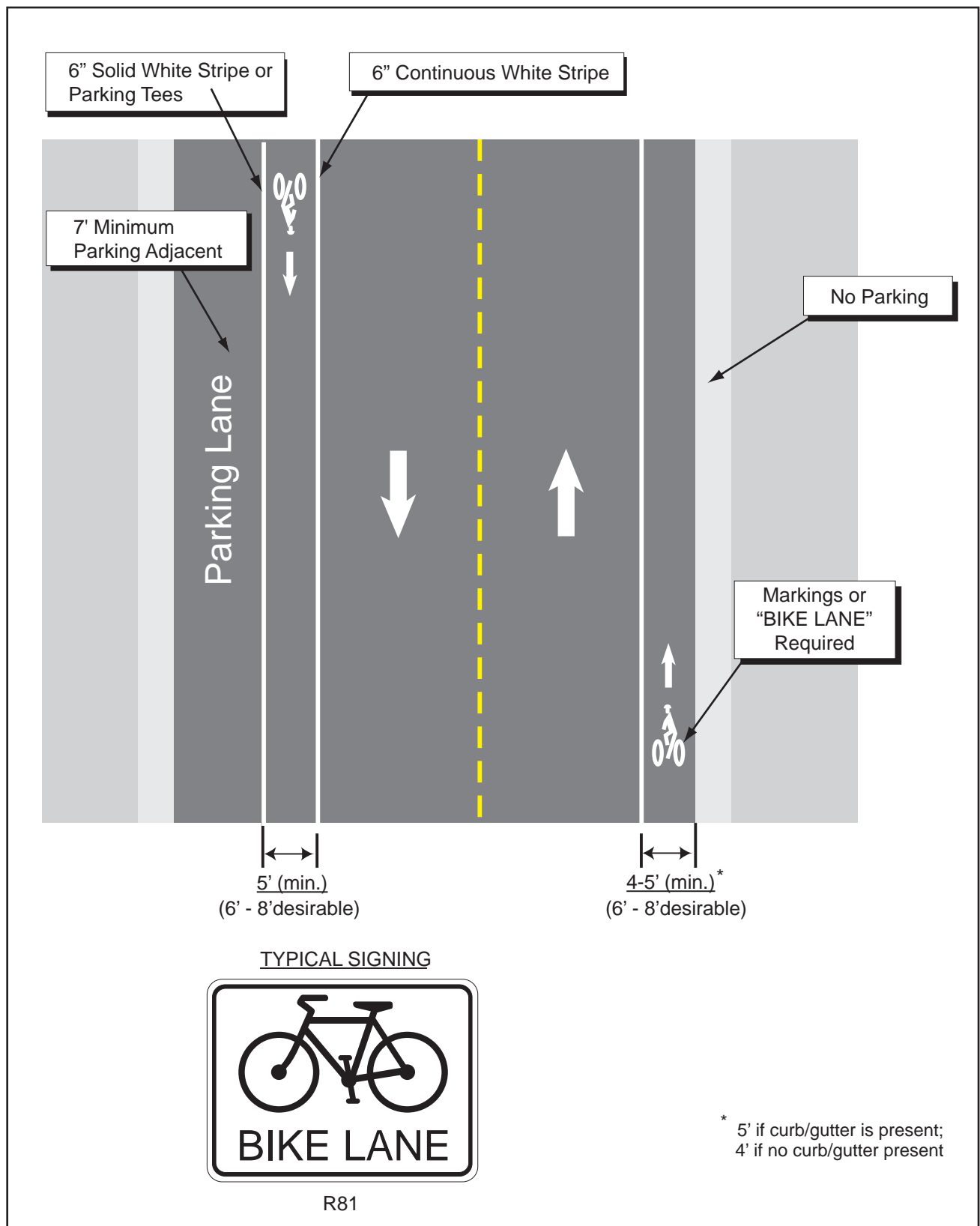
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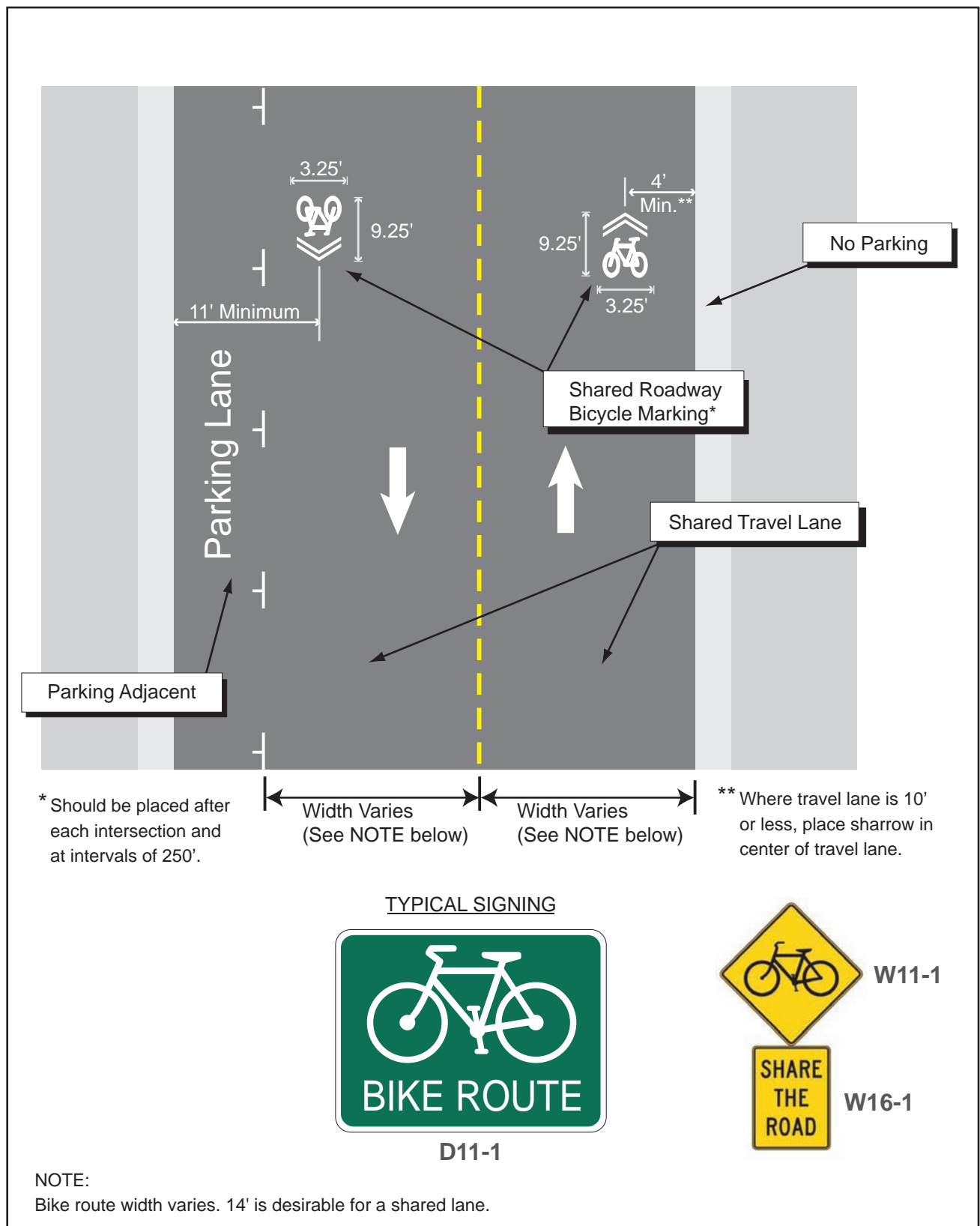
City of Hughson Non-Motorized Transportation Plan

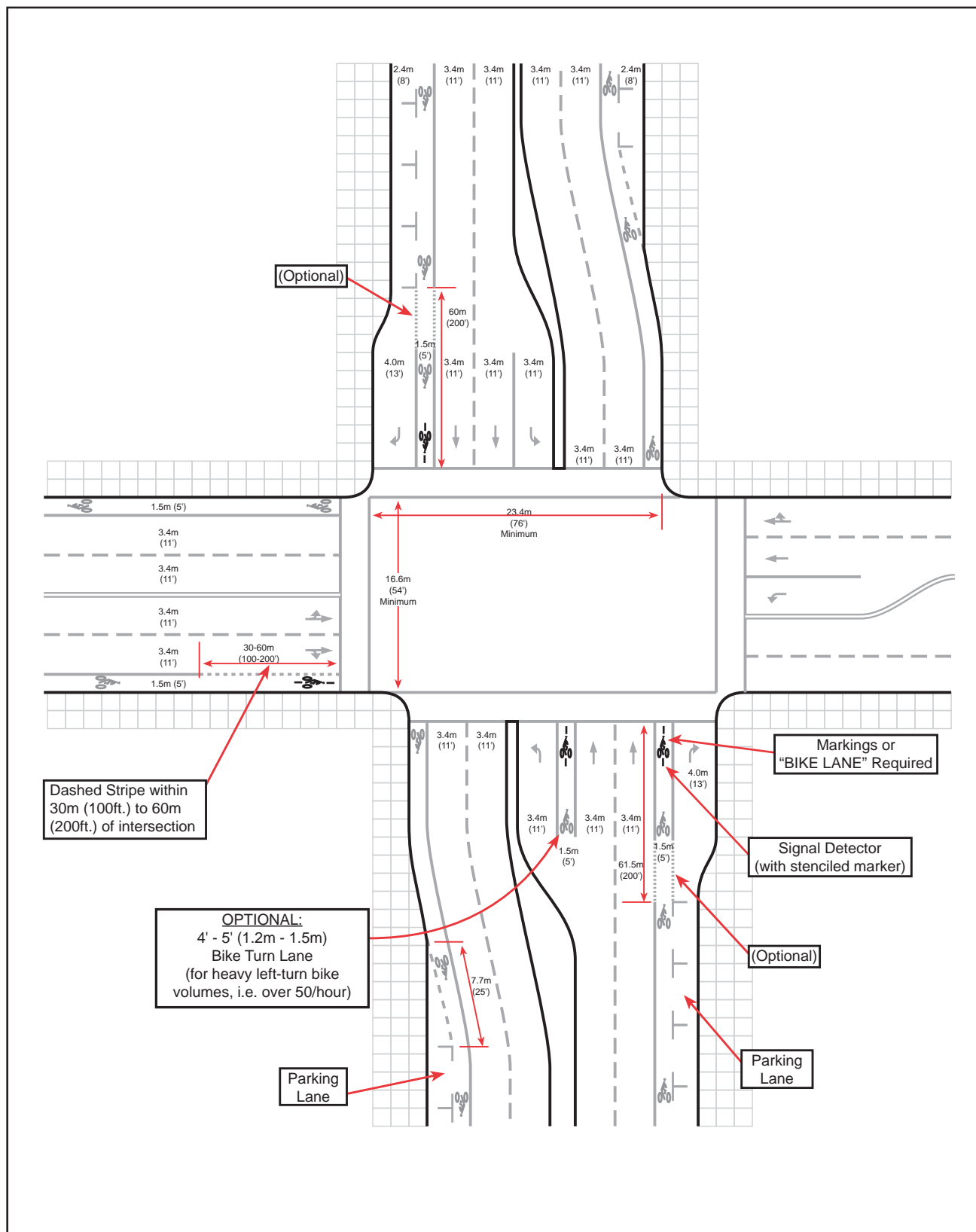
BIKEWAY FACILITY TYPES

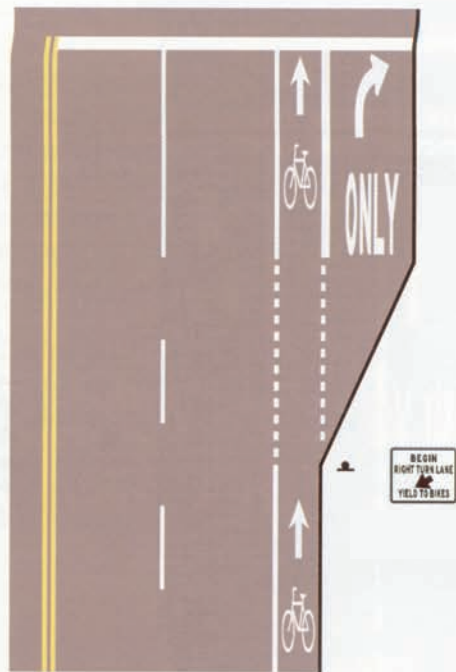
Figure 4



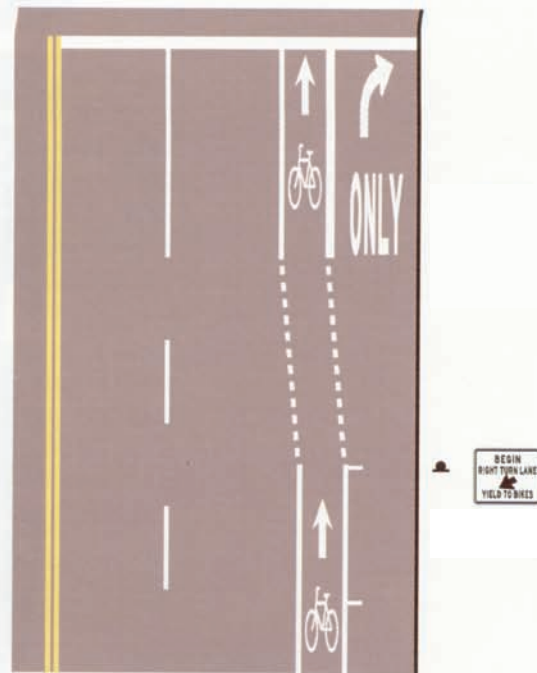








a. Right-turn-only lane

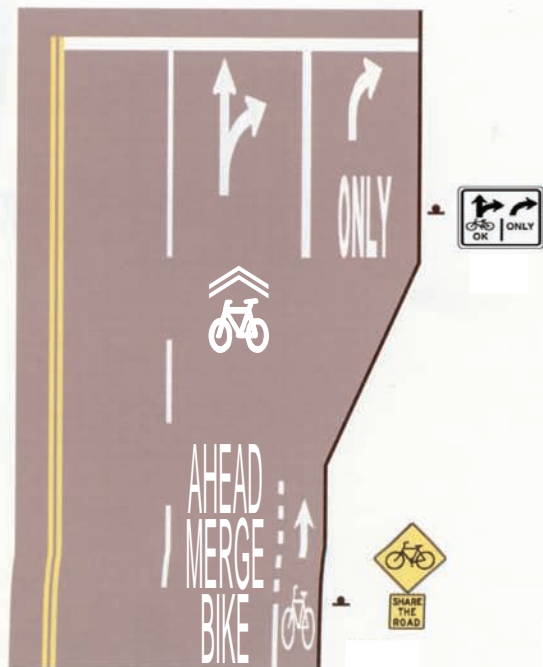


b. Parking lane into right-turn-only lane

NOTE: The dotted lines in cases "a" and "b" are optional (see case "c".)



c. Right-turn-only lane



d. Optional right/straight and right-turn-only



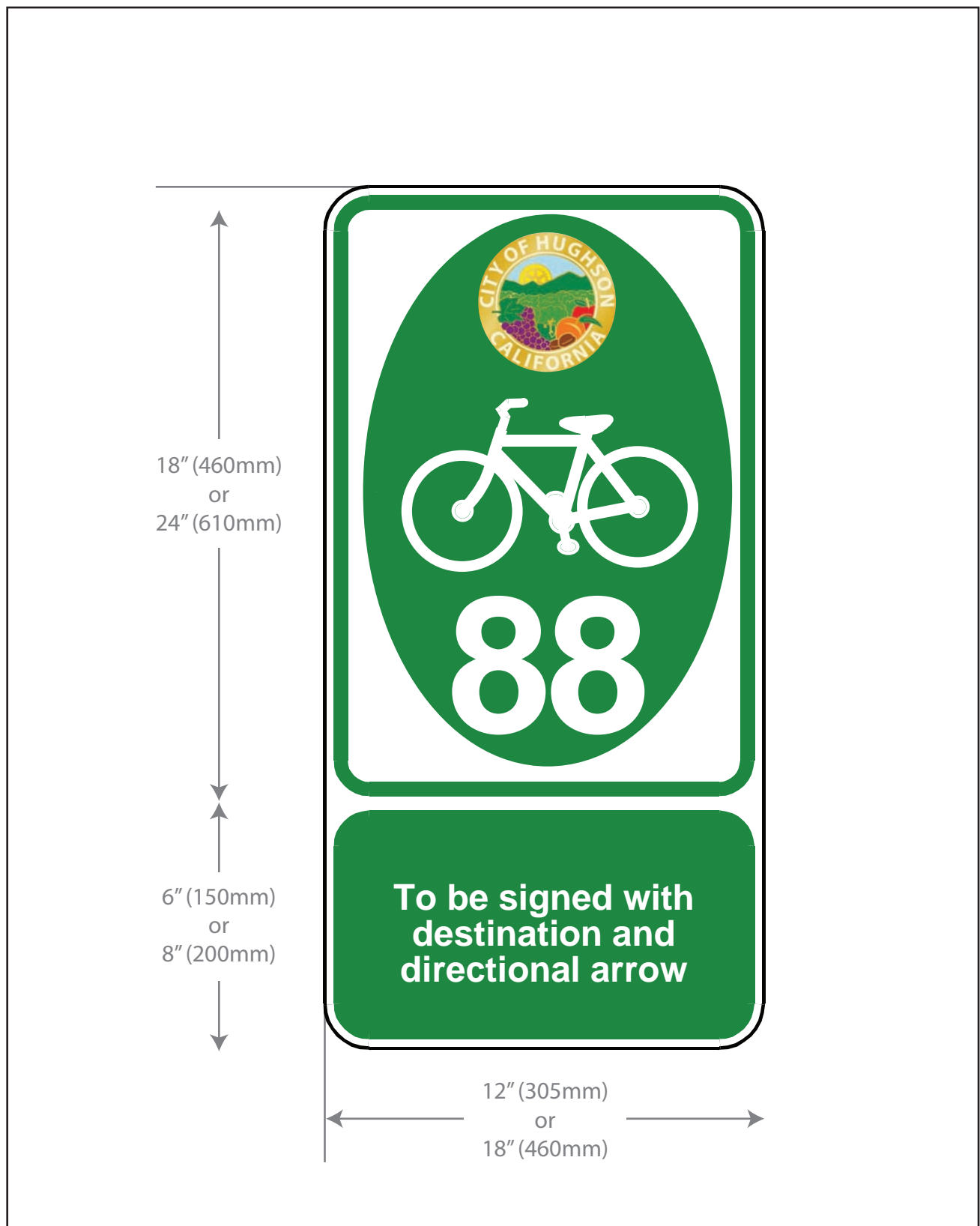
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BICYCLE LANES APPROACHING RIGHT-TURN-ONLY LANES

Figure 9



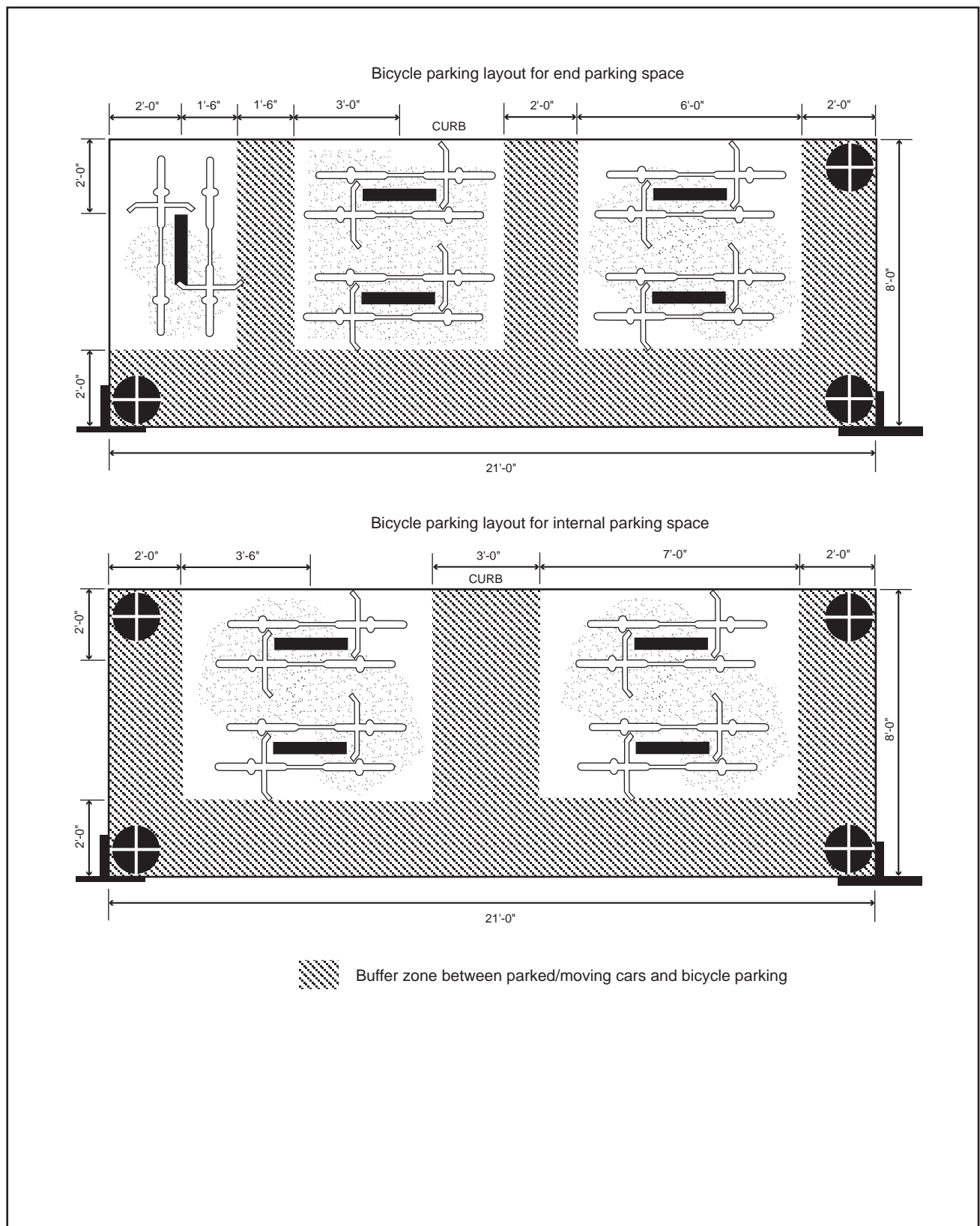
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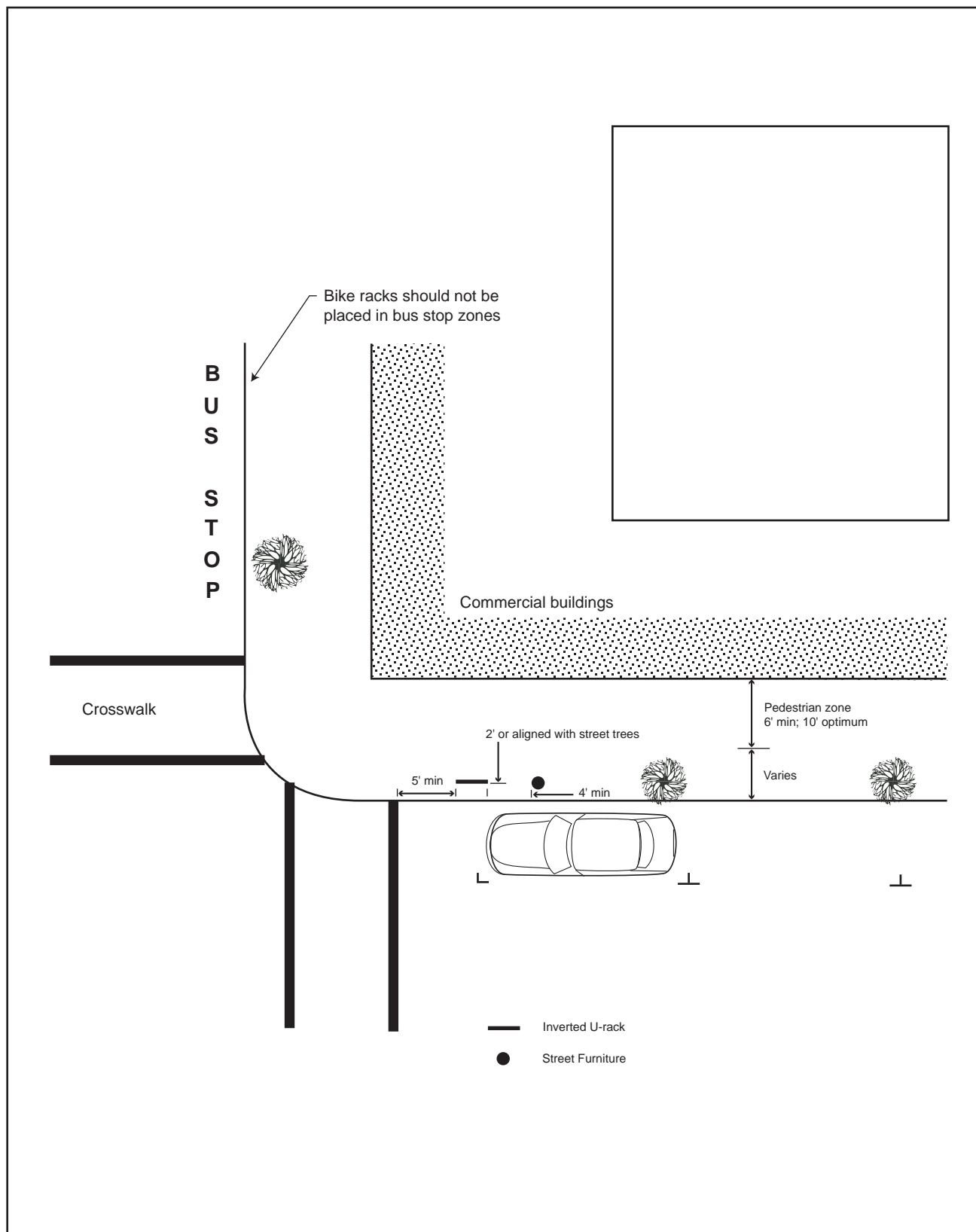
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City of Hughson Non-Motorized Transportation Plan

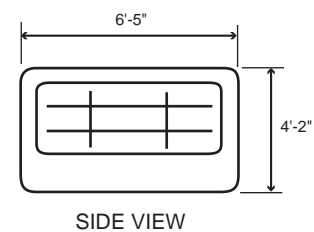
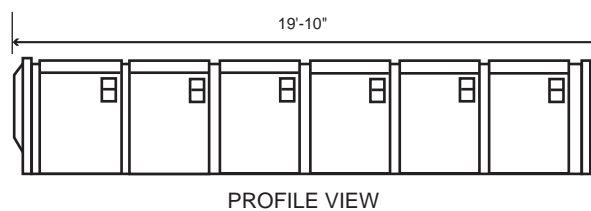
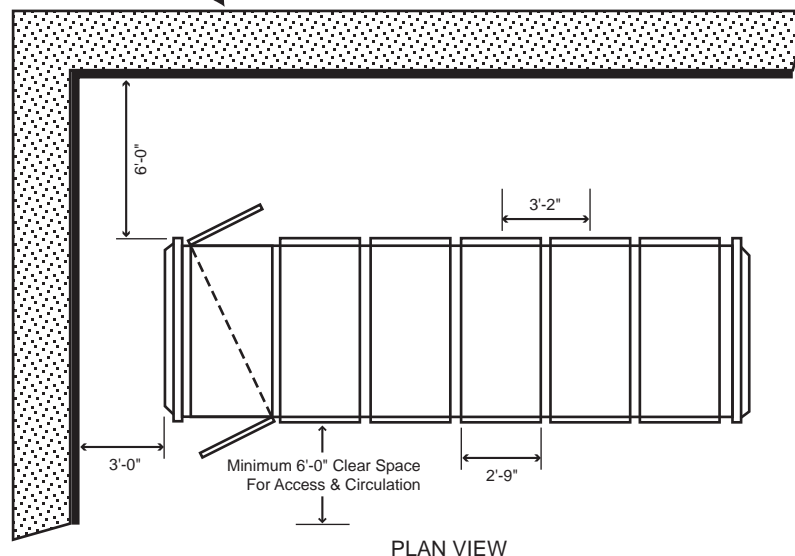
SAMPLE SIGNAGE STANDARD

Figure 10





Adjacent Structure
(if applicable)



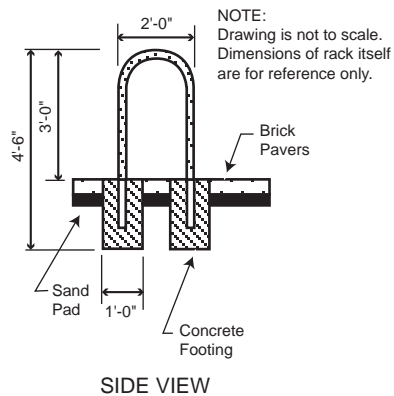
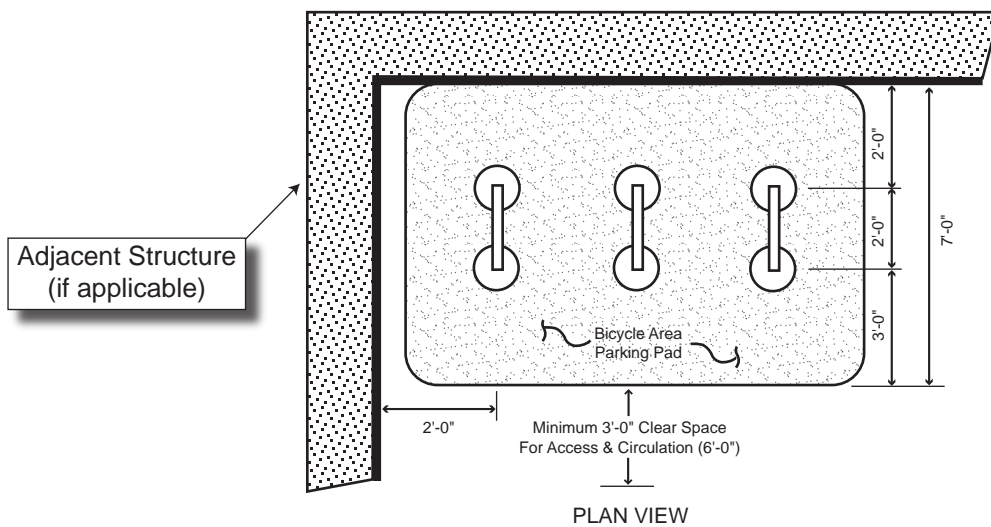
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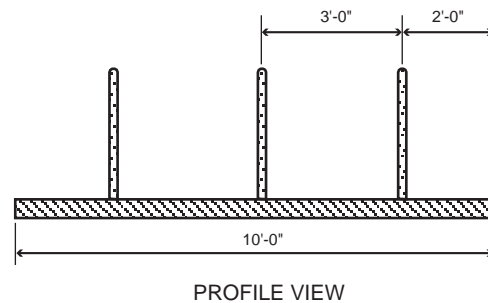
City of Hughson Non-Motorized Transportation Plan

GUIDELINES FOR PLACEMENT OF BICYCLE LOCKERS

Figure 13



NOTE:
Drawing is not to scale.
Dimensions of rack itself
are for reference only.



TYPICAL SIGNING



D4-3



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GUIDELINES FOR PLACEMENT OF INVERTED U-RACK

Figure 14

7. PEDESTRIAN RECOMMENDATIONS

The pedestrian network through the City of Hughson is mostly constructed. This chapter of the plan outlines standards and recommendations that should guide the development of pedestrian facilities and the bridging gaps in the pedestrian network that are documented in Chapter 5.

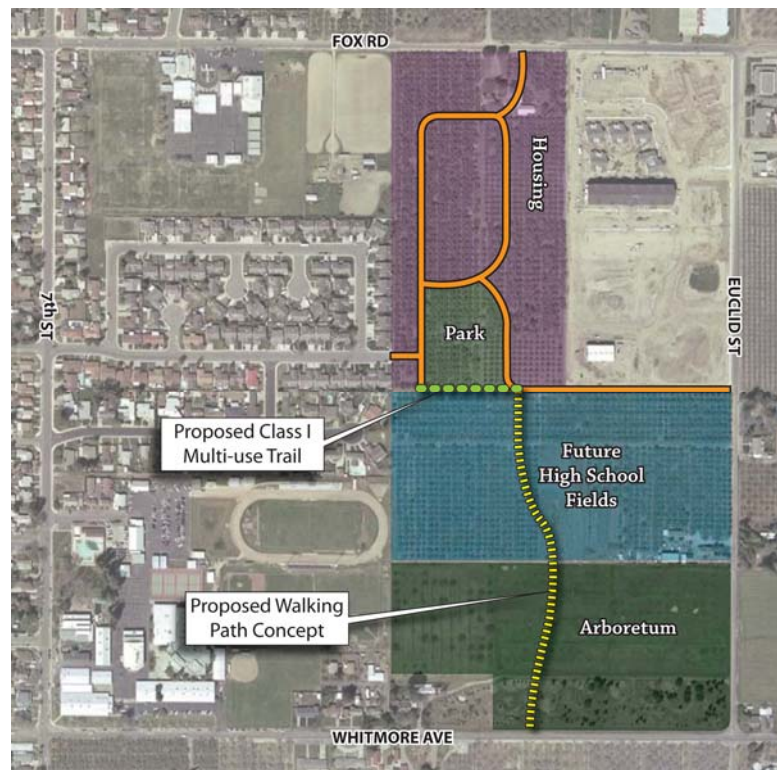
SIDEWALKS

Sidewalks are the most common element of the pedestrian network and provide access between the roadway and adjacent land uses. The facilities should generally be provided on both sides of the street with few exceptions. Sidewalks adjacent to fast and busy streets should include a landscaped buffer where possible to improve the pedestrian environment and encourage walking. The design of sidewalks should provide for a minimum width of five feet, according to the Americans with Disabilities Act Accessibility Guidelines. A width of four feet is acceptable only with passing zones of five feet in width and length at minimum intervals of 200 feet. Where pedestrian activity is expected to be high, a sidewalk width of 6-10 feet may be more appropriate. The minimum sidewalk width where pedestrian activity is expected to be high should be calculated using the Caltrans Highway Design Manual.

Figure 15 shows the roads with gaps in the sidewalk network. Table 9 shows the list of sidewalk projects by street and shows the length of each project. Some sidewalk projects are fully or partially located on roadways that are identified for other improvements as is documented in the Draft Capital Improvement Plan Report (Draft CIP). For a project that is marked in Table 9 by an asterisk, the Draft CIP should be consulted when an implementation plan is developed for that project to coordinate project, minimize disruptions to the traveling public, and potentially minimize costs.

Arboretum Trail

The Arboretum Trail (Project P11) shown in Table 9, and in a figure to the right, is a proposed off-street pedestrian path that would connect Fontana Memorial Park, the proposed expansion of the High School Fields, and the Arboretum, as well as Taylor Street, Locust Street, the Locust Bikeway, and Whitmore Avenue.



Proposed Arboretum Trail - Walking Path Concept

Table 9 Sidewalk Needs		
ID	Project Name	Length (mi)
P01*	Walker Lane/2 nd Street	0.44
P02*	Locust Street	0.59
P03*	Pine Street	0.06
P04*	Whitmore Avenue	0.52
P05*	Santa Fe Avenue	0.87
P06*	Tully Road	0.96
P07*	2 nd Street South of Pine Street	0.03
P08*	Charles Street	0.20
P09*	5 th Street	0.21
P10*	7 th Street	0.40
P11*	Arboretum Trail	0.27
Total		4.55
NOTE: * Consult the Draft Capital Improvements Plan (Draft CIP) when an implementation plan is developed for this project because one or more projects identified in the Draft CIP may coincide with this project. Source: Fehr and Peers, 2008.		

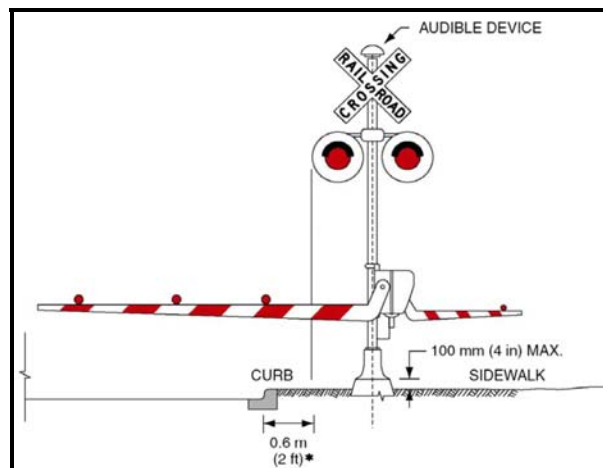
LIGHTING

Pedestrians travel during the day and night. Neighborhoods and in Downtown should provide pedestrian-scale lighting to improve real and perceived safety and to promote walking. Pedestrian-scale lighting should be provided to illuminate pedestrian facilities that are particularly dark, with the highest priority given to facilities shaded by street trees. Street trees should also be maintained to provide enough clearance for any pedestrian-scale lighting that is installed.



RAILROAD CROSSINGS

According to the California Public Utilities Commission (PUC), an at-grade crossing of a railway and a pathway will require an engineering study that should consist at a minimum of the PUC and the parties responsible for the pathway and railway. The design of railroad crossings should taken into consideration pedestrian crossing gates/arms and fencing that would channelize pedestrians and force them to wait for a crossing arm along with an emergency exit gate for those stuck behind the arm. The following figures show examples of pedestrian crossing arms, gates and fencing. The locations for consideration are the following crossings along the Santa Fe Railroad: Hatch Road, Tully Road, Whitmore Avenue, Service Road, and Geer Road. These locations are highlighted in the bicycle projects phase figures in Chapter 10 (See Figures 17A-C).



Pedestrian Gate Placement with Pedestrian Gate Arm¹⁸



Pedestrian Gate Arm, Emergency Exit Gate and Adjacent Fencing¹⁹

18. Source: Caltrans. *Manual on Uniform Traffic Control Devices*. September 26, 2006.

19. Source: California Public Utilities Commission. *Pedestrian Rail Crossings in California*. December 2007.

CROSSWALK POLICY

Well-marked pedestrian crossings accomplish dual goals. They prepare drivers for the likelihood of encountering a pedestrian, and they create an atmosphere of walkability and accessibility for pedestrians. In California, it is legal for pedestrians to cross any street, except at unmarked locations between immediately adjacent signalized crossings or where crossing is expressly prohibited. Marked crossings reinforce the location and legitimacy of a crossing.



Why do cities mark crosswalks?

Crosswalk Function:

- Creating reasonable expectations where pedestrians may cross a roadway
- Predictability of pedestrian actions and movement
- Channelization of pedestrians to designated crossing locations

Advantages of marked crosswalks:

- Help pedestrians find their way across complex intersections
- Designate the shortest path
- Direct pedestrians to locations of best sight distance

Disadvantages of marked crosswalks:

- May create a "false sense of security" for pedestrians
- At uncontrolled locations on multi-lane streets with higher traffic volumes, may result in a greater number of pedestrian collisions if additional enhancements are not provided
- Maintenance is costly

In pedestrian-friendly cities, crossing locations are treated as essential links in the pedestrian network. At mid-block locations, pedestrians cannot cross legally without a marked crosswalk. When there are pedestrian generators in these locations, it may be appropriate to create safe, convenient crossing opportunities. Without mid-block crossing locations, pedestrians face the following three choices: detour to a controlled crossing location; detour to an intersection where it is legal to cross, even if not controlled; or jaywalk (cross illegally).

Steps in identifying candidate locations for crosswalks

The first step in identifying candidate crosswalk locations is to identify the places people would like to walk (pedestrian desire lines) which are affected by local land uses (homes, schools, parks, commercial establishments, etc.) and the location of transit stops. This information forms a basis for identifying pedestrian crossing improvement areas and prioritizing such improvements, thereby creating a convenient, connective and continuous walking environment.

The second step is identifying where it is safest for people to cross. Of all road users, pedestrians have the highest risk because they are the least protected. National statistics indicate that pedestrians represent 14 percent of all traffic incident fatalities while walking accounts for only three percent of total travel trips. Pedestrian collisions occur most often when a pedestrian is attempting to cross the street at an intersection or mid-block location²⁰.

Several major studies of pedestrian collision rates at marked and unmarked crosswalks have been conducted. In 2002, the Federal Highway Administration (FHWA) published a comprehensive report on the relative safety of marked and unmarked crossings. This document presents a variety of special treatment options to mitigate safety, visibility or operational concerns at specific locations. The flowchart on the following page outlines the steps in identifying candidate locations for crosswalks based on the findings of the 2002 FHWA Study.

CONTROLLED LOCATIONS

The following is the recommended, or best practice, for pedestrian treatments in crosswalks at signalized intersections or stop-controlled approaches (i.e., vehicles stop at approach in question).

Mark Crosswalks on all approaches (i.e., legs of the intersection) using standard crosswalk markings or high-visibility markings. Where the collision data or observations of conflicts identify a crosswalk of particular concern, consider special treatments (identified below under "Solutions")

- **Pedestrian signals should be timed to accommodate a walking speed of 3.5 feet per second during the pedestrian clearance interval.** The proposed amendments to the MUTCD call for a minimum walk time²¹ of three feet per second from top of curb ramp to top of curb ramp, with the pedestrian clearance interval, timed for a walking speed of 3.5 feet per second. If there are special land uses such as senior centers or schools within 100 feet of the intersection, slower walking speeds (3.0 feet per second) may be considered

The following two situations are **exceptions** to the policy of marking crosswalks on all approaches:

- **Crossing locations with heavy right- or left-turn volumes** that occur during the same signal phase as the conflicting pedestrian movement where protected signal phasing for the heavy movement or other solutions are infeasible²²
- **Intersections with inadequate sight distance**²³ of pedestrians. Elimination of crosswalks in these instances should only occur after other solutions have been deemed infeasible

Specific treatments at locations with the following characteristics are addressed in Chapter 6. Treatments at these locations should be chosen using engineering judgment.

- Wide intersections
- Intersections with high numbers of turning vehicles

20. Pedestrian Crash Types, A 1990's Information Guide, FHWA; This paper analyzed 5,076 pedestrian crashes that occurred during the early 1990's. Crashes were evenly selected from small, medium, and large communities within six states: California, Florida, Maryland, Minnesota, North Carolina, and Utah.

21. The minimum walk time is the total time allocated including the WALK and the clearance interval, or FLASHING DON'T WALK (FDW)

22. Alternative pedestrian crossings should be identified and it may be necessary to install barrier treatments to reinforce that pedestrian should not cross at the location without a marked crosswalk.

23. Unrestricted sight distance of pedestrians by motorists should be at least ten times the speed limit (for example, 250 feet for a street with a speed limit of 25 miles per hour).



- Intersections with high numbers of pedestrians

UNCONTROLLED LOCATIONS

This section describes best practices for considering the installation of crosswalks at uncontrolled intersections and mid-block locations. Figure 16 shows typical signage for these locations.

When to Install Crosswalks at Uncontrolled Intersections

The following is the recommended practice, or best practice, for pedestrian treatments at uncontrolled approaches to intersections that are not controlled by traffic signals or stop signs.²⁴

Crossings should be marked where all of the following occur:

- Sufficient demand exists to justify the installation of a crosswalk (see Demand Considerations below)
- The location is 300 feet or more from a controlled crossing location
- The location has sufficient sight distance (sight distance in feet should be greater than 10 times the speed limit), and/or sight distance will be improved prior to crosswalk marking
- Safety considerations do not preclude a crosswalk

Demand Consideration:

Uncontrolled crossings should be identified as a candidate for marking if there is a demonstrated need for a crosswalk. Need may be demonstrated by:

- 20 pedestrians per hour during the peak hour or 60 pedestrians total for the highest consecutive four-hour period

or:

- The crossing is on a direct route to or from a pedestrian generator, such as a school, library, senior center, shopping center, park, or employment center



When to Install Crosswalks at Mid-Block Locations

Mid-block crossings should be marked where the following occur:

- Sufficient demand exists to justify the installation of a crosswalk (see Demand Considerations below)
- The mid-block location is approximately 300 feet or more from another crossing location

24. The most common crosswalk of this type will be at intersections where a minor side street has a stop sign and a major street is uncontrolled.

- The mid-block location has sufficient sight distance (sight distance in feet should be greater than 10 times the speed limit)
- Provision of a crossing would channelize potential jaywalkers to a suitable crossing location
- Safety considerations do not preclude a crosswalk (see below, Safety Considerations at Uncontrolled Locations)

Where mid-block crosswalks are installed, the default design should be the “triple four” or high-visibility pavement treatments. The installation of mid-block crosswalks requires approval of the City Council.

Demand Considerations: Candidate locations for marked pedestrian crossings at mid-block locations should meet one of the following criteria:

- 40 pedestrians during a one-hour period or 25/hour for four consecutive hours
- A pedestrian generator is less than 300 feet away at a location mid-way between signal or stop-controlled intersections, or there are significant pedestrian trip generators on both sides of the street

Safety Considerations at Uncontrolled Locations

The flowchart on the following page and corresponding Table 10 should be used to determine if special treatments are needed to ensure safe crossing at uncontrolled locations. Where safety concerns would continue even with special treatments, such as a high-visibility crosswalk, pedestrian signal warrants, established in the California *Manual on Uniform Traffic Control Devices*, should be tested to determine whether the crossing warrants a signal. In the event that a signal is determined to be inappropriate or the recommended device is infeasible in the short term due to financial considerations, the crosswalk should not be marked.

A crosswalk should *not* be installed if sight distance in feet is less than ten times the speed limit. For example, if an intersection has an approach speed of 25 miles per hour, the unrestricted view of pedestrians by motorists should be at least 250 feet.

TRAIL CROSSINGS

At locations where a multi-use trail crosses a street, the location of the crossing (mid-block or intersection) should determine what type of safety considerations are used to determine whether or not to mark a crosswalk.

Trail crossings should be well lit and well signed. At all uncontrolled at-grade trail crossings, traffic calming and signage within 150 to 200 feet of the crossing should be considered. Warning signs should be installed within 30 to 50 feet of the crossing.

If the crossing does not meet the demand or safety considerations for installation of a marked crosswalk and the nearest signalized crossing location is: 300 feet or more away on an arterial street; 200 feet or more away on a collector street; or 100 feet or more away on a local street, signage and landscaping should be used to direct both cyclists and pedestrians to the adjacent signalized crossing. However, if the nearest signalized crossing is greater than 150 feet away and the location does not meet safety considerations for a marked crosswalk, and other at-grade treatments are infeasible, a grade-separated bicycle-pedestrian crossing should be considered. Additional information regarding uncontrolled trail crossings is provided in Chapter 6 in the Bicycle Facility Design Guidelines section.



CROSSWALK PLACEMENT FLOWCHART FOR UNCONTROLLED LOCATIONS

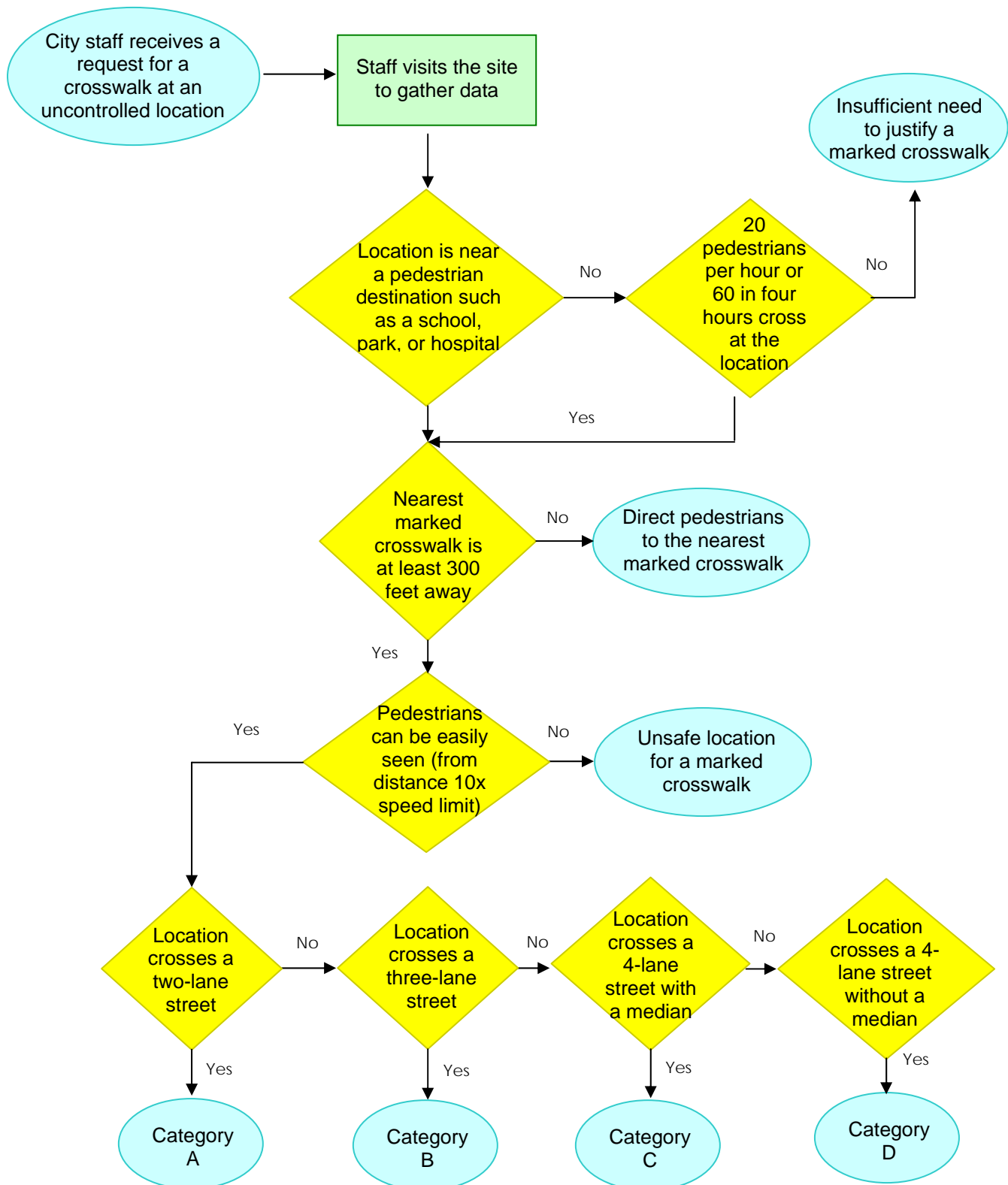


Table 10
Uncontrolled Crossing Treatments

	30 miles per hour or less				35 miles per hour				40 miles per hour or more			
Average Daily Traffic	Category A	Category B	Category C	Category D	Category A	Category B	Category C	Category D	Category A	Category B	Category C	Category D
9,000 cars or fewer per day	SC	HVC	HVC	HVC	HVC	HVC	HVC	HVC1	HVC2	HVC2	HVC2	HVC2
9,000-12,000 cars per day	SC	HVC	HVC	HVC1	HVC	HVC2	HVC2	HVC2	HVC2	HVC2	PS/PB	PS/PB
12,000-15,000 cars per day	HVC	HVC2	HVC2	HVC2	HVC	HVC2	HVC2	HVC2	HVC2	PS/PB	PS/PB	PS/PB
15,000 cars or more per day	HVC	HVC2	PS/PB	PS/PB	HVC2	PS/PB	PS/PB	PS/PB	PS/PB	PS/PB	PS/PB	PS/PB

Legend:

Category A: Two Lane Street

Category B: Three-lane streets (Refers to streets with one lane in each direction and a center two-way left-turn lane.)

Category C: Four or more lanes with a raised median

Category D: Four or more lanes without a raised median

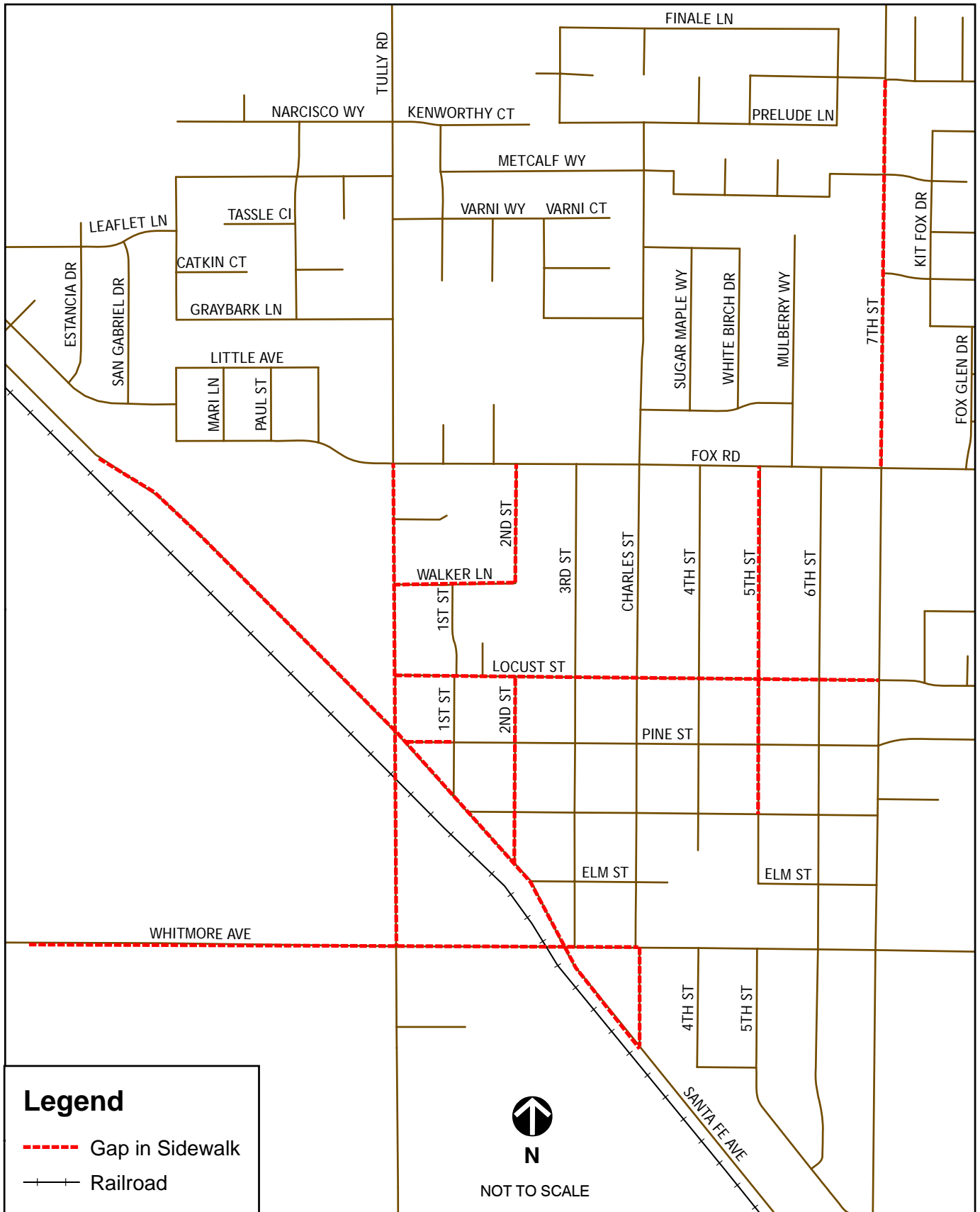
SC = Standard Crosswalk

HVC = High Visibility Crosswalk

HVC1 = High visibility crosswalk plus a pedestrian refuge or other Level 1 device

HVC2 = High visibility crosswalk plus a pedestrian refuge, overhead flashing beacons, or other Level 1 and 2 devices

PS/PB = Pedestrian signal or pedestrian bridge



City of Hughson Non-Motorized Transportation Plan



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EXISTING SIDEWALK DEFICIENCIES



R1-5



W11-2



W16-7p



R1-6



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City of Hughson Non-Motorized Transportation Plan

TYPICAL PEDESTRIAN SIGNING

Figure 16

8. BICYCLE SUPPORT FACILITIES

Every bicycle trip has two components: 1) the route selected by the bicyclist and 2) the “end-of-trip” facilities at the destinations. Support facilities are facilities that cyclists use when they reach their destinations. They can include short and long-term bicycle parking, showers, lockers, restrooms, good lighting, staging areas, bicycle shops, and even public phones. The lack of bicycle facilities at the destination can be one of the largest deterrents to cycling for many riders.

TYPES OF BICYCLE PARKING AND SUPPORT FACILITIES

There are different types of support facilities just as there are different levels of bikeway facilities. Support facilities fall into one of five main categories:

- **Short-term Bicycle Parking:** *Bicycle Racks* are low-cost devices that provide a location to secure a bicycle. Ideally, bicyclists can lock both their frame and wheels. The bicycle rack should be in a highly visible location secured to the ground, preferably within 50 feet of a main entrance to a building or facility, and be appropriately advertised with the signage near the roadway. Short-term bicycle parking is commonly used for short trips, when cyclists are planning to leave their bicycles for up to a few hours.
- **Long-term Bicycle Parking:** *Bicycle Lockers* are covered storage units that can be locked individually, providing secure parking for one bicycle. *Bicycle Cages* are secure areas with limited-access doors. Occasionally, they are attended. Each of these is designed to provide bicyclists with a high level of security so that they feel comfortable leaving their bicycles for long periods of time. They are appropriate for employees of large buildings and at transit stations.
- **Shower and Locker Facilities:** *Lockers* provide a secure place for bicyclists to store their helmets or other riding gear. *Showers* are important for bicycle commuters with a rigorous commute and/or formal office attire requirements.
- **Bicycle Stations:** *Bicycle Stations* provide free all-day, attended bicycle parking. Three recent bicycle station projects include one in Long Beach, the Palo Alto CalTrain station, and the Downtown Berkeley BART station. Bicycle stations can provide bicycle tune-ups, repairs, and rentals in order to sustain their operation. They are intended to serve locations with large numbers of bicycle commuters needing long-term bicycle parking and are an excellent means of facilitating the intermodal connections between bicycles and transit.
- **Trailheads & Staging Areas:** *Trailheads and Staging Areas* provide access to and support facilities along trails. These may include bicycle racks, public telephones, restrooms, drinking fountains, and maps and signage.
- **Bicycle Shops:** *Bicycle shops* provide bicycles, replacement parts, maintenance, education, maps, and are central to the formation of a bicycle community. A shop should be encouraged at a central location well served by bikeways so that is easily accessible and widely used by the community. Bicycle shops can provide expertise to the community, can work with City Police to host bicycle rodeos, and can assist or sponsor the implementation of various educational aspects of this Plan.



EXISTING FACILITIES

Bicycle parking is provided at the elementary schools and the middle school. These schools also provide a bicycle and pedestrian safety assembly. Skateboard storage is also provided at the middle school. Bicycle parking is also provided at the Hughson City Hall. These locations are shown in Chapter 3 on Figure 2B. No changing or clothes/equipment storage facilities for bicyclists are provided in the City.

The City of Hughson currently does not have an ordinance that requires the provision of bicycle parking.

KEY RECOMMENDATIONS

The following improvements and programs are recommended to increase the provision of end-of-trip facilities for bicyclists:

- Evaluate the needs of the community for bicycle parking and consider amending the City of Hughson Zoning Ordinance to address these needs.
- Make a list of locations of bicycle racks and lockers available to the public.
- Encourage the Hughson Unified School District to provide safe and secure bicycle parking at all schools.

Determine the adequacy of bicycle parking currently provided. Pursue grant funds or other funding to supplement insufficient bicycle parking.



9. SAFETY AND EDUCATION

This section identifies various bicycle and pedestrian safety improvements and recommends specific actions which are designed to enhance safety for bicyclists and pedestrians through education. While improving safety is extremely important and a high priority, riding a bicycle and walking involve inherent risk that no improvements, including those listed in this section, can completely eliminate.

BICYCLE COLLISIONS

On-street bicycle riding is commonly perceived as unsafe because it exposes a lightweight, two-wheeled vehicle to heavier and faster-moving automobiles, trucks, and buses. However, collision statistics show that, based on number of users and miles traveled, bicyclists face only a marginally higher degree of sustaining an injury than a motorist²⁵. Death rates are essentially the same for bicycle and automobile collisions. Roughly half of reported bicycle collisions show the bicyclist to be at fault. National studies show that approximately 54 percent of bicycle-related collisions are caused by bicyclists.

The most common causes of bicycle collisions include wrong-way riding and right-of-way violations by either the cyclist or the motorist. Some bicyclists believe that in the absence of bicycle lanes, they are more visible to motorists if they ride against the flow of automobile traffic; however, this practice results in turning conflicts between bicycles and autos and poses a danger for less experienced bicyclists who might unintentionally weave into the path of oncoming autos. Others believe that they are safer riding on sidewalks, which in fact increases their chance of being hit by a vehicle pulling out of a driveway and creates conflicts with pedestrians. The collision figures reflect reported collisions only; bicycle-related collisions tend to be under-reported especially if they do not involve bodily or property damage.

Bicycle collision statistics taken for May 2002 - September 2007 indicate that in the City of Hughson approximately 1.3 percent of all reported vehicle related collisions involve a bicycle (a total of 2 bicycle collisions were recorded in the 5+ year period). The number of collisions involving a bicycle in Hughson is 75 percent lower than the statewide average of 5.3 percent of all collisions.²⁶ In those five years, the City has added two bicycle facilities. The cyclist was at fault in both recorded collisions. The neighborhood with all the bicycle collisions was the Downtown residential area. The vast majority of the pedestrian collisions were also in this neighborhood, indicating that this neighborhood be a high priority for bicycle and pedestrian improvements. Collision data is often an indicator of greater use than a measure of safety of a particular area. Considering the deficiencies and potential noted, improvements made to this neighborhood will not only improve the safety for its residents, but also for people traveling between the north of Hughson and Downtown (and points south).

BICYCLE EDUCATION PROGRAMS

Programs to teach current and potential bicyclists of all ages about the fundamentals of bicycle riding are important to establishing good riding skills. Currently, the elementary schools and middle school provide assemblies at the beginning of the year to discuss pedestrian and bicycle safety. The following steps are recommended to build upon this effort:

25. Bicycle Federation of America

26. The 1997 *Bicycle Master Plan* noted that a total of 127 bicycle collisions were recorded by the City of Hughson between 1992 and 1995.



- Establish a joint bicycle-pedestrian education program that is taught yearly to school children (kindergarten to 5th grade) and senior adults. Include *bicycle rodeos* where children are given actual riding lessons in school.
- Establish a bicycle helmet program through various statewide helmet programs that provides low-cost helmets to schoolchildren. Helmets should be mandatory for any student riding a bicycle to school.
- Establish an adult bicycle education program through the adult school, parks and recreation, and other departments that teaches adults how to ride defensively and encourages people to ride to work. This program may include the use of volunteers from local bicycle clubs and possibly sponsorship of bicycle tours and races.
- Educate drivers about the rights of bicyclists through a variety of means including making bicycle safety a part of traffic school curriculum, producing a brochure on bicycle safety and rights for public distribution, enforcing existing laws regarding both motorists and bicycles, encouraging the state to include questions about bicycle safety and operations on drivers license exams, and providing signs at strategic locations advising motorists to share the roadway with bicyclists.

Safe Moves, a statewide non-profit organization, has devised a bicycle and pedestrian safety education program for school children and senior adults, incorporating many of the above mentioned components. The Safe Moves program offers school workshops, bicycle rodeos, bicycle registration, helmet inspection, and traffic assessment skills.

Licensing bicycles helps reduce theft by providing an identification number for the police. It can also serve as a regular forum for providing education to riders.

- Consider establishing a bicycle licensing program.

SECURITY

The Hughson Police Department should provide enforcement on multi-use paths as well as enforcement of existing vehicle statutes relating to bicycle operations and pedestrian violations.

In general, multi-use pathway undercrossings (although none are proposed in Hughson) require special attention because they can be perceived as unsafe areas, particularly after dark. Any undercrossing over 50 feet in length should be lighted, and all approaches to the undercrossing should provide the user a clear view all the way through the undercrossing. The City will design undercrossings to avoid areas off the path where people can loiter.

The Police Department may have to acquire special vehicles (such as trail bikes) for patrolling the paths. Every five miles of pathway requires one hour of additional police manpower.

PEDESTRIAN COLLISIONS

According to the California Highway Patrol's Statewide Integrated Traffic Records System (SWITRS), pedestrians comprised 16 percent of all fatalities for reported collisions in Stanislaus County during the 1996-2005 period with 13 pedestrian deaths²⁷. In 2000, 4,739 pedestrians were killed and

27. California Highway Patrol. [Statewide Integrated Traffic Records System 2005](http://www.chp.ca.gov/switrs/pdf/2005-sec8.pdf). *2005 Annual Report of Fatal and Injury Motor Vehicle Traffic Collisions*. www.chp.ca.gov/switrs/pdf/2005-sec8.pdf, 6/27/03.



78,000 injured in traffic collisions in the United States.²⁸ Statewide, 697 pedestrians died in reported collisions, or 21 percent of all fatalities. Pedestrian collision statistics from May 2002 - September 2007 indicate that in the City of Hughson approximately 4.6 percent of all vehicle collisions involved a pedestrian (a total of 7 pedestrian collisions were recorded in the 5+ year period). The number of collisions involving a pedestrian in Hughson is 36 percent lower than the statewide average of 7.2 percent of all collisions.

Of the seven pedestrian collisions in the last five years, only one (14 percent) occurred at an intersection, while the remaining (86 percent) occurred when pedestrians were either walking on the shoulder of the road (29 percent) or were crossing outside of a crosswalk (57 percent). Pedestrians were at fault a majority of the time (about 67 percent). The median age of pedestrians involved was 12 while the median age of the drivers involved was 45. The Downtown Residential Area experienced the largest number of pedestrian collisions (6 of 7).

PEDESTRIAN EDUCATION PROGRAMS

Programs to teach current and potential pedestrians and motorists of all ages about the fundamentals of crossing the street and of respecting the right-of-way of pedestrians is important to improving the safety for pedestrians. Currently, the elementary schools and middle school provide assemblies at the beginning of the year to discuss pedestrian and bicycle safety. The following steps are recommended to build upon this effort:

- Establish a joint bicycle-pedestrian education program that is taught yearly to school children (kindergarten to 5th grade) and senior adults. Include supervised crossing lessons to teach students about when to cross the street.
- Establish a periodic "Walk your child to school" day to educate students about crossing the street and to encourage walking as a means of transport.
- Establish "walking school buses" guided by parents or other facilitators to provide a supervised means for walking elementary school students to and from school.
- Establish a school crossing guard program for elementary students that enhance the visibility of the crosswalks during peak pedestrian travel times (i.e., a half-hour before and after school).
- Educate drivers about the rights of pedestrians through a variety of means including making pedestrian safety a part of traffic school curriculum, producing a brochure on pedestrian safety and rights for public distribution, enforcing existing laws regarding both motorists and pedestrians, encouraging the state to include questions about pedestrian safety and operations on drivers license exams, and providing signs at strategic locations advising motorists to yield to pedestrians.
- Encourage the development of a periodic police sting operation to enforce pedestrian right-of-way laws in high pedestrian-activity areas.

28. United States Department of Transportation. National Highway Traffic Safety Administration. National Center for Statistics and Analysis Advanced Research Analysis. *Traffic Safety Facts 2000: Pedestrians*. DOT HS 809 331. www.nrd.nhtsa.dot.gov/pdf/nrd-30/nCSA/tsf2000/2000pedfacts.pdf, 6/27/03.

28. United States Department of Transportation. National Highway Traffic Safety Administration. National Center for Statistics and Analysis Advanced Research Analysis. *Pedestrian Roadway Fatalities*. DOT HS 809 456. April 2003. www.nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/Rpts/2003/809-456.pdf, 6/27/03.



10. PRIORITIZATION OF PROJECTS

The proposed bikeway and pedestrian system, when fully implemented, will provide a comprehensive system for the City of Hughson. However, due to limited resources, the proposed segments need to be prioritized for implementation over the next 20 years.

BIKEWAY PROJECTS

The method employed for the prioritization of bikeway projects was developed by Fehr & Peers and has been used by other agencies in their bikeway plans. Existing bikeways were included in the project list and subsequent cost estimates due to the recommendations to improve them. The bikeway projects list and cost estimates do not include railroad crossing improvements. However, the locations in need of railroad crossing improvements are shown in Figures 17A-C. Each bikeway project was evaluated with a total of 12 possible points based on four elements:

- Activity Centers
- Transit Access
- Connectivity
- Relative Ability to Implement

The method used to score projects within each element is described below:

Activity Centers (three points): The number of local and regional activity centers on or near a proposed bikeway was counted. The activity centers include regional parks, shopping centers, schools, large employment centers, and multi-modal connections. The activity centers were weighted differently based on their ability to attract bicycle riders. For example, neighborhood parks would have less potential to attract bicycles than regional parks. The total number of activity centers along a bikeway route was averaged on a per-mile basis.

- Projects with two or more activity centers per mile received three points
- Projects with between one and two activity centers per mile received two points
- Projects with less than one activity center per mile received one point

Connectivity (three points): This criterion evaluates the ability of a bicycle facility to provide a viable alternative to heavily used arterials, provide connectivity between activity centers, and connect to and expand existing bicycle facilities. Projects with high connectivity received three points, moderate connectivity received two points, and low connectivity received one point. A more detailed description of how each proposed bikeway was evaluated is shown below.

- A proposed bikeway receives three points if one of the following conditions is met:
 - connects to existing bikeways and/or activity centers on both ends
 - bridges a gap in an existing "crucial" bikeway
 - serves as a collector of other bikeways or residential streets
 - passes through the entire city



- A proposed bikeway receives two points if it one of the following conditions are met:
 - provides a "short cut" for another bikeway
 - serves as a bypass to busy arterial streets
 - connects to potential regional routes
- A proposed bikeway receives one point if one of the following conditions are met:
 - connects to an existing bikeway on one end and a proposed bikeway on the other end
 - connects to proposed bikeways on both ends

Transit Access (three points): The methodology for assessing transit access for each project was as follows:

- Projects that provide direct access to a bus stop receive three points
- Project that provide do not provide direct access to a transit stop but provide access within 2 city blocks of a transit stop receive two points
- Projects that provide en route access to a transit stop (those that do not provide direct access to a transit stop, but that are within 1 mile of a transit stop and connect to a route that comes within 2 city blocks of a transit stop) receive one point.

Relative Ability to Implement (three points): The relative ability to implement a project was determined through a review of existing plans, field review of the study area, and the level of construction required for implementation. In general, a project is considered to have high implementation ability if no restriping or modification of existing street layout is necessary. If restriping and minor modifications to the existing layout is required, the project is considered to have moderate implementation ability. If major construction is required, the project is considered to have low implementation ability. For ranking purpose, bikeway projects with high implementation ability were given three points, projects with moderate implementation ability were given two points, and projects with low implementation ability were given one point.

The scoring for each bikeway project is listed in Table 11. This analysis assumes the full development of each bikeway.

The project scoring resulted in the grouping of the projects into three implementation categories based on their relative scores. The three categories are defined as follows:

Phase I (Short-Term Projects): Projects that received the highest relative scores and are recommended for highest priority consideration for implementation. These projects would be targeted for completion within five years.

Phase II (Medium-Term Projects): Moderate relative scores and the second group of projects considered for funding and implementation. These projects would be targeted for completion within 10 years, but some projects may be dependent on when development occurs.

Phase III (Long-Term Projects): The lowest relative scores and the third group considered for funding. Although the projects in this group received relatively low scores, they are part of a plan that, when fully developed, forms a comprehensive bikeway system. These projects would be targeted for completion within 15-20 years or as adjacent development occurs.



Table 11 Bicycle Facilities Scoring							
ID	Project Name	Length	SCORES				
			Activity Centers	Connectivity	Transit	Ability to Implement	TOTAL
L05	Hughson Ave Bicycle Lanes	0.45	3	3	3	2	11
L14	6 th Street Bicycle Lanes	0.50	3	3	1	3	10
L13	Charles Bikeway	0.95	3	3	2	2	10
L04	Locust Bikeway	1.05	3	3	1	3	10
L02	Flora Vista/Fox Bikeway	2.05	3	3	2	2	10
L12	Tully Bikeway	2.00	3	3	1	2	9
L15	7 th Street Bicycle Lanes	2.00	3	3	1	2	9
R06	Whitmore Ave Regional Route	2.00	3	3	2	1	9
R10	Santa Fe Regional Route	3.15	3	3	2	1	9
L16	Thomas Taylor Bicycle Route	0.65	3	2	0	3	8
L11	Mountain View Bicycle Lanes	0.25	3	2	1	1	7
L17	Neighborhood N-S Bicycle Route	0.70	3	1	1	1	6
L18	Euclid Bicycle Lanes	1.90	2	2	1	1	6
R01	Hatch Road Path	2.05	2	2	1	1	6
R07	Roeding Road	1.25	3	2	0	1	6
L03	"A" Street Bicycle Lanes	0.05	3	0	1	1	5
L08	Neighborhood E-W Bicycle Route	0.20	3	1	0	1	5
L09	Service Road Bicycle Lanes	1.25	2	2	0	1	5
R19	Geer Road Path	2.95	2	2	0	1	5
Source: Fehr and Peers, 2008.							



Many medium-term and long-term projects will be constructed as adjacent parcels develop. Some of the bikeways may also be developed in multiple phases. Table 12 shows the order and rankings of bikeway projects. Within each phase the projects are divided into sub-phases in order to further prioritize projects. The order of projects within each sub-phase can be considered of equal priority. Figures 17A, 17B, and 17C show the Phase I, Phase II, and Phase III bikeway networks and railroad crossing improvements, respectively.

Table 12 Bicycle Facilities Rankings and Phases			
Phase	ID	Project Name	Length
<i>Phase I Projects</i>			
I A	L05*	Hughson Ave Bicycle Lanes	0.45
I A	L14	6 th Street Bicycle Lanes	0.50
I A	L13*	Charles Bikeway	0.95
I B	L04*	Locust Bikeway	1.05
I B	L02-1*	Flora Vista/Fox Bikeway - <i>Segment: Leaflet to Euclid</i>	1.60
I B	L12-1*	Tully Bikeway - <i>Segment: North of Whitmore</i>	1.00
I B	L15-1*	7 th Street Bicycle Lanes - <i>Segment: North of Santa Fe</i>	1.40
I B	R06-1*	Whitmore Avenue Regional Route - <i>Segment: Tully to 7th Street</i>	0.50
<i>Phase II Projects</i>			
II A	R10*	Santa Fe Regional Route	3.15
II A	L02-2*	Flora Vista/Fox Bikeway - <i>Segment: East of Euclid</i>	0.25
II A	R06-2*	Whitmore Avenue Regional Route - <i>Segment: East of 7th Street</i>	0.75
II B	L16	Thomas Taylor Bicycle Route	0.65
II B	L03	"A" Street Bicycle Lanes	0.05
<i>Phase III Projects</i>			
III A	L11*	Mountain View Bicycle Lanes	0.25
III A	L02-3	Flora Vista/Fox Bikeway - <i>Segment: North of Leaflet</i>	0.20
III A	L17	Neighborhood N-S Bicycle Route	0.70
III A	L18*	Euclid Bicycle Lanes	1.90
III A	L08	Neighborhood E-W Bicycle Route	0.20
III B	L12-3*	Tully Bikeway - <i>Segment: South of Whitmore</i>	1.00
III B	L15-3*	7 th Street Bicycle Lanes - <i>Segment: South of Santa Fe</i>	0.60



Table 12
Bicycle Facilities Rankings and Phases

Phase	ID	Project Name	Length
<i>Phase III Projects (continued)</i>			
III B	R06-3*	Whitmore Avenue Regional Route - <i>Segment: West of Tully</i>	0.75
III B	R07*	Roeding Road Regional Route	1.25
III B	L09*	Service Road Bicycle Lanes	1.25
III B	R01*	Hatch Road Path	2.05
III B	R19*	Geer Road Path	2.95
<p>NOTE:</p> <p>* Consult the Draft Capital Improvements Plan (Draft CIP) when an implementation plan is developed for this project because one or more projects identified in the Draft CIP may coincide with this project.</p> <p>Source: Fehr and Peers, 2008.</p>			



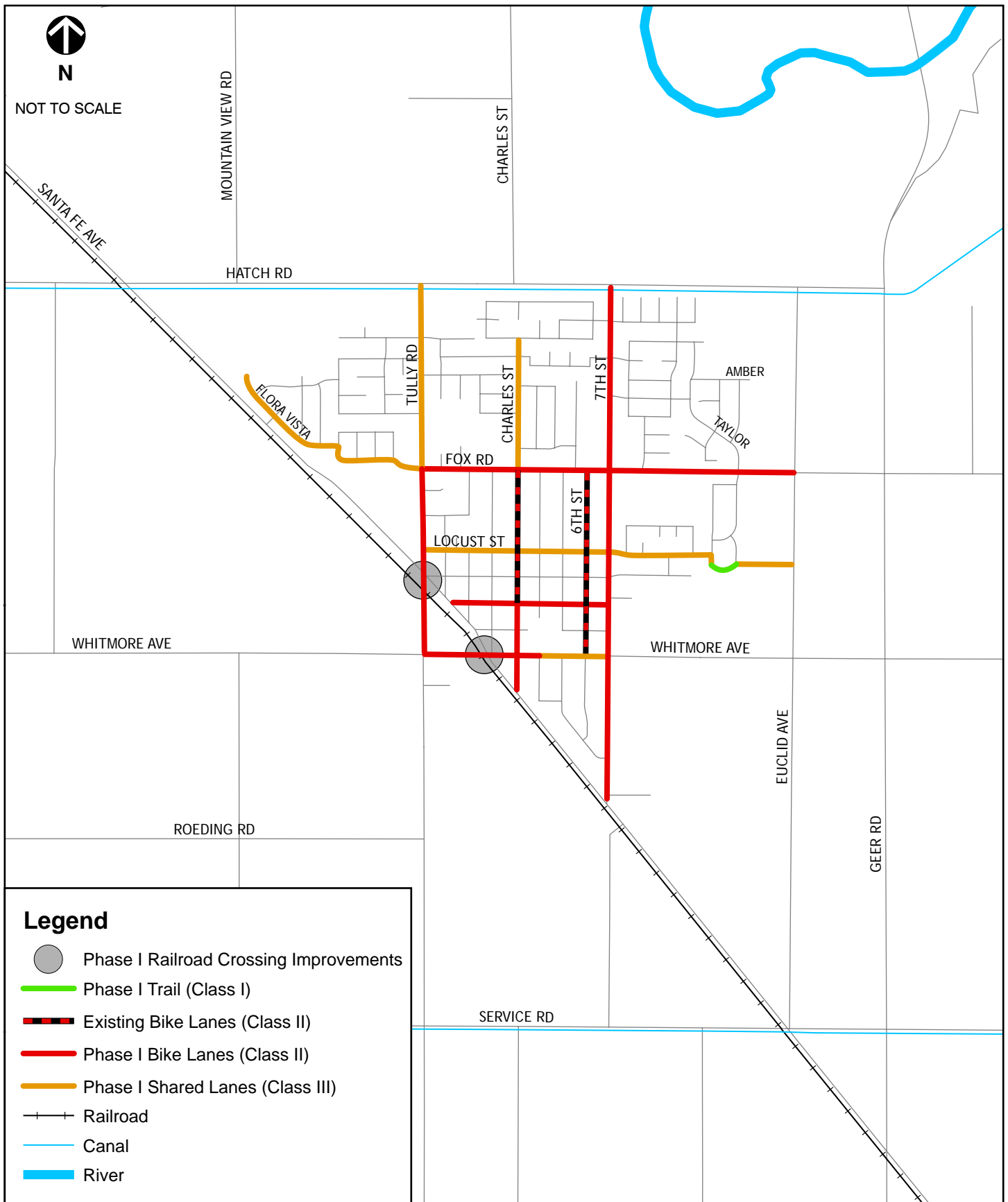
SIDEWALK PROJECTS

There are several places where sidewalks are not provided and these are shown on Figure 15. The conceptual alignment of the Arboretum Trail can be found in Chapter 7. Pedestrian projects were initially classified as short term (Phase I) and mid- to long-term (Phase II) for project implementation. *Phase I* improvements may occur within the next five years and includes projects that would provide a minimum of one sidewalk per street, except on busy arterials where pedestrians should not cross mid-block to access the sidewalk and sidewalks should, therefore, be provided on both sides of the street; *Phase II* improvements include projects that would complete the network of sidewalks. The Arboretum trail is a *Phase I* funding priority. These projects only include sidewalks, additional study is needed for street lighting, curb ramps, crosswalks and other pedestrian facilities. Table 13 shows sidewalk projects by phase.

Table 13 Sidewalk Phases				
ID	Project Name	Phase I Length (mi)	Phase II Length (mi)	Total Length (mi)
P01*	Walker Lane/2 nd Street	0.22	0.22	0.44
P02*	Locust Street	0.25	0.34	0.59
P03*	Pine Street	0.03	0.03	0.06
P04*	Whitmore Avenue	0.44	0.08	0.52
P05*	Santa Fe Avenue	0.87	--	0.87
P06*	Tully Road	0.52	0.44	0.96
P07*	2 nd Street South of Pine Street	--	0.03	0.03
P08*	Charles Street	0.10	0.10	0.20
P09*	5 th Street	0.09	0.12	0.21
P10*	7 th Street	--	0.40	0.40
P11*	Arboretum Trail	0.27	--	0.27
Totals		2.79	1.76	4.55
NOTE: * Consult the Draft Capital Improvements Plan (Draft CIP) when an implementation plan is developed for this project because one or more projects identified in the Draft CIP may coincide with this project. Source: Fehr and Peers, 2008.				

If a particular improvement becomes eligible for funding, or receives funding from a development or other opportunistic source, it may occur within a shorter time frame than the ones specified here. As part of the next CIP update, the City will develop more thorough criteria for ranking projects, as well as a project description for top-ranked projects (see policy 1.9.1.1.).





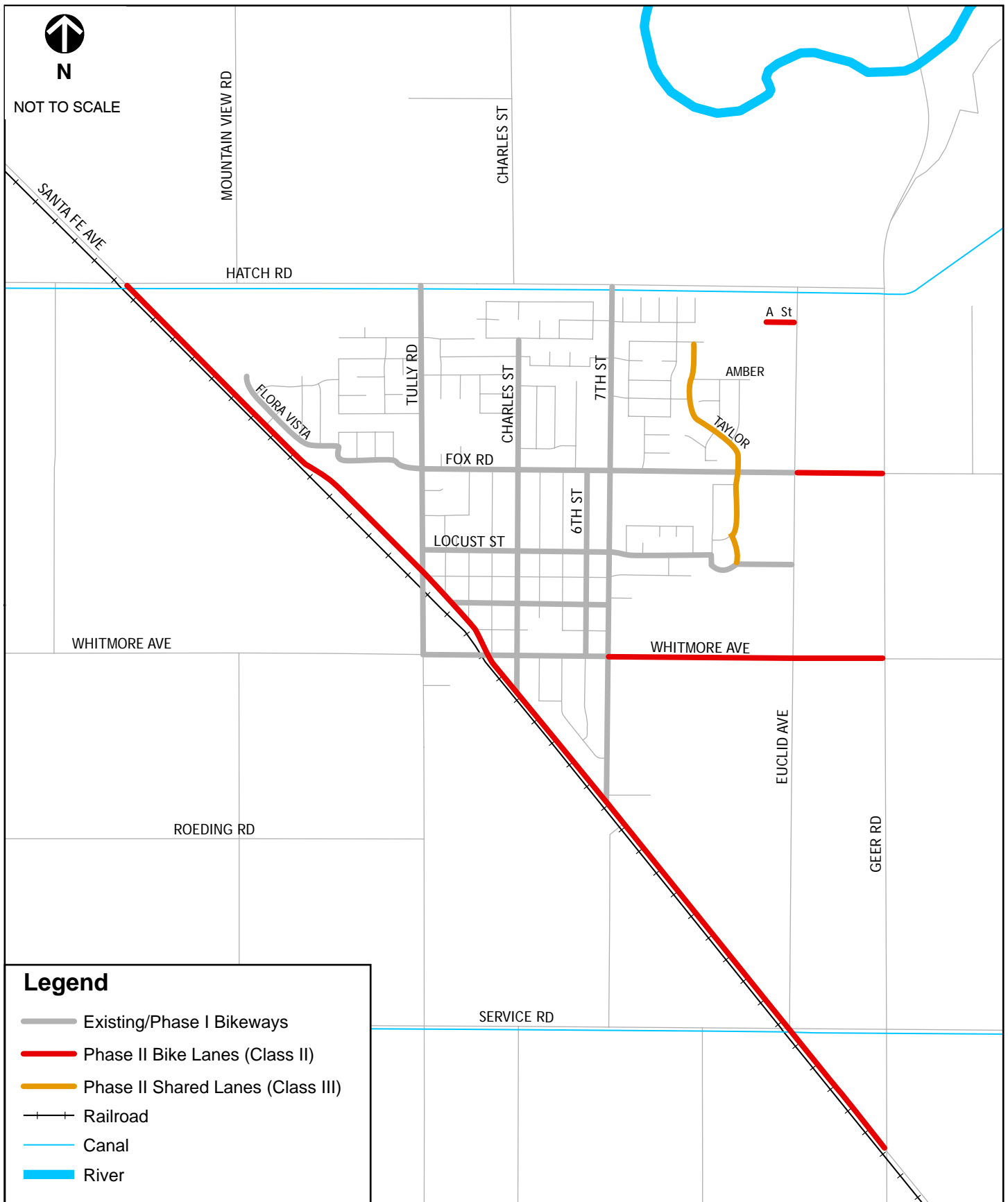
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PROPOSED PHASE I BIKEWAY NETWORK

Figure 17A



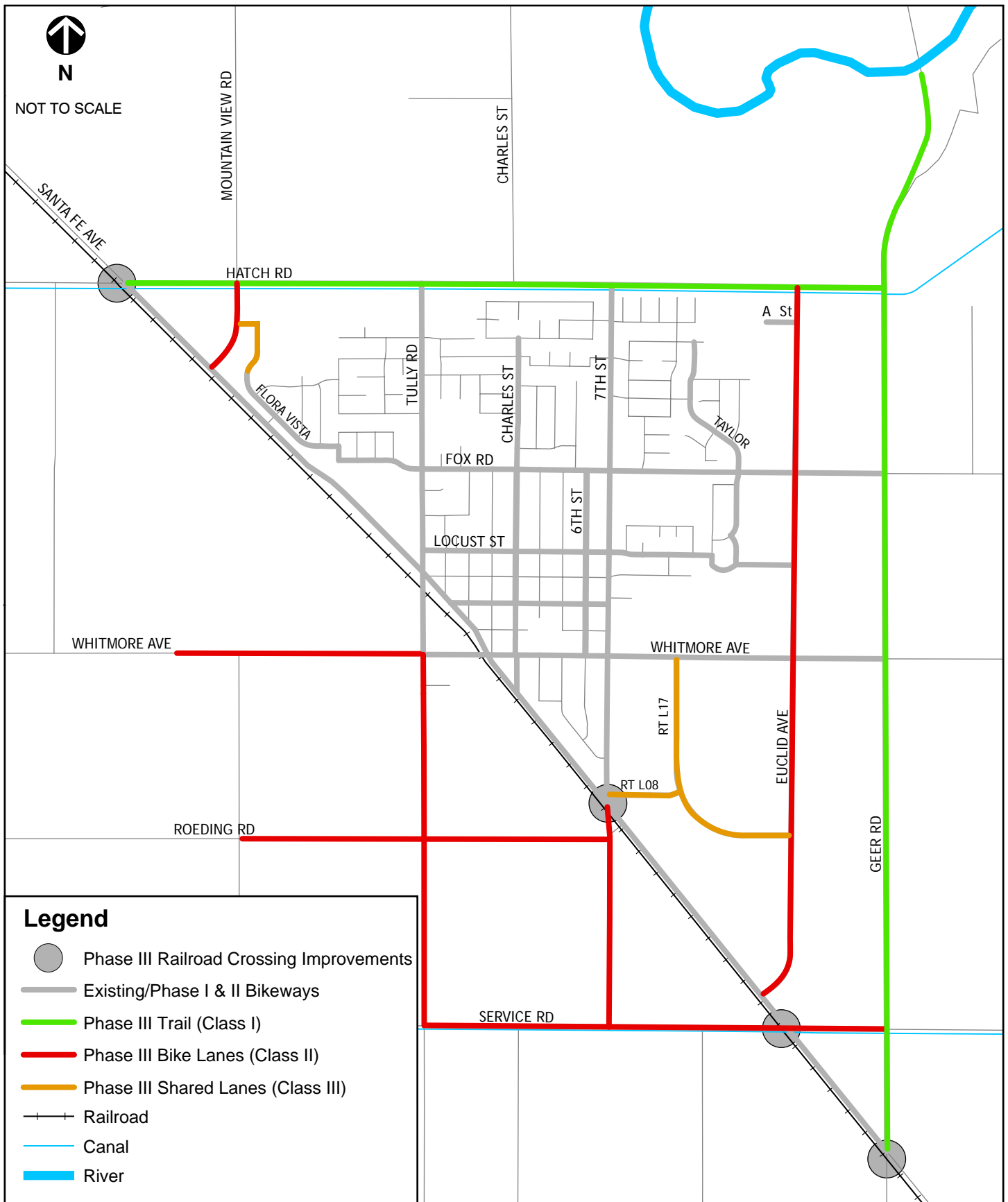
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August 2008
Task Order 2\Graphics\WC06-2281_17B_Phase2

City of Hughson Non-Motorized Transportation Plan

PROPOSED PHASE II BIKEWAY NETWORK

Figure 17B



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City of Hughson Non-Motorized Transportation Plan

PROPOSED PHASE III BIKEWAY NETWORK

Figure 17C

11. FUNDING AND IMPLEMENTATION

Implementation of the proposed bicycle and pedestrian system will require funding from local, state, and federal sources and coordination with multiple agencies. To facilitate funding efforts, this section presents conceptual construction cost estimates for the proposed system along with a brief description of past expenditures for bicycle facilities. At the conclusion of this section, a brief overview of overall funding and implementation strategies are provided.

CURRENT AND PAST EXPENDITURES

Understanding the City's investment in the existing bikeway and pedestrian system and what is required to complete the system is important in developing a funding strategy. With a proposed length of 25.4 miles, the proposed bikeway system represents a substantial investment.

The City of Hughson has spent approximately \$294,000 for new bicycle and pedestrian facilities on Charles Street.

COST OF NEW BICYCLE FACILITIES

Construction Costs

Table 14 provides a unit cost summary for the construction of bikeway facilities in the region. These estimates are based on costs experienced in communities throughout the State. More detailed estimates should be developed following the preliminary engineering stage as individual projects advance towards implementation.

Table 14 Conceptual Unit Cost Estimates For Bikeway Construction	
Facility Type	Estimated Cost per Mile
Class I Bicycle Path - Construct path with minimal grading needed	\$500,000
Class II Bicycle Lane - Signing/stripping plus minimal roadway improvements	\$30,000
Class III Bicycle Route - Signing plus stencils in some locations	\$5,000
Source: Fehr and Peers, 2008.	

For purposes of this *Non-Motorized Transportation 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 no grade separation and minimal grading needed given the existing topography within the City; cost of right-of-way acquisition is not included.
- New Class II facilities would require minimal roadway improvements
- New Class III facilities would require signing only (with optional stencils).



Construction of the proposed system would require approximately \$3,100,000, which equates to an investment of approximately \$155,000 per year over 20 years. 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. The cost is itemized by phase in Table 15. These estimates include existing bikeways due to the recommended improvements to those facilities.

Construction of the proposed Class I paths would require an estimated investment of approximately \$2,600,000 (although actual costs will vary depending on grading work and the level of amenities, such as landscaping and lighting).

Table 15 Conceptual Cost Estimates For Bikeway Construction by Phase				
Development Phase	Total Length (miles) by Facility Type			Estimated Cost
	Class I	Class II	Class III	
<i>Phase I</i>	0.10	4.75	2.60	\$190,000
<i>Phase II</i>	--	4.20	0.65	\$130,000
<i>Phase III</i>	5.00	7.00	1.10	\$2,780,000
TOTALS	5.10	15.95	4.35	\$3,100,000
Source: Fehr and Peers, 2008.				

Maintenance Costs

Multi-use path maintenance includes cleaning, resurfacing, and restriping the asphalt path, repairing bridges and other structures, cleaning drainage system, removing trash, and landscaping. While this maintenance effort may not be incrementally major, it does have the potential to develop heavy expenses if it is not done periodically.

For purposes of estimating maintenance expenses for paved pathways, \$8,500 per mile per year is assumed based on information received from other similar facilities in California. This cost covers all expenses including labor, supplies, and amortized equipment costs. Tasks include trash removal, sweeping (with a mechanized sweeper), sign replacement/repair, pavement marking replacement, pavement sealing/ resurfacing, and structural and drainage inspection. Underbrush and weeds should be removed to maintain a clear pathway.

Sections with narrow widths or other clearance restrictions should be clearly marked. Pathways should be designed to accommodate City maintenance vehicles and emergency vehicles.

Maintenance costs for Class II bicycle lanes and Class III bicycle routes are not provided because it is assumed that sweeping and minor repairs will be provided as part of the regular roadway maintenance. Additional costs should be minimal because, in most locations, the roadway surface area to be maintained will be the same with or without bicycle lanes or routes. Sidewalk maintenance is included in the annual sidewalk program.



COST OF NEW SIDEWALKS

Construction Costs

The unit cost of 5-foot wide sidewalks and complimentary curbs and gutters is estimated to be \$481,000 per mile for one side of the street. This estimate is based on costs experienced in communities throughout the State of California. More detailed estimates should be developed following the preliminary engineering stage as individual projects advance towards implementation.

For purposes of this *Non-Motorized Transportation Plan*, conceptual construction costs for the proposed system were based on the assumption that new sidewalks would be constructed on generally flat right-of-way with no grade separation and minimal grading needed given the existing topography within the City; cost of right-of-way acquisition is not included.

Construction of the proposed system improvements would require approximately \$2,060,000, which equates to an investment of approximately \$103,000 per year over 20 years. 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. The cost is itemized by phase in Table 16.

Table 16 Conceptual Cost Estimates For Sidewalk Construction by Phase		
Development Phase	Length (mi)	Estimated Cost
<i>Phase I</i>	2.79	\$1,342,000
<i>Phase II</i>	1.76	\$847,000
TOTALS	4.55	\$2,189,000
Source: Fehr and Peers, 2008.		

FUNDING STRATEGY

All pedestrian and bicycle projects require two types of funding: initial funding for installation and long-term maintenance funding. A maintenance schedule, budget, and funding source for each project should be developed before project approval. The following are potential funding sources that are not guaranteed, but that should be explored and 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 and pedestrian projects in local traffic impact fee programs and assessment districts.
- Continue to include proposed bikeways and pedestrian improvements 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. There are a variety of potential funding sources including local, state and federal. Some portions of the system can be completed as part of future development and road widening and construction projects.

Federal Funding Sources

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

Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) - SAFETEA-LU 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 SAFETEA-LU 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, bicycle activated traffic control devices, preservation of abandoned railway corridors for bicycle and pedestrian trails, and improvements for highways and bridges. SAFETEA-LU allows the transfer of funds from other SAFETEA-LU programs to the STP Fund. Cities, counties, metropolitan planning organizations (MPO), and transit operators can apply for SAFETEA-LU 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 SAFETEA-LU 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.

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 Hughson.

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.

Office of Traffic Safety (OTS) - The following is an excerpt from www.ots.ca.gov:

OTS grantees conduct traffic safety rodeos for elementary, middle and high schools, and community groups in an effort to increase awareness among various age groups. To boost compliance with the law and decrease injuries, safety helmets are properly fitted and distributed to children in need. Court diversion courses are established in several communities for those violating the bicycle helmet law. Other programs target high-risk populations and areas with multicultural public education addressing safer driving and walking behaviors.

A bicycle and pedestrian community program should be designed to increase safety awareness and skills among pedestrians and bicyclists and should also address driver behaviors. Two types of programs are described below. A comprehensive program should include both elements: 1) education and 2) enforcement.

Education - Educational efforts may be designed to include the entire community or specific target groups. Educational efforts may include bicycle rodeos, school presentations, public service announcements and the distribution of pamphlets and posters to increase public awareness and education.

Enforcement - Enforcement efforts can include safety helmet violations, speed enforcement and visible display radar trailer deployment near schools and areas of high pedestrian traffic. Several agencies have successfully implemented diversion programs for those cited for safety helmet violations. It is also appropriate to conduct occupant restraint and speed enforcement near schools during school commute hours.

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.

- Transportation Development Act (TDA) Article III funds are state block grants awarded annually to local jurisdictions for bicycle and pedestrian projects in California. These funds originate from the state sales tax and are distributed to local jurisdiction based on population.
- Transportation Funds for Clean Air (TFCA, and formerly AB 434) funds are available for clean air transportation projects, including bicycle projects, in California.
- California's Bicycle Transportation Account (BTA) is an annual program that is available for funding bicycle projects. Available as grants to local jurisdictions, the emphasis is on projects which benefit bicycling for commuting purposes.



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, TDA Article 3 - This fund was established by the California legislature under the state Transportation Development Act of 1972. Revenues are derived from return of ¼-percent of the 7¼-percent state sales tax to the county of origin. Local jurisdictions can apply for these funds that 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.

Transportation Fund for Clean Air - A four-dollar motor vehicle surcharge funds this program, which generates around \$20 million in annual revenue. Bicycle facility and smart growth projects are eligible for funding. Applications are submitted in June each year for consideration.

Stanislaus Council of Governments (StanCOG) - StanCOG administers Transportation Development Act funds and Congestions Mitigation Air Quality (CMAQ) funds. Policy 6.1 in the 2001 StanCOG *Bicycle Action Plan* states that funding priority is given to the lowest cost regional bicycle facilities first, to commuter routes second, to cross-town/intercity facilities third, and to intercity/interregional facilities last. Hughson's regional bikeways are included in the second, third and fourth priority levels. Member agencies should contact StanCOG for consideration of projects.

New Construction - Future road widening and construction projects are one method of providing bicycle lanes. To ensure that roadway construction projects provide bicycle lanes where needed, it is important that the review process includes a designated bicycle coordinator.

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.

Impact Fees - Another potential local source of funding are developer impact fees, typically tied to trip generation and traffic impacts as a result of proposed projects.

Open Space District - Local Open Space Districts may float bonds that go to acquiring land or open space easements, which may also provide for some improvements to the local trail and bikeway system.

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.



APPENDIX A - COMMENTS

One written comment was received:

"It would be great to have bike lanes on the main roads to the school such as Tully, Fox and 7th. See markings on map". The markings show 6th and 7th between Fox and Whitmore, Locust from Tully to 7th, Fox from Tully to the Fox Rd Elementary School, and Tully from Fox to Locust.

Other comments:

Other spoken comments were noted at the public workshop and were evaluated for incorporation within this Plan.