"ACTIVE TRANSPORTATION PLAN:
• Bicycle Master Plan, and
• Pedestrian Master Plan"

NOVEMBER 2012

FEHR & PEERS

TABLE OF CONTENTS

APPENDICES

Appendix A: Public Input

Appendix B: Bike Lane Feasibility Analysis

Appendix C: Pomona Pedestrian Policies and Principles

Appendix D: Pedestrian Improvements at Intersections

LIST OF FIGURES

LIST OF EXHIBITS

LIST OF TABLES

1. Introduction

Bicycling and walking are increasingly recognized important components of the transportation system. In the Pomona General Plan, the City recognized the importance of cycling in reducing traffic, air pollution, and energy consumption, and providing greater transportation options that enhance quality of life. The City has also made great strides in improving the pedestrian environment, particularly in Downtown Pomona. This Active Transportation Plan (ATP) is consistent with these sustainability efforts and provides detailed direction on how to continue the City's progress toward a better bicycling and walking environment. The Plan does this by proposing a system of bikeways connecting neighborhoods to key activity centers throughout the City, developing support facilities, such as bike parking, and education programs, and by identifying recommendations for improving bicyclist safety. This document satisfies the requirements of the California Bicycle Transportation Act, granting the City eligibility for Bicycle Transportation Account (BTA) funding through the California Department of Transportation (Caltrans) for any of the bicycle improvements identified in this plan. The ATP also contains detailed recommendations for improving pedestrian safety and comfort at intersections and for prioritizing the installation of sidewalks where they do not currently exist.

This chapter describes the process that was used to develop the Plan, describes the contents of the Plan and outlines how these contents meet the requirements of Caltrans for BTA funding eligibility.

Image 1-1. Cyclists on Holt Boulevard, Pomona, CA.

ACTIVE TRANSPORTATION PLAN OVERVIEW

The City of Pomona received a $40,000 technical assistance contribution from the Los Angeles County Department of Public Health's Healthy Policies Initiative (HPI). The City used this contribution to develop supplemental materials to the City's first ever Active Transportation Plan. These supplements include three products:

(1) A micro-level assessment enhancing bicycle access to middle and high schools
(2) A methodology to rank missing sidewalk sections throughout the city (and a prioritized list of those sections)
(3) A list of possible pedestrian treatments at 35 key intersections

The first two products, along with the City's bicycle plan, are integrated into this Active Transportation Plan. The third product, the list of 35 intersection recommendations was developed giving priority to pedestrians and is included as an appendix and it will be used to prioritize potential pedestrian improvements as the City proceeds with future projects at these locations. These recommendations will serve as a useful baseline for improvements; however, the recommendations may need to be modified to insure pedestrian needs are balanced with vehicle, truck, and bus movements. In addition, should the Pomona General Plan Update and Corridors Specific Plan be adopted, there will be a greater emphasis on pedestrian and transit mobility in the city. Should these policies become adopted—and as broader shifts transpire with rising fuel prices and AB 32/SB 375 compliance—the City will be well positioned with a set of projects to enhance walkability and make travel by foot a safe, convenient choice.

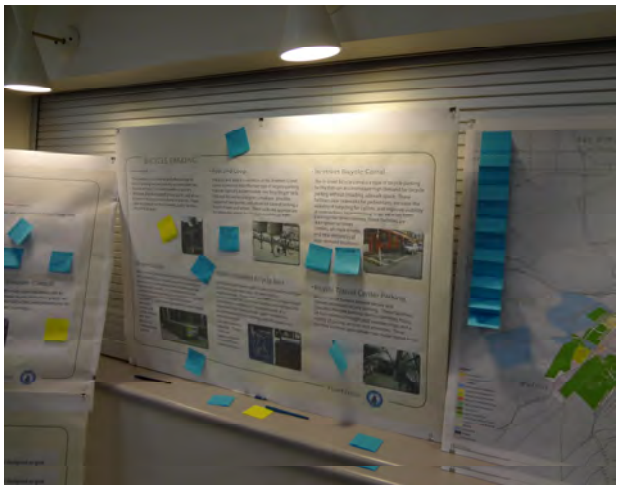
At the time of implementation the ATP/BMP recommendations will be balanced with corridor specific plan recommendations and existing and projected conditions on particular roadways - to develop a safe project which balances all modes and builds on the complete streets concept.

PLAN DEVELOPMENT AND PUBLIC INVOLVEMENT

The City of Pomona has developed a handful of designated bicycle facilities over the years. The development of the *BMP* comes as part of an effort by the City to address local and regional desires to enhance the viability of bicycling as a mode of transportation and reduce transportation system impacts on local communities. The BMP and ATP offers a multifaceted strategy designed to meet the growing demand for bicycle infrastructure and help reduce Pomona's contribution to air pollution, congestion, energy consumption, and climate change. By making biking easier and safer, the City can better manage its transportation network and reduce its overall greenhouse gas emissions resulting from single-occupant driving. The planning process to develop this plan started in February 2012.

The goals, policies, recommendations, and action items in this *Plan* are the outcome of a substantial public outreach effort by the City. Between April and September 2012, the City and consultant team accepted public input to the *Plan* at three public events. Additionally, a public website (www.pomona-atp.org) broadcast the latest news related to the *Plan*, and provided a forum for public dialogue about the *Plan*. City staff or the project team members talked to the public about the *Plan* at the following events: Pomona Bicycle Master Plan / Active Transportation Plan Public Meeting #1 (April 2012); Pomona Bicycle Master Plan / Active Transportation Plan Public Meeting #2 (July 2012); and the Pomona Stakeholders Public Meeting (September 2012). The Final Draft Active Transportation Plan (Bicycle Master Plan & Pedestrian Master Plan) went before the Pomona City Council in December 2012 for adoption.

Images 1-2 to 1-4. Pomona Public Workshop #1, April 26, 2012. (Source: Fehr & Peers)



PUBLIC INPUT

At the first public meeting with the BMP Stakeholder Committee, stakeholder input was collected via a survey, maps that could be marked up by the public, and discussions with meeting facilitators. As a result, a list of desired improvements was developed based on public input. This list is by no means exhaustive, and the Stakeholder Committee recognized that the list could grow as the public gave input to the plans.

- Bike lanes on major streets and commercial corridors
- Bike paths along railroads or utility channels
- Bike routes or bike boulevards on residential streets
- Additional bicycle parking, particularly at the following locations:
    - Along Garey Avenue
    - Pomona Civic Center/downtown Pomona/Fox Theater
    - Glasshouse Records
    - Along Holt Boulevard
    - Fairplex
    - Ganesha Park Community Center
    - North Pomona Metrolink Station/Pomona Transit Center
    - Cal Poly Pomona
    - Local schools and parks
- Improved lighting
- Improved pavement condition
- Additional bicycle capacity and improved ease of using bicycles on buses/transit
- Improved bicycle detection at intersections
- Enhanced bicycle lanes via increased width and use of green paint or buffers
- Education promoting awareness of bicyclists and rights on road for following groups:
    - Motorists
    - Law enforcement
    - Bicyclists
- Improved access to major destinations such as:
    - Cal Poly Pomona
    - Downtown Pomona
    - Major travel corridors
- Accommodate a full range of cyclists on the bicycle network
- Host car-free street days, such as Sunday Streets or CicLAvia events

PLAN CONTENTS

The *Bicycle Master Plan* is presented in the following chapters:

TABLE 1-1 – BICYCLE MASTER PLAN CONTENTS

Chapter	Contents
1. Introduction	--
2. Existing Policy Framework	Summarizes the key plans, programs, policies and other planning documents that will be affected and may affect the recommendations and implementation of the Bicycle Master Plan
3. Existing Conditions	Discusses the existing local conditions relevant to bicycling and walking, including land use patterns and commuting statistics. This section also includes a variety of bicycle-specific information required for BTA compliance.
4. Proposed Bicycle Improvements	Establishes a menu of proposed network of bikeways and support facilities based on expressed needs, gaps in existing the network and key destinations and activity centers. This chapter also includes a map of the proposed network and provides a list of proposed projects based on City priorities.
5. Proposed Pedestrian Improvements	Provides location-specific improvements intended to enhance pedestrian safety and mobility.
6. Support Programs	Describes the bicycle and pedestrian safety and education programs in Pomona, and recommends additional programs or enhancements to improve the state of bicycling and walking in the city.
7. Funding and Implementation	Includes a phased implementation plan for bicycle projects based on community-input, project readiness, and connectivity. Provides planning-level cost estimates for implementation and maintenance of the proposed bicycle network. Potential funding sources are also identified. More detailed project descriptions are included for five high-priority projects, for use in grant applications.
8. Design Guidelines	Provides guidelines for the design of bicycle and pedestrian facilities, including on- and off-street bikeways, bicycle parking, pedestrian crossings, signage and support facilities.
Appendices A-D	Appendix A includes a summary of public input; Appendix B includes a segment-by-segment feasibility analysis; and Appendix C includes recommended Pedestrian Policies and Principles. Appendix D identifies potential pedestrian improvements at various intersections in the City.

Caltrans requires that bicycle plans include certain components, as identified in Section 891.2 of the California Streets and Highway Code, to be eligible for BTA funding. **Table 1-2** summarizes these elements and the chapters of this plan in which each is addressed.

TABLE 1-2 – CALTRANS BICYCLE TRANSPORTATION ACCOUNT FUNDING REQUIREMENTS

Element	Chapter of this Plan
Number of Existing and Future Bicycle Commuters	Chapter 3 [Existing pp. 22-24, Future pp. 24-25]
Land Use and Settlement Patterns	Chapter 3 [pp. 19-21]
Existing and Proposed Bikeways	Chapters 3 and 4 [Existing pp. 33-34, Proposed p. 50-53]
Existing and Proposed Bicycle Parking Facilities	Chapters 3 and 4 [Existing p. 35-36, Proposed p. 55 (description) & p. 57 (map)]
Existing and Proposed Access to other Transportation Modes	Chapters 3 and 4 [Existing p. 35-36, Proposed p. 54, 58, 119-128, (description) & p. 52 (map)]
Facilities for Changing and Storing Clothes and Equipment	Chapters 3 and 4 [Existing p. 35-36, Proposed p. 58]
Bicycle Safety, Education, and Enforcement Programs	Chapter 6 [pp. 94-107]
Citizen and Community Involvement in the Development of the Plan	Chapters 1 and 3 [pp. 3-4 and 37-40]
Coordination and Consistency with Other Plans	Chapter 2 [pp. 7-17]
Projects Proposed in the Plan and their Priority for Implementation	Chapter 7 [pp. 115-118]
Past Expenditures for Bicycle Facilities and Future Financial Needs	Chapter 7 [p. 115]

Source: Caltrans Streets and Highway Code, Section 890-894.2

2. Existing Policy Framework

This chapter summarizes existing plans and policy documents relevant to non-motorized transportation in the City of Pomona. These documents have been grouped into City of Pomona Plans and Policies, Other City and County Plans, Regional Plans, State Plans and Federal Initiatives. **Table 2-1** lists the existing planning and policy documents addressed in this chapter.

TABLE 2-1 – SUMMARY OF RELEVANT EXISTING PLANS AND POLICIES

City of Pomona Plans & Policies	Other City and County Plans	Regional Plans	State Plans	Federal Initiatives
General Plan	San Dimas Bicycle Plan	SCAG 2012 RTP/SCS	Caltrans' Complete Streets Policy	Department of Transportation Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations
Municipal Code	Claremont Bicycle Plan		California Complete Streets Act	
Transportation Impact Study Guidelines	Los Angeles County Bicycle Plan	Metro BTSP	Assembly Bill 32 & State Bill 375	
Downtown Pomona Specific Plan	San Bernardino County Bicycle Plan		Assembly Bill 1581 & Caltrans' Policy Directive 09-06	

CITY OF POMONA PLANS AND POLICIES

This section discusses adopted plans and policies relevant to bicycling and walking in the City of Pomona. These documents guide how the City of Pomona plans for and manages its built environment.

General Plan

The *City of Pomona Comprehensive General Plan: Circulation and Transportation Element* describes the existing bicycle, pedestrian, transit, and vehicle facilities within the City and establishes the goals and policies for future transportation needs. **Table 2.2** summarizes the goals and policies that relate directly to the Bicycle Master Plan:

TABLE 2.2 – SUMMARY OF RELEVANT GENERAL PLAN GOALS AND POLICIES

Circulation Element Objectives: • To develop a plan for circulation which allows for the movement of people and goods in and through the City in a safe and efficient manner, and which respects other policies of the City. • To use circulation planning as a means to develop greater City identity and create a strong City structure through coherent designation of street function and street beautification programs. • To use circulation planning to encourage desirable future land use patterns in the City.	**Policy** – It is the policy of the City of Pomona to coordinate circulation planning with existing and proposed land use policies of the City and to use circulation planning as one means to accomplish desired land use patterns for the future.
	Policy – It is the policy of the City of Pomona to recognize the important role street aesthetics play in determining the overall image of the City and to coordinate street construction or improvement projects with City beautification programs.
	Policy – It is the policy of the City of Pomona to improve the safety and convenience of pedestrian movement throughout the community.
	Policy – It is the policy of the City of Pomona to recognize the importance of the bicycle as a viable means of transportation and to make adequate provision for its safe use within the community.
	Policy – It is the policy of the City of Pomona to support efforts which will lead to the development of a regional bicycle trail system for the Pomona Valley.
	Policy – It is the policy of the City of Pomona to support the development of alternative local transportation systems which effectively serve the needs of Pomona's residents.
Environmental Resources Element Objectives: • To assure that Pomona's environment is not unnecessarily polluted from any source by developing policies and standards for environmental quality.	**Policy** – It is the policy of the City of Pomona to work toward the elimination of air pollution from all manmade sources.
	Policy – It is the policy of the City of Pomona to develop

• To assure that the environmental impact of proposed public and private actions does not have a negative effect on the community. • To develop an open space plan which provides opportunities for recreation and education; preserves scenic, cultural, and historic values; protects the public safety and preserves City identity.	appropriate linear systems, such as streets, highways, utility and flood control rights-of-way, bike trails, and fixed transit lines, throughout the city as "green linkages: within the open space net, tying the various elements together.
Community Design Element Objectives: • To make the City's streets the unifying framework of the community through the use of distinctive design treatments.	**Policy –** It is the policy of the City of Pomona to increase amenities and provide human scale along city streets in order to insure increased comfort and usability for pedestrians and bicyclists.

Source: City of Pomona General Plan, 1976

City of Pomona Municipal Code

The City of Pomona Municipal Code includes ordinances that address how development should occur within the City. In addition to defining standards for future development, the Code also defines existing pedestrian-oriented districts within the City. The following sections are relevant to the Cycling Plan:

50.479 – Commercial Improvement Districts: This section defines Commercial Improvement Districts and allowed activities. "Activities which benefit real property and/or businesses located in the district," means, but is not limited to, all of the following:

> **(1):** Promotion of public events which benefit real properties and/or businesses in the district;
>
> **(5)**: Providing security, sanitation, graffiti removal, street and sidewalk cleaning and other municipal services supplemental to those normally provided by the municipality.

46.347(1)(b) – Outdoor Dining and Newsstands within Public Rights-of-Way: Outdoor dining is permitted only where the sidewalk is wide enough to adequately accommodate both the usual pedestrian traffic in the area and the operation of the proposed activity. A clear, continuous pedestrian path not less than four feet in width shall be required for unimpeded pedestrian circulation outside of the outdoor dining area. The minimum width of the pedestrian path may be increased by the public works director in areas requiring public utility access. As used in this subsection, the term "pedestrian path" means a continuous obstruction-free sidewalk area between the outside boundary of the dining area and any obstruction, including but not limited to parking meters, street trees, landscaping, streetlights, bus benches, public art and curb lines.

46.230 – Maintenance of Vehicle and Pedestrian Crossings: Every person making any excavation for any purpose whatsoever in or under any street shall maintain adequate and safe crossings for vehicular and pedestrian traffic at all street intersections and at intervals of not less than 300 feet for pedestrian traffic. If any such excavation is made across any street, at least one adequate and safe crossing shall be maintained at all times for vehicles and pedestrians.

58.633 (a) (1) – Prohibited Activities: The following activities shall be prohibited at all city-owned and/or operated skate parks: Use of bicycles or motorized vehicles within designated skate park areas.

38.73 (6) – Specific acts Prohibited: Riding any domestic animal or riding or driving any bicycle or any other vehicle whatsoever elsewhere than on the roads or drives provided for such purpose.

.503 H – Off-Street Parking:[1] 13. Safety Features. Parking lots shall meet the following standards:

> a. Safety barriers, protective bumpers or curbing, concrete wheel stops and directional markings shall be provided to assure pedestrian/vehicular safety, efficient utilization, protection of landscaping, and to prevent encroachment onto adjoining public or private property. In lieu of concrete wheel stops, a three-foot landscaped planter, with a six-inch-high concrete curb, may be utilized. This shall not be construed to allow any parking spaces to encroach into any required setback area or the additional landscape to be considered as part of the six percent landscape requirement.
>
> b. Visibility of pedestrians, bicyclists, and motorists shall be assured when entering individual parking spaces, when circulating within a parking facility, and when entering or leaving a parking facility.

City of Pomona Traffic Impact Study Guidelines

The City of Pomona requires a Traffic Impact Study (TIS) for any project that generates 50 or more trips during any peak hour and for projects adjacent to intersections of two major arterials. Traffic impact studies may be required for other projects at the discretion of the City's Traffic Engineer. A TIS must address bicycle and pedestrian circulation, as well as driveways, on-site circulation, consistency with City plans and policies, adjacent streets and intersections, and any intersections controlled by traffic signals or stop signs to which the project will add Projects that generate 1 to 49 trips during any peak hour are required to complete a Focused TIS, which restricts the TIS scope to adjacent streets and intersections. Both full and Focused Traffic Impact Studies are required to address bicycle and pedestrian access to the project site, existing bicycle and pedestrian traffic and planned bicycle facilities outlined in the City's General Plan.

Downtown Pomona Specific Plan

The City of Pomona adopted an update to the Downtown Pomona Specific Plan (DPSP) in May 2007. The DPSP was originally adopted in May 1994 and was updated in 2005, 2006, and 2007. The DPSP document addresses the specific plan process, urban design, land use, development standards, circulation and parking, design guidelines, and project implementation. Overall, the DPSP aims to provide the vision and implementation program for creating an appealing commercial district that serves Pomona residents and the broader region.

The DPSP focuses on place-making, quality design, and enhancements that serve transit patrons, pedestrians, or motorists. The parking and circulation chapter of the plan focuses on improving pedestrian linkages to transit, downtown parking supply, and concerns with neighborhood intrusion by

[1] The municipal code off-street parking section does not include requirements for bicycle parking.

vehicles. Bicyclists are not specifically mentioned, but could expect to benefit from improvements to transit linkages, streetscape design, and overall improved access to the downtown area. The DPSP seeks to capitalize on the rich history and vibrant assets of the downtown area for advancing the condition and success of downtown Pomona.

Pomona Corridors Specific Plan

The Corridors Specific Plan establishes a vision for 13 miles of Pomona's major arterial corridors—Foothill Boulevard, Garey Avenue, Holt Avenue and Mission Boulevard. The plan is intended to guide the physical and economic development of these important thoroughfares. The plan includes analysis of existing traffic conditions and the impact of future land uses on transportation in the corridor, with a focus on promoting land uses that will increase economic activity while encouraging land uses that will capture more trips internally. The plan also envisions a redesign of these key arterials with a focus on multimodal transportation and enhanced urban design. The following table compares the recommendations of the Corridors Specific Plan (CSP) with the recommendations in the Active Transportation Plan (ATP).

Corridor	Segment (Limits)	CSP Recommendation	ATP Recommendation	Notes
Foothill Boulevard	Garey to Towne	Gateway Boulevard (no bikeway)	No designated bikeway	Bonita Avenue bike lanes provide east-west access to the south.
Garey Avenue**	Foothill to Bonita	Parkway (no bikeway)	Bike Lanes	Bike lanes are feasible in this segment.
	Bonita to Artesia	Palm Tree Boulevard (no bikeway)	Bike Lanes & Potential Future Bikeway	Bike lanes are feasible between Bonita & La Verne.
	Artesia to Holt	Grand Boulevard (no bikeway)*	No Bikeway	Bike lanes would require removal of travel lanes or parking.
	Mission to SR-60	Parkway (no bikeway)	No Bikeway	Bike lanes would require removal of travel lanes or parking.
Holt Avenue**	Fairplex to Garey	Grand Boulevard (no bikeway)*	No designated bikeway	Bike lanes would require removal of travel lanes or parking.
	Garey to East City Limit	Grand Avenue (no bikeway)	No Bikeway	Bike lanes would require removal of travel lanes or parking.
Mission Boulevard**	SR-71 to East City Limit	Midtown Boulevard (cycle track)	Potential Future Bikeway	Cycle track requires lane removal and access management (driveway consolidation).

*The cross section with dimensions for the Grand Boulevard typology shows no bike lanes, however a plan view graphic illustrating the "Typical Grand Boulevard Plan Layout" shows a green cycle track treatment, but no dimensions.
**At the time of implementation the ATP/BMP recommendations will be balanced with corridor specific plan recommendations and existing and projected conditions on particular roadways - to develop a safe project which balances all modes and builds on the complete streets concept.

OTHER CITY AND COUNTY PLANS

This section describes the plans and policies related to bicycling and pedestrian activity in adjacent cities, unincorporated areas, or along county-owned or managed facilities such as Thompson Creek.

Claremont Bicycle Plan

The City of Claremont adopted this plan in November 2007. The plan provides an overview of the City and of related plans, projects and policies; describes existing conditions, including facilities and demand estimates for bicycling; identifies goals; designates a bikeway network and recommends specific improvements; discusses past bicycle facility expenditures; documents the extent of public participation; identifies "major activity centers" and other priority areas for improvement; and describes recommended support programs. The City's primary goal in completing a bicycle master plan includes eligibility for BTA funding to further implement bicycle related projects.

San Dimas Bicycle Plan

The City of San Dimas adopted this plan in August 2011 as an update to the City's 1997 Bikeway Systems Master Plan. The plan provides an overview of the City and of related plans, projects and policies; describes existing conditions, including facilities and demand estimates for bicycling; identifies goals; designates a bikeway network and recommends specific improvements relating to signage, bicycle parking, and bicycle facilities; identifies "major activity centers" and other priority areas for improvement; contains facility design considerations; describes recommended support programs; and includes project implementation strategies.

Los Angeles County Bicycle Master Plan

The Los Angeles County Bicycle Master Plan was adopted by the Los Angeles County Board of Supervisors. The Plan was developed by the Los Angeles County Public Works Department and an appointed Bicycle Task Force. The Countywide Bicycle Plan identifies opportunities for off-street bicycle facilities, on-street bicycle facilities, and shared-use pathways in unincorporated areas of Los Angeles County. Unincorporated areas near Pomona where proposed facilities are considered include Walnut Islands, West San Dimas, and Rowland Heights.

San Bernardino County Non-Motorized Transportation Plan

The San Bernardino County Non-Motorized Transportation Plan identifies and prioritizes bicycle and pedestrian-related projects, programs, and planning efforts which have countywide significance. The Plan is used to plan and allocate countywide funding for bicycle and pedestrian -related projects. Areas of importance noted in the plan include a Class I "backbone bicycle system," better connectivity between cities and county sub areas, and prioritization of "low-hanging fruit" that increase connectivity on class II and Class III bicycle facilities as they represent low-cost improvements, removal of gaps in the bicycle network, and connect to key destinations. Transit centers and civic service facilities are also of importance. The Plan focuses on access to activity centers and inter-jurisdictional facilities.

REGIONAL OR STRATEGIC PLANS

Regional or strategic plans are typically intended to facilitate coordinated planning across jurisdictional boundaries and set regional priorities for funding of transportation infrastructure, including bicycle and pedestrian projects.

Metro Bicycle Transportation Strategic Plan

In 2006, the Los Angeles County Metropolitan Transportation Authority (Metro) released two documents relating to bicycle planning in the region: the Metro Bicycle Transportation Strategic Plan and BTA Compliance Document. Both of these documents supplant prior countywide bicycle planning documents dating back to 1996. The Strategic Plan is intended to be used by local cities and Los Angeles County Transit agencies in setting bicycle-related priorities that lead to regional improvements. The document discusses the significance of bicycle usage with transit as a way of expanding mobility options within the region. The BTA document inventories and maps existing and planned facilities, and provides information regarding past expenditures by the 89 local jurisdictions within the county. The plan also includes: a listing of 167 "bike-transit hubs" in the county, procedures for evaluating access to transit, best-practices in a tool box of design measures, gaps in the regional bikeway network, and 12 prototypical "bike-transit hub" access plans in different areas of the county, including a sample bicycle access plan for the Downtown Pomona Metrolink Station.

SCAG Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS)

In 2012, the Southern California Association of Governments (SCAG) adopted the 2012 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), which integrates the region's transportation and land use planning. The RTP/SCS is intended to reduce greenhouse gas emissions from transportation in accordance with California's Sustainable Communities and Climate Protection Act and includes significant investments in multimodal transportation. It identifies regional solutions to transportation issues in southern California by reviewing existing transportation system conditions and providing improvement recommendations for the various focus areas including aviation, goods movement, highways and arterials, land use, non-motorized transportation, transit, and transportation finance. The non-motorized transportation section provides

information regarding existing mode split, bicyclist types, bicycle safety, the California Strategic Highway Safety Plan for bicyclists, and identifies implementation priorities for local jurisdictions. This document serves more as a policy guide for the region, than as a regional bicycle plan identifying potential expansion of bicycle facilities. The regional bikeway network is estimated to extend approximately 4,315 miles with an additional 5,807 miles of planned facilities. Of the $524.7 billion transportation expenditures in the RTP, $6.9 billion are allocated for non-motorized projects. Additionally, this document includes a regional Active Transportation Plan.

U.S. Bike Route 66

Planning efforts are underway for a (multi-state) regional bike route along Route 66 (Foothill Boulevard) that could run through Pomona. If the US Bicycle Route 66 (USBR 66) project extends through Pomona, the City of Pomona proposes to utilize the recently-installed bike lanes on nearby Bonita Avenue—which parallels Route 66—as part of the USBR 66 project alignment.

STATE PLANS

Caltrans is responsible for building and maintaining state-funded transportation infrastructure. Within the City of Pomona, Caltrans maintains Interstate 80, Interstate 580, and San Pablo Avenue. The following policies would affect strategic planning decisions on those corridors. In conjunction with Caltrans, the State has also passed legislation that affects all streets in Pomona.

Caltrans' Complete Streets Policy

In 2001, Caltrans adopted a routine accommodation policy for the state in the form of Deputy Directive 64, "Accommodating Nonmotorized Travel." The directive was updated in 2008 as "Complete Streets—Integrating the Transportation System." The new policy reads in part:

> *The Department views all transportation improvements as opportunities to improve safety, access, and mobility for all travelers in California and recognizes bicycle, pedestrian, and transit modes as integral elements of the transportation system.*
>
> *The Department develops integrated multimodal projects in balance with community goals, plans, and values. Addressing the safety and mobility needs of bicyclists, pedestrians, and transit users in all projects, regardless of funding, is implicit in these objectives. Bicycle, pedestrian and transit travel is facilitated by creating "complete streets" beginning early in system planning and continuing through project delivery and maintenance and operations….*

The directive establishes Caltrans' own responsibilities under this policy. Among the responsibilities that Caltrans assigns to various staff positions under the policy are:

- Ensure bicycle, pedestrian, and transit interests are appropriately represented on interdisciplinary planning and project delivery development teams.

- Ensure bicycle, pedestrian, and transit user needs are addressed and deficiencies identified during system and corridor planning, project initiation, scoping, and programming.
- Ensure incorporation of bicycle, pedestrian, and transit travel elements in all Department transportation plans and studies.
- Promote land uses that encourage bicycle, pedestrian, and transit travel.
- Research, develop, and implement multimodal performance measures.

California Complete Streets Act

Assembly Bill 1358, the "California Complete Streets Act of 2008," requires "that the legislative body of a city or county, upon any substantive revision of the circulation element of the general plan, modify the circulation element to plan for a balanced, multimodal transportation network that meets the needs of all users [including] motorists, pedestrians, bicyclists, children, persons with disabilities, seniors, movers of commercial goods, and users of public transportation…." This provision of the law goes into effect on January 1, 2011. The law also directs the Governor's Office of Planning and Research to amend its guidelines for the development of circulation elements so as to assist cities and counties in meeting the above requirement.

Assembly Bill 32 and State Bill 375

Senate Bill (SB) 375 is the implementation legislation for Assembly Bill (AB) 32. AB 32 requires the reduction of greenhouse gases (GHG) by 28 percent by the year 2020 and by 50 percent by the year 2050. GHGs are emissions – carbon dioxide chief among them – that accumulate in the atmosphere and trap solar energy in a way that can affect global climate patterns. The largest source of these emissions related to human activity is generated by combustion-powered machinery, internal combustion vehicle engines, and equipment used to generate power and heat. SB 375 tasks metropolitan and regional planning agencies with achieving GHG reductions through their Regional or Metropolitan Transportation Plans. The reduction of the use the automobile for trip making is one method for reducing GHG emissions. This can be achieved through the use of modes other than the automobile, such as walking, bicycling, or using transit.

Assembly Bill 1581 and Caltrans Policy Directive 09-06

Assembly Bill (AB) 1581 provides direction that new actuated traffic signal construction and modifications to existing traffic signals include the ability to detect bicycles and motorcycles. It also calls for the timing of actuated traffic signals to account for bicycles. In response to AB 1581, Caltrans has issues Traffic Operations Policy Directive 09-06, which has proposed modifications to Table 4D-105(D) of the California Manual on Uniform Traffic Control Devices. The California Traffic Control Devices Committee is considering the proposed modifications.

FEDERAL INITIATIVES

The United States Department of Transportation has issued the following statement on pedestrian and bicycle activity and planning.

The US DoT Statement on Bicycle and Pedestrian Accommodations, Regulations and Recommendations

On March 5, 2010, the United States Department of Transportation (DOT) announced a policy directive to demonstrate the DOT's support of fully integrated active transportation networks by incorporating walking and bicycling facilities into transportation projects. The statement encourages transportation agencies to go beyond minimum standards in the provision of the facilities. The DOT further encourages agencies to adopt policy statements that would affect bicycling and walking, such as:

- Considering walking and bicycling as equals with other transportation modes
- Ensuring availability of transportation choices for people of all ages and abilities
- Going beyond minimum design standards
- Integrating bicycle and pedestrian accommodations on new, rehabilitated, and limited access bridges
- Collecting data on walking and biking trips
- Setting mode share for walking and bicycling and tracking them over time
- Removing snow from sidewalks and shared use paths
- Improving non-motorized facilities during maintenance projects

3. Existing Conditions

Pomona provides an excellent environment for active transportation, including a temperate climate, a network of schools and open space, close proximity of several universities, a well-connected street grid and relatively flat terrain in most of the City. Despite the fact that bicycling and walking are becoming increasingly popular in southern California, the lack of a safe, well-connected, and accessible network of bikeways, sidewalks and pedestrian crossings presents an obstacle to active transportation in Pomona.

As Pomona's first *Bicycle Master Plan*, this effort will lay the groundwork and vision for developing a system of on-street and off-street bicycle facilities throughout the City, focusing on completing a system of bikeways and support facilities between neighborhoods and providing safe routes to schools and access to major destinations such as employment centers, stores and shops, parks, trails, and open space areas. This *Plan* also includes criteria for defining different types of bicycle facilities, a listing of priority projects, design standards and education and safety programs. This chapter provides a snapshot of the existing physical environment and existing programs, practices, and policies related to bicycling conditions in the City. The chapter outline is shown in **Table 3-1** below.

TABLE 3-1 – CHAPTER OUTLINE

Existing Bicycling Conditions
Pomona Today
- Existing Land Use and Settlement Patterns
- Existing and Potential Bicycle Activity in Pomona
Types of Bikeway Facilities
Existing Bicycling Facilities
- Existing On- and Off-Street Facilities
- Existing Bicycle Parking
- Status of On-Going and Past Bike Projects
Barriers to Cycling / Needs Assessment
Vehicle/Bicycle Collision Analysis

POMONA TODAY

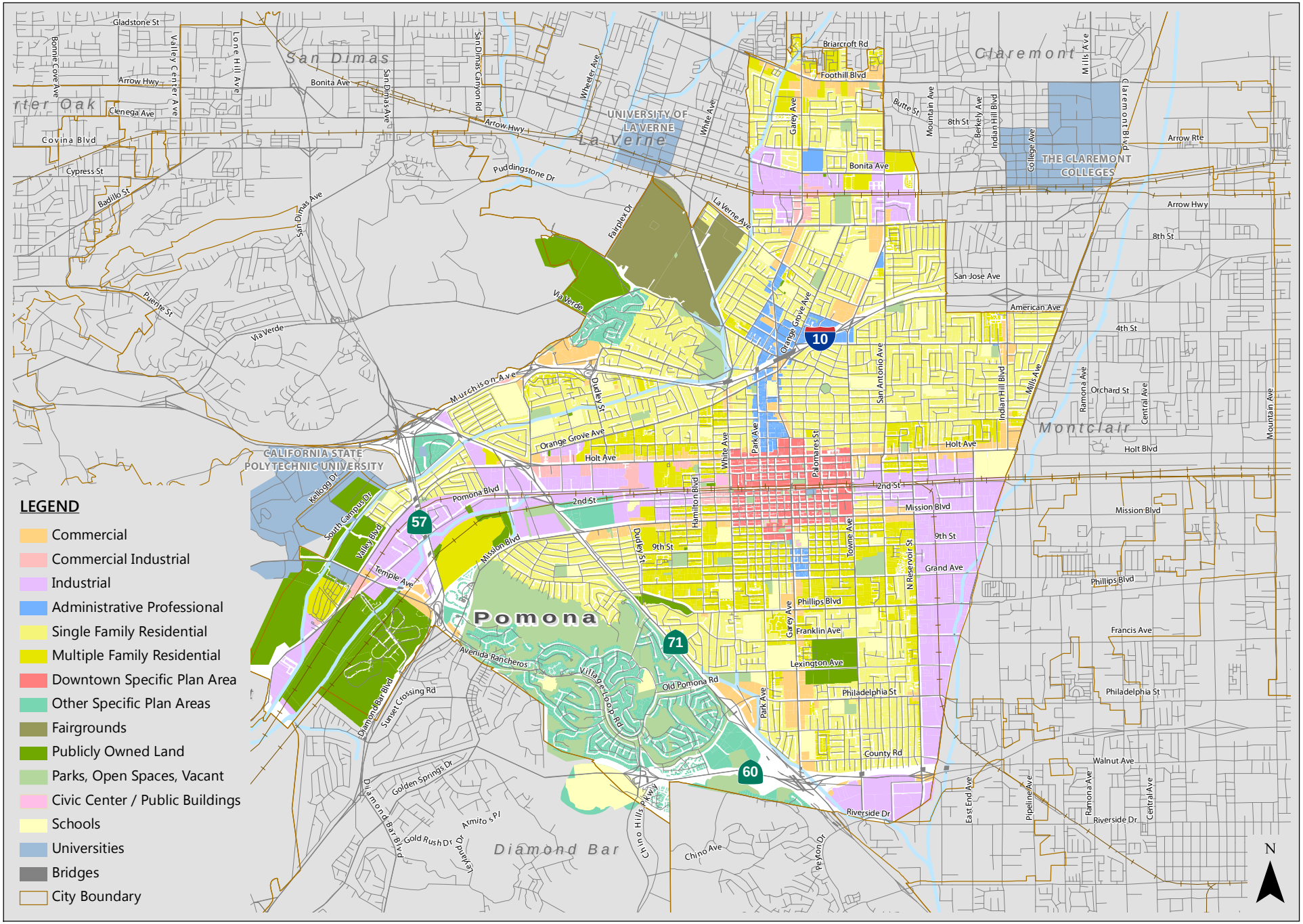
Land Use and Settlement Patterns

The City of Pomona is located in the eastern portion of Los Angeles County, between the San Gabriel Valley and the Inland Empire. First settled in the 1830s and incorporated in 1888, the City of Pomona is now home to approximately 149,058 residents and is the seventh-largest city in Los Angeles County, with a land area of about 23 square miles. Pomona lies on the eastern border of Los Angeles County with San Bernardino County.

Historically, Pomona has established and interconnected neighborhood commercial corridors, schools, parks, and residences through the development of a grid street system. Most of the city is flat, with hills in the southwestern corner of the City. The City's major thoroughfares are Garey Avenue and Towne Avenue (north-south), and Holt Avenue, Phillips Boulevard, Foothill Boulevard, Arrow Highway, and Mission Boulevard (east-west). Portions of SR-57, SR-60, SR-71, and I-10 are within Pomona's city limits.

Amtrak and Metrolink trains serve the Pomona Transit Center, located south of Garey Avenue and Monterey Avenue. This area is anchored by the historic Fox Theater and home to a growing arts colony. Most of the city's housing stock is single-family, which is spread throughout the northern area of the City and the central part of the City to the south. Pomona's newest neighborhood, Phillips Ranch, is located in the southwest area of the City and is home to a few off-street bicycle paths. Multi-family housing is primarily located along downtown's southern border, between Mission Boulevard and Phillips Boulevard, and along Holt Avenue.

Light industry is concentrated in several areas: along 2nd Street, east of Reservoir Street, between Holt Avenue and Mission Boulevard west of Hamilton Boulevard, and along Bonita Avenue. Cal Poly Pomona lies at the western edge of Pomona and the Western University of Health Sciences is located downtown. Local public and private schools are spread throughout the City. The Claremont Colleges, Mount San Antonio College and University of La Verne are all within one mile of City boundaries. The Fairplex, where the Los Angeles County Fair and many large sporting and recreational events are held, occupies the northwestern corner of the City. Pomona is bordered on the northwest by Frank Bonelli Regional Park.



FEHR PEERS

\\FpLA1\Data\Jobs\Active\2500s\2517 - Pomona Bike\Graphics\GIS\MXD\f0x_Landuse_8by11.mxd

ZONING AND LAND USE
CITY OF POMONA
FIGURE 3-1

The Pomona Unified School District (PUSD) operates nearly forty schools in Pomona. The City also has several private schools, one charter high school and one magnet high school. The following schools are located within Pomona:

PUSD Elementary Schools

- Alcott Elementary
- Allison Elementary
- Armstrong Elementary
- Arroyo Elementary
- Barfield Elementary
- Cortez Elementary
- Decker Elementary
- Harrison Elementary
- Kellogg Polytechnic Elementary
- Kingsley Elementary
- Lexington Elementary
- Lincoln Elementary
- Lopez Elementary
- Madison Elementary
- Montvue Elementary
- Philadelphia Elementary
- Pueblo Elementary
- Ranch Hills Elementary
- Roosevelt Elementary
- San Antonio Elementary
- San Jose Elementary
- Vejar Elementary
- Washington Elementary
- Westmont Elementary
- Yorba Elementary

PUSD Middle Schools

- Emerson Middle School
- Fremont Academy
- Marshall Middle School
- Simons Middle School

PUSD High Schools

- Diamond Ranch High School
- Ganesha High
- Garey High
- Pomona High
- Palomares Academy
- Village Academy

PUSD Alternative Schools

- Community Day School
- Park West High School
- Pomona Alternative School
- School of Extended Educational Options

Other Schools

- American Christian Academy
- Charisma Christian Academy
- City of Knowledge Islamic School
- First Christian Church Child Development Center
- ICC Community School
- International Polytechnic High School
- Pomona Catholic High School
- The School of Arts and Enterprise
- St. Joseph Elementary School
- St. Madeline School

Existing and Potential Bicycling Activity in Pomona

Knowing how many people bicycle, and for what purposes, can help Pomona develop effective projects and programs to better serve residents and resident-employees. A common term used in describing demand for bicycle facilities is "mode split." Mode split refers to the form of transportation a person chooses to take, such as walking, bicycling, public transit, or driving, and 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 3-1** presents American Community Survey data for the journey-to-work mode split for the City of Pomona, compared to the United States, California, and Los Angeles County. As shown, driving is the predominant means of commuting in Pomona, comparable to the rates for Los Angeles County and California, and slightly lower than the United States as a whole.

TABLE 3.1 – EXISTING JOURNEY TO WORK DATA

Mode	United States	California	Los Angeles County	City of Pomona
Drive Alone	76%	73%	72%	73%
Carpool	10%	12%	11%	16%
Transit	5%	5%	7%	4%
Bike	1% (0.5%)	1%	1% (0.8%)	1% (0.8%)
Walk	3%	3%	3%	2%
Other	5%	6%	6%	5%
Total	100%	100%	100%	100%

Source: American Community Survey 2008-2010

Note: Totals may not add to 100% due to rounding

As shown in **Table 3-1**, bicycle trips represent less than one percent of home-based work trips in Pomona. 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 than shopping, school, recreation, and other trips, and are therefore less compatible with bicycling.
- Census journey-to-work data fails to capture people who commute by bicycle one or two days per week.
- 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 a transit station before transferring to transit for the remainder of their journey to work.
- No separate accounting of shopping, school, or recreational trips is made in the Census; these trips make up more than half of the person trips on a typical weekday and a significantly greater proportion on the weekend. These trips also tend to be short to medium in length and are therefore very well suited for bicycling.

- Journey-to-work reports information for adult work trips, but does not request data on school trips, which are much more likely to be bicycling trips because school-aged individuals cannot drive until the latter half of their high school years.

The SCAG's Year 2000 Post-Census Regional Travel Survey, which surveyed 17,000 households in the six-county Los Angeles area, found that one percent of all trips in the region are by bicycle. Bicycle commuting rates in Los Angeles County have risen since 2000 (from 0.6% to 0.8%), so it is likely that overall bicycle trips have risen as well.

Table 3-2 summarizes bicycle ridership estimates for commute and non-commute cyclists. According to the 2010 American Community Survey (5-year estimates), there were 31,847 enrolled students from grades 1 to 12 in Pomona, and 10,329 college students. A roll-call tally conducted at three Pomona Unified School District Schools, indicates that approximately 2.1% of grade-school students bike to school. According to local surveys cited in the Metro Bicycle Transportation Strategic Plan BTA Compliance Document, a similar percentage (2%) of local college students commute by bicycle. Based on these assumptions [(31,847 x 2.1%) + (10,329 x 2.0%)], Pomona would have an estimated 876 student cyclists. Approximately 2,594 of Pomona workers commute by transit (4.3% of employed population, 60,742). According to on-board bus and rail surveys conducted by Metro in 2001, approximately 1.2% of transit riders cycle to transit stops; therefore, Pomona would have about 31 home-to-transit cyclists.

TABLE 3-2 – POMONA BICYCLISTS BY TRIP GROUP

Trip Group	Daily Bicycle Commuters	
Workers (Home-to-Work Trips)	501	36%
Students (Home-to-School Trips)	876	62%
Transit Riders (Home-to-Transit Trips)	31	2%
Total	1,408	100%

Source: Census 2000; Fehr & Peers, 2010

Commute trips represent a minority of bicycle trips. To get a fuller sense of bicycling in Pomona, one must account for the other reasons for which people use bicycles. The *National Bicycle & Walking Study*, published by the Federal Highway Administration in 1995, estimated that for every commute trip made by bicycle, there were 1.74 trips made for shopping, social, and other utilitarian purposes. We can estimate these types of trips in Pomona as follows:

- **Number of daily bicycle commuters:** 1,408
- **Number of daily trips per commuter:** 2 (assuming each commuter bikes to work or school and then bikes home again later)
- **Number of daily bicycle commute trips:** 2,816 (1,408 x 2)
- **Daily bicycle trips for non-commute purposes:** 4,900 (2,816 x 1.74)

Lastly, cycling is a popular recreational activity for all age groups. While most of this plan is focused on encouraging bicycling as a form of transportation, recreational riders, with encouragement, may transition to bicycling commuters. Similarly, recreational cycling can be a popular family activity, and children who ride with parents may be more likely to bike to school or with their friends. Regardless, Pomona has a mild climate, mostly flat terrain, and many parks within a 10-minute bicycle ride of downtown or residential neighborhoods.

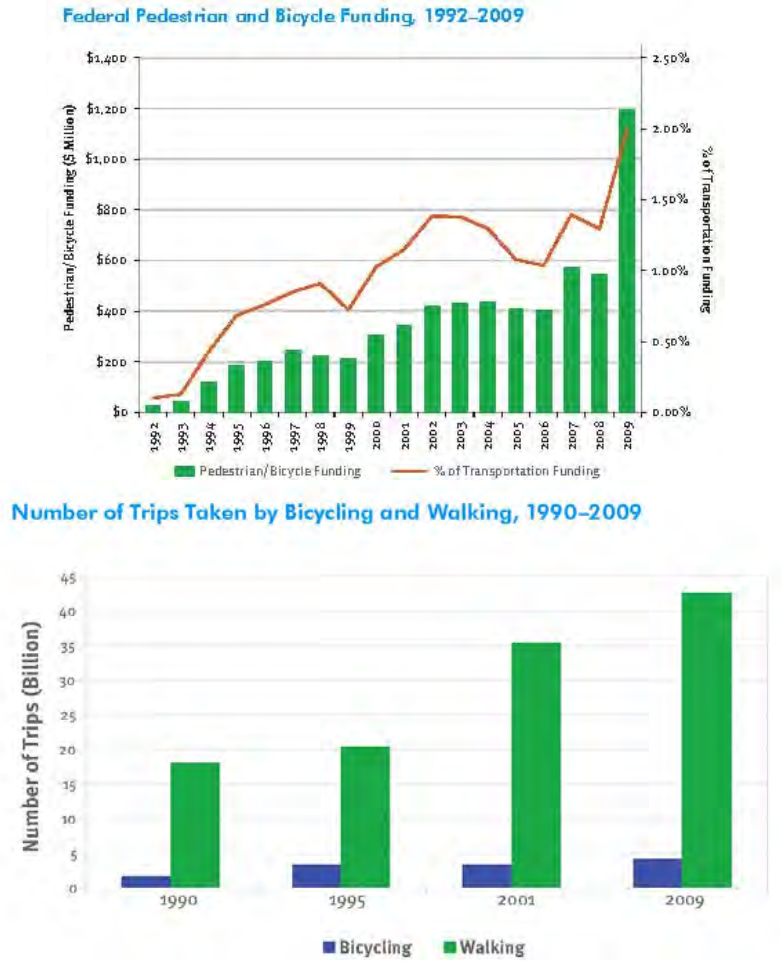
The Federal Highway Administration and U.S. Department of Transportation released in May 2010 the *National Bicycle & Walking Study: 15 Year Status Report*. The agencies found that between the initial report in 1995 and household survey data collected in 2009, bicycling activity had increased in general, though not to the goal of doubling walking and biking trips that was set in 1995. Interestingly, though only one percent of respondents in the 2009 National Households Transportation Survey said that they made everyday trips by bike, 12 percent said that they had ridden a bike in the past week.

Future Bicycling Activity

Future bicycle trips will depend on a number of factors such as the availability of well-connected facilities, appropriate education and promotion programs designed to encourage cycling, and location, density, and type of future land development. Cities with thoughtful bikeway plans and meaningful implementation programs have found high levels of correlation between bicycle facilities and number of cyclists. Three cities with such plans – Portland, San Francisco, and Seattle – found that the number of cyclists on a bicycle corridor after it was improved was double or triple the previous count. More generally, the 2010 *National Bicycle & Walking Study: 15 Year Status Report* found that between 1990 and 2008 funding for bike and pedestrian projects increased from less than 0.5 percent of federal transportation funding to about one percent. Over that same time, pedestrian and bicycle trips increased by about 50 percent.

With appropriate bicycle facilities in place and implementation of employer trip reduction programs, the bicycle mode split could increase significantly above its current rate. According to the methodology adopted by the Los Angeles County Metropolitan Transportation Authority and outlined in their Bicycle Transportation Strategic Plan (Volume 2), cities can expect to see a 279% increase in bicycling upon buildout of a complete bicycle network. By expanding bicycle facilities that encourage a broad cross section of bicyclists and improve safety, Pomona could increase the current mode split, which would result in over 25,000 bicycle trips daily by 2020, as shown in **Table 3-3**.

Figure 3-2 – National Pedestrian and Bicycle Funding and Number of Trips



Source: *National Bicycle & Walking Study: 15 Year Status Report* (2010)

TABLE 3-3 – POMONA BICYCLE TRAVEL – EXISTING AND 2020

Mode	City of Pomona – Today	City of Pomona – 2020
Daily Bicycle Commuters	1,408	3,928
Daily Bicycle Commute Trips	2,816	7,857
Daily Non-Commute Bicycle Trips	4,900	13,671
TOTAL	9,124	25,456

Sources: U.S. Census Bureau, ACS, 5-years estimates (2006-2010); LACMTA, Bicycle Transportation Strategic Plan, 2006; Fehr & Peers, 2012

TYPES OF BIKEWAY FACILITIES

The City of Pomona began to develop its bicycle network in the 1990s. Since that time, the City has identified others for future consideration. These bikeways include three distinct types of facilities, as defined by Caltrans, and shown in **Figure 3-3**:

- Class I bike paths, such as along Fairplex Drive
- Class II bike lanes, such as on Hamilton Boulevard
- Class III bike routes

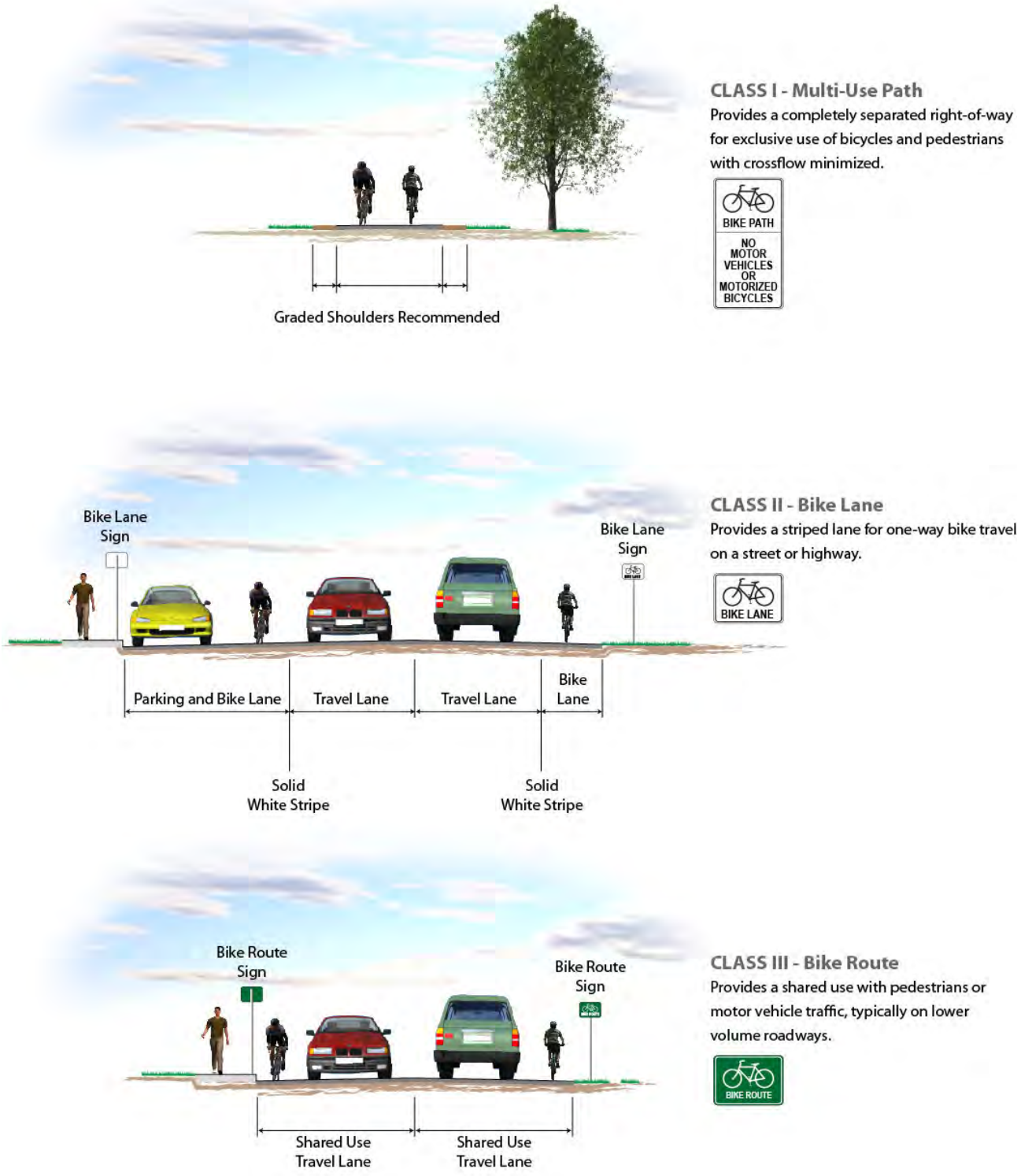
An understanding of the condition of existing bicycle facilities in Pomona is necessary for determining future opportunities for improvement. The existing and future bike network will aim to provide connections to city and regional destinations, including key destinations such as Cal Poly Pomona, downtown Pomona, the Fairplex, Pomona Metrolink Station, and various schools, park and other community destinations. These existing activity generators are shown in **Figure 3-4**.

TABLE 3-4 – BIKE FACILITY TYPES

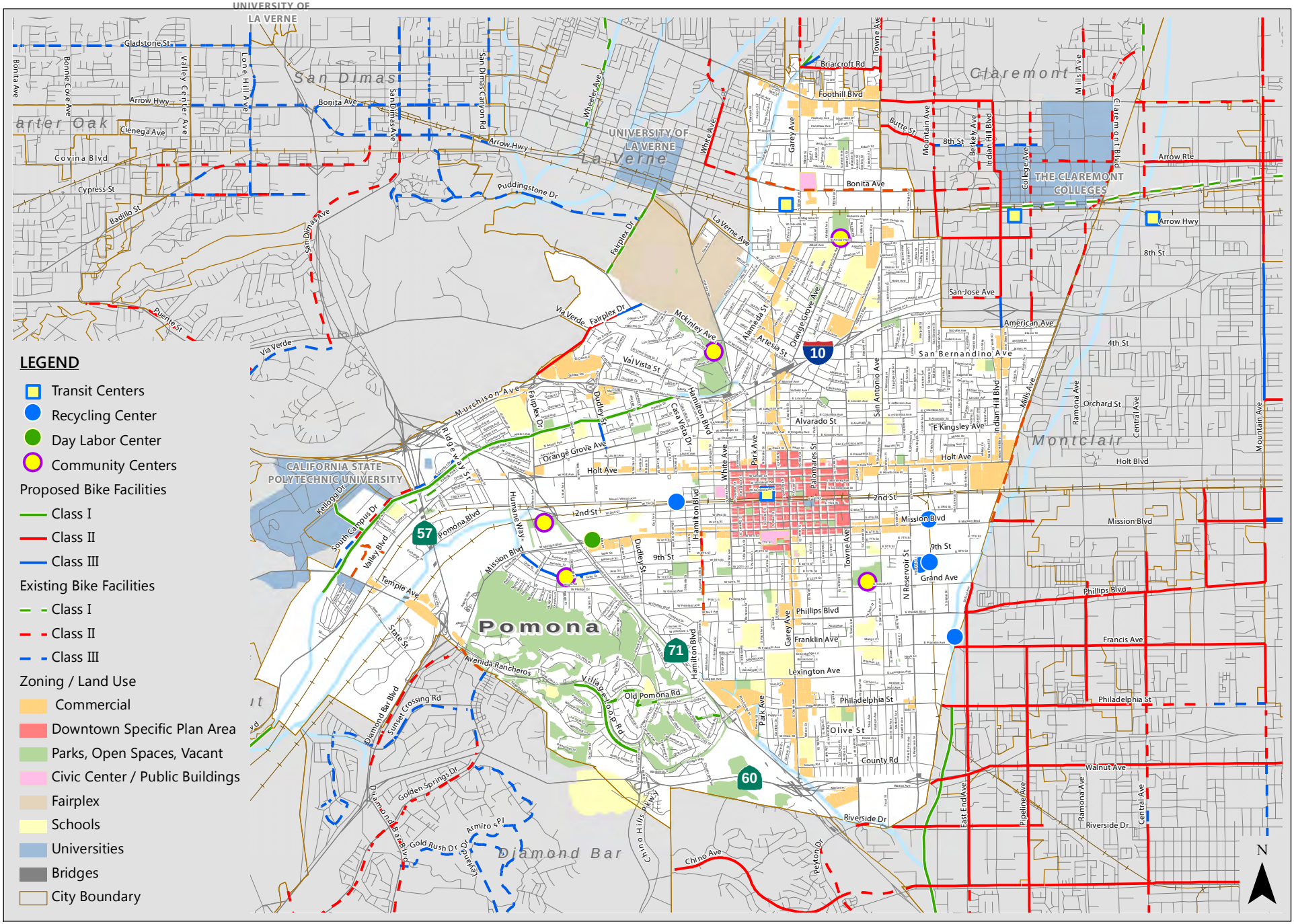
Class I: Shared-Use Path
These facilities provide a completely separate right-of-way and are designated for the exclusive use of bicycles and pedestrians with vehicles cross-flow minimized.
Class II: Bike Lane
Bike lanes provide a restricted right-of-way and are designated for the use of bicycles with a striped lane on a street or highway. Bicycle lanes are generally five feet wide. Vehicle parking and vehicle/pedestrian cross-flow are permitted. Recent variations on the bike lane seeing increased use in urban areas of the U.S. include **cycle tracks** and **buffered bike lanes**, which are not covered in traditional roadway design manuals, but are featured in the NACTO Urban Bikeway Design Guide, described below. These facilities, like bike lanes, are constructed within a roadway, but provide a greater level of separation from vehicular traffic and/or parked vehicles.
Class III: Bike Route
Bike routes provide a right-of-way designated by signs or pavement markings for shared use with pedestrians or motor vehicles. A standard Class III bike route per the CA-MUTCD may simply have signs or combine signs and shared lane markings. A **bicycle boulevard** is a special type of shared route on a local or collector street that encourage through travel by bicyclists, but discourages motor vehicle through traffic. Bike boulevards may include a range of bicycle treatments and traffic calming elements from simple signage and pavement markings to mini traffic circles to traffic diverters.

Source: Caltrans, 2001

Figure 3-3 – Bikeway Types



Note: bike lanes may be striped adjacent to the curb or between the travel lane and on-street parking.



FEHR & PEERS

N:\Jobs\Active\2500s\2517 - Pomona Bike\Graphics\GIS\MXD\f0x_facilitiesandkeydestinations8by11.mxd

BIKEWAY FACILITIES KEY DESTINATIONS
CITY OF POMONA
FIGURE 3-4

Bikeway planning and design in California typically relies on the guidelines and design standards established by Caltrans as documented in "Chapter 1000: Bikeway Planning and Design" of the *Highway Design Manual* (5th Edition, California Department of Transportation, January 2001). Chapter 1000 follows standards developed by the American Association of State Highway and Transportation Officials (AASHTO) and the Federal Highway Administration (FHWA), and identifies specific design standards for various conditions and bikeway-to-roadway relationships. The California Manual on Uniform Traffic Control Devices (MUTCD) also provides design standards for bicycle facilities, pavement markings, signage, and traffic control. Caltrans standards provide for three distinct types of bikeway facilities, as described in **Table 3-4.**

Another important source for bikeway planning and design is the National Association of City Transportation Officials (NACTO) *Urban Bikeway Design Guide*. This document was developed based on the experience of cities in designing and implementing bicycle facilities. Because cities and the built environment differ throughout the country, this source was developed to provide urban areas with innovative solutions that have been implemented in cities across the United States and abroad. Many of the treatments in this document are not specifically identified in the documents referenced above, but have received approval status from the FHWA. Ultimately, the document seeks to guide the development of bikeway facilities where uncommon challenges are created by competing modal demands for limited right-of-way.

BICYCLE TRIP TYPES

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

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, commuters and shoppers are interested in the shortest and safest route between two points. The *Bicycle Master Plan* identifies appropriate improvements for recreational and commuter bicycle facilities.

Commuter and Student Destinations and Needs

Commuter and student destinations include downtown employment centers, office parks, university campuses, and elementary, junior high, and high schools. Targeting bikeway improvements to commuters is important because most roadway congestion and a significant portion of air contaminants occur during the AM and PM peak periods.

In many cases, bicycling as a commute alternative has the potential to improve traffic and air quality. For example, 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 bike 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.

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 several 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. Cal Poly Pomona is located on the City's western border, while Mt. San Antonio College and the Claremont Colleges are no more than a mile from the City's borders.

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 dangerous 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 simple and obvious needs. They require bike lanes or wide curb lanes along arterials and collectors, loop detectors at signalized intersections that respond to bicycles, signals where school children need to cross busy arterials, periodic maintenance of the pavement, and adequate bicycle storage and lockers/showers at their destination points.

Most commute bicycle trips are fewer than five miles and are not regional trips, except for those commuters linking to another mode, such as at bus stops or transit stations. Continuing to allow bicycles on transit vehicles operated by Metro, Foothill Transit, and Metrolink and providing bike lockers at transit stations will help extend the range of commute bicyclists in Pomona.

Not all bicycle trips are related to commuting purposes. Bicycling is ideally suited for short elective trips, such as groceries, lunch/dinner, or other errands that are often done with an automobile. The potential for increasing the proportion of these trips that are made by bicycle can be increased by providing convenient bicycle parking and bicycle facilities for all skill and comfort levels that connect dense employment and residential areas to nearby commercial and neighborhood retail that serve these other trip purposes.

Recreational Destinations and Needs

Pomona has a diverse recreational system that includes city parks and several existing and proposed multi-use paths as well as access to regional parks that appeal to various types of bicyclists. Recreational bicycling includes children riding to a nearby park, casual riders riding over their lunch hour or in the evening for exercise, and older adults riding to a community center. More serious recreational cyclists often ride long distances on the weekend and may participate in organized bike tours. The common attribute of all of these activities is that they are generally done for the pleasure of the ride itself, they often have a recreational facility as a final destination, they are discretionary by nature, and they value speed and directness less than surroundings and relative safety.

Recreational bicyclists can generally be categorized into two groups. The first group is casual bicyclists who typically have short trips and often include less experienced cyclists, 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.

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 recreational destination (a park or a shopping mall), the route may consist of fairly direct back streets that allow arrival with reasonable time through a comfortable environment. For other casual riders, a route that leads through interesting neighborhoods, along creeks, or through parks and open space offers the greatest interest.

EXISTING BICYCLING FACILITIES

Pomona has a grid-based network of streets that provide excellent opportunities to develop a bikeway system. An inventory was completed of existing multi-use paths and on-street bikeway facilities based on the City's data files, project documents provided by City staff, information from the general public, and extensive field visits. The City currently has approximately 3.28 miles of bikeway facilities, consisting of approximately:

- 2.1 miles of Class I multi-use paths
- 1.27 miles of Class II bike lanes
- No miles of Class III bike routes

The Existing Bikeway Network map (**Figure 3-4**) shows locations for all existing bikeways.

Multi-Use Paths (Off-Street)

Pomona currently has two short segments of multi-use path, as shown in **Table 3-5**. These facilities may require modifications to be brought into conformance with minimum design standards and best practices (to be determined in the recommendations phase).

- Village Loop Road Multi-Use Path – This multi-use path in the Phillips Ranch neighborhood runs through parkland between Pala Mesa Drive and Phillips Ranch Road.

- Skyline Lane Multi-Use Path – This multi-use path in the Phillips Ranch neighborhood runs through parkland between Deer Creek Road and Rainbow Ridge Road.

TABLE 3-5 – EXISTING MULTI-USE PATHS (CLASS I)

Path	From	To	Length (miles)
Village Loop Road	Pala Mesa Drive	Phillips Ranch Road	1.0
Skyline Lane	Deer Creek Road	Rainbow Ridge Road	.23
		Total	1.23

Bike Lanes (On-Street)

Pomona's on-street bicycle facilities are limited to three short segments of bike lanes. **Table 3-6** provides a list of existing on-street bike facilities.

TABLE 3-6 – EXISTING CLASS II AND CLASS III BIKE FACILITIES

Street	From	To	Class	Length (miles)
Bonita Avenue	West City Limit	East City Limit	II	1.4
Hamilton Boulevard	Mission Boulevard	Phillips Boulevard	II	0.75
South Campus Drive	Temple Avenue	Kellogg Drive	III	0.29
South Campus Drive	Kellogg Drive	East Campus/SR-57	II	0.62
South Campus Drive	East Campus/SR-57	Ridgeway Street	III	0.59
Innovation Way*	Kellogg Drive	Temple Avenue	II	0.25
Kellogg Drive*	South Campus Drive	Valley Boulevard	II	0.27
			Total	4.17

*Owned by Cal Poly Pomona (not a City of Pomona facility)

Image 3-1 Bike Lane on Hamilton Avenue (Source: City of Pomona)

Existing Bicycle Parking, Transport, and Support Facilities

Bicycle parking is present at Pomona's downtown Metrolink station, the Pomona Civic Center, and major educational institutions such as Cal Poly Pomona. Bicycle parking at the downtown Pomona Metrolink station includes bicycle racks. Limited bicycle parking is present throughout the rest of the City and should be considered at destinations and bicycle generators. The City does not currently have a rack placement or rack request program enabling accurate tracking or geographic locating of city-installed racks in the public right-of-way or on other publicly-owned properties. In addition, there is currently no city code requirement for private developers or property owners to provide on-site bicycle parking for residents, tenants or visitors.

Connections to other modes, such as public transit, are primarily provided in two ways in Pomona: bicycle racks on buses and bicycle parking at the two Metrolink stations. The bus operators in Pomona include Metro, Foothill Transit, and OmniTrans, all of whose busses provide racks with capacity for two bikes. Bicycle parking is typically not provided at bus stops. Metrolink allows bikes on all train cars; however, most are limited to three bikes. Selected Metrolink trains include special "Bike Cars" that are designed to hold 18 bikes on the lower level. Both Metrolink line serving Pomona, the Riverside Line and San Bernardino Line, have trains that include a "Bike Car." There are no bicycle parking support facilities such as lockers, showers, or changing facilities at connections with other transit modes in Pomona.

Images 3-2 through 3-5 clockwise from top left: Bicycle parking in downtown Pomona; bicycle parking at the Pomona Transit Center; Foothill Transit bus with bicycle rack; bike locked to railing at Pomona North Metrolink Station.

KEY ISSUES AND BICYCLE NEEDS ASSESSMENT

In making conscious efforts to enhance the bicycle network, the City has a number of challenges to overcome. As described in Chapter 1, public outreach was conducted to identify the key public concerns with cycling in the City. The comments received reinforced several issues previously identified by City staff. Comments could be summarized in one of the following three broader categories:

- Make cycling to key destinations, such as commercial districts and schools, easier and safer
- Identify solutions for bridging major barriers in the City, including SR-71, I-10, major east-west and north-south arterials, and Metrolink tracks
- Develop a complete and integrated network that accommodates a range of cycling skills

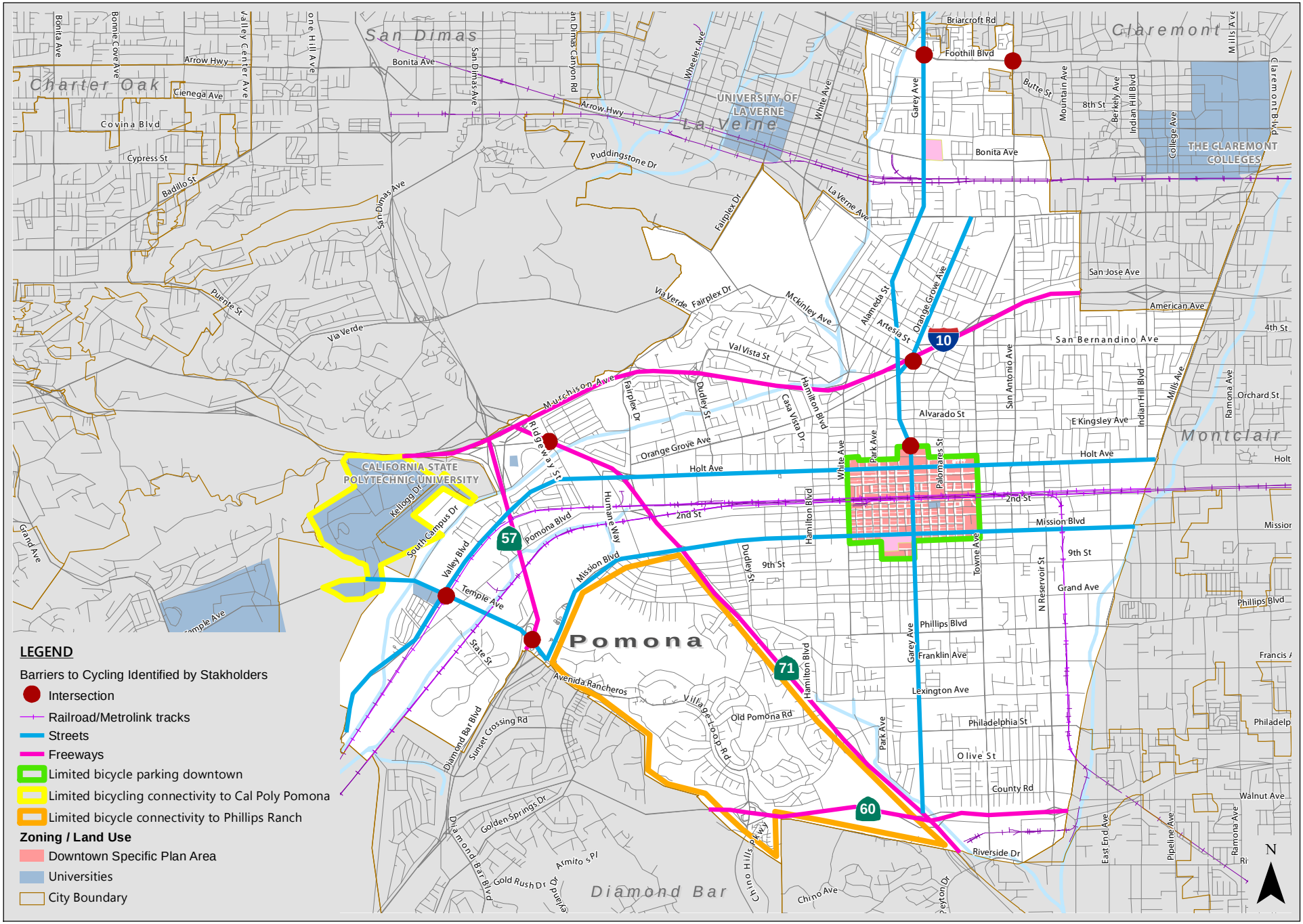
The following section discusses more specific elements of these issues to be addressed in the proposed facilities section and design guidelines. A complete list of public comments is available in Appendix A.

As discussed, Pomona is primarily comprised of residential neighborhoods well suited for biking. Based on local observations, most residents do not walk or bike when purchasing daily goods or services, even though various destinations are located within an easily "bikeable" distance of approximately two miles.

Stakeholder Meeting #1

On April 26, 2012, an initial stakeholder meeting was held at the Ganesha Park Community Center. The approximately 60 attendees discussed general concerns and facility preferences and identified desired bike parking locations, potential routes, and barriers to bicycling in Pomona. The barriers to bicycling, as described by meeting attendees are illustrated geographically in **Figure** 3-5.

.



FEHR & PEERS

N:\Jobs\Active\2500s\2517 - Pomona Bike\Graphics\GIS\MXD\f0x_barrierstobicycling8by11.mxd

BARRIERS TO BICYCLING
CITY OF POMONA
FIGURE 3-5

A short survey distributed to attendees captured the following information:

Question #1: What type of bicycle facilities do you prefer?

Respondents were instructed to choose up to two of the options shown in **Table 3-7**. The most popular facility types were bike lanes, bike paths, and bike routes/bike boulevards, respectively.

TABLE 3-7 – STAKEHOLDER RESPONSES TO SURVEY QUESTION #1

Type of facility	#	%
Bike lanes on major streets/commercial corridors	24	75%
Bike paths along railroads or waterways/flood channels	13	41%
Bike routes/bike boulevards on smaller or more residential streets	11	34%
Riding in regular vehicular travel lanes	4	13%
Other *(examples included: connections to downtown Pomona, open streets event/CicLAvia)*	2	6%

Note: A total of 32 completed surveys were received.

Question #2: Please list up to five locations where you would like to see bicycle parking?

Participants suggested a total of 52 places for bicycle parking, ranging from specific businesses and intersections to entire City Council districts. Many locations were mentioned more than once. Downtown Pomona and locations within it were mentioned 26 times. The North Pomona Metrolink station and the Pomona Transit Center were mentioned 11 times. Participants described a need for bicycle parking at local and regional destinations including parks, Cal Poly Pomona, the Fairplex and public facilities such as post offices and libraries. Major transportation corridors were also a key location for bicycle parking. Garey Avenue and intersections along it were mentioned 13 times. Other frequently mentioned corridors include White Avenue (6 times), 2nd Street (6 times) and Holt Avenue (3 times). These responses will inform the development of a bicycle parking pilot program for installing bicycle racks at City-owned facilities and within the City-owned public right-of-way.

Question #3: Would you like to share anything else that would make bicycling in Pomona easier for you?

Table 3-8 presents a summary of responses to this open-ended final question.

TABLE 3-8 – STAKEHOLDER RESPONSES TO SURVEY QUESTION #3

Facilitating bicycles on transit	4
Metrolink	1
Foothill Transit buses	1
Triple bike racks	1
Secure bike parking at transit	3
Bicycle facilities	13
Bicycle lanes(inc. green lanes, wide lanes near parked cars)	4
Bilingual signage	1
Water fountains	2
Bicycle loop detectors at intersections	1
Lighting and visibility	3
Education	4
Increased driver awareness and respect for bicyclists	2
Police education about right to road	1
Bicyclist education about riding on the right side of the street	1
General street maintenance and engineering	3
Traffic calming	1
Better condition pavement	1
Keeping major roads clear of debris	1
Bicycle access to destinations	3
Cal Poly Pomona	1
Downtown Pomona	1
Major corridors (Garey, Holt, Temple, Mission)	1
General safety concerns	1

Stakeholder Meeting #2

On July 18, 2012, a second stakeholder meeting was held at Emerson Middle School. The approximately 30 attendees discussed preliminary bicycle facility recommendations, desired bike parking locations, and policies and programs that could be implemented to facilitate and promote active transportation in Pomona.

Stakeholder Meeting #3

On September 19, 2012, a third stakeholder meeting was held at Pomona City Hall. There were representatives form seven stakeholder groups. The discussion included an overview of the proposed

plan, preliminary bicycle facility recommendations and general issues and concerns relating to the development and future implementation of the Active Transportation Plan.

The Citrus Regional Bikeway

Pomona is located along the newly completed Citrus Regional Bikeway, a regionally significant on-street facility that connects with off-street paths to the east and west. The bicycle lane on the Citrus Regional Bikeway was recently implemented on Bonita Avenue within the city limits. Just outside the city limits, immediately east and west of Pomona, the bicycle lane was also recently installed on Bonita Avenue, creating a continuous bike lane on Bonita Avenue within the city and connecting to existing bicycle lanes in adjacent jurisdictions. In San Bernardino County to the east, there is an existing off-street bike path that is known as the Pacific Electric Trail, to which the Citrus Regional Bikeway connects. In Los Angeles County to the west, the Citrus Regional Bikeway connects to the San Gabriel River Trail.

Other Regional Bikeway Improvements

The 2012 Los Angeles County Bicycle Master Plan proposes two major regional Class I facilities that would pass through the City of Pomona: the Thompson Creek Path, which would travel north-south through the northwestern corner of the City, and the San Jose Creek Trail, which would travel north-south through the western part of the City, between the 10 Freeway and the City of Diamond Bar. The two Class I facilities would be connected by a Class III facility traveling on surface streets between White Avenue and Murchison Avenue in the City of Pomona.

The Citrus Regional Bikeway, which is the Los Angeles County continuation of San Bernardino County's Pacific Electric Trail, would travel through north Pomona parallel to the Metrolink rail tracks, connecting to surface streets in Claremont at its eastern end, continuing west through La Verne and eventually connecting to the San Gabriel River Trail. In 2011, the Claremont portion of this bikeway was constructed along Bonita Avenue and 1st Street.

Safe Routes to School

Pomona's neighborhood-oriented schools make biking and walking to school a viable and attractive alternative to driving. As shown in **Table 3-9**, a roll-call survey conducted by the Los Angeles County Department of Public Health staff in three Pomona Unified School District Schools (76 total classrooms) indicates an average of 31% of student arrive to school on foot and 2% arrive by bicycle.

TABLE 3-9 – MODE SPLIT FOR SELECT POMONA SCHOOLS

Means of Transportation	Ganesha High		Garey High		Arroyo Elementary		TOTAL	
	#	%	#	%	#	%	#	%
Walk	197	27%	201	38%	192	40%	590	34%
Bicycle	18	2%	14	3%	8	2%	40	2%
Drove	34	5%	18	3%	0	0%	52	3%
Other self-driven	49	7%	7	1%	0	0%	56	3%
School bus	5	1%	1	0%	2	0%	8	0%
Family Vehicle driven by a parent	391	53%	230	43%	265	55%	886	50%
Carpool driven by a parent	30	4%	51	10%	12	3%	93	5%
Metro bus	18	2%	9	2%	0	0%	27	2%
Other not listed	1	0%	3	1%	1	0%	5	0%
Total	743	1	534	1	480	1	1757	1

Ganesha survey administered:	Week of 2/20/12;	33 classrooms
Garey survey administered:	Week of 2/20/12;	25 classrooms
Arroyo survey administered:	Week of 2/20/12;	18 classrooms

Source: Los Angeles County Department of Public Health (February 20, 2012)

In coordination with the local school district, the school has been successful in obtaining funding to implement improvements near several schools. However, opportunities exist to improve safety around the schools, particularly by improving crossings and bike routes, and slowing speeds near schools. Additionally, education, encouragement, and enforcement efforts that are developed and implemented through collaboration between parent groups, local bicycle advocacy groups, the City, and law enforcement have the potential to promote a number of Safe Routes to School activities, including bike/walk to school days, walking school buses, and additional infrastructure improvements near schools.

Retail Areas

Several key destinations, such as the Pomona Civic Center, retail destinations in downtown Pomona, and the Pomona Metrolink station are within a mile radius of many residential homes in Pomona. A one-mile radius from the Pomona Civic Center generally encompasses the area to Dudley Street to the west, Lexington Avenue to the south, Reservoir Street to the east, and Alvarado Street to the north. Despite this, driving remains a dominate mode. Also, the lack of dedicated bike facilities along key arterials that provide access to downtown such as Mission Street, Holt Boulevard, and Garey Avenue make getting to popular destinations difficult at best. The City is considering increasing the number of bike racks on commercial streets, but bike parking is in limited in supply in some areas. Short- and long-term bicycle parking is needed in key commercial areas, at large employment areas, transit hus, schools, parks, and other community destinations. The addition of secure bicycle parking will be a critical component of encouraging people to bicycle in Pomona and should be prioritized.

It is important to recognize that many cyclists, at least initially, may not feel comfortable utilizing some of the key arterials that provide access to key destinations in Pomona- with or without bicycle lanes. A fundamental component of implementing any successful bicycling plan is providing projects and facilities that provide interconnected and alternative routes for cyclists of different capabilities. For example, commuter cyclists are typically more confident, defensive, and faster than children or less frequent riders. Thus, these types of cyclists require a different type of facility than a child riding to school or an occasional cyclist who rides on the weekends. Having different types of facilities also requires providing education on how different facilities should operate so that cyclists as well as drivers understand what is expected to maintain a safe facility.

Intersections

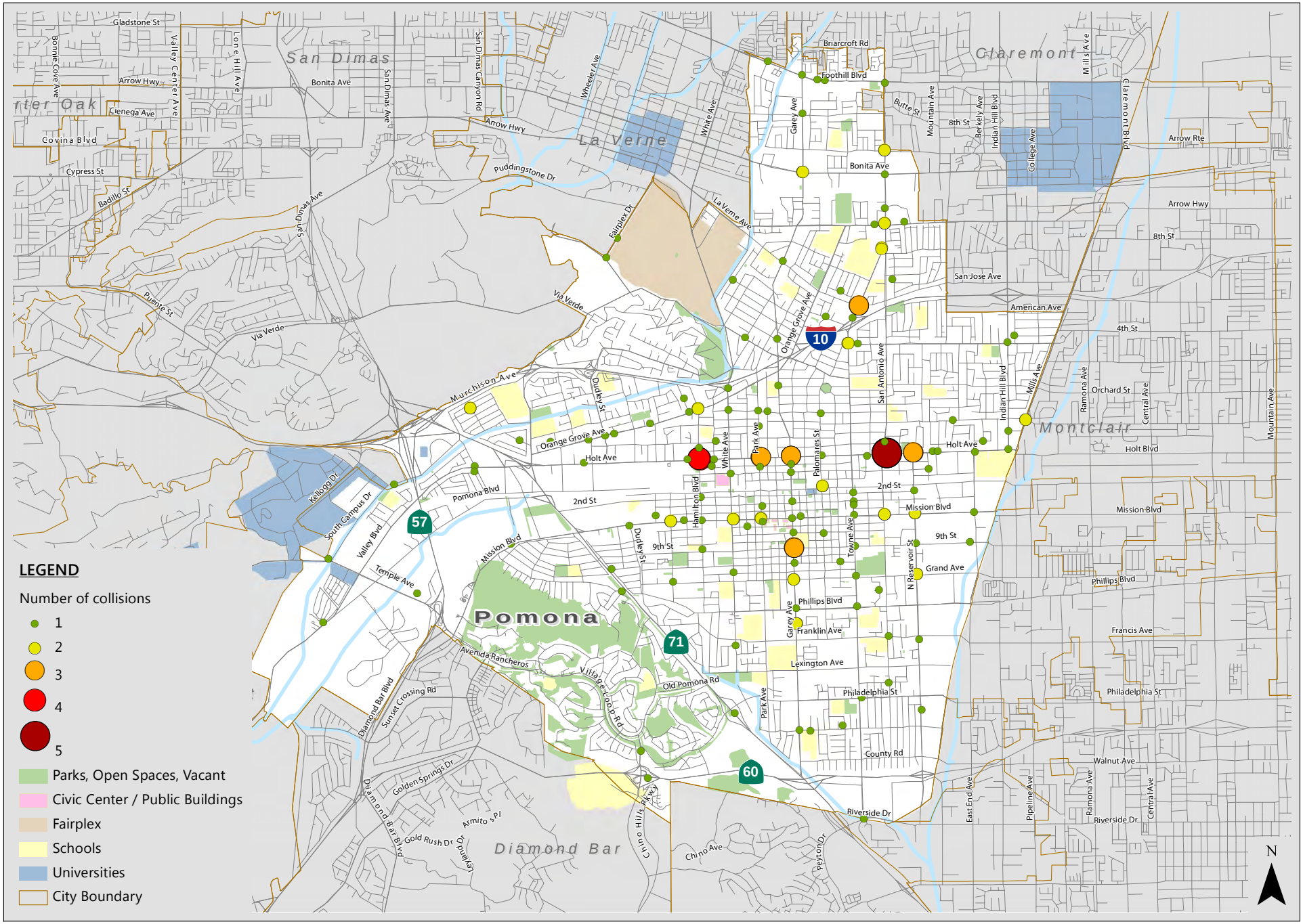
Oftentimes, bicyclists must wait through lengthy signal cycles or risk proceeding through intersections against the light. At uncontrolled intersections, cyclists must wait for gaps in traffic before proceeding. Bicycle-specific detectors or bicycle-specific signals should be considered at intersections along the bicycle network and stencils should be used to inform bicyclists where to potions their bikes in order to actuate the signal. The 2012 California MUTCD requires that all new limit line detector installations and modifications, all new and modified bike path approaches, new signalized intersections, or modifications to advanced detection provide bicycle detection and appropriate markings informing bicyclists where to place their bikes or utilize a push-button for actuation. Alternatively, these locations can operate with fixed time signal cycles.

BICYCLE COLLISION REPORTS

While traffic collisions can affect anyone, they have a disproportionate impact on bicyclists, who, along with pedestrians, are the most vulnerable users on the road. Data on collisions and a brief analysis of collision reports provided by the City of Pomona can show some generalized trends in vehicle-cyclist collisions in the City and help planners and decision-makers identify specific locations and support programs. **Figure 3-6** identifies the locations of bicycle-related collision reports between 2007 and 2011, and **Figure 3-7** identifies the locations where injuries occurred. Both figures use data provided by the California Highway Patrol's Statewide Integrated Traffic Records System (SWITRS). This data set is also used by UC Berkeley's Transportation Injury Mapping System (TIMS).

The collision reports identify crash locations; however, many factors that influence collision rates are not location-specific, such as time of day, weather conditions, degree of sobriety, and age of parties involved. Furthermore, many bicycle collisions might involve stationary objects, and these types of collisions are not typically recorded in the City's collision database. Therefore, a small number of data points may not indicate much about a specific location. While the collision locations identified in this section help identify "hotspots," they should not be assumed to be the most hazardous or risky locations. For a more meaningful evaluation, the data would need to be adjusted for the number of bicyclists to account for "exposure." At best, a group of data points at a single location reveals that there is a tendency for collisions to occur relative to the number of bicyclists in the area. For example, Holt Avenue has more bicycle collision reports than other areas of the City, but it is a primary shopping district with greater numbers of bicycles than the more residential areas of the City. It is possible that the places with high numbers of collisions also have a high number of bicyclists. Absent a complete database of bicycle volumes, there is no reliable way to adjust for exposure and relative safety. Thus, the data in the following section is presented for informational purposes only, and does not necessarily identify a certain location as unsafe.

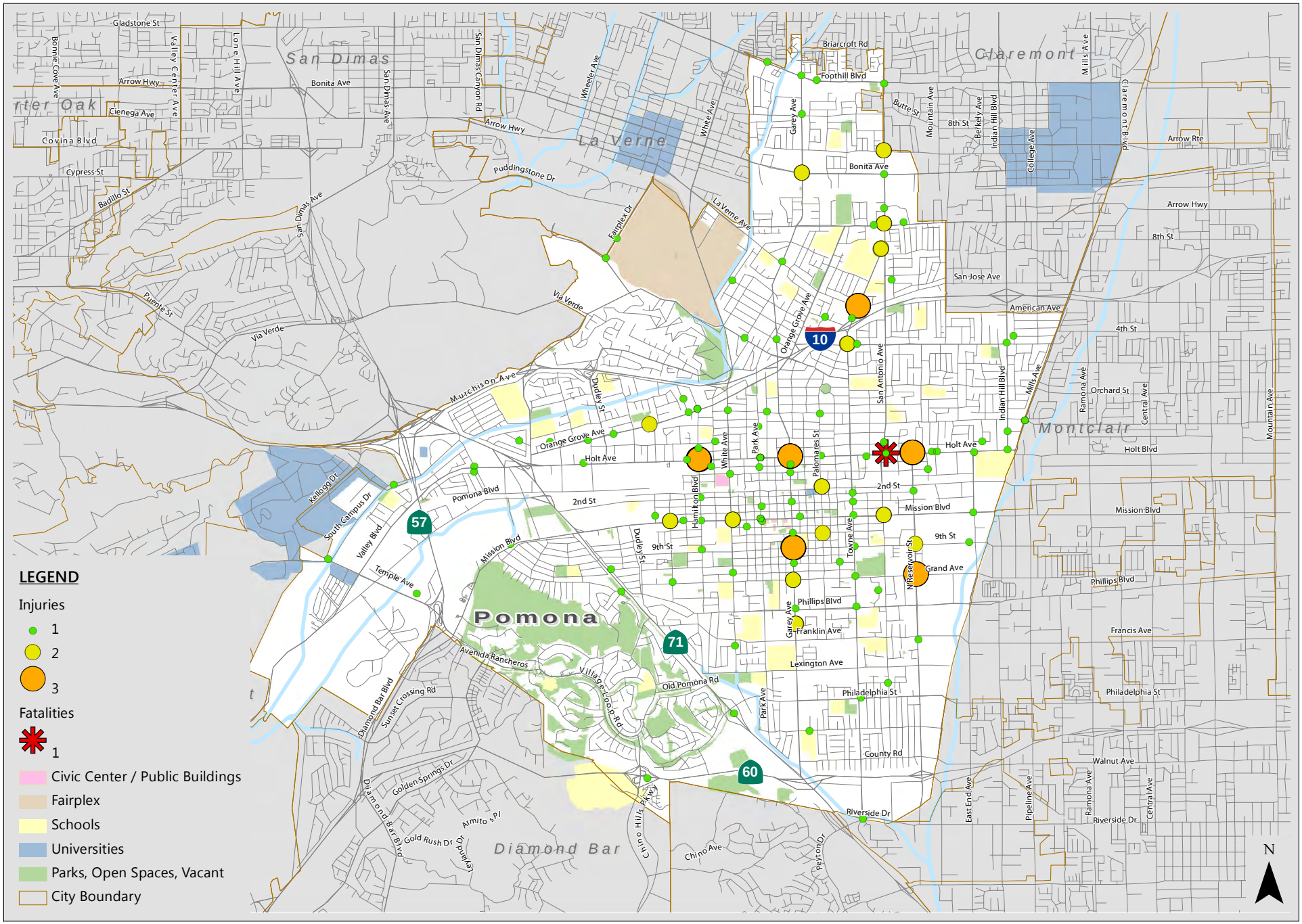
Collisions occurring within 100 feet of an intersection are assigned to that intersection, defined as the combination of primary and secondary roadway. Collisions occurring more than 100 feet from an intersection are assigned to that segment. Based on the data provided, 81% of bicycle-involved collisions occurred at an intersection. **Table 3-10** summarizes the 10 intersections that were reported most frequently in the 2007-2011 bicycle-involved collision data. The collision data set also includes the reported violation type, according to the California Vehicle Code. **Table 3-11** summarizes the 2007 to 2011 bicycle-involved collision data by code violation. Data for the ages of bicyclists and drivers was not available.



FEHR & PEERS

N:\Jobs\Active\2500s\2517 - Pomona Bike\Graphics\GIS\MXD\f0x_bikeCollision.mxd

BICYCLE COLLISION FREQUENCY (2007 - 2011)
CITY OF POMONA
FIGURE 3-6



FEHR & PEERS

BICYCLE COLLISIONS RESULTING IN INJURIES AND / OR FATALITIES (2007 - 2011)
CITY OF POMONA
FIGURE 3-7

N:\Jobs\Active\2500s\2517 - Pomona Bike\Graphics\GIS\MXD\f0x_bikeInjury.mxd

TABLE 3-10 – TOP BICYCLE COLLISION LOCATIONS BY INTERSECTION – 2007-2011

Intersection	Collisions Reported	Intersection	Collisions Reported
Holt Avenue/San Antonio Avenue	5	1st Street / Palomares Street Academy Avenue / Augusta Street Arrow Highway / Towne Avenue Beaver Court / Garey Avenue Bonita Avenue / Garey Avenue Buena Vista Avenue / Mission Boulevard Garey Avenue / Grand Avenue Grand Avenue / Reservoir Street Hamilton Boulevard / Orange Grove Avenue Holt Avenue / Mills Avenue Mission Boulevard / Park Avenue Mission Boulevard / San Antonio Avenue Mission Boulevard / White Avenue Reservoir Street / Mission Boulevard San Bernardino Avenue / Towne Avenue Towne Avenue / Harrison Avenue Towne Avenue / San Antonio Avenue	2 at each
Holt Avenue/Hamilton Boulevard	4		
Towne Avenue/La Verne Avenue	3		
Holt Avenue/Park Avenue	3		
Holt Avenue/Garey Avenue	3		
Garey Avenue at 9th Street	3		
Reservoir Street at Holt Avenue (W)	3		

Source: City of Pomona, 2012

Table 3-11 provides a list of the most common PCFs for collisions at signalized locations. The top three PCFs were travel on the wrong side of the road, auto right-of-way violations, and traffic signals and signs. These three PCFs accounted for 60% of collisions.

TABLE 3-11 – PRIMARY COLLISION FACTORS, 2007-2011

Primary Collision Factor	Percent Share	Primary Collision Factor	Percent Share
Wrong Side of Road	22.4%	Other Hazardous Movement	4.1%
Auto Right-of-Way Violation	21.8%	Driving Under the Influence	1.8%
Traffic Signals and Signs	15.9%	Improper Passing	1.8%
Unknown	14.7%	Pedestrian Right-of-Way Violation	1.2%
Improper Turning	8.8%	Pedestrian Violation	1.2%
Unsafe Speed	4.7%	Unsafe Starting or Backing	1.2%

Source: City of Pomona, 2012

Table 3-12 provides a summary of time of day data for collisions. The time of day was grouped into four categories: school/business hours (7:00 AM to 4:59 PM), evening hours (5:00 to 8:59 PM), night hours (9:00 PM to 2:59 AM), and morning hours (3:00 to 6:59 AM). Among bicycle involved collisions, the greatest proportion of collisions occurred during business hours with 51% of the total, followed by evening hours. Evening and night hours combined for less than 15% of the total collisions.

TABLE 3-12 – COLLISIONS BY TIME OF DAY

Time of Day	% of Total
7:00 AM to 4:59 PM	51%
5:00 to 8:59 PM	38%
9:00 PM to 2:59 AM	9%
3:00 to 6:59 AM	3%

Source: City of Pomona, 2012

Table 3-13 provides information on the involvement of alcohol for collisions. The PCF "driving under the influence" occurred three times out of 170 bicycle-vehicle collisions. Based on this data, alcohol was involved in 1.8% of collisions in Pomona.

TABLE 3-13 – INVOLVEMENT OF ALCOHOL FOR BICYCLE-VEHICLE COLLISIONS IN POMONA, 2007-2011

Alcohol Involved?	% of Total
PCF for Driving Under the Influence	1.8%
Other PCF	98.2%

Source: City of Pomona, 2012

As indicated in the data above, a majority of bicycle-involved collisions in Pomona occur at intersections, during daylight business hours, and do not involve alcohol. The propensity for bicycle-involved collisions at intersections during daylight signals potential conflicts between bicycles and vehicles at intersections and the need to educate motorists and cyclists about safe and lawful behavior as they share the road. Developing a bicycle network with a mix of bicycle facility types and up-to-date design guidelines for signing and striping will help communicate the rules of the road and designate space for motorists and cyclists on the public roadway network.

4. Proposed Active Transportation Network

While all streets should be designed to safely accommodate all who use them, the proposed active transportation network consists of pedestrian improvements at a number of locations and bicycling facilities that are designed to be the primary system for active transportation within, to, and from Pomona.

The pedestrian-oriented improvements and the Bikeway Network are the primary tools that allow the City to focus and prioritize implementation efforts where they will provide the greatest community benefit. Streets or corridors selected for inclusion in the networks are targeted for specific improvements in this Plan, such as the installation of bicycling lanes, off-street paths, signage, crossing improvements, or streetscape improvements. Combined, these two networks form the citywide active transportation network. The individual projects in this Plan represent specific improvements considered necessary to help Pomona meet its goals and objectives for active transportation.

Once completed, the active transportation network will provide safer and more direct travel paths throughout the City for those who prefer to walk or bike. The proposed system was developed according to the following criteria:

Connection to Activity Centers: Schools and universities; community facilities such as Garey High School, the library, the community center, parks, and open space; and neighborhood commercial districts should be accessible by foot or bicycle. Residents should be able to walk or bike from home to both local and regional destinations.

Comfort and Access: The system should provide safe and equitable access from all areas of the City to both commute and recreation destinations, and should be designed for people of all levels of ability.

Purpose: Each link in the system should serve one or a combination of these purposes: encourage bicycling for recreation, improve facilities for commuting, and provide a connection to the citywide bike network. On-street facilities should be continuous and direct, and off-street facilities should have a minimal number of arterial crossings and uncontrolled intersections.

Connection to Regional Networks: The system should provide access to regional bikeways, regional trails, and routes in adjacent communities.

Image 5.1. South Campus Drive, fronting Cal Poly Pomona

PROPOSED BICYCLING NETWORK

To be eligible for grant funds under Caltrans' Bicycle Transportation Account, a city or county must adopt a bicycle plan that includes certain components outlined in Section 891.2 of the Streets and Highways Code. This section addresses the components required under Sections 891.2 (c), (d), (e), (f), and (j).

The proposed bikeway network consists of routes that are designed to be the primary system for bicyclists traveling through Pomona. Streets or corridors selected for inclusion in the network are targeted for specific improvements in this Plan, such as the installation of bicycling lanes, off-street paths, or signage. By law, unless explicitly prohibited (as they are on I-10, SR-57 and SR-71), bicyclists are allowed on all streets and roads regardless of whether the streets and roads are a part of the bikeway network.

TABLE 4-1 – LENGTH OF BICYCLING NETWORK

Bikeway Classification	Caltrans Classification[1]	Existing	Proposed
Shared-Use Bicycling and Walking Path	Class I	1.2 miles	7.5 miles
On-Street Bicycling Lane	Class II	4.2 miles	28 miles
Bicycling Route (Signed and Marked)	Class III[2]	--	26.4 miles
Long-Term Improvements	TBD	--	9.9 miles
Improvements Recently Completed	Class II	--	3.7 miles
Total	--	5.4 miles	75.5 miles

Notes:

Based on Caltrans Highway Design Manual

The Caltrans definition of Class III includes only bicycling route signs; however, all bicycling routes in Pomona are proposed with both signage and shared lane (sharrow) markings. The City of Berkeley refers to signed and sharrowed Class III bicycling routes as Class II.5.

Source: Fehr & Peers, 2012

Figure 4-1 illustrates the Citywide Existing and Proposed Bikeway Network. The proposed system includes a total of approximately 76 miles of new bikeway facilities in addition to the three miles currently in place. **Table 4-1** above shows the number of proposed miles for each bikeway classification.

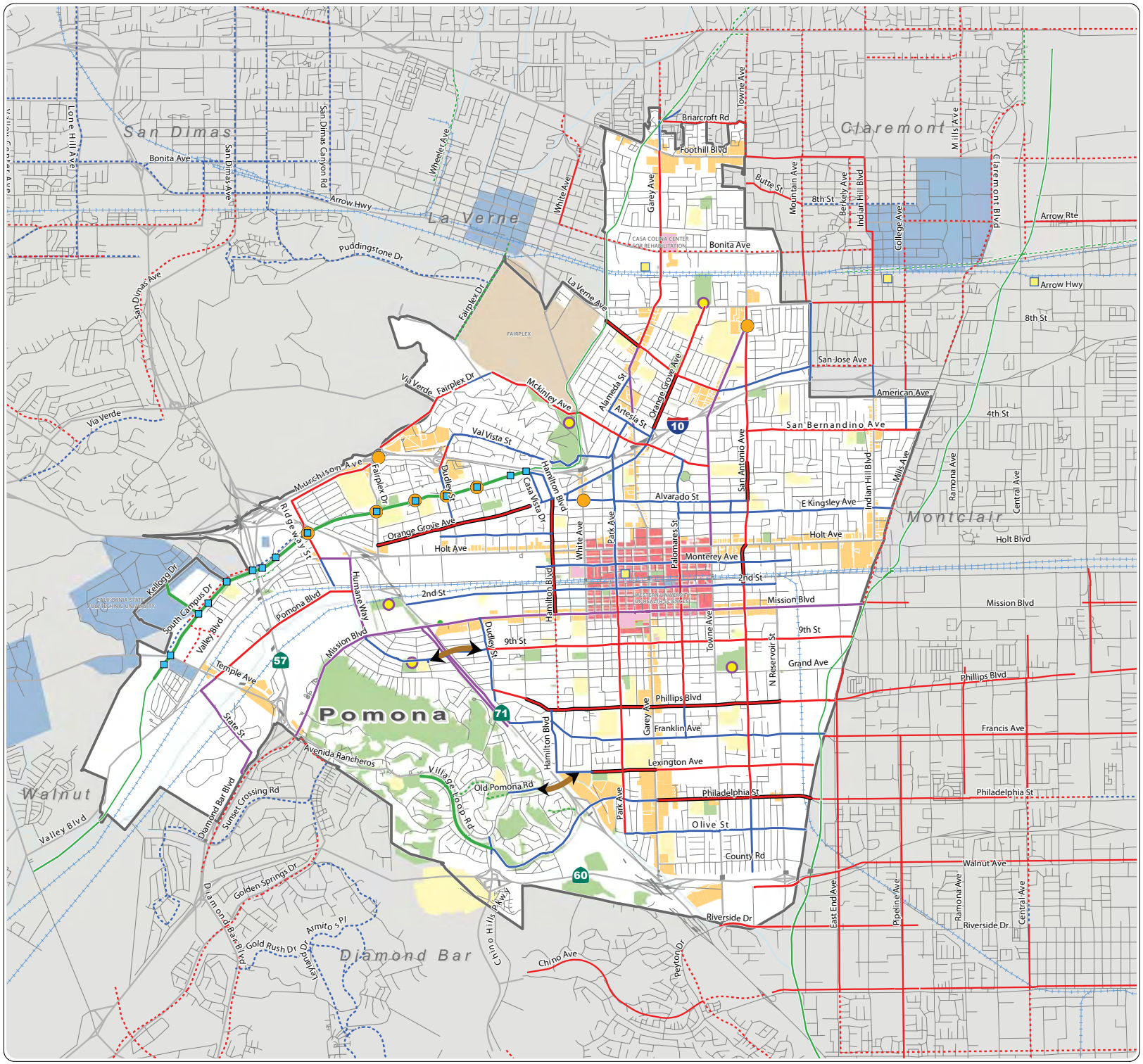


FIGURE 4-1: EXISTING AND PROPOSED BICYCLE FACILITIES

- Potential Future Connection
- Bike Path Access Points
- Intersection / Crossing Improvements

Proposed Bike Facilities

- Bike Path
- Bike Path (Long Term)
- Bike Lane
- Bike Route
- Bike Lane After Road Diet
- Bike Lane After Removal of Parking
- Potential Future Bike Facilities
- Transit Centers
- Day Labor Center
- Bridges
- Community Centers

Existing Bike Facilities

- Bike Path
- Bike Lane
- Bike Route
- City Boundary

Zoning / Land Use

- Commercial
- Parks, Open Spaces, Vacant
- Civic Center / Public Buildings
- Fairplex
- Schools
- Universities
- Downtown Specific Plan Area

FEHR & PEERS

General Design Guidance

The City of Pomona has a street grid that is well suited for a robust bicycling and walking network. To accommodate a wide range of bicyclists, this network should be designed to facilitate commute bicycling trips and recreational and casual bicycling. Regardless, some design features may be universally applied to many bicycling facilities. This section summarizes some basic design features of standard Class I (shared-use paths), Class II (bicycling lanes), and Class III (bicycling routes). More detailed bicycling facility design guidelines are provided in **Chapter 8 - Design Guidelines**.

Shared-use Paths (Class I) should be designed to separate bicycle and pedestrian traffic as much as possible. The bicycling path portion should be a minimum of eight feet wide, with a preferred width of ten feet and up to fourteen feet in areas where heavy use is expected. Adjacent to bicycle paths, a separately designated walking path constructed with decomposed granite is preferable. Signage or stencils should indicate bicycling and walking only paths, as well as portions of paths that are shared. Paths should be continuous and have as few stops and crossings as are practical and safe.

Bicycle lanes (Class II) should be a minimum of five feet wide with a preferred width of six feet, measured from the edge of the parking lane or the curb face at locations without on-street parking. A minimum area outside of the gutter pan of four feet (three feet for a five-foot bicycling lane) should be provided. A 4-foot lane may be provided where there is no on-street parking and no gutter. In urban areas, 4-foot bike lanes are typically used only on intersection approaches where the bike lane is striped to the left of a designated right-turn lane. Bicycle lanes should be striped and marked on both sides of the roadway at the same time to provide continuity and discourage wrong-way riding. On steep grades, bicycle lanes may be provided in the uphill direction with shared lane markings in the downhill direction. If shorter segments of the corridors have insufficient width for bicycle lanes, on-street signage or stencils to raise the visibility of bicyclists and alert motorists that they are likely to encounter cyclists may be appropriate.

All bicycle routes (Class III) should be marked with signage and stencils to raise the visibility of bicyclists to motorists. In addition to standard bicycle lanes and bicycle routes, several bicycling design and traffic calming treatments should be considered to enhance the comfort and safety along specific routes.

PROJECT LIST

As part of the planning process, several project areas were identified for site-specific recommendations and conceptual plans. The recommendations include short- to long-term improvements. The concept designs for these projects also serve as templates for best practices design guidelines for other areas in the City not prioritized in this Plan. Each project is accompanied by a fact sheet that can be used to pursue project-specific grant funding as an implementation step after Plan completion.

Over the past decade, Pomona has implemented a limited number of facilities; however, the City is in the midst of implementing two bike lanes in the City along South Campus Drive and Bonita Avenue. As the currently planned heavy infrastructure projects are put into construction, though, the City should use opportunities, such as roadway repaving or utility work, to implement network segments that require "sign and paint only." These features can be implemented relatively rapidly at low cost and greatly expand the network, which would both facilitate and encourage increased cycling in the City. Segments facing significant obstacles such as I-10 crossing at San Jose/Thompson Creek and the SR-71 crossings at 9th Street and San Jose Creek, will require more time to implement due to additional design analysis and the high cost of these projects.

Many of the projects in **Table 4-2** contain items that can be fully or partially implemented using paint and signs. The Plan recommends that these projects that can be coordinated with street improvement and resurfacing projects receive priority, provided this does not unreasonably delay the overall projects. Projects involving hardscape and changes in street operations will be subject to further review prior to implementation. The proposed project list in **Table 4-2** lists the various projects in alphabetical order.

Recommended Bicycling Facilities for Key Corridors

The following bicycling-friendly treatments may be considered along bicycling routes. These treatments are described in detail in the Design Guidelines (Chapter 8).

- 5-6' bicycle lanes
- Physically separated bicycle lanes with buffer
- Colored bicycling lanes
- Bicycle loop detection
- Sharrows
- Accommodation at large intersections and freeway interchanges
- Signage & Wayfinding

Proposed Parking Facilities

It is recommended that the City of Pomona establish a bicycle rack program that allows for the installation of bike parking throughout the City and should prioritize locations near bicycle generators, civic uses, transit facilities, and key destinations such as downtown Pomona. Additionally, the city should maintain an inventory of requests for the installation of bicycle racks based on local requests. Resident and stakeholder input would assist with the prioritization process and the city should seek to install additional bicycle racks as funding allows and demand justifies. Based on stakeholder input and a review of bicycle generators, locations for which bicycle parking is recommended are shown in **Figure 4-2**.

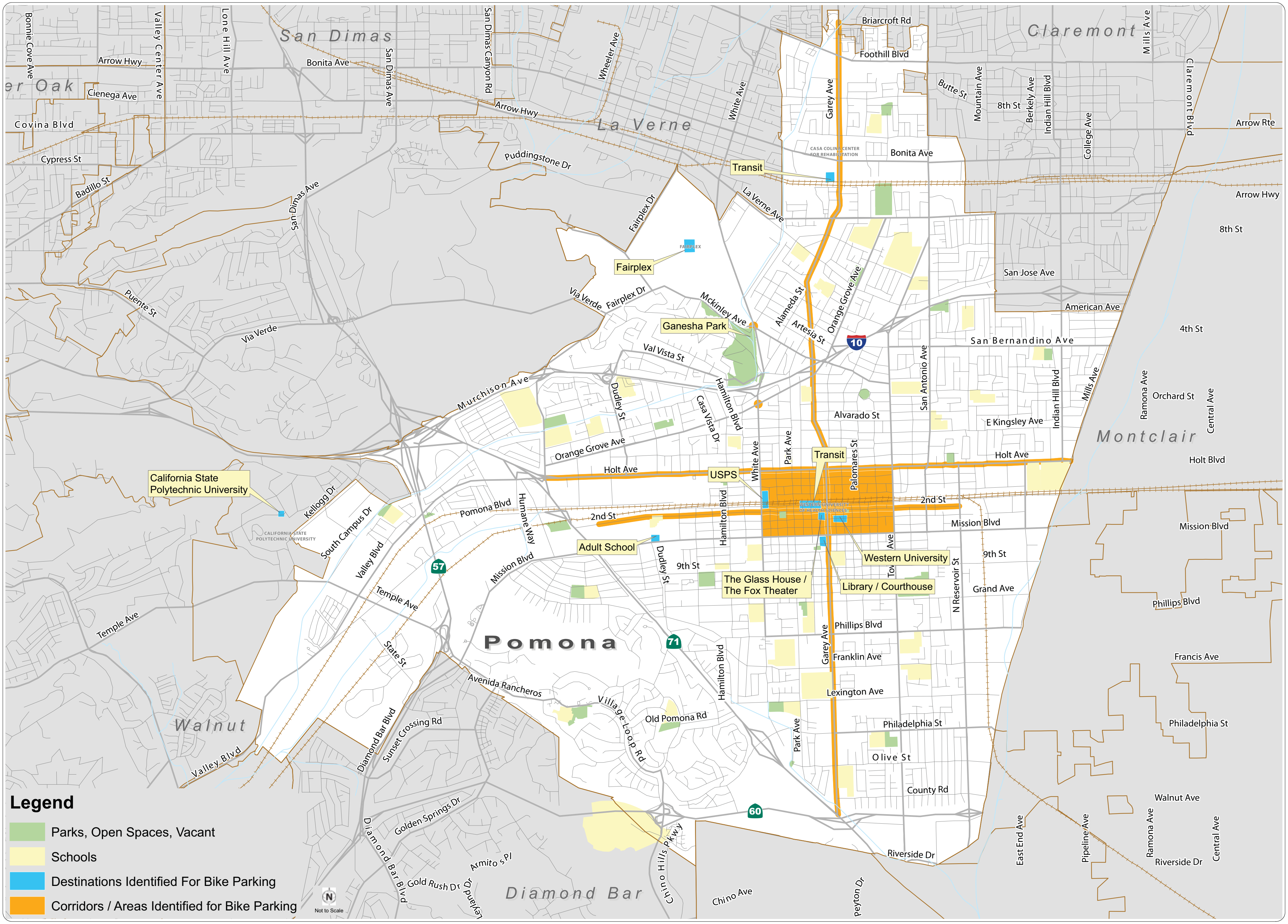
TABLE 4.2 - PROPOSED PROJECT LIST

Facility	From (N/W)	To (S/E)	Distance	Facility Type
2nd St	Chino Valley Fwy	Garey Ave	2	Bike Route
	Garey Ave	Gibbs St	0.4	TBD
	Gibbs St	Reservoir St	0.5	Bike Route
9th St	Butterfield Rd	Dudley St	0.35	Bike Route
	Dudley St	ECL	3	Bike Lane
Alameda St	Artesia St	Garey Ave	0.3	Bike Route
Alvarado St	Huntington St	San Antonio Ave	1.5	Bike Route
Artesia St	Alameda St	Orange Grove Ave	0.4	Bike Route
Butterfield Rd	Fleming St	Wright St	0.3	TBD
Casa Vista Dr	Murchison Ave	Orange Grove Ave	0.3	Bike Route
Caswell Ave	Alvarado St	Kingsley Ave	0.1	Bike Route
College Ave	Brin Mawr Rd	San Bernardino Ave	0.35	Bike Route
Dudley St	Lavita Ave	Murchison Ave	0.2	Bike Route
	Murchison Ave	Crest Way	0.3	Bike Lane
	Mission Blvd	Phillips Blvd	0.6	Bike Route
Fairplex Dr (w/o McKinley Ave)	McKinley Ave	Mountain Meadows Drvwy	0.15	Bike Route
	Mountain Meadows Drvwy	I-10 Freeway	0.95	Bike Lane
Fremont St/Franklin Ave	Hansen Ave	ECL	2.6	Bike Route
Garey Ave	Briarcroft Rd	Foothill Blvd	0.2	Bike Route
	Foothill Blvd	La Verne Ave	1.6	Bike Lane
	La Verne Ave	Artesia St	0.65	TBD
N Hamilton Blvd	Murchison Ave	Orange Grove Ave	0.2	Bike Route
Hamilton Blvd	Orange Grove Ave	Mission Blvd	1	Bike Lane
S Hamilton Blvd	Phillips Blvd	Lexington Ave	0.5	Bike Route
Humane Way	Holt Ave	Mission Blvd	0.7	TBD
Kingsley Ave	Caswell Ave	ECL	1.3	Bike Route
Laurel Ave	Erie St	Hamilton Blvd	0.9	Bike Route
La Verne Ave	Arrow Hwy	Towne Ave	1.1	Bike Lane
	Towne Ave	Mountain Ave	0.8	Bike Route
Lexington Ave	Hamilton Blvd	Garey Ave	0.8	Bike Route
	Garey Ave	ECL	1.3	Bike Lane
McKinley Ave	Fairplex Dr	Gibbs Ave	1.7	Bike Lane
	Gibbs Ave	Palomares St	0.1	Bike Route
	Palomares St	Towne Ave	0.2	Bike Lane
Mission Bl	Temple Ave	ECL	5	TBD
Monterey Ave	Myrtle Ave	Lorrane Ave	2	Bike Route
Mountain Ave	Arrow Hwy	I-10 Freeway	0.6	Bike Route
Murchison Ave	Ridgeway St	Fairplex Dr	0.7	Bike Lane
Olive St	Park Ave	ECL	1.5	Bike Route
Old Pomona Rd	Village Loop Rd	SR-71	0.45	Bike Route
Orange Grove Ave	Fairplex Dr	Lewis St	1	Bike Lane
	Lewis St	Artesia St	1.3	Bike Route
	Artesia St	E Arrow Hwy	1.1	Bike Lane
Palomares St	McKinley Ave	Pasadena St	0.7	Bike Route
	Pasadena St	Phillips Blvd	1.3	Bike Lane
	Phillips Blvd	Franklin Ave	0.25	Bike Route
Park Ave	Artesia St	3rd St	1.5	Bike Route
	3rd St	Olive St	2	Bike Lane

TABLE 4.2 - PROPOSED PROJECT LIST

Facility	From (N/W)	To (S/E)	Distance	Facility Type
Philadelphia St	Garey Ave	ECL	1.3	Bike Lane
Phillips Blvd	Dudley St	ECL	2.8	Bike Lane
Phillips Ranch Rd	Village Loop Rd	Rio Rancho Rd	0.1	Bike Route
Pomona Bl	Temple Ave	Pacific Street	0.7	Bike Lane
Preciado St	White Ave	Park Ave	0.3	Bike Route
Ridgeway St	Murchison Ave	Valley Bl	0.5	Bike Lane
	Valley Blvd	Mt. Vernon Ave	0.25	Bike Route
San Antonio Ave	Towne Ave	Philadelphia St	3.7	Bike Lane
	Philadelphia St	County Rd	0.5	Bike Route
San Bernardino Ave	San Antonio Ave	Mills Ave	1.5	Bike Lane
San Jose Creek	Poly Vista	Murchison Ave	3.5	Bike Path
State St	Pomona Bl	Diamond Bar Bl	0.85	TBD
Rio Rancho Rd	Phillips Ranch Rd	Garey Ave	1.6	Bike Route
Thompson Creek	I-10	NCL	3	Bike Path
Towne Ave	Arrow Hwy	San Antonio Ave	0.2	Bike Lane
	San Antonio Ave	Holt Ave	1.75	TBD
Val Vista	Crest Way	White Ave	1.2	Bike Route
Valley Blvd/Holt Ave	Ridgeway St	Humane Way	0.25	TBD
Village Loop Rd	Pala Mesa Dr	Phillips Ranch Rd	1	Bike Path

Notes: ECL, WCL, NCL, SCL = Eastern, Western, Northern, Southern City Limit



FEHR & PEERS

\\fpla1\data\Jobs\Active\2500s\2517 - Pomona Bike\Graphics\GIS\MXD\f0x_bikeParking.mxd

PROPOSED BIKE PARKING LOCATIONS

FIGURE 4-2

Proposed Parking Facilities for Other Modes and Support Facilities

It is recommended that the City of Pomona enhance the accessibility of transit to bicyclists by installing secure short-term bicycle parking in the form of additional bicycle racks and long-term bicycle parking in the form of lockers. Bicycle lockers allow potential transit patrons to ride to a transit station and board transit service without having to take their bicycle along. These should be acquired and established at the North Pomona and Downtown Pomona Metrolink stations. In addition, support facilities such as restrooms, showers, and changing facilities should be provided at these locations to further facilitate bike commuters' comfort and willingness to bicycle to and from these facilities.

SCHOOL AREA BICYCLE IMPROVEMENTS (MICRO-LEVEL BICYCLE ANALYSIS)

The following presents plans to improve bicycle access to Pomona's 12 middle and high schools. Middle and high schools were studied as many students at these age levels rely on bicycling and walking as their primary modes of transportation. At a later date, this analysis may be expanded to include Pomona's elementary schools. **Figure 4-3** shows middle/high school locations and enrollment boundaries.

Infrastructure improvements are proposed both on school properties and nearby streets. While the improvements are based on a careful, field-researched examination of existing conditions, they are subject to additional, more refined traffic and design review. Furthermore, all projects located on school grounds will require coordination with and approval from the Pomona Unified School District and/or school principals. Coordination and approval may alter the design or location of proposed facilities on school properties.

The goal of these recommendations is to make bicycling to school safer and more convenient for students. Generally, the goal of the recommendations is to minimize bicycle, pedestrian, and auto conflicts. For each school, we classify improvements into the following three categories:

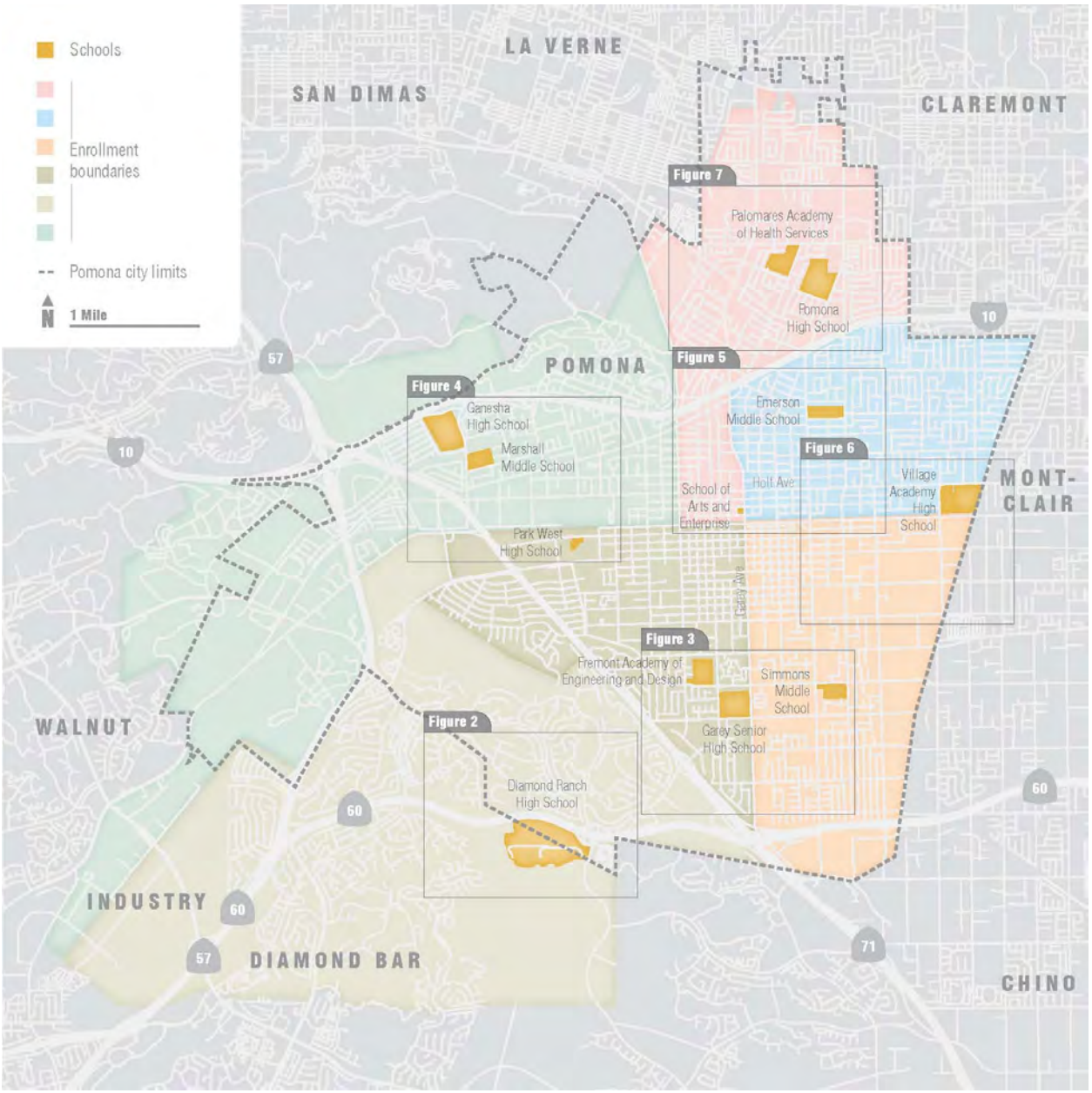
1. School Access (A) – Infrastructure improvements designed to enhance the safety and convenience of bicycle access to schools. These improvements are located on a school's campus or in its immediate vicinity.

2. Bicycle Parking (P) – Modifications to existing on-campus bicycle parking or recommendations for new/additional bicycle parking. All proposed bicycle parking should adhere to the guidelines for adequate and secure bicycle parking set forth in Chapter 8. Middle schools should provide bicycle parking for 20 bicycles; high schools should provide parking for 30 bicycles. These figures represent a baseline that may be adjusted in accordance with demand.

3. Bikeway Network (N) – Bikeways radiating from a school's campus into surrounding neighborhoods, which are designed to improve connectivity between schools and their surrounding communities. In some instances, these recommendations include additional bikeways beyond those in the overall proposed Pomona bikeway network. Other routes are coterminous with bicycle facilities proposed in the overall Pomona bikeway network. We highlight both here to signify their importance in developing a cohesive, safe network of school-serving bikeways.

Alphanumeric codes describe each infrastructure improvement in the following text and maps. The letter corresponds to the type of improvement proposed (A – school access, P – bicycle parking, or N – bikeway network). In some instances, numbers in parenthesis indicate the quantity of a listed improvement.

Figure 4-3 – Pomona School Locations and Enrollment Boundaries



Diamond Ranch High School

Bicycle Parking

P1. Additional Bicycle Parking

Existing

- Wave rack located in car parking space

Proposed

- Add bicycle parking at the location shown in **Figure 4-4**, along the existing sidewalk located northeast of the existing pick-up and drop-off area
- Add racks to accommodate 30 bicycles

Bikeway Network

N1. Diamond Ranch Road between Existing On-Campus Bicycle Parking and Chino Hills Parkway

Existing

- Four lanes, planted median, edge line (westbound)
- 25′ wide (westbound); 22′ wide (eastbound)

Proposed

- Add 5′-wide bicycle lane in the westbound (uphill) direction
- Add sharrows in the eastbound (downhill) direction
- Add pedestrian-scale street lighting

N2. Phillips Ranch Road between Diamond Ranch Road and Rio Rancho Road

Existing

- Four lanes, planted median
- 24′ (southbound); 30′ (northbound)

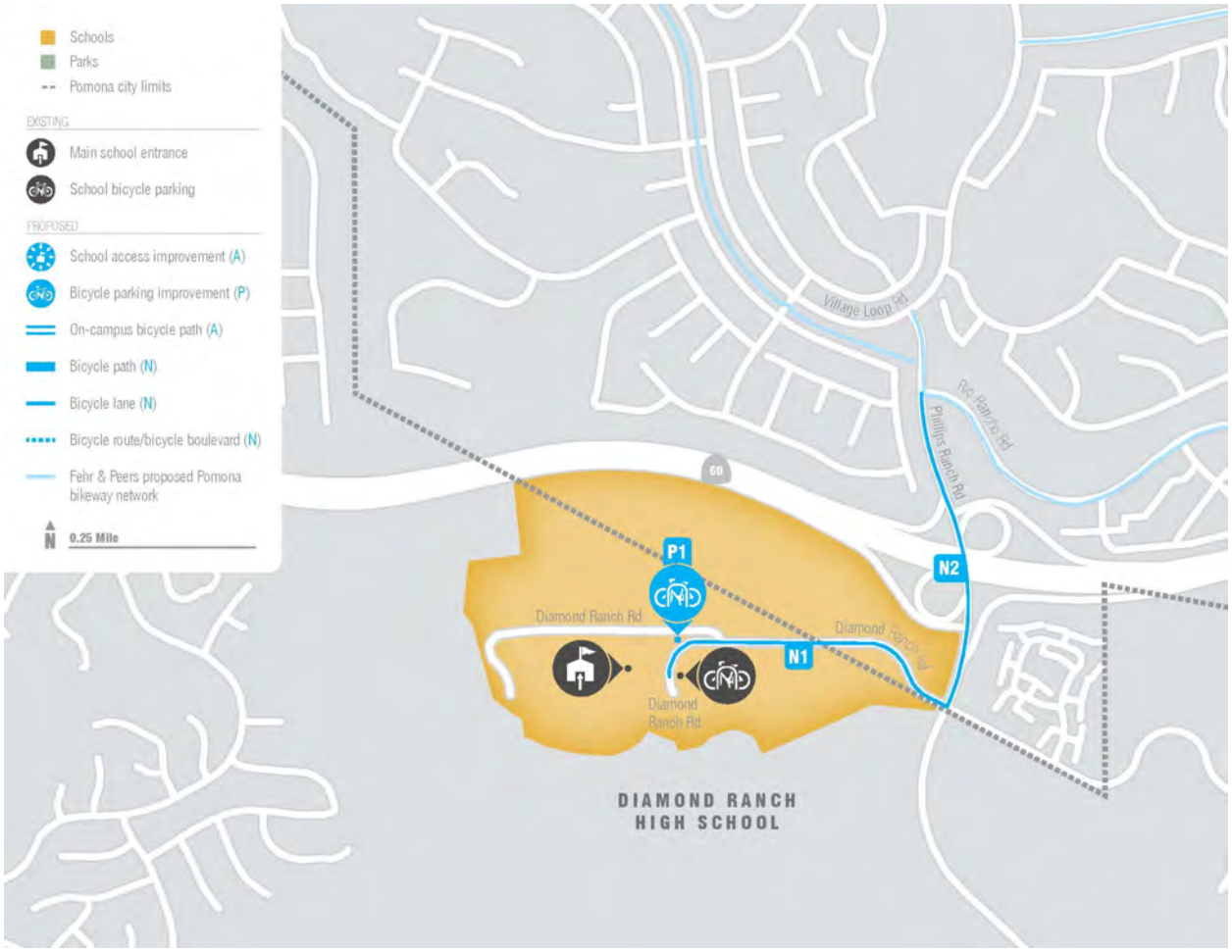
Existing – State Route 60 overpass section

- Six lanes, including freeway slip ramps
- 80′ (varies)

Proposed

- Add 4′-wide bicycle lane (southbound) and 6′ bicycle lane with 2′ buffer (northbound) to connect to the proposed bikeway on Rio Rancho Road

Figure 4-4 – Diamond Ranch High School Recommendations



Proposed – State Route 60 overpass section

- Add 6′ bicycle lanes
  Add conflict treatments at freeway on-/off-ramps

Fremont Academy of Engineering and Design

Access

A1. Bicycle Parking Access

Existing

- Locked auxiliary school entrance located west of the main school entrance
- Path connecting auxiliary school entrance to north sidewalk of Franklin Avenue; path intersects sidewalk immediately east of Bolivar Street

Proposed

- Ensure that auxiliary school entrance remains open to provide cyclists a direct route to the bicycle parking proposed in P2
- Add a curb ramp at the southern end of the path connecting the auxiliary school entrance to Franklin Avenue

Bicycle Parking

P2. New Bicycle Parking

Existing

- No existing on-campus bicycle parking

Proposed

- Add bicycle parking at the location shown in **Figure 4-5**, the auxiliary school entrance located west of the main school entrance. Locate bicycle parking inside the entrance gate to improve security
- Add racks to accommodate 30 bicycles

Bikeway Network

N3. Fremont Street/Franklin Avenue between Hamilton Boulevard and Pomona Eastern City Limit

Existing

- Two lanes, on-street parking
- 40' wide

Proposed

- Add sharrows to entire corridor
- Add lighting on Fremont Street between Hamilton Boulevard and White Avenue and on Franklin Avenue east of Garey Avenue
- Add bicycle loop detectors on Fremont Street/Franklin Avenue at White Avenue and Park Avenue
- Add traffic circle at the intersection of Franklin Avenue & San Antonio Avenue as a component of the San Antonio Avenue road diet project proposed in the Fehr & Peers Pomona bikeway network
- Add intersection crossing treatment at the intersection of Franklin Avenue & Towne Avenue

Garey Senior High School

School Access

A2. On-Campus Bicycle Path

Existing

- Grass lawn between on-campus bicycle parking and Lexington Avenue

Proposed

- Add bicycle path, following the alignment shown in Figure 4-5, between the existing on-campus bicycle parking and Lexington Avenue

Bicycle Parking

P3. Modified Bicycle Parking

Existing

- Front wheel support bicycle rack with insufficient space to lock bicycles perpendicularly to the rack

Proposed

- Remove vegetation and replace front wheel support rack with bicycle racks compliant with bicycle parking design guidelines
- Add racks to accommodate 30 bicycles

Bikeway Network

N4. Lexington Avenue between Park Avenue and Garey Avenue

Existing

- Two lanes, center turn lane, on-street parking
- 54' wide

Proposed

- Remove on-street parking on the south side of Lexington Avenue and add 6' bicycle lane with 2' painted buffer

Simmons Middle School

Bicycle Parking

P4. Modified Bicycle Parking

Existing

- Fenced-in bicycle parking area with poor bicycle circulation

Proposed

- Remove planter to create parking aisle
- Add additional bicycle parking in courtyard adjacent to fenced-in area
- Add racks to accommodate 20 bicycles, as shown in Figure 4-5

Figure 4-5 – Fremont, Garey, and Simmons Recommendations

Ganesha High School

School Access

A3. Bicycle Parking Access

Existing

- Locked auxiliary school entrance located south of the main school entrance

Proposed

- Ensure that auxiliary school entrance remains open to provide cyclists a direct route to the bicycle parking proposed in P5, as shown in **Figure 4-6**

A4. Fairplex Drive Bicycle Left-Turn Lane

Existing

- Elwood Avenue: two lanes, on-street parking, T-intersection with Fairplex Drive
- Fairplex Drive: four lanes, planted median, northbound left turns not possible due to T-intersection
- Ganesha High School driveway: one lane, on-street parking, separated from Fairplex Drive by additional median

Proposed

- Add bicycle-only left-turn lane with bicycle loop detector from northbound Fairplex Drive at Elwood Avenue into high school; modify signals to accommodate bicycle left-turn movements
- Add gap across median between Fairplex Drive and Ganesha High School driveway

A5. On-Campus Bicycle Path

Existing

- Narrow walkway between Ganesha High School driveway at Elwood Avenue and existing bicycle parking
- Grass lawn between Ganesha High School driveway at Elwood Avenue and bicycle parking proposed in P5

Proposed

- Add bicycle path between Ganesha High School driveway at Elwood Avenue and existing on-campus bicycle parking or bicycle parking proposed in P5; path alignment depends on whether bicycle parking remains at existing location or is relocated to location shown in P5
- Add curb ramp where path intersects with Ganesha High School driveway

Bicycle Parking

P5. Additional Bicycle Parking

Existing

- Bicycle parking located in school quad

Proposed

- Option 1: Expand bicycle parking at existing location
- Option 2: Add additional, enclosed bicycle parking at location shown in Figure 4
- Add racks to accommodate 30 bicycles

Marshall Middle School

School Access

A6. Modified Pick-Up/Drop-Off Area

Existing

- Pick-up/drop-off area west of main entrance

Proposed

- Add "keep clear" area at eastern end of pick-up/drop-off area to reduce conflicts between motorists and bicyclists, as shown in Figure 4-6

A7. On-Campus Bicycle Path

Existing

- Grass lawn between on-campus bicycle parking and Arroyo Avenue

Proposed

- Add bicycle path, following the alignment shown in Figure 4-6, between the existing on-campus bicycle parking and the easternmost driveway on the school campus
- Remove section of brick wall adjacent to existing bicycle parking, through which bicycle path will extend

Bicycle Parking

P6. Modified Bicycle Parking

Existing

- Two front wheel support bicycle racks

Proposed

- Replace front wheel support rack with bicycle racks compliant with bicycle parking design guidelines
- Add racks to accommodate 20 bicycles
- Add fence around bicycle parking

Bikeway Network

N5. San Jose Creek Bicycle Path

Existing

- Creek immediately north of campus with adequate space for bicycle path

Proposed

- Add bicycle path along San Jose Creek from west city limit to Interstate 10

Park West High School

School Access

A8. On-Campus Bicycle Path

Existing

- Parking lot driveway immediately west of main school building

Proposed

- Add bike path along east side of driveway connecting 2nd Street to existing on-campus bicycle parking

Figure 4-6 – Ganesha, Marshall, and Park West Recommendations

School of Arts and Enterprise

Bicycle Parking

P7a. New Bicycle Parking

Existing

- One front wheel support rack

Proposed

- Add new bicycle parking at the location shown in **Figure 4-7**, south of Monterey Street and east of Thomas Street between the two school buildings
- Add racks to accommodate 30 bicycles
- Open gate on west side of school for students to access proposed bicycle parking

P7b. Modified Bicycle Parking

Existing

- One front wheel support rack

Proposed

- Replace front wheel support rack with bicycle racks compliant with bicycle parking design guidelines, at current bicycle parking location
- Add racks to accommodate 30 bicycles

Bikeway Network

N6. Thomas Street between Monterey Avenue and Commercial Street

Existing

- Two lanes, on-street parking
- 46’ wide

Proposed

- Add 6’ bicycle lanes

N7. Monterey Avenue between Hamilton Boulevard and Loranne Avenue; Loranne Avenue between Monterey Avenue and Price Street

Existing

- Monterey Avenue from Hamilton Boulevard to Rebecca Street
  - Two lanes, center turn lane, on-street parking
  - 55' wide
- Monterey Avenue from Rebecca Street to Towne Avenue
  - Two lanes, center turn lane, on-street parking
  - 45' wide
- Monterey Avenue from Towne Avenue to San Antonio Avenue
  - Two lanes, center turn lane, on-street parking
  - 68' wide
- Monterey Avenue from San Antonio Avenue to Loranne Avenue
  - Two lanes, on-street parking
  - 38' wide
- Loranne Avenue from Monterey Avenue to Price Street
  - Two lanes, on-street parking
  - 44' wide

Proposed

- Designate as bicycle boulevard
- Add sharrows to entire corridor

Emerson Middle School

School Access

A9. On-Campus Bicycle Path

Existing

- Grass lawn and parking lot between main school entrance and Lincoln Avenue & Towne Avenue intersection

Proposed

- Add bicycle path with pedestrian side path, following the alignment shown in Figure 4-7, from the main school entrance, around the parking lot, to the Lincoln Avenue & Towne Avenue intersection
- Add gate to existing school fence at Lincoln Avenue & Towne Avenue intersection allowing cyclists to access proposed path from street

A10. Lincoln Avenue Bicycle Access Improvement

Existing

- Path leading from main school entrance to north sidewalk on Lincoln Avenue

Proposed

- Add curb ramp where path intersects with street, allowing cyclists to access the path directly from Lincoln Avenue; bicyclists cross sidewalk to access path, but do not ride on sidewalk

Bicycle Parking

P8. New Bicycle Parking

Existing

- No existing on-campus bicycle parking

Proposed

- Add bicycle parking at the location shown in Figure 4-7, near the school office
- Add racks to accommodate 20 bicycles

Bikeway Network

N8. Caswell Avenue between Lincoln Avenue and Holt Avenue

Existing

- Two lanes, on-street parking
- 45’ wide

Proposed

- Remove centerline striping
- Add 6’ bicycle lanes

N9. Lincoln Avenue between Towne Avenue and San Antonio Avenue

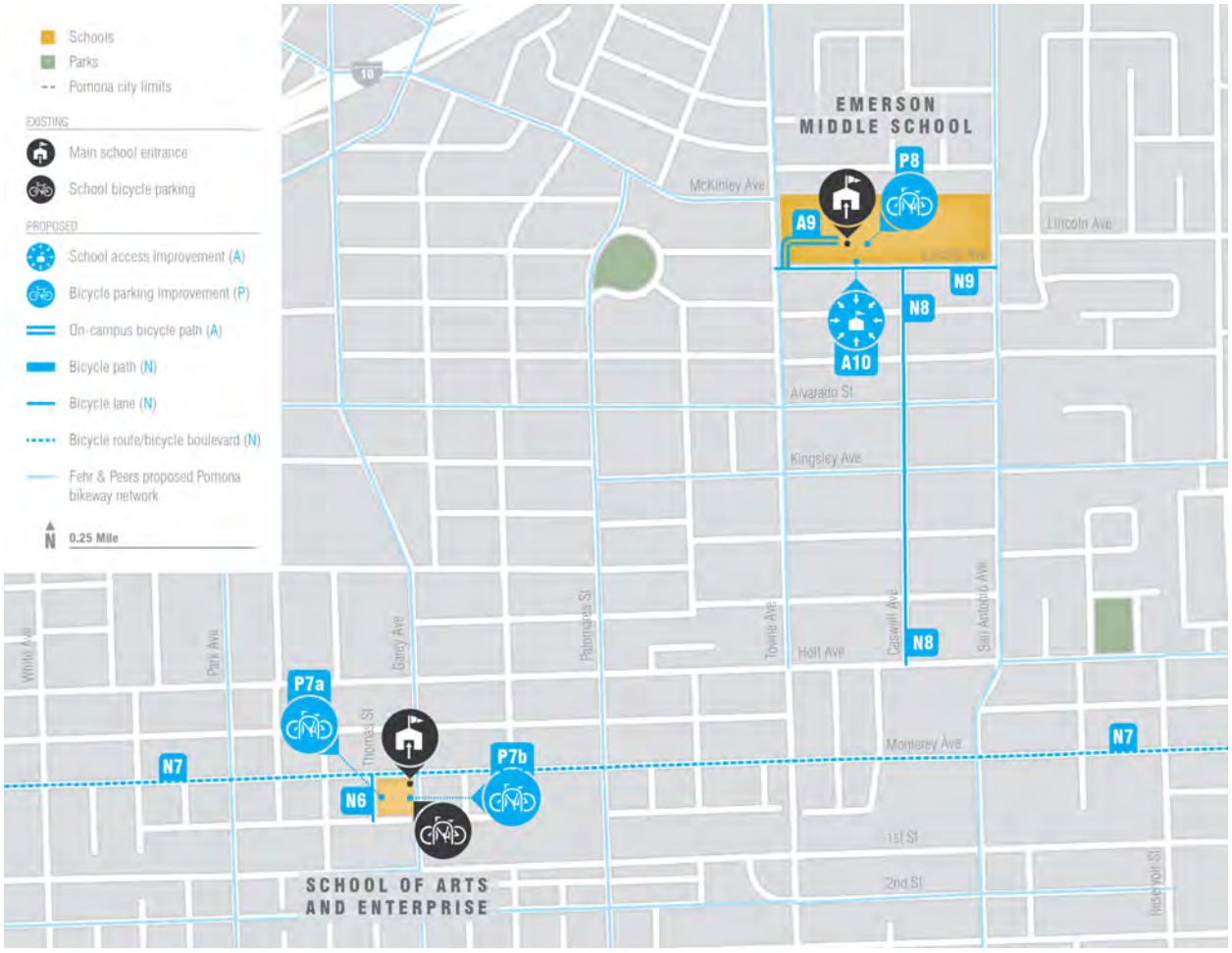
Existing

- Two lanes, on-street parking
- 44' wide

Proposed

- Add 5' bicycle lanes

Figure 4-7 – School of Arts and Enterprise and Emerson Recommendations



Village Academy High School

School Access

A11a. Option 1: Price Street Connection to High School via Bicycle Bridge over East End Avenue

Existing

- Price Street ends with cul-de-sac immediately west of East End Avenue railroad undercrossing

Proposed

- Add bicycle/pedestrian bridge over East End Avenue from eastern end of Price Street to Village Academy High School campus

A11b. Option 2: Price Street Connection to High School via At-Grade Crossing of East End Avenue

Existing

- Two signalized driveways leading from East End Avenue into Village Academy High School
- Narrow path along west side of East End Avenue connecting Price Street to west sidewalk of East End Avenue; path meets sidewalk immediately south of northernmost signalized school driveway
- East End Avenue at northern signalized school driveway: two lanes, concrete median, yellow lateral line crosswalk across East End Avenue at northern intersection approach
- Advanced school crossing signs

Proposed

- Between Price Street and northern signalized school driveway, widen path on west side of East End Avenue to accommodate bicycles
- Improve pedestrian crossing across south approach of northern signalized school driveway; add:
    - Zebra-stripe crosswalk (1)
    - Pedestrian crossing signs (2)
    - Advanced pedestrian warning signs (2)
- Add shared use path along edge of school parking lot from east side of proposed crosswalk across south approach of school driveway to school entrance, as shown in **Figure 4-8**

Bicycle Parking

P9. New Bicycle Parking

Existing

- No existing on-campus bicycle parking

Proposed

- Add bicycle parking at the locations shown in Figure 4-8: near the northern school entrance and east of the southern, main school entrance
- Add racks to accommodate 30 bicycles

Bikeway Network

N10. Price Street between Loranne Avenue and East End of Price Street

Existing

- Two lanes, on-street parking
- 44′ wide

Proposed

- Remove centerline striping
- Add 6′ bicycle lanes

N11. Parking Lot Driveways to Holt Avenue and Mills Avenue

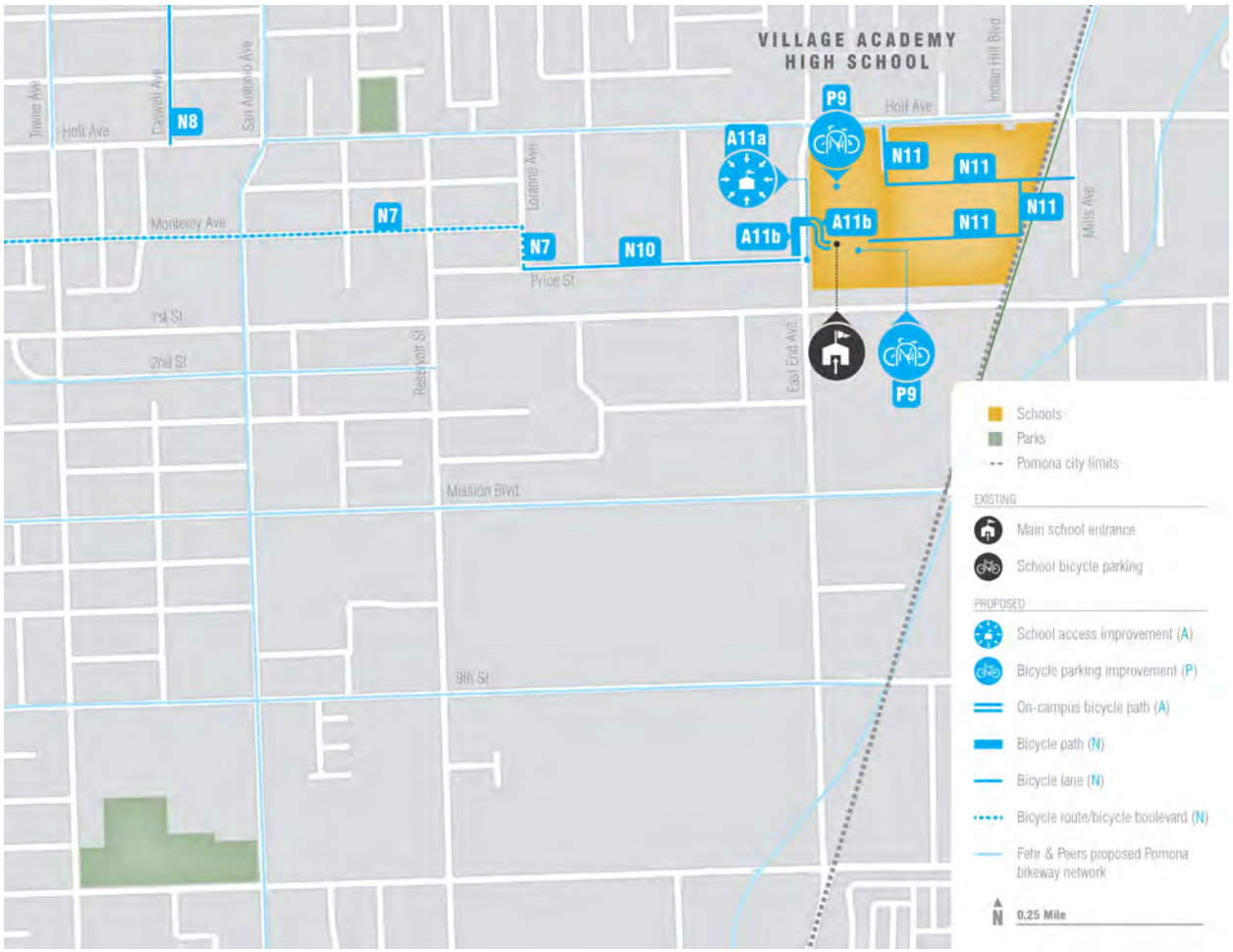
Existing

- School driveways
    - Two lanes
    - 40′ wide

Proposed

- Add 6′ colored bicycle lanes as shown in Figure 4-8
- Remove speed humps

Figure 4-8 – Village Academy High School Recommendations



Palomares Academy of Health Services

School Access

A12. Orange Grove Avenue/Deborah Drive Intersection Bicycle Crossing Improvements

Existing

- Orange Grove Avenue: two lanes, on-street parking, yellow lateral line crosswalk across Orange Grove Avenue at northern intersection approach
- Deborah Drive: two lanes, on-street parking, no marked crosswalk
- Pedestrian crossing signs
- Advanced school crossing signs/flashing beacons

Proposed

- As shown in **Figure 4-9**, at location of existing crosswalk across Orange Grove Avenue, add:
    - Raised zebra-stripe crosswalk (1)
    - Advanced yield markings (2)
    - Advanced yield signs (2)
    - Crossing islands (1 pair)

A13. School Driveway Bicycle Crossing Improvements

Existing

- Yellow ladder crossing with diagonal hatching across one-way school driveway west of Deborah Drive

Proposed

- Add raised zebra-stripe crosswalk (1)
- Add pedestrian crossing sign (1)
- Add advanced yield markings (1)
- Add advanced yield sign (1)
- Add advanced pedestrian warning signs (1)

Bicycle Parking

P10. New Bicycle Parking

Existing

- No existing on-campus bicycle parking

Proposed

- Add bicycle parking in the school courtyard as shown in Figure 4-9
- Add racks to accommodate 30 bicycles

Bikeway Network

N12. Orange Grove Avenue between Arrow Highway and La Verne Avenue

Existing

- Two lanes, on-street parking
- 50′ wide

Proposed

- Add 6′ colored bicycle lane with 2′ painted buffer

N13. Berkeley Avenue between White Avenue and Westwood Place; Westwood Place between Willow Street and Berkeley Avenue; Willow Street between Yorba Drive and Westwood Place; Yorba Drive between Flanders Avenue and Willow Street; Flanders Avenue between Yorba Drive and Armour Street/Cary Lane; Armour Street/Cary Lane between Flanders Avenue and Freda Avenue; Freda Avenue between Armour Street/Cary Lane and Cinderella Way; Cinderella Way between Freda Avenue and Bangor Street; Bangor Street between Cinderella Way and Towne Avenue

Existing

- Two lanes, on-street parking
- 30′-35′ width

Proposed

- Designate as bicycle route
- Add sharrows
- Signalize Garey Avenue & Freda Avenue intersection
- Add bicycle connection between Garey Avenue & Freda Avenue intersection and Cary Lane
- Add roundabout at Cary Lane & La Verne Avenue intersection

Pomona High School

School Access

A14. On-Campus Bicycle Path

Existing

- Landscaping and school buildings between bicycle parking proposed in P11 and Bangor Street

Proposed

- Add bicycle path, following the alignment shown in Figure 4-9, between the on-campus bicycle parking proposed in P11 and Bangor Street
- Add curb ramp where path intersects with Bangor Street

A15. Palomares Cemetery-Adjacent Bicycle Path

Existing

- Vacant lot between Palomares Cemetery and Towne Avenue

Proposed

- As shown in Figure 4-9, add bicycle/pedestrian path from Towne Avenue & San Antonio Avenue intersection, across vacant lot, to proposed new school entrance on north side of campus; school staff will determine exact entrance location

Bicycle Parking

P11. Expanded Bicycle Parking

Existing

- Bicycle parking located immediately inside main school entrance

Proposed

- Add additional bicycle parking immediately east of existing bicycle parking
- Add racks to accommodate 30 bicycles

Bikeway Network

N14. San Antonio Avenue between Towne Avenue and La Verne Avenue

Existing

- Two lanes, on-street parking
- 56' wide

Proposed

- Add 6' bicycle lanes

N15. Vassar Street between San Antonio Avenue and Lovejoy Street; Lovejoy Street between Vassar Street and Arrow Highway

Existing

- Two lanes, on-street parking
- 32' wide

Proposed

- Designate as bicycle route
- Add sharrows
- At Lovejoy Street & Arrow Highway intersection, add:
    - HAWK (High-Intensity Activated crosswalk) beacon (2)
    - Cul-de-sac bike path cut through from Lovejoy Street to Arrow Highway (1)
    - Curb ramp through median on Arrow Highway (1)
    - Zebra-stripe crosswalk (1 north of Arrow Highway median, 1 south of Arrow Highway median)
    - Pedestrian crossing signs (2)
    - Advanced yield markings (2)
    - Advanced yield signs (2)
    - Advanced pedestrian warning signs (2)

Figure 4-9 – Palomares Academy and Pomona High School Recommendations

5. Pedestrian Network

SIDEWALK PRIORITIZATION

Many streets in the City do not have sidewalks, and the City is currently embarking on a sidewalk construction program to address this. The missing sidewalks are substantial in mileage and dispersed throughout the City, with 484 linear segments of missing sidewalk totaling about 35 miles. Analyzing walking demand, safety concerns, and pedestrian activity at each location would be prohibitively time-intensive. This sidewalk prioritization guides the City's efforts towards the areas where there is likely to be the most walking activity using available citywide data. By constructing sidewalks in these areas first, the City provides a greater immediate benefit to pedestrians.

The provision of basic pedestrian infrastructure, such as sidewalks, is essential to creating a comfortable walking environment. Additional polices and principles, covering topics relating to the pedestrian environment, such as land use considerations, parking, driveways, street networks, and pedestrian crossings, are available in Appendix C.

Methodology

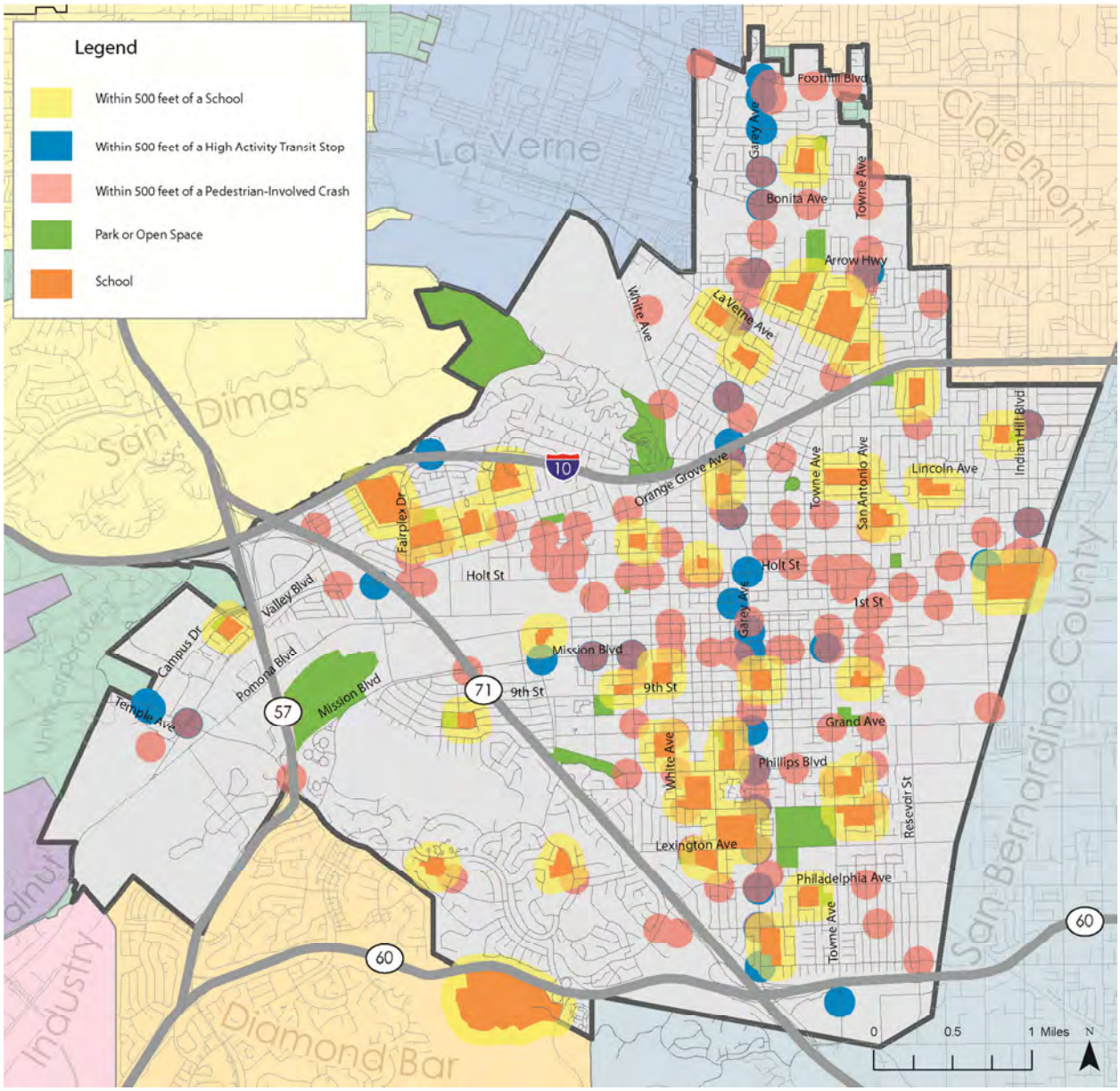
The prioritization methodology employs existing spatial data to group the missing sidewalks into three tiers, where Tier 1 is the highest priority, followed by Tier 2 and Tier 3.

Proxies for Walking Activity

The City does not possess any pedestrian count data, which would serve as the most direct indicator of how much walking happens along or near a segment of missing sidewalk. In the absence of pedestrian counts, there are three data sources that indicate walking activity and places where the need to walk is high. These are the locations of pedestrian-involved crashes, transit stops with high boardings and alightings, and schools. Any segment of missing sidewalk that fell in the vicinity of one or more of these as described below was classified as Tier 1.

The locations of pedestrian-involved crashes that took place between 2008 and 2011 are shown on **Figure 5-1**. The time period was chosen to represent recent activity without relying too heavily upon the randomness of a single year. Although the spatial distribution of crashes varies significantly from the spatial distribution of walking activity, because danger to pedestrians varies from place to place, the location of a pedestrian-involved crash does indicate that someone was walking there. Additionally, because sidewalks are a pedestrian safety countermeasure, they reduce pedestrian risk. The sidewalk prioritization methodology thus places importance on crashes as indicators of locations where risk may be high. A 500-foot buffer is placed around the crashes, with the rationale that areas within 500 feet of a crash share many characteristics with the precise crash location, in terms of the demand for walking as well as the walking environment.

Figure 5-1 – Proxies for Walking Activity



Transit boardings and alightings indicate pedestrian activity because the majority of riders access transit by walking. We obtained and analyzed average boardings and alightings in October 2011 for all Los Angeles Metropolitan Transportation Authority (Metro) and Foothill Transit stops in the City. Where there were multiple stops at an intersection, we summed across all lines and stops to find the total boardings and alightings at that intersection. Of 156 intersections with Foothill Transit stops, 37 carry over 1000 boardings and alightings per week. Of five intersections with Metro stops, one carries more than 100 boardings and alightings per day. These 42 intersections were then considered high activity transit stops, and are shown in Figure 5-1.

Schools in the City of Pomona are shown on Figure 5-1. It is important to provide safe walking routes to school. Most of Pomona's schools are neighborhood schools, and the distance from home to school is a walkable one. A 500-foot buffer is shown around each school. This buffer captures the locations nearest the school that likely serve the most school-related walking trips.

Census Walking Activity Index

In order to discriminate between Tier 2 and Tier 3, tract-level information from the Census are combined to form a walking activity index. Although walking undoubtedly varies within a tract, Census data concerning the people who live in that tract is the next best available source of information about walking activity and demand in Pomona. **Table 5-1** shows the Census data that are employed; they are listed under "Census Information." For each Census attribute, the tracts are classified into up to three intervals based on natural breaks in the data (low interval, middle interval, or high interval). These intervals are assigned scores 0, 1, or 2, and each attribute is assigned a weight based on a heuristic assessment of how closely the attribute corresponds to walking activity.

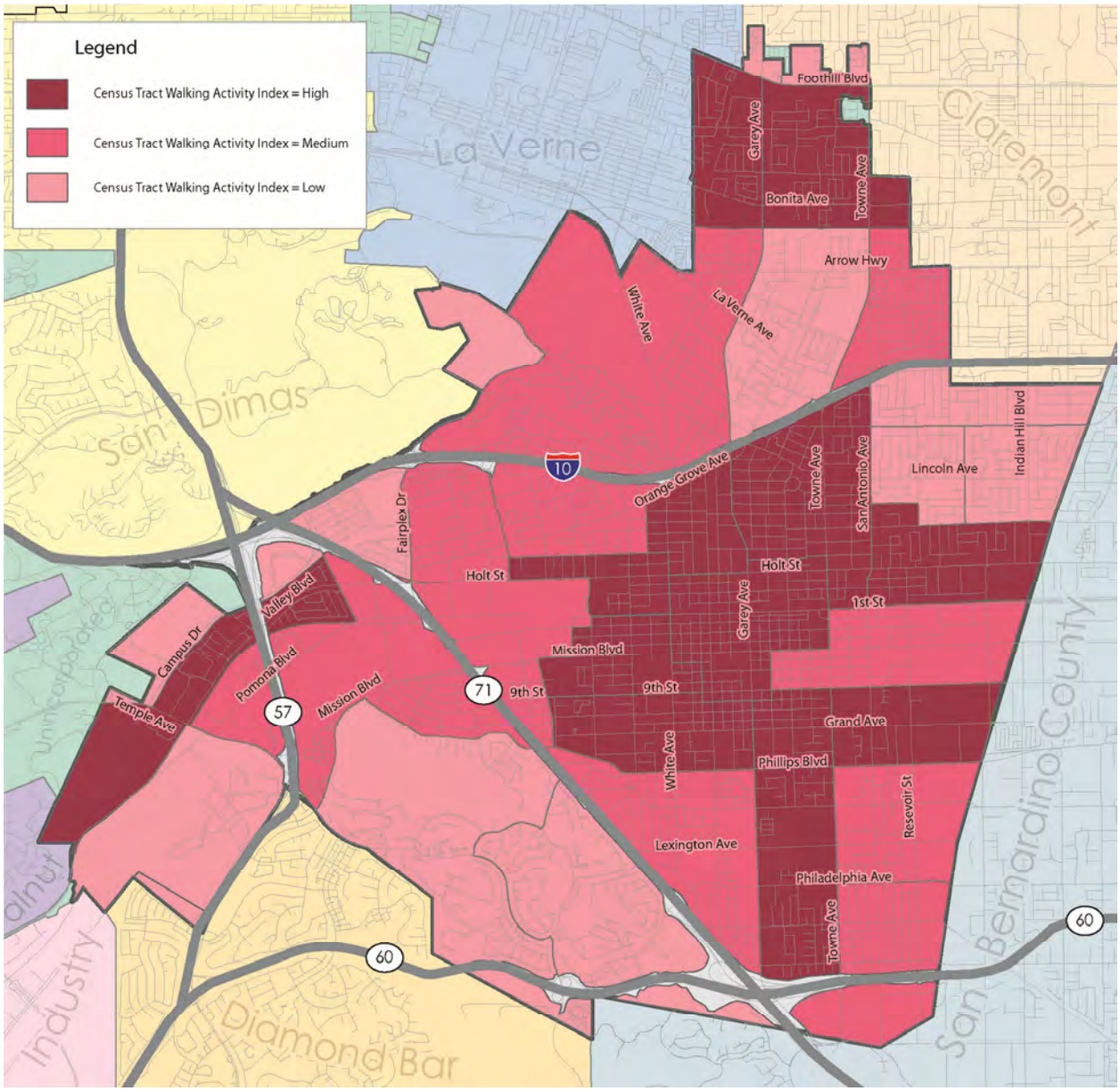
Each Census tract in Pomona is then categorized as high, medium, or low based upon its aggregate score. For example, if a tract has above 3% of workers that walk to work (score of 2); 6% of households without a vehicle (score of 1), fewer than 3,780 people (score of 0), $50,000 median household income (score of 1); and 29% of the population under 18 (score 2), the final score would be the weight multiplied by each score, and then summed (3 x 2) + (3 x 1) + (2 x 0) + (1 x 1) + (1 x 2) for a total of 12.

The maximum total is 18, and the minimum total is 1. Tracts with totals 11 or above are classified as high, tracts with totals between 8 and 10 are classified as medium, and tracts with totals 7 and below are classified as low. The tract classifications are shown in Map 1-33.

TABLE 5-1 – CENSUS DATA, INTERVALS, AND WEIGHTS

Census Information	Weight	Low Interval (Score: 0)	Middle Interval (Score: 1)	High Interval (Score: 2)
Percentage of Workers that Walk to Work	3	Below 1%	1% - 3%	Above 3%
Percentage of Households without a Vehicle	3	Below 1.5%	1.5% - 6%	Above 6%
Population	2	Below 3,780 people	3,780 - 4,880 people	Above 4,880 people
Median Household Income	1	Above 52,200	40,200-52,200	Below 40,200
Percentage of the Population Under 18 Years Old	1	--	Below 28%	Above 28%

Figure 5-2 – Census Tract Walking Activity Index Classifications



Segments of missing sidewalk that do not fall in Tier 1 but are located in a tract with a High Walking Activity Index are Tier 2. The remaining missing sidewalks are Tier 3. The results are shown in **Figure 5-3**, along with the boundaries of three inset maps that show the results at greater zoom. The three inset maps are **Figure 5-4**, **Figure 5-5**, and **Figure 5-6**. **Table 5-2** summarizes the definitions of the three priority tiers.

TABLE 5-2 – SIDEWALK PRIORITY TIER DEFINITIONS

Tier	**Definition**
Tier 1 (Highest)	Located in the vicinity of a walking activity proxy as shown in Figure 5-1
Tier 2	Not in Tier 1, and in a census tract with a High Walking Activity Index
Tier 3	All remaining missing sidewalks not in Tiers 1 or 2

Figure 5-3 – Missing Sidewalk Area Reference Map

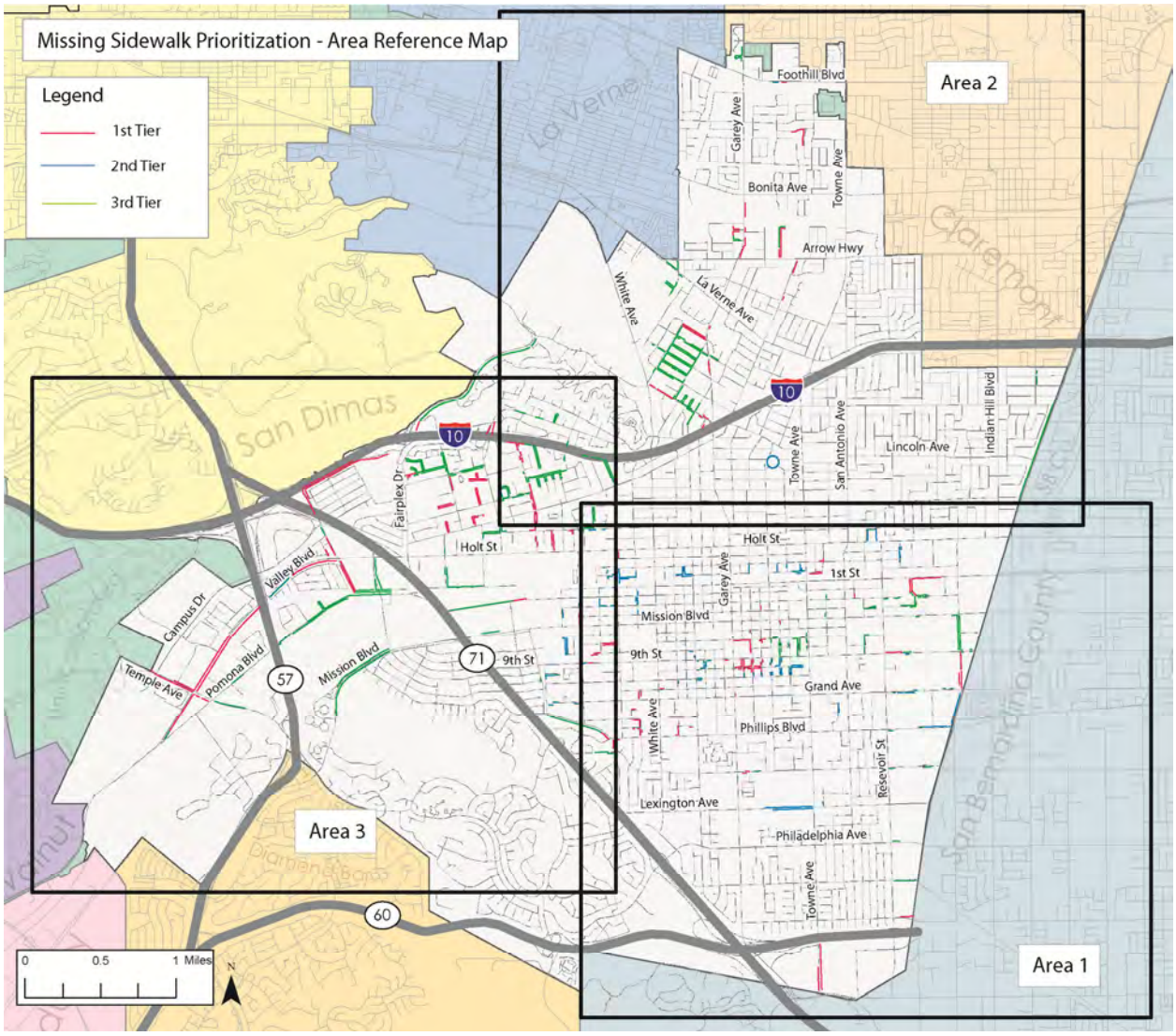


Figure 5-4 – Missing Sidewalk Priority Tiers, Area 1 of 3

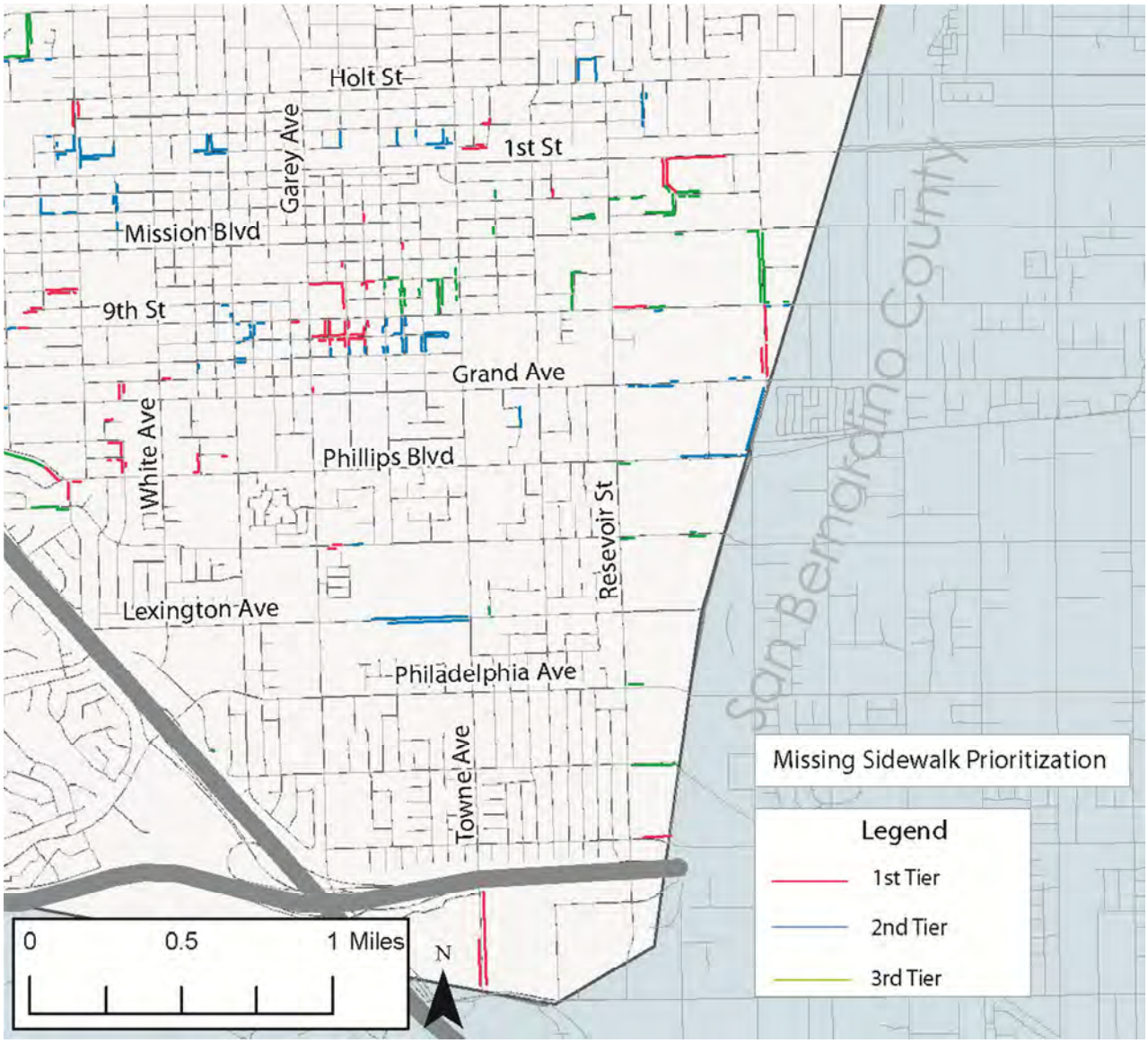


Figure 5-5 – Missing Sidewalk Priority Tiers, Area 2 of 3

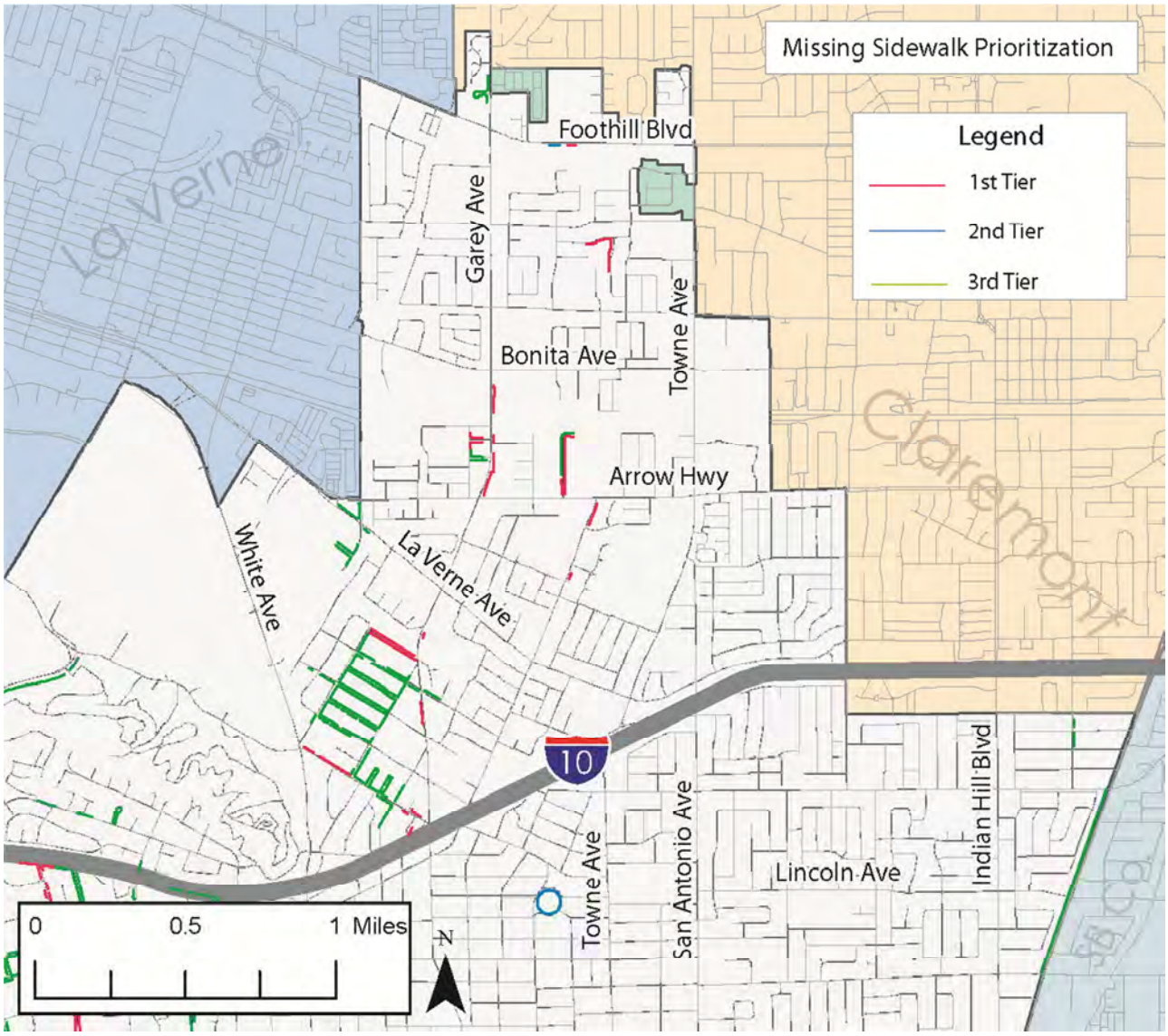
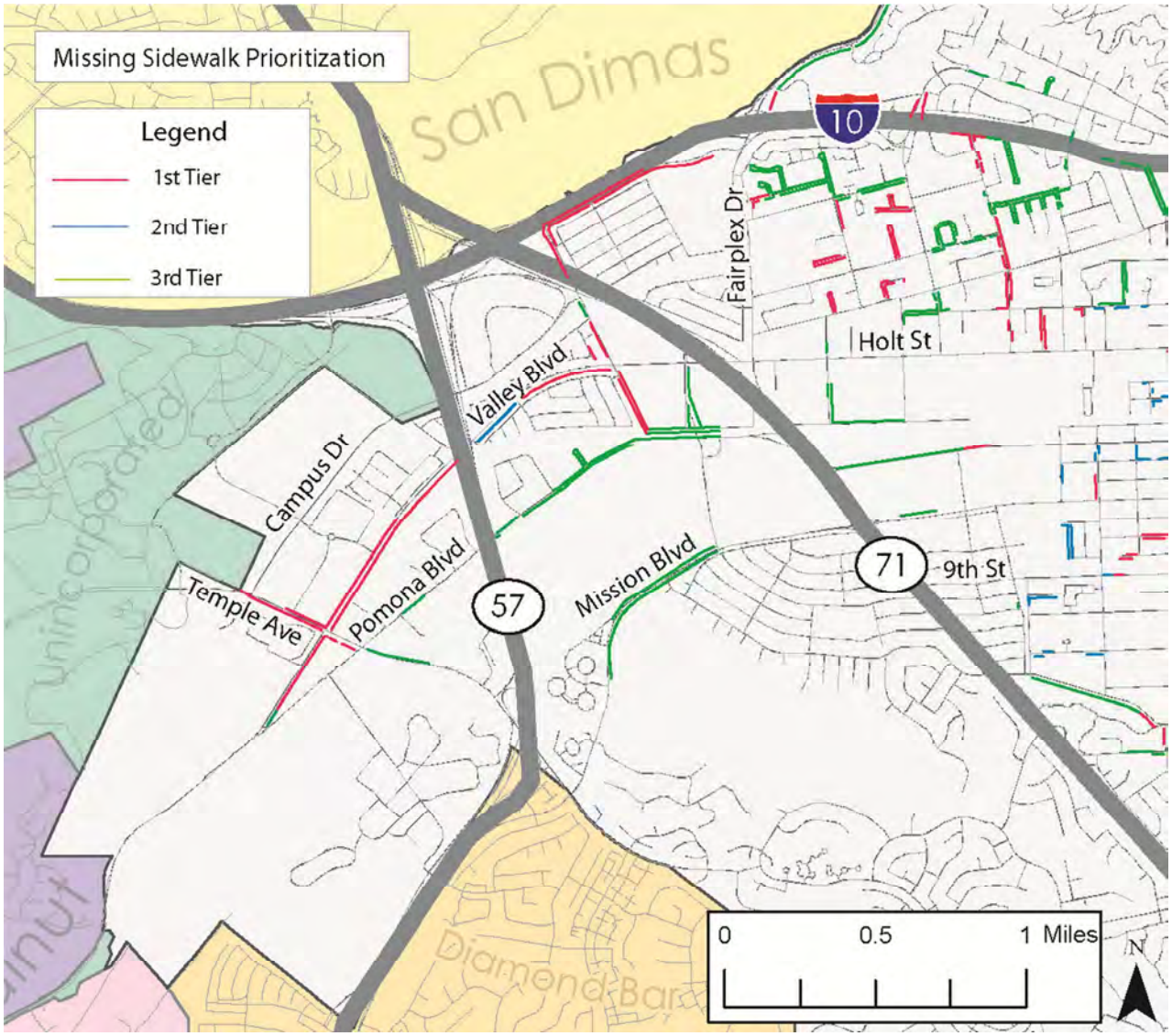


Figure 5-6 – Missing Sidewalk Priority Tiers, Area 3 of 3



6. Support Programs

While Chapters 4 and 5 focused on specific engineering/infrastructure enhancements to improve safety and encourage walking and bicycling in Pomona, this chapter presents recommendations for complementary, and essential, education and enforcement strategies in support of active transportation and specific programs and policies that will facilitate non-motorized transportation in Pomona. This section also addresses BTA requirement (g): "A description of bicycling safety and education programs conducted in the area included within the plan, efforts by the law enforcement agency having primary traffic law enforcement responsibility in the area to enforce provisions of the Vehicle Code pertaining to bicycle operation, and the resulting effect on accidents involving bicyclists."

Education is a critical element for a complete and balanced approach to improving both bicycling and walking safety in Pomona. Education campaigns should include residents of all ages, especially emphasizing education of school children where safe walking and bicycling habits may be instilled as lifelong lessons. The following organizations and projects are involved in active transportation education initiatives in Pomona.

EXISTING PROGRAMS

Safe Routes to School

Pomona has applied for multiple state and federal Safe Routes to Schools grants in recent years and has been awarded several grants, primarily for infrastructure improvements. Pomona has used Safe Routes to School funds for bicycling and walking infrastructure.

Pomona Valley Bicycle Coalition

The Pomona Valley Bicycle Coalition (PVBC) was founded in 2012. The group's mission, as a part of the community, is to increase bicycling access, bicycling-safety, awareness, and safe routes for bicyclists and pedestrians within Pomona. PVBC aims to improve facilities in Pomona, and provides support and guidance to the City of Pomona with a focus on helping make Pomona a bicycling friendly and green community. The group is extremely active with organizing bike rides, providing public input in planning processes, and strongly supporting Bike to Work Day and Bike Month activities.

Pomona Police Department Enforcement Activities

The Pomona Police Department has a team of traffic officers who conduct enforcement activities at local schools and partner with the school district to address school circulation issues. Additionally, the Police Department is involved in pedestrian education activities at local schools, pedestrian safety training, and various enforcement activities, such as pedestrian stings, geared toward motorists.

PROPOSED PROGRAMS

Support programs are important because they increase the safety, utility, and viability of infrastructure projects. They may also be more cost effective, longer lasting, or reach a broader audience for more meaningful impact. Municipalities provide support to, and even administer, a broad range of programs and activities related to bicycling and walking safety, education, promotion, and law enforcement as a way to complement their project-building efforts. Below is a list of programs and activities that have proven effective in other jurisdictions and which the City of Pomona could choose to offer its residents. The toolbox of education, encouragement, and enforcement programs that follows is both adaptable to Pomona's unique needs and flexible to budget opportunities and constraints. Many education efforts involve an element of community participation as they are volunteer-based. As a result, education programs are among the most inexpensive tools to improve the walking and bicycling environment. Education programs can also be a collaborative effort between the City and local public health organizations.

Education and Encouragement Programs

Billboards/Electronic Message Boards and Street Smarts Program

Billboards and electronic message boards promote safety in the community, inform the public about bicycling and walking safety programs, and provide feedback on the program's effects. Street Smarts is one example of a public education campaign targeted at changing driver, pedestrian, and bicyclist behavior to improve safety on city streets.

Street Smarts (http://www.getstreetsmarts.org/) is a safety program initiated by the City of San Jose. Electronic message boards were used to display safety messages. Messages were changed regularly and the boards were moved repeatedly to maximize their impact. The Street Smarts campaign launched in November 2002 and has received positive feedback from the public.

Street Smarts was designed as both a media and a community relations campaign. It uses education to raise awareness of certain problem behaviors that contribute to traffic crashes and aims to change those behaviors over time. Behaviors addressed by the campaign are: red-light running, speeding, stop sign violations, school zone violations, and crosswalk violations. In addition to a media campaign, a community relations campaign should be conducted, working with schools, neighborhood associations, businesses, and community organizations to create a public forum to address this community issue.

Message boards can be used at various safety hot spots. The Street Smarts campaign materials are designed for use by any public agency for any community and are available from the City of San Jose. Materials are available in English, Spanish and Vietnamese.

The Street Smarts program has the following advantages:

- The program provides multiple messages using a single tool
- The high-quality campaign materials were designed to be used by any public agency
- The artwork is available from the City of San José for $3,500
- Media campaigns use a wide variety of communication tools

Although the Street Smarts campaign requires staff resources, the overall cost is low to implement.

Citywide Walking and Bicycling Maps

Attractive maps with bicycle and walking routes, both in print and on City websites, can serve as an educational tool. These maps should highlight convenient routes for walking and bicycling in Pomona and include tips on safe walking and bicycling practices. Maps should be distributed at public facilities throughout the City, through the Pomona Valley Bicycle Coalition, and at local bicycle shops.

Brochures and Pamphlets

Supplemental brochures and pamphlets are helpful to educate residents and visitors on topics such as (1) how to ride a bicycle safely in traffic, (2) how traffic signals work for pedestrians and bicyclists and the best way to be detected at signalized intersections, (3) pedestrian and bicyclists' rights and responsibilities when sharing the road, and (4) motorists' rights and responsibilities when sharing the road. Premade versions these pamphlets are available through advocacy organizations, the Federal Highway Administration (http://safety.fhwa.dot.gov/ped_bike/ped_bike_order), AAA (http://www.aaafoundation.org/products), and the National Highway Traffic Safety Administration (http://www.nhtsa.gov/Pedestrians). These materials can be distributed at locations with high volumes of pedestrians and bicyclists and through the same outlets as citywide bicycle maps.

SmartTrips Program

Pomona, like many cities, has single occupancy vehicle trips as the primary mode of transportation. SmartTrips, developed in Portland, Oregon, is a program to encourage walking, bicycling, carpooling and transit through hand-delivered information packets. Key components of the packet include: bicycling and walking maps (with personalized route selections) and organized activities that get people out in their neighborhoods or places of employment to shop, work, and discover how many trips they can easily,

conveniently, and safely make without using a car. The success of this program is measured by surveys and other measures. TransForm has a similar pilot program in the Bay Area, known as TravelChoice (more information at http://transformca.org/campaign/travelchoice).

Safe Routes to School

Safe Routes to School (SRTS) refers to a variety of programs aimed at promoting walking and bicycling to school, and improving traffic safety around schools. The program takes a comprehensive "5 E" approach (as defined in this chapter) with specific engineering, education, encouragement, enforcement, and evaluation. The programs involve partnerships among school staff, parents, students, city staff, school districts, neighbors, and law enforcement. The National Center for Safe Routes to School has in-depth programming information. Integrating educational messages into a comprehensive SRTS program can be a very effective way to kick-start a citywide program. Specific education tools include:

- Pedestrian skills training for 1st and 3rd graders
- Bicycle skills training for 3rd and 5th graders
- Messaging to parents about safe driving, walking and bicycling habits
- Creating drop-off and pick-up procedures
- Incorporating information about walking and bicycling into classroom subjects such as math or science (e.g., calculate average walking speeds or distances)
- Assemblies or classroom sessions about safety

Bicycling Guide for Kids Brochure

Children should learn the correct bicycling rules at an early age. For example, riding on a sidewalk is one of the most dangerous places for a child to ride, particularly in a residential neighborhood, because of the driveways and cars backing out, curb cuts, parking lots, trees, bushes, garbage cans, etc.

A bicycling guide targeting children and similar resources are available from the International Bicycle Fund's website at http://www.ibike.org/education/.

Public Service Announcements

Radio and television public service announcements (PSAs) can provide accurate and current information to the public. PSAs are valuable as they are versatile and can reach a large audience on walking and bicycling issues, education, and announcements. Organizations such as the National Highway Traffic Safety Administration (NHTSA), Safe Kids Coalition, and California Office of Traffic Safety have existing PSAs that Pomona can use. Pomona can incorporate its own logos and slogans into these PSAs. Pomona's mayor or council members could also record their own radio or television announcements for broadcast. Potential PSA topics might include:

- Pedestrian education for seniors
- Driver education about pedestrians

- Drivers running red lights
- Bicyclists riding safely
- "Everybody walks" campaign, promoting the notion that every trip, no matter what mode is ultimately used, begins and ends with a walking trip

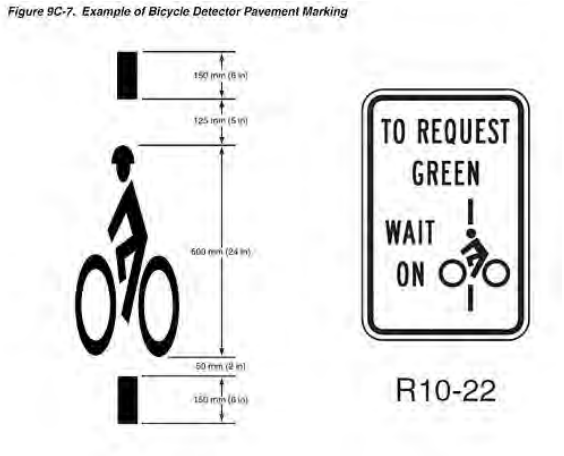
One challenge is that PSAs can be costly and may not reach the intended audience. A lower-cost alternative is to air PSAs only on public access channels; however, this low-cost approach may not be as effective as using a public relations firm and purchasing advertising time targeted to a specific audience.

Perils for Pedestrians

A great way to educate the public on walking and bicycling issues is the media. Perils for Pedestrians (http://www.pedestrians.org/), a monthly television series, promotes awareness of issues affecting the safety of people who walk and bicycle. Many cities in California, including Berkeley and Davis, are already taking part through cable stations and webcasts. A typical series consists of interviews with walking and bicycling advocates, planners, engineers, and local and international public officials. They talk about important issues affecting active transportation, such as: walking hazards, infrastructure, bicycles, transit, and more. This program helps raise awareness of local and international issues through a common form of interface.

Educational Signs for Bicycle Detectors

Educational signs can be installed along bicycling routes approaching signalized intersections. They instruct bicyclists to look for the bicycle detector symbol and stop their bicycle on it. Signs can improve the understanding of bicycle detections and encourage bicyclist compliance at signals. This could supplement brochures available on the City's website and at City Hall. Signs can be posted along bicycling lanes, routes, and boulevards at actuated signals. Pomona is using video detection technology on new signals, which eliminates the need for indicating where bicyclists should stop.



The cost of a sign is approximately $200 plus installation. Costs can become high if large numbers of intersections are signed. Additionally, the use of word-intensive signs poses difficulties in areas with multilingual populations.

Educational Signs for Pedestrian Signal Indications

Educational signs can be installed above pedestrian push buttons or integrated into the push button housing to improve understanding of pedestrian signal indications. Signs improve public understanding of pedestrian signal indications, and thus encourage pedestrian compliance at the signals. Signs should be considered where 10 or more pedestrian crossings per hour are anticipated.

The cost of a sign is approximately $200 plus installation. Costs can be high if large numbers of push buttons are signed. Additionally, this treatment is not accessible to pedestrians with visual impairments, and the use of word-intensive signs poses difficulties in areas with multilingual populations.

Bicycle Training/Repair and Partnership with Local Bicycle Stores

Bicycling training and bicycle repair classes, as currently offered by the Pomona Strollers and Rollers, are an excellent tool to increase community knowledge of bicycle maintenance issues and street riding skills. Youth training classes can include a "build-a-bike" program, in which youth learn how to rebuild a used bicycle that they may keep at the end of the program. Such classes are most helpful for beginner to intermediate bicyclists who would like to improve their understanding of bicycle maintenance and street riding skills.

Bicycle shops are a natural outlet for distributing walking and cycling pamphlets, maps, and other informational materials to the community. These stores are also ideal locations to post notices about bicycle/pedestrian meetings, safety workshops, and events. Bicycle shops may also offer knowledgeable personnel and/or sponsorship for future cycling events and workshops.

Walking School Buses/Bicycle Trains

Walking school buses and bicycle trains are organized walking and bicycling groups, respectively, where adults "pick up" walkers and bicyclists along a specific routes to school at specific locations. This way, children are supervised during their travel to school.

Walking Mascot

Bellevue, WA launched a walking mascot campaign at their elementary school in conjunction with roadway improvements. The mascot, called PedBee, is on school safety signs and makes personal appearances at school safety days. Safety days include local staff from the City's Transportation and Police Departments. Children are taught bicycling, walking, and traffic safety basics, such as crossing the street safely. Children are also given traffic safety workbooks that provide guidance with hands-on activities such as coloring and safety procedure quizzes.

Corner Captains

The program is effective in neighborhoods where lack of adult supervision is a barrier to walking and bicycling. Neighbors or parents agree to stand at a corner of a route to school during the start or end of the school day to supervise kids as they walk to or from school. With clear sight lines, students will be seen the entire length of the block. Corner captains should wear reflective vests.

Teen Driving, Cycling, and Pedestrian Education

Teens need different educational messages than adults or children. The City should work with local teen-organizations or schools to facilitate a participatory process whereby teens create educational messages. Youth Participatory Action Research (YPAR) is an effective way to assist youth to create visuals, videos, or campaigns for bicycle and pedestrian safety among their peers. The California Department of Public Health has guides on YPAR and youth-led projects.

Adult Bicycle Education

A course on safe urban bicycling skills, such as that developed by the League of American Bicyclists, could be offered in coordination with the Pomona Valley Bicycle Coalition and League of American Bicyclists. This program would train adults to ride defensively in traffic and provide instructions for effective bicycle commuting.

Senior Bicycle, Pedestrian, and Driving Education/Walk Wise, Drive Smart

Seniors often rely on walking and transit as their primary modes of transportation. Pomona should work with local senior centers to provide activities related to safe walking for seniors. The City's program should also focus on safe driving for seniors. Many seniors do not want to give up driving even when it may be unsafe because it is perceived as a loss of independence. Educational messaging should address this concern.

Nationally and regionally, the number of senior citizen pedestrians is growing. Walk Wise, Drive Smart is a program aimed to improve the walking environment not only for senior adults, but also for all members of the community. It is a program that holds educational workshops, walking audits, and feedback surveys. Activities are aimed at senior citizens providing exercise at a pace and location comfortable to the participants, but are open to all. More information is available at http://www.walk-wise.org/.

Enforcement Programs

Enforcement tools have been demonstrated to be very effective in improving safety for road users. However, some programs can require a significant investment from local agencies. Newer enforcement tools like radar "wagons" can minimize the amount of time required for local law enforcement agencies.

Increased Fines

An increase in traffic fines has been shown to discourage driver violations against pedestrians in crosswalks. For example, in Salt Lake City, UT, fines were increased from $34 to $70 for driver violations against pedestrians in crosswalks. A lowering of fines for jaywalking from $70 to $10 was also implemented. Variations on this include double fines in school zones and construction zones.

Bicycle Traffic School

With this program, bicyclists or motorists who are ticketed for unsafe bicycling or unsafe driving around bicyclists, respectively, attend a class about safe and lawful behavior while riding a bicycle or sharing the road as a motorist with bicyclists. The class is offered in lieu of paying a fine or appearing in court. Bicycle traffic school is often accompanied by a media campaign informing road users of the program. Citations can be focused on common or uniquely hazardous behaviors such as unsafe passing of bicyclists by motorists or wrong way riding by bicyclists.

Wrong Way Riding Signs

Signs can inform bicyclists they are riding in the wrong direction for each side of the street. The California MUTCD provides guidance on wrong way signs that can be mounted on the back side of existing sign

posts on streets with bike lanes to maximize their visibility to bicyclists traveling in the wrong direction. Local law enforcement should also provide enforcement by educating and/or citing cyclists who are riding in the opposite direction of traffic, as this is a common cause of collisions.

Pedestrian Sting Operations

Officers can conduct random pedestrian sting operations at locations where motorists do not yield to pedestrians crossing in a crosswalk. A plain-clothes officer crosses the crosswalk in front of an approaching vehicle (where the vehicle has enough time to stop). Another officer waits nearby to ticket any motorists who do not yield to the pedestrian. Such operations can also target pedestrians who make unsafe crossings. The City should work with local law enforcement to announce the pedestrian sting operation and campaign prior to enforcement, and present the operation as an educational tool.

Pedestrian stings increase drivers' awareness of pedestrians at intersections; however, as the program is typically not an ongoing operation, changes in motorist behavior can be short-term. The cost of the program could range from $3,000 to $5,000 for a 6-week operation, which includes the cost of police officer staffing time.

Speed Trailers and Active Speed Monitors

Speed trailers and active speed monitors display the speed of oncoming vehicles. Speed trailers are portable, whereas speed monitors are installed at permanent locations. Both devices help officers track motorist speed, display current speed to motorists, and create awareness of the posted speed limit. Devices should be placed at known locations with reported speeding, and should be used in conjunction with random ticketing operations.

Neighborhood Speed Watch/Radar Lending Program

If speeding is a problem, law enforcement officers can lend speed radar guns to students or residents to check speeds of passing vehicles. The student or resident records the license plate number of any speeding vehicles, and law enforcement will send a speeding notice warning to the motorist. A group of organized neighbors can also commit to periodically monitoring streets for speeding vehicles.

Neighborhood Pace Vehicle

Residents can set the pace on streets in their neighborhood by driving no faster than the posted speed limit. On streets with only one lane in each direction, this will effectively force other motorists to drive slower. Many communities distribute stickers that say "Neighborhood Pace Car - Drive the Speed Limit," which residents can place on their rear windshield.

Traffic Complaint Hotline

Pomona residents can report non-emergency traffic violations to law enforcement if there is an established traffic complaint hotline. Officers can target problem areas more effectively with records of traffic complaints. This also allows the community to engage efficiently with officers.

Speed Enforcement in School Zones

Strict enforcement of speed laws in school zones can improve the safety for children walking and bicycling to school. A 'zero tolerance' policy for speeders in school zones, and an increase in fines for drivers who violate the posted school zone speed limit, are both potential approaches.

Tattletale Lights

To help law enforcement officers catch red-light runners safely and more effectively, a "rat box" is wired into the backside of a traffic signal controller and allows enforcement officers stationed downstream to identify, pursue, and cite red-light runners. Warning signs may be set up along with the box to warn drivers about the fine for red-light violations. Rat boxes are a low-cost initiative (approximately $100 to install the box), but do require police officers for enforcement.

Law Enforcement Officer Bicycle and Pedestrian Training/Bicycle Liaison Officer

Law enforcement officers should receive training specifically focused on bicycle and pedestrian safety and enforcement principles. As a cost-saving measure, the City of Pomona may collaborate with surrounding jurisdictions and share resources as practical. Additionally, the Pomona Police Department should consider appointing a bicycle and pedestrian liaison officer—as the Los Angeles Police Department has successfully instituted—who is a single point of contact for all matters concerning bicyclist and pedestrian safety.

Citywide Programs and Strategies

As a complement to the support programs listed above, the following policies and programs are recommended for the City of Pomona:

Accessibility

- Facilitate bicycles on transit
    - Install secure bicycle parking at major transit stops/centers
    - Encourage Foothill Transit and Metro to install triple bike racks on buses
- Provide bicycle detection at intersections
- Install bicycle parking throughout downtown
- Install bicycle parking in the public right-of-way, such as in converted car parking spaces, serving major destinations. Prioritize corridors with existing or planned bicycle facilities
- Adopt a bicycle parking ordinance to ensure quality bike parking is installed on private property. The parking ordinance should include commercial, residential, and office uses; specify the number of spaces and types of parking racks to be provided; and provide for long-term and short-term parking.

- Adopt a bicycle amenities ordinance that requires or provides incentives for developers of new commercial buildings to install showers and clothing lockers for bicycle commuters.

- Develop citywide bicycle wayfinding signage (including distances and travel times). Principal destinations to include on wayfinding signs are:

    - Cal Poly Pomona
    - Downtown, FOX
    - Transit centers
    - Western University
    - Library
    - City Hall

- Develop an ADA Transition Plan

- Continue to create capital improvement projects to enhance pedestrian access

Maintenance and Funding

- Improve pavement condition (give priority to designated bike routes and corridors with high bike ridership)

- Keep roads and bike lanes clear of debris (prioritize street sweeping on routes with curbside bike lanes)

- Pursue active transportation and multi-modal funding to implement the projects in this plan. Sources for funding include, but are not limited to, State and Federal Safe Routes to School grants, California Bicycle Transportation Account, Caltrans Transportation Planning Grants, SCAG RTIP Call for Projects, and Metro Call for Projects. Set a goal of submitting at least two non-motorized grant-funding applications per year.

- Identify an employee who will serve as the bicycle and pedestrian coordinator and manage non-motorized transportation projects and ongoing route maintenance

- Update infrastructure capital improvement project list to prioritize projects that would proactively address areas with substantial pedestrian or bicyclist-involved collision history

- Coordinate street repaving, facility upgrades, and restriping with bicycle plan implementation and prioritize projects that include bicycle infrastructure

- Assign a funding source or responsibility to keep sidewalks maintained

Education/Community Involvement

- Promote increased driver awareness and respect for bicyclists and pedestrians

- Pursue Office of Traffic Safety grants for outreach campaigns

- Consider expanding the Pomona Active Transportation Plan project website into a permanent bicycle and pedestrian information website/blog hosted within the City's web domain, similar to the successful Los Angeles Department of Transportation Bicycle Services website (http://www.bicyclela.org) and LADOT Bike Blog (http://ladotbikeblog.wordpress.com)

- Create education programs to reach non-English speaking and low-income communities. In particular, partner with the Pomona Economic Opportunity Center to create outreach programs and educational material targeting the day laborer population in Pomona.

- Conduct targeted outreach of proposed bicycle and pedestrian related improvements and events to educate local residents and employees, and garner greater interest and support. Target outreach at:

    - Pomona Unified School District
    - Cal Poly Pomona
    - Cycling groups/shops
    - Merchant associations
    - Downtown Business Association
    - Public events and festivals

- Establish a standing City of Pomona Bicycle and Pedestrian Advisory Committee (BPAC) that meets regularly with City staff to discuss walking and bicycling issues. The role of the BPAC includes identifying key problems, crafting public outreach campaigns, promoting bicycle and pedestrian programs, and serving as an interface between the City and community members/advocacy organizations. BPAC members may include:

    - Local bicycle and pedestrian advocates, including members of the Pomona Valley Bicycle Coalition
    - Pomona Unified School District and Cal Poly Pomona students and staff
    - City Public Works Department staff
    - City Planning Department staff
    - Law enforcement and fire department officers
    - Neighborhood business owners
    - Hospital and public health staff

- Establish a Bike-Friendly Business District (BFBD) in Downtown Pomona. Long Beach began the first BFBD program in 2010. The program encourages merchants and their customers to replace cars with bicycles. The City works with local business owners in certain retail districts, such as Pomona's downtown, to offer incentives including discounts for bicyclists, free bike valet, free bike tune-ups, bicycle parking, and special stickers. This creates an incentive to travel by bicycle and benefits merchants, who often see an increase in customers.

Enforcement/Safety

- Consider police bicycle patrol for downtown area

- Conduct targeted enforcement efforts, with citations and educational materials that focus on safe and lawful behavior for all road users. Enforcement can be targeted at areas such as schools, public facilities, and locations with demonstrated collision history. Combine with bike traffic school above.

- Monitor and record bicyclist and pedestrian-involved collisions

- Consider the establishment of repair, air, and bike maintenance sites
- Prohibit sidewalk bicycle riding in high pedestrian areas/downtown (include "no bicycle riding on sidewalk" signage and markings)

Encouragement/Evaluation

- Establish a large-scale car-free day similar to the popular CicLAvia

- Establish a "bike-buddy" program in conjunction with the Pomona Valley Bicycle Coalition and employers. This program would pair experienced cyclists with new cyclists to bicycle to work together. The City could hold skills training workshops prior to the program's kick-off to teach bicycling safety skills to all participants.

- Conduct walk/bicycle audits as part of outreach strategies for new development projects or as a comprehensive SRTS program. A walk/bicycle audit leads stakeholders on a set course to discuss bicyclist/pedestrian safety concerns and strategies to improve safety.

- Partner with Cal Poly Pomona Urban Planning students, Los Angeles County Bicycle Coalition, and sister chapter Pomona Valley Bicycle Coalition to conduct annual bicycle and pedestrian counts, to implement an annual monitoring program that conducts bicycle and pedestrian counts once a year, or require that all traffic study counts include bicycles and pedestrians to estimate bicycling levels and changes in bicycling levels over time.

- Develop metrics to measure the impact of walking and bicycling on public health, resident and merchant perceptions, environmental impact, amount of cycling, and safety (note: it may not be possible to measure the impact of bicycling alone). Some examples are provided below:

    - Public Health – Partner with local schools to measure distance cycled or calories/weight lost during Bike Month (May)

    - Resident and Merchant Perceptions – Survey questions such as "how frequently do you walk or bicycle around town?" "what prevents you from walking and bicycling?" and "what mode of travel do you use for short trips?" aim to understand attitudes toward walking and bicycling, and common concerns. These surveys, which should be available in English and Spanish, can be done citywide or as part of an SRTS program for parents.

    - Environmental Impact – Measure reductions in vehicle miles traveled or vehicle emissions through surveys

- Amount of Cycling and Walking – Partner with Cal Poly Pomona and require bicycle and pedestrian counts with traffic studies so that changes in levels of cycling can be measured over time

- Safety – Review the number of bicycle/pedestrian-involved collisions on a regular basis and develop collision rates as data on the number of vehicles, bicyclists, and pedestrians is collected over time

7. Funding and Implementation

With approximately three miles of bicycle facilities in the City of Pomona, recent implementation of bicycle facilities has been limited. As the currently planned heavy infrastructure projects come under construction, the City should use opportunities such as roadway repaving or utility work to implement network segments that require limited changes or consist of "sign and paint only." These features can be implemented relatively rapidly at low cost and greatly expand the network, which would both facilitate and encourage increased cycling in the City. This approach allows the City to implement more of the Plan at a quicker pace, with the intent of effectively providing alternative mobility choices.

Numerous funding sources are potentially available at the federal, state, regional, county, and local levels for the City of Pomona to implement the projects and programs in the Active Transportation Plan. Below is a description of the most promising funding programs available for the proposed projects at the federal, state, MPO and county levels. Most of these sources are highly competitive and require the preparation of extensive applications.

STATE AND FEDERAL PROGRAMS

The majority of public funds for bicycle and pedestrian projects are derived through a core group of federal and state programs. Federal funds from the Surface Transportation Program (STP), Transportation Enhancements (TE), and Congestion Mitigation Air Quality (CMAQ) programs are allocated to the County and distributed accordingly.

Bicycle Transportation Account (BTA)

The BTA is a Caltrans-administered program that provides funding to cities and counties for projects that improve the safety and convenience of bicycling commuting. Eligible projects include secure bicycle parking; bicycle-carrying facilities on transit vehicles; installation of traffic-control devices that facilitate bicycling; planning, design, construction and maintenance of bikeways that serve major transportation corridors; and elimination of hazards to bicycling commuters. In fiscal year 2008/09, the BTA provided $7.2 million for projects throughout the state. To be eligible for BTA funds, a city or county must prepare and adopt a bicycling transportation plan that meets the requirements outlined in Section 891.2 of the California Streets and Highways Code. More information on the Bicycle Transportation Account is available at: www.dot.ca.gov/hq/LocalPrograms/bta/btawebPage.htm

Transportation Enhancements

Under the Transportation Enhancements (TE) program, California receives approximately $60 million per year from the federal government to fund projects and activities that enhance the surface transportation system. The program funds projects under 12 eligible categories, including the provision of bicycling lanes, trails, bicycle parking, and other bicycling facilities; safety-education activities for pedestrians and bicyclists; landscaping, streetscaping, and other scenic beautification projects; and the preservation of abandoned railway corridors and their conversion to trails for non-motorized transportation. In California, 75 percent of TE funding is distributed by the regional transportation planning agencies. For the Los Angeles County, the Metropolitan Transportation Authority (Metro) manages the disbursement of funds. The remaining 25 percent of the state budget is allocated by Caltrans at the district level.

Safe Routes to School (SR2S)

California's Safe Routes to Schools program (SR2S) is a Caltrans-administered grant-funding program established in 1999 (and extended in 2007 to the year 2013). Eligible projects include bikeways, walkways, crosswalks, traffic signals, traffic-calming applications, and other infrastructure projects that improve the safety of walking and biking routes to elementary, middle, and high schools, as well as "incidental" education, enforcement, and encouragement activities. Planning projects are not eligible. In fiscal year 2007/08, approximately $25.5 million was available in grant funding. More information on the Caltrans www.dot.ca.gov/hq/LocalPrograms/saferoutes/saferoutes.htm

Proposition 84

The Department of Conservation manages competitive grants, on behalf of the California Strategic Growth Council (SGC), to cities, counties, and designated regional agencies to promote sustainable community planning and natural resource conservation. The grant program supports development, adoption, and implementation of various planning elements. In 2010, it awarded $20 million through the Proposition 84 Sustainable Communities Planning Grant and Incentives Program. The SGC will award $20 million more in grants in both 2011 and 2012 (totaling $40 million). Eligible projects include plans that support greenhouse gas emission reduction and sustainable communities.

http://www.sgc.ca.gov/planning_grants.html

Caltrans Transportation Planning Grants

Caltrans provides Transportation Planning Grants on a yearly basis. These grants are available to jurisdictions focusing on improving mobility by innovatively addressing problems or deficiencies in the transportation system. Funds can be used for planning or feasibility studies. The maximum funding available per project is $300,000. Fiscal year 2012-2013 grants were awarded to 70 projects totaling almost $10 million.

http://www.dot.ca.gov/hq/tpp/grants.html

OTS Grant Opportunities

The California Office of Traffic Safety (OTS) provides grants for safety programs and equipment. Bicycle and Pedestrian Safety is a specifically identified funding priority. This category of grants includes enforcement and education programs, which encompass a wide range of activities, including bicycle helmet distribution, design and printing of billboards and bus posters, other public information materials, development of safety components as part of physical education curriculum, or police safety demonstrations through school visitations. In 2009, OTS awarded $82 million to 203 agencies.

http://www.ots.ca.gov/Grants/default.asp

Highway Safety Improvement Program (HSIP)

The Highway Safety Improvement Program (HSIP) is a core federal-aid program that aims to reduce traffic fatalities and serious injuries on public roads. Caltrans administers the program in California and received $74.5 million for the 2010/11 Federal Fiscal Year. HSIP funds can be used for projects such as bike lane or sidewalk projects on local roadways, improvements to Class I multi-use paths, or for traffic calming measures. Applications that identify a history of incidents and demonstrate their project's improvement to safety are most competitive for funding. The Transportation Development Act can also be used to fund related improvements; however, these funds are allocated to cities on the basis of a formula.

http://www.dot.ca.gov/hq/LocalPrograms/hsip.htm

Land and Water Conservation Fund

The Land and Water Conservation Fund (LWCF) provides matching grants to States and local governments for the acquisition and development of public outdoor recreation areas and facilities. The program is intended to create and maintain a nationwide legacy of high quality recreation areas and facilities and to stimulate non-federal investments in the protection and maintenance of recreation resources.

http://www.nps.gov/ncrc/programs/lwcf/grants.html

Environmental Enhancement and Mitigation Program

The Environmental Enhancement and Mitigation Program (EEMP) was established in 1989 and is administered by the California Natural Resources Agency and Caltrans. The program offers a total of $10 million each year for grants to local, state, and federal governmental agencies and to nonprofit organizations, funded through gasoline taxes. EEMP Funds are allocated to projects that either directly or indirectly offset environmental impacts of modified or new public transportation facilities including streets, mass transit guideways, park-n-ride facilities, transit stations, tree planning to offset the effects of vehicular emissions, and the acquisition or development of roadside recreational facilities, such as trails.

http://resources.ca.gov/eem/

Recreational Trails Program

The Recreational Trails Program (RTP) provides funds to states to develop and maintain recreational trails and trail-related facilities for both non-motorized and motorized recreational trail uses. The RTP is an assistance program of the Department of Transportation's Federal Highway Administration (FHWA). The RTP funds come from the Federal Highway Trust Fund, and represent a portion of the motor fuel excise tax collected from non-highway recreational fuel use. RTP funds are distributed to each state by legislative formula: half of the funds are distributed equally among all states, and half are distributed in proportion to the estimated amount of non-highway recreational fuel use in each State. RTP funds may be used for maintenance and restoration of existing trails, purchase and lease of equipment to construct or maintain trails, administrative costs associated with the program, or operation of educational programs to promote safety and environmental protection related to trails.

http://www.fhwa.dot.gov/environment/recreational_trails/index.cfm

Transportation Development Account Article III

Transportation Development Act was enacted by the California State Legislature and is administered by Caltrans. Article 3 of the TDA provides funding for pedestrian and bicycle facilities. By ordinance, Metro is responsible for administering the program and establishing its policies within Los Angeles County. TDA, Article 3 funds are allocated annually on a per capita basis to both cities and the County of Los Angeles. Agencies must submit a claim form to Metro by the end of the fiscal year in which they are allocated. TDA Article 3 funds may be used for right-of-way acquisition, design costs, construction or major reconstruction, retrofitting to comply with the Americans with Disabilities Act (ADA), route improvements

such as bicycle detectors at signals, and purchase and installation of supporting bicycle facilities such as parking, lockers, and showers.

http://www.metro.net/projects/tda/

Safe and Active Communities

The California Department of Public Health Safe and Active Communities Branch (SACB) is soliciting applications from eligible entities to develop, implement, and evaluate a set of small-scale, low-cost educational interventions with underserved California schools. A total of $375,000 is available in the support of building school interest and capacity to conduct year-round interventions to improve safety for walking and bicycling in the neighborhoods surrounding school campuses. Interventions must focus on improving safety rather than simply encouraging walking and bicycling. The desired outcome is that each local intervention site will create a calendar outlining its ongoing SRTS activities during the year subsequent to the grant period. Applications must include five to eight elementary or middle school interventions over a 24-month period.

www.cdph.ca.gov

REGIONAL AND LOCAL FUNDING

At the regional and county level, SCAG and Metro administer much of the funds that can be used to fund active transportation projects. Metro administers several programs that are sources of funding for recommended projects. As mentioned, federal and state programs, such as the Transportation Enhancements program, are administered at the state or county level and distributed to local jurisdictions.

Metro Call for Projects

Metro is responsible for allocating discretionary federal, state, and local transportation funds to improve all modes of surface transportation. Metro also prepares the Los Angeles County Transportation Improvement Program (TIP). The Call for Projects program is a competitive process that distributes discretionally capital transportation funds to regionally significant projects. Metro accepts applications for this program every other year. Funding levels for each mode is established by the Metro Long Range Transportation Plan and bicycling may be included in up to five modal categories.

Modal Categories Relevant to Bicycle Plan Projects and Programs

Modal Category	Share of Funding*	Eligible Projects**
Bikeway Improvements	8%	Regionally significant projects that provide access and mobility through bike-to-transit improvements, gap closures in the inter-jurisdictional bikeway network, bicycle parking, and first-time implementation of bicycle racks on buses.
Regional Surface Transportation Improvements	40%	On-street bicycle lanes may be eligible if included as part of a larger capacity-enhancing arterial improvement project. Bikeway grade-separation projects may be eligible as part of larger arterial grade-separation projects.
Transportation Enhancement Activities	2%	Bicycle-related safety and education programs. Bikeway projects implemented as part of a scenic or historic highway, and landscaping or scenic beautification along existing bikeways may also be eligible.
Transportation Demand Management	7%	Technology and/or innovation-based bicycle transportation projects such as Bicycle Commuter Centers and modern bicycle sharing infrastructure. Larger TDM strategies with bicycle transportation components would also be eligible.
Pedestrian Improvements	8%	Pedestrian improvements that promote walking as a viable form of utilitarian travel, pedestrian safety, and an integral link within the overall transportation system.
*Funding estimate is bi-annual (every other year) based on the approved funding from the 2007 CFP. **The discussion of eligible projects is based on 2009 CFP requirements and assumes all eligibility requirements are met and the questions in the CFP application are adequately addressed. These requirements are subject to change in future cycles. City staff should refer to the latest CFP Application Package for detailed eligibility requirements.		

From LA City Bicycle Plan, 2010.

SCAG Non-Motorized RTP

The Southern California Association of Governments' Non-Motorized Program is currently developing a Regional Bicycle and Pedestrian Plan. The program was kicked off in August 2009 and is working towards improving transportation options, increasing safety and assisting with the SB 375 goals in reduction in greenhouse gases.

http://www.scag.ca.gov/nonmotorized.htm

Local Conservation Corp

Local Conservation Corp services may be used in the implementation and maintenance of bicycle and pedestrian improvements. Conservation Corps crews typically provide services which may include, but are not limited to:

- Sidewalk repair
- Landscaping & tree-planting
- Steam cleaning
- Median maintenance
- Pressure washing
- Trail construction
- Filling potholes
- Urban park construction
- Installing signs
- Graffiti removal

Local Conservation Corps offices are located in Pomona, Norwalk, downtown Los Angeles and San Bernardino (Inland Empire).

http://www.ccc.ca.gov/Pages/default.aspx

COST OF NEW BICYCLING FACILITIES

Table 7-1 provides a unit cost summary for the construction of bikeway facilities in Pomona; **Table 7-2** summarizes the conceptual cost estimates for each priority project. These estimates are based on costs experienced in other communities throughout southern California. More detailed estimates should be developed following the preliminary engineering stage as individual projects advance towards implementation.

TABLE 7-1 – CONCEPTUAL UNIT COSTS FOR BIKEWAY CONSTRUCTION

Facility Type		Improvement	Estimated Cost Per Mile
Class I	Shared-Use Path	Construct Path with Minimal Grading Needed	$1.5 million
Class II	Bicycling Lane	Signing/Striping with Minor Improvements	$50,000
Class III	Bicycling Route	Signing Plus Stencils	$30,000

Note: Costs are in 2012 dollars, excluding right-of-way costs

For purposes of this 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 or no roadway improvements. Bike lanes enhanced with buffers or coloring may be considered, but may have higher per mile costs.
- New Class III facilities would require signing only and stencils with minor improvements.

Past Bicycle Facility Expenditures

The City of Pomona has opportunistically implemented bicycle facilities in conjunction with street improvements. Based on the length of existing bicycle facilities and planning level cost estimates, it is estimated that the City has spent $191,000 on bicycle facilities. This estimate of past expenditures is based on 3.3 miles of bicycle lanes implemented at a cost of $164,500 and .9 miles of bicycle routes implemented at a cost of $26,400.

Bicycle Facility Implementation Phasing

The project list developed in chapter four was updated to reflect project implementation phasing. The project list is divided into four tiers:

- Tier 0 – Recently completed projects
- Tier 1 – Top Priority Projects
- Tier 2 – Second Priority Projects
- Tier 3 – Long-term Priority Projects

TABLE 7.2 - BICYCLE FACILITY PHASING PLAN AND COST ESTIMATES

Project #	Facility	From (N/W)	To (S/E)	Distance (miles)	Facility Type	Cost	Potential Funding Source(s)	Target Cycle
Tier 0 Projects (Recently Completed)								
N/A	Bonita Ave	WCL	ECL	1.4	Bike Lane	Completed		
N/A	Hamilton Blvd	Mission Blvd	Phillips Blvd	0.75	Bike Lane	Completed		
N/A	South Campus Dr	Temple Ave Kellog Drive East Campus/SR-57	Kellog Drive East Campus/SR-57 Ridgeway Street	0.29 0.62 0.59	Bike Route Bike Lane Bike Route	Completed		
Tier 1 Priority Projects (2017)								
1	San Jose Creek (Design and Environmental)	Poly Vista	Murchison Ave	3.5	Bike Path	$ 500,000.00	Metro CFP BTA	2013-2017 2013-2017
2	San Antonio Ave	Towne Ave Philadelphia St	Philadelphia St County Rd	3.7 0.5	Bike Lane Bike Route	$ 200,000.00	Metro CFP	2013-2017
3	Park Ave	Artesia St 3rd St	3rd St Olive St	1.5 2	Bike Route Bike Lane	$ 145,000.00	Metro CFP	2013-2017
4	Palomares St	McKinley Ave Pasadena St Phillips Blvd	Pasadena St Phillips Blvd Franklin Ave	0.7 1.3 0.25	Bike Route Bike Lane Bike Route	$ 93,500.00	Metro CFP	2013-2017
5	Garey Ave	Briarcroft Rd Foothill Blvd	Foothill Blvd La Verne Ave	0.2 1.6	Bike Route Bike Lane	$ 86,000.00	Metro CFP	2013-2017
6	San Bernardino Ave	San Antonio Ave	Mills Ave	1.5	Bike Lane	$ 75,000.00	Metro CFP	2013-2017
7	Caswell Ave Kingsley Ave	Alvarado St Caswell Ave	Kingsley Ave ECL	0.1 1.3	Bike Route Bike Route	$ 42,000.00	Metro CFP	2013-2017
8	Alvarado St	Huntington St	San Antonio Ave	1.5	Bike Route	$ 45,000.00	Metro CFP	2013-2017
9	McKinley Ave	Fairplex Dr Gibbs Ave Palomares St	Gibbs Ave Palomares St Towne Ave	1.7 0.1 0.2	Bike Lane Bike Route Bike Lane	$ 98,000.00	Metro CFP	2013-2017
10	2nd St	Chino Valley Fwy Garey Ave Gibbs St	Garey Ave Gibbs St Reservoir St	2 0.4 0.5	Bike Route TBD Bike Route	$ 87,000.00	Metro CFP	2013-2017
11	Phillips Blvd	Dudley St	ECL	2.8	Bike Lane	$ 140,000.00	Metro CFP	2013-2017
12	9th St	Butterfield Rd Dudley St	Dudley St ECL	0.35 3	Bike Route Bike Lane	$ 160,500.00	Metro CFP	2013-2017
13	N Hamilton Blvd Hamilton Blvd S Hamilton Blvd	Murchison Ave Orange Grove Ave Phillips Blvd	Orange Grove Ave Mission Blvd Lexington Ave	0.2 1 0.5	Bike Route Bike Lane Bike Route	$ 71,000.00	Metro CFP	2013-2017
14	Artesia St	Alameda St	Orange Grove Ave	0.4	Bike Route	$ 12,000.00	Metro CFP	2013-2017
15	Alameda St	Artesia St	Garey Ave	0.3	Bike Route	$ 9,000.00	Metro CFP	2013-2017
16	Orange Grove Ave	Fairplex Dr Lewis St Artesia St	Lewis St Artesia St E Arrow Hwy	1 1.3 1.1	Bike Lane Bike Route Bike Lane	$ 144,000.00	Metro CFP	2013-2017
18	Murchison Ave	Ridgeway St	Fairplex Dr	0.7	Bike Lane	$ 35,000.00	Metro CFP	2013-2017
19	Ridgeway St	Murchison Ave Valley Blvd	Valley Bl Mt. Vernon Ave	0.5 0.25	Bike Lane Bike Route	$ 32,500.00	Metro CFP	2013-2017
			Tier 1 Priority Projects Total Cost Estimate			**$ 1,975,500.00**		
Tier 2 Priority Projects (2021)								
1	San Jose Creek (Construction)	Poly Vista	Murchison Ave	3.5	Bike Path	$ 5,250,000.00	Metro CFP BTA	2017-2021 2017-2021
20	La Verne Ave	Arrow Hwy Towne Ave	Towne Ave Mountain Ave	1.1 0.8	Bike Lane Bike Route	$ 79,000.00	Metro CFP	2017-2021
21	Casa Vista Dr	Murchison Ave	Orange Grove Ave	0.3	Bike Route	$ 9,000.00	Metro CFP	2017-2021
22	Laurel Ave	Erie St	Hamilton Blvd	0.9	Bike Route	$ 27,000.00	Metro CFP	2017-2021
23	Village Loop Rd Phillips Ranch Rd Rio Rancho Rd	Pala Mesa Dr Village Loop Rd Phillips Ranch Rd	Phillips Ranch Rd Rio Rancho Rd Garey Ave	1 0.1 1.6	Bike Path Bike Route Bike Route	$ 551,000.00	Metro CFP	2017-2021
24	Dudley St	Lavita Ave Murchison Ave Mission Blvd	Murchison Ave Crest Way Phillips Blvd	0.2 0.3 0.6	Bike Route Bike Lane Bike Route	$ 39,000.00	Metro CFP	2017-2021
25	Fremont St/Franklin Ave	Hansen Ave	ECL	2.6	Bike Route	$ 78,000.00	Metro CFP	2017-2021
26	Lexington Ave	Hamilton Blvd Garey Ave	Garey Ave ECL	0.8 1.3	Bike Route Bike Lane	$ 89,000.00	Metro CFP	2017-2021
27	Philadelphia St	Garey Ave	ECL	1.3	Bike Lane	$ 65,000.00	Metro CFP	2017-2021
28	Olive St	Park Ave	ECL	1.5	Bike Route	$ 45,000.00	Metro CFP	2017-2021
29	Mountain Ave	Arrow Hwy	I-10 Freeway	0.6	Bike Route	$ 18,000.00	Metro CFP	2017-2021
30	Monterey Ave	Myrtle Ave	Lorrane Ave	2	Bike Route	$ 60,000.00	Metro CFP	2017-2021
31 32	Val Vista Preciado St	Crest Way White Ave	White Ave Park Ave	1.2 0.3	Bike Route Bike Route	$ 45,000.00	Metro CFP	2017-2021
33	Fairplex Dr (w/o McKinley Ave)	McKinley Ave Mountain Meadows Drvwy	Mountain Meadows Drvwy I-10 Freeway	0.15 0.95	Bike Route Bike Lane	$ 52,000.00	Metro CFP	2017-2021

TABLE 7.2 - BICYCLE FACILITY PHASING PLAN AND COST ESTIMATES

Project #	Facility	From (N/W)	To (S/E)	Distance (miles)	Facility Type	Cost	Potential Funding Source(s)	Target Cycle
34	College Ave	Brin Mawr Rd	San Bernardino Ave	0.35	Bike Route	$ 10,500.00	Metro CFP	2017-2021
35	Old Pomona Rd	Village Loop Rd	SR-71	0.45	Bike Route	$ 13,500.00	Metro CFP	2017-2021
36	Pomona Bl	Temple Ave	Pacific Street	0.7	Bike Lane	$ 35,000.00	Metro CFP	2017-2021
37	Towne Ave	Arrow Hwy	San Antonio Ave	0.2	Bike Lane	$ 10,000.00	Metro CFP	2017-2021
			Tier 2 Priority Projects Total Cost Estimate			**$ 6,476,000.00**		
			Tier 1 & 2 Projects Total Cost Estimate			**$ 8,451,500.00**		
Tier 3 Long-Term Priority Projects*								
38	Towne Ave	San Antonio Ave	Holt Ave	1.75	TBD (Bike Lane)			
39	Mission Bl	Temple Ave	ECL	5	TBD (Bike Lane)			
40	Garey Ave	La Verne Ave	Artesia St	0.65	TBD (Bike Lane)			
41	State St	Pomona Bl	Diamond Bar Bl	0.85	TBD (Bike Lane)			
42	Humane Way	Holt Ave	Mission Blvd	0.7	TBD (Bike Lane)			
43	Valley Blvd/Holt Ave	Ridgeway St	Humane Way	0.25	TBD (Bike Lane)			
44	Butterfield Rd	Fleming St	Wright St	0.3	TBD (Bike Lane)			
45	Thompson Creek	I-10	NCL	3	TBD (Bike Path)			
			Tier 3 Projects Total Cost Estimate (Bike Lanes and Bike Path)		**$ 4,975,000.00**			

Notes: ECL, WCL, NCL, SCL = Eastern, Western, Northern, Southern City Limit

*To provide a conservative cost estimate, cost estimates for on-street facilities in Tier 3 were developed assuming the facility would be implemented as a bike lane. The facility may be implemented as a bike lane or bike route.

The Tier 1 and Tier 2 projects were prioritized based on project readiness, public input, the connectivity considerations described at the beginning of this chapter, and ease of implementation as related to street resurfacing projects. The following section includes grant ready project sheets for five projects in the Tier 1 priority list that are prime candidates to receive funding such as Bicycle Transportation Account funds, Metro Call for Projects, or Safe Routes to School funding.

Note that cost estimates for the San Jose Creek Bike Path in Tier 1 are not a direct multiplication of the unit cost and mileage, rather that construction cost is included in Tier 2. Tier 1 includes the other design elements of the Class I facility that change the cost from a direct multiplication of unit cost and mileage design.

Construction of the Class I, II and III system would require approximately $13.5 million, which equates to an investment of approximately $1.4 million per year over 10 years. This means that if the City were to implement these projects, a local match of approximately $2.7 million would be needed. A portion of the proposed system may be constructed as part of new development or as redevelopment occurs, which may offset some costs.

Maintenance Costs

Multi-use path maintenance includes cleaning, resurfacing, and re-striping the asphalt path; repairing bridges and other structures; cleaning drainage systems; 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.

The estimated annual maintenance expenses for Class I bicycling paths is approximately $15,000 per mile. If all of the proposed bicycling paths are implemented, this would yield a total of 7.5 miles of Class I facilities. The annual maintenance cost for Pomona's Class I facilities at build-out is estimated at about $112,500.

For Class II bicycling lanes, the cost consists of maintaining signage, pavement markings and striping, estimated at $2,500 per year. The estimated additional annual cost for maintenance of all near and medium-term facilities proposed in this plan (28 miles) is $70,000.

Class III facilities will require maintenance of signage and shared lane markings located along the route, also estimated at $2,500 per year. At full build-out, the cost of maintaining the Class III facilities proposed in this plan (26.4 miles) is estimated at approximately $66,000.

Project Sheets

The following section contains project fact sheets (**Exhibit 7-1**) for five proposed high-priority projects identified through public input, collaboration with Pomona staff, and discussed in this chapter. Projects involving hardscape and changes in street operations will be subject to further neighborhood review prior to implementation. These project fact sheets can be included in grant applications for implementation funds. Specific grants to consider for funding include, but are not limited to, Safe Routes to School grants, Metro Call for Projects, and BTA grants.

Exhibit 7-1 – San Antonio Avenue Bicycle Lane

The City recognizes the importance of continuous north-south bicycle facilities paralleling major arterial roads. San Antonio Avenue is one block east and parallels Towne Avenue, offering an alternative to bicycling on Towne Avenue while facilitating access to its destinations. San Antonio Avenue links to Monterey Avenue and Second Avenue, major retail and service corridors providing connections to Metrolink and Amtrak rail service. It also provides access to civic uses such as Pomona High School, several elementary schools, and Washington Park. The proposed bicycle facilities will extend along the **4.2-mile** length of San Antonio Avenue from Towne Avenue to County Road.

San Antonio Avenue serves two-way traffic, providing one or two lanes in each direction, along its length. Intersections along San Antonio Avenue are four-way stop controlled at seven intersections, and signal controlled at nine major intersections along its length including the merge with Towne Avenue.

Bikeway Connections	**Destinations**
o La Verne Avenue Bicycle Route o San Bernardino Avenue Bicycle Lane o Alvarado Street Bicycle Route o Kingsley Avenue Bicycle Route o Monterey Avenue Bicycle Route o 2nd Street Bicycle Route o 9th Street Bicycle Lane o Phillips Boulevard Bicycle Lane o Franklin Avenue Bicycle Route o Lexington Avenue Bicycle Lane o Philadelphia Street Bicycle Lane o Olive Street Bicycle Route	o Pomona High School o Barfield Elementary School o Pomona Jaycees Community Park o Allison Elementary School o Emerson Middle School o Kingsley Elementary School o San Antonio Middle School o Garfield Park o Downtown access via 2nd St and Monterey Ave o Regional and national rail in downtown o Washington Elementary School o Washington Park o Alcott Elementary School o Simons Middle School o Philadelphia Elementary School

Existing Conditions

At Towne Ave

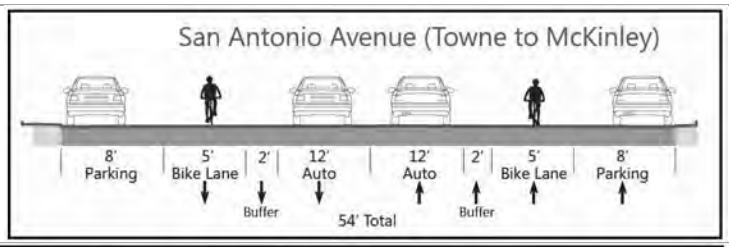
South of 1st St

South of Philadelphia St

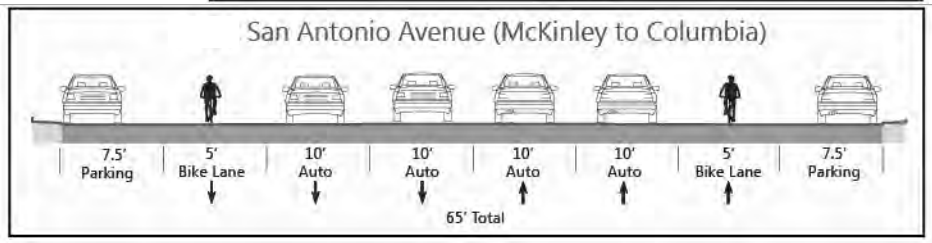
Issues	Opportunities
○ San Antonio Ave has seven four-way stop signs at intersections that slow bicyclists ○ San Antonio Ave has excess capacity along some segments ○ San Antonio Ave lacks bicycle detection at signals the eight signals along its length	○ Consider removing stop control for San Antonio Ave at some locations ○ Remove travel lanes to install bicycle lanes ○ Install inductive or video detection for bicyclists at intersections with activated traffic signals ○ Consider buffered bicycle lanes where excess width allows

Improvements

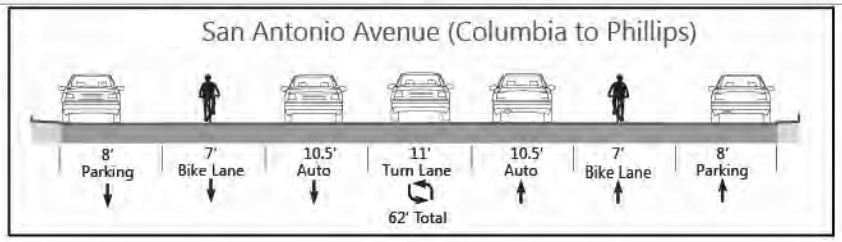
This project would add dedicated bicycle lanes in each direction from Towne Avenue south to Philadelphia Street. South of Philadelphia Street to the dead end after County Road, this project would add signs and shared lane markings to indicate a bicycle route.



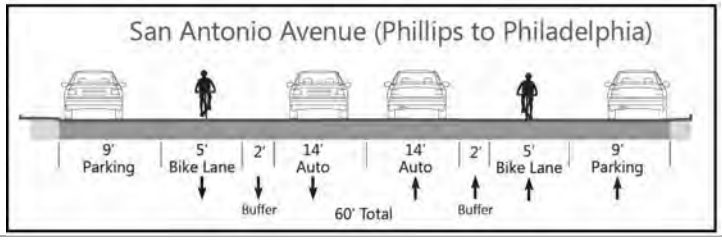
- Add ***bicycle lane***



- Implement ***road diet*** from McKinley Ave to Alvarado Blvd
- Add ***bicycle lane***



- Implement ***road diet*** from Holt Ave to 2nd St
- Add ***bicycle lane***



- Add ***bicycle lane***

Cost - $200,000

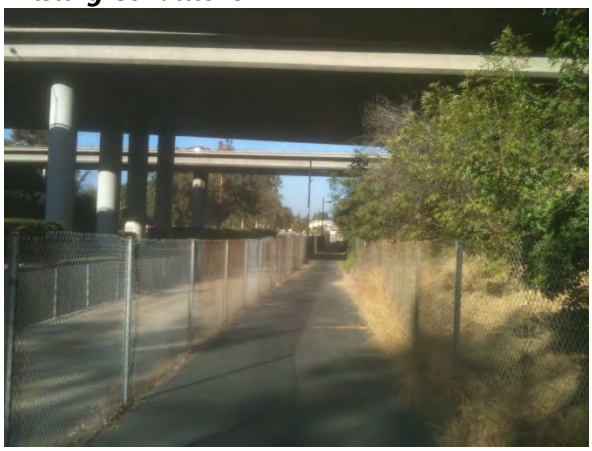
Includes bicycle lane striping and signage, and bicycle detection at signals north of Philadelphia Street as well as striping in sections undergoing road diets. Bicycle route segments include signage and shared lane markings.

Exhibit 7-2 – San Jose Creek Bicycle Path

The City recognizes the importance of grade-separated bicycle paths to provide a complete bicycle network. The San Jose Creek Bicycle Path parallels South Campus Drive, offering a greater level of east-west connectivity and offering access to California Polytechnic University at Pomona. The San Jose Creek Bicycle Path connects the university to Hamilton Boulevard, facilitating access to downtown Pomona, the Civic Center, and regional transit connections. The proposed bicycle facilities will extend along the **3.5-mile** length of the path from east of Temple Avenue to Casa Vista Drive. This stretch includes 15 access points to the grade-separated path.

Bikeway Connections	**Destinations**
○ Ridgeway Street Bicycle Lane ○ Dudley Street Bicycle Route ○ Hamilton Boulevard Bicycle Lane ○ Kellogg Drive Bicycle Path ○ Casa Vista Drive Bicycle Route ○ Cal Poly Bicycle Path	○ Cal Poly Pomona ○ Kellogg Park ○ Kellogg Polytechnic Elementary ○ Ganesha High School ○ John F. Kennedy Park ○ Marshall Middle School ○ Kiwanis Park ○ Arroyo Elementary School ○ Cortez Elementary School ○ DeVry University

Existing Conditions



Undercrossing at SR 57

A paved and lighted pathway already exists at the SR 57 undercrossing.

Pathway east of Kellogg Park

User-created openings in the chain-link fence at Kellogg Park indicate that the wide right-of-way is currently being used as access to and from the park.

Bridge along South Campus Dr

The bridge north of Kellogg Drive along South Campus Drive provides an opportunity for cyclists and pedestrians to cross to the north side of the channel and connect to the Cal Poly campus.

Of the 15 access points, six are neighborhood or park access points where bicyclists may enter or exit the path without interacting with vehicular traffic. The remaining nine access points are at-grade crossings that will require improvements for safe passage of bicyclists across lanes of travel. The path also travels underneath SR 71. Though the path underneath SR 57 has enough horizontal and vertical clearance for a bicycle path, the right-of-way under the SR 71 overpass may require civil engineering work to accommodate a bicycle path undercrossing.

Issues	**Opportunities**
○ San Jose Bicycle Path has nine at-grade crossings ○ SR 71 has low-hanging overpass ○ Potential neighborhood access points are currently fenced.	○ Install signage and infrastructure to improve safety and ease of access at at-grade crossings ○ Improve crossing and facilities at SR 71 ○ Create access points by creating a continuous bicycle path, using existing access points.

Improvements

This project would create a bicycle path separated from traffic along the San Jose Creek. The project would also include intersection safety improvements where the path crosses traffic in nine locations. Way-finding and safety signage, as well as striping where appropriate, would also be included.

Cost - $500,000

This cost includes the design and environmental review processes for the bikeway. An estimated additional $5,250,000 may be required for construction of the grade-separated bicycle path along San Jose Creek as well as associated earthwork, signage, and improvements at crossings and access points. Following the design and environmental review processes, the construction cost may vary, and opportunities for including improvements for the bicycle path in adjacent projects may arise.

Exhibit 7-3 – Park Avenue Bicycle Lane

The City recognizes the importance of continuous north-south bicycle facilities paralleling major arterial roads. Park Avenue parallels White and Garey Avenues, offering an alternative to bicycling on these busy streets while facilitating access to their destinations. Park Avenue links to Monterey Avenue and Second Street, major retail and service corridors providing connections to Metrolink and Amtrak rail service. It also connects with the major east-west thoroughfare Mission Boulevard. Park Avenue provides access to civic uses such as Garey High School and Civic Center. The proposed bicycle facilities will extend along the **3.5-mile** length of Park Avenue from Artesia Street to Olive Street.

Park Avenue serves two-way traffic, providing one or two lanes in each direction, along its length. Park Avenue is signal controlled at eight intersections along its length and is otherwise stop controlled.

Bikeway Connections	**Destinations**
○ McKinley Avenue Bicycle Lane ○ Artesia and Alameda Street Bicycle Routes ○ Val Vista Street Bicycle Route ○ Orange Grove Avenue Bicycle Lane ○ Alvarado Street Bicycle Route ○ Monterey Avenue Bicycle Route ○ 2nd Street Bicycle Route ○ 9th Street Bicycle Lane ○ Phillips Boulevard Bicycle Lane ○ Franklin Avenue Bicycle Route ○ Lexington Avenue Bicycle Lane ○ Philadelphia Street Bicycle Route ○ Olive Street Bicycle Route	○ Lincoln Elementary School ○ Downtown Pomona Train Station ○ Central Park ○ Memorial Park ○ Civic Center ○ Tony Cerda Park ○ Madison Elementary School ○ Fremont Middle School ○ Garey High School ○ Martin Luther King Junior Memorial Park ○ Lexington Elementary School ○ Powers Park

Existing Conditions

At Artesia St

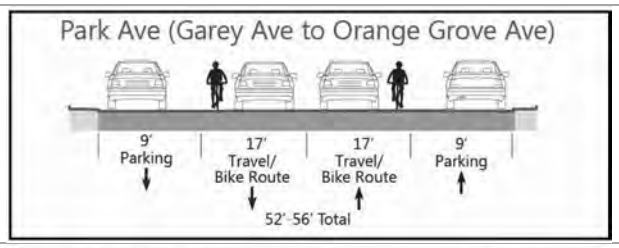
South of 2nd St

South of Phillips St

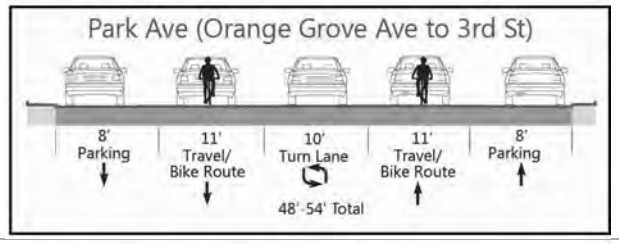
Issues	**Opportunities**
○ Park Ave has eight stop signs at intersections that slow bicyclists ○ Park Ave has excess capacity along some segments ○ Park Ave lacks bicycle detection at signals the eight signals along its length	○ Consider removing stop control for Park Ave at some locations ○ Remove travel lanes to install bicycle lanes ○ Install inductive or video detection for bicyclists at intersections with activated traffic signals

Improvements

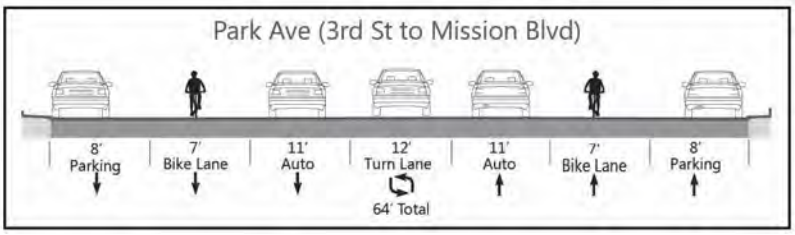
This project would add dedicated bicycle lanes in each direction from 3rd Street south to Olive Street. North of 3rd Street to the intersection with Artesia Street, this project would add signs and shared lane markings to indicate a bicycle route.



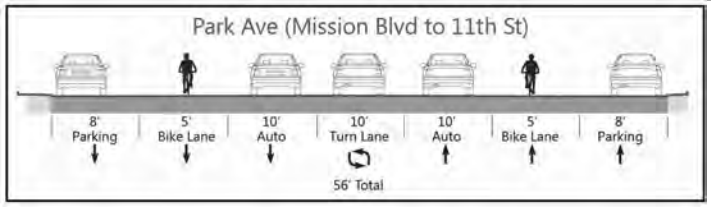
- Add ***bicycle route***



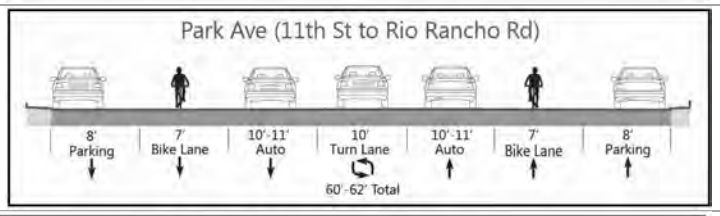
- Add ***bicycle route***



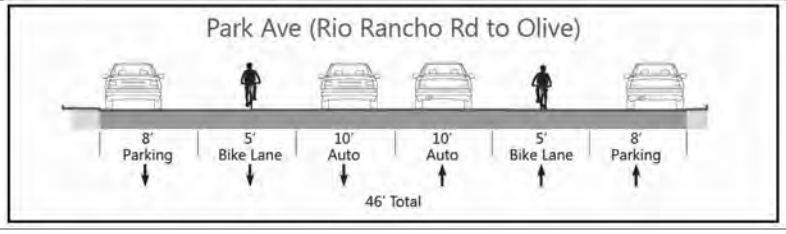
- Add ***bicycle lane***



- Add ***bicycle lane***



- Add ***bicycle lane***



- Add ***bicycle lane***

Cost - $145,000

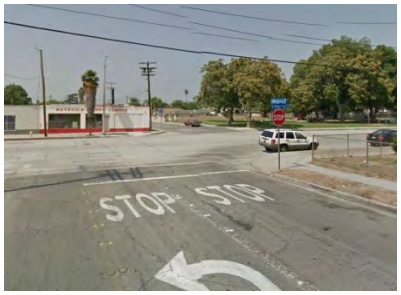
Includes bicycle lanes, shared lane markings along Class III segments, signage, bicycle detection at signals, and modifications to stop-controlled intersections.

Exhibit 7-4 – Monterey Avenue Bicycle Route

The City recognizes the importance of east-west bicycle facilities through the downtown area. Monterey Avenue parallels Holt Avenue, offering an alternative to bicycling on this busy street while facilitating access to its destinations. Monterey Avenue connects with the major arterials White Avenue, Garey Avenue, Towne Avenue, and major retail and service corridors in the downtown area. It also serves the transit center offering service on Metrolink and Amtrak rail. Monterey Avenue provides access to civic uses such as the Pomona Post Office, parks, and schools. The proposed bicycle facilities will extend along the **2-mile** length of Monterey Avenue from Myrtle Avenue east to Lorrane Avenue. Monterey Avenue serves two-way traffic, providing one or two lanes in each direction, along its length. Monterey Avenue is signal controlled at three intersections along its length and is otherwise stop controlled.

Bikeway Connections	**Destinations**
○ San Antonio Bicycle Lane ○ Palomares Street Bicycle Route ○ Park Avenue Bicycle Route ○ Hamilton Avenue Bicycle Lane	○ Hamilton Park ○ Pomona Post Office ○ Downtown Pomona Train Station ○ American Museum of Ceramic Art ○ Garfield Park ○ Pueblo Elementary School ○ Village Academy High School

Existing Conditions



At Hamilton Avenue

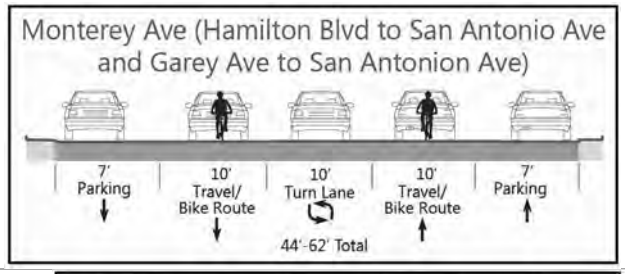
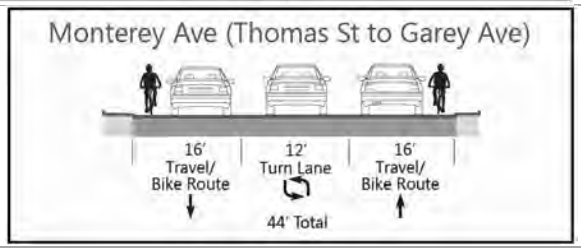

At White Avenue


At San Antonio Avenue

Issues	**Opportunities**
○ Monterey Ave has six stop signs at intersections that slow bicyclists ○ Monterey Ave appears to have excess capacity along some segments ○ Monterey Ave lacks bicycle detection at signals	○ Consider removing stop control for Monterey Ave at some locations ○ Consider removing travel/ turn lanes to install bicycle lanes ○ Install inductive or video detection for bicyclists at intersections with activated traffic signals.

Improvements

This project would include shared lane markings and signage to indicate a bicycle route.

		○ Add ***bicycle route***
		○ Add ***bicycle route***

Cost - $60,000

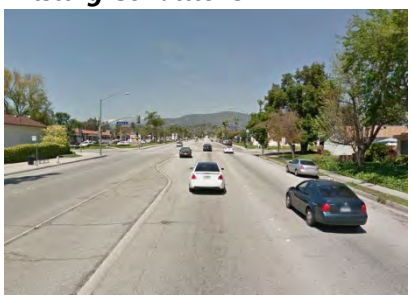
Includes shared lane markings, signage, bicycle detection at signals, and modifications to stop-controlled intersections.

Exhibit 7-5 – Garey Avenue Bicycle Lane

The City recognizes the importance of north-south bicycle facilities connecting to adjacent jurisdictions and providing access to other modes, such as transit stations. Garey Avenue is a significant north-south corridor in Pomona, facilitating access to commercial destinations and educational institutions. The Garey Avenue bicycle lane will connect with the major arterials of: Foothill Boulevard, Bonita Avenue, Arrow Highway, and La Verne Avenue. It also serves the North Pomona Metrolink Station and transit center. Garey Avenue provides access to Casa Colina Rehabilitation Center, Pomona Valley Hospital, San Jose Elementary School, Yorba Elementary School, and various commercial uses. The proposed bicycle facilities will extend along approximately 2 miles of Garey Avenue from the northern city limit to LaVerne Avenue. Garey Avenue serves two-way traffic, providing two lanes in each direction, along its length. Garey Avenue is generally signal controlled along its length. Minor streets intersecting Garey Avenue are stop controlled.

Bikeway Connections	**Destinations**
○ Bonita Avenue Bicycle Lane ○ La Verne Avenue Bicycle Lane ○ Thompson Creek Bicycle Route ○ Alameda Street Bike Route ○ Artesia Street Bike Route	○ Garey Shipping Center ○ Casa Colina Rehabilitation Center ○ North Pomona Metrolink Station ○ Yorba and San Jose Elementary Schools ○ Pomona Valley Hospital

Existing Conditions



Garey Ave south of Grove St

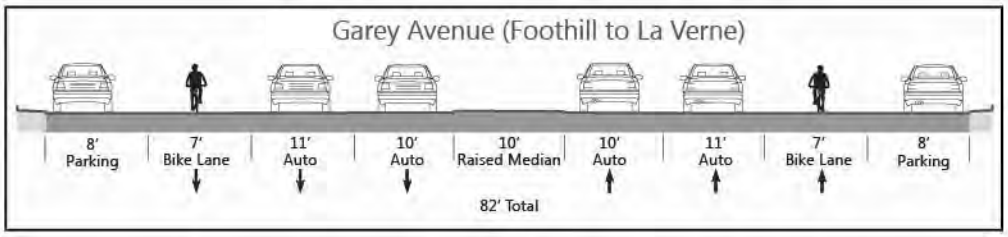
At Bonita Ave

At La Verne Avenue

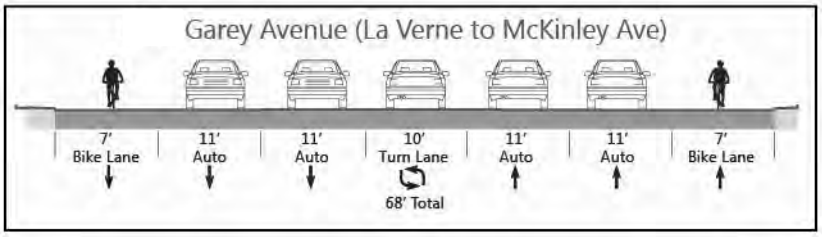
Issues	**Opportunities**
○ Garey Ave is a major arterial with relatively high traffic volumes and speeds ○ Garey Ave lacks bicycle detection at signals along its length ○ The proposed bicycle facility will not go south of I-10	○ Garey Avenue is a major commercial corridor providing direct access to a number of destinations ○ Install inductive or video detection for bicyclists at signal controlled intersections ○ Consider options for extending the bicycle facility south of I-10

Improvements

This project would install bicycle lanes, bicycle detection at signalized intersections, and signs to indicate a bicycle lane along the Garey Avenue.



- Add ***bicycle lane***



- Add ***bicycle lane***

Cost - $86,000

Includes striping, signage, and bicycle detection at signals.

8. Bicycle and Pedestrian Design Guidelines

This chapter identifies guidelines for the design of bikeways and bicycle parking facilities in the City of Pomona. The appropriate design of bicycling facilities is an integral component of encouraging the public to bicycle for commuting and recreational purposes. Good design affects the experience, enjoyment and comfort for bicyclists, and should ultimately provide the highest level of safety possible for all road and shared-use path users. The Pomona Active Transportation Plan envisions a 2-part bicycling network, one that accommodates utilitarian trips, such as those between home and work, and one that accommodates recreational trips.

The following design guidelines focus on treatments that prioritize bicycling and walking. As the city proceeds with future projects the recommendations will serve as a useful baseline, but may need to be modified to insure pedestrian needs are balanced with other goals. The recommendations in this report will need to undergo further analysis and design, which may lead to modification to the design of the projects.

Bikeway planning and design in California typically relies on the guidelines and design standards established by Caltrans and documented in "Chapter 1000: Bikeway Planning and Design" of the Highway Design Manual (California Department of Transportation, 2006). Chapter 1000 follows standards developed by the American Association of State Highway and Transportation Officials (AASHTO) and the Federal Highway Administration (FHWA) and identifies specific design standards for various conditions and bikeway-to-roadway relationships. These standards provide a good framework for future implementation, but depending on the circumstances may not always be feasible given specific constraints. Likewise, these standards can often be expanded. Whatever the case may be, local jurisdictions must be protected from liability concerns so most agencies adopt the Caltrans or AASHTO standards as a minimum. Caltrans standards provide for three distinct types of bikeway facilities, as generally described below.

Note: The final design of the improvements at specific locations must be left to the professional engineer who will be responsible for the design and who will be charged with exercising good engineering judgment that meets acceptable standard of care for pedestrian, bicycle, and vehicular traffic. This chapter is meant to guide the design process.

This chapter presents design guidelines for the following topics:

Class I Shared-Use Path
- Shared-Use Path Structures
- Crossing Treatments
- Path Amenities

Class II Bicycling Lanes
- Bicycling lanes next to Parallel Parking
- Bicycling lanes next to Angled Parking
- Bicycling lanes without Parking
- Bicycling lanes on Hills
- Bicycling lanes at Intersections
- Bicycling Lane Markings
- Treatments at Interchanges, Bridges and Tunnels
- Bicycle Loops and Detectors

Class III Bicycling Routes
- Bicycling Boulevards
- Share the Road Markings

Bicycling Signage
- Wayfinding/Destination Signage
- Signs for Shared Roadways

Maintenance Standards
- Utility Covers and Construction Plates

TYPES OF BICYCLE FACILITIES

Class I: Shared Use Path

These facilities provide a completely separate right-of-way and are designated for the exclusive use of bicycles and pedestrians with vehicles cross-flow minimized.

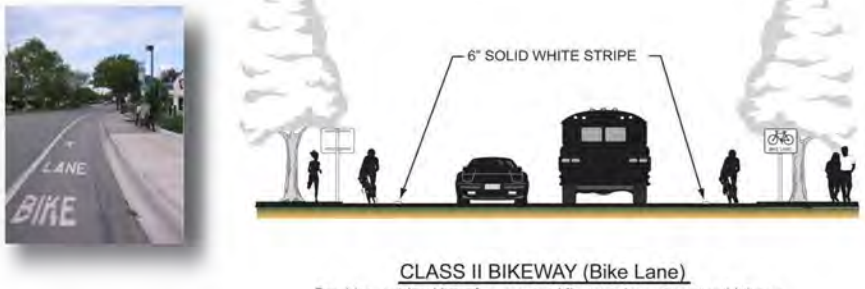
Class II: Bicycling Lane

Bicycling lanes provide a restricted right-of-way and are designated for the use of bicycles with a striped lane on a street or highway. Bicycling lanes are generally five feet wide. Vehicle parking and vehicle/pedestrian cross-flow are permitted. May be implemented with or without parking, width permitting.

Class III: Bicycling Route

These bikeways provide a right-of-way designated by signs or pavement markings for shared use with pedestrians or motor vehicles. May be implemented with or without parking, width permitting.

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.

Class I Shared Use Path

Class I bikeways (shown in **Figure 8-1**) are typically called bicycling paths, multi-use or shared use paths and are completely separated from roads by a buffer (five feet or more) or barriers. Cross traffic by motor vehicles should be minimized along bicycling paths to avoid conflicts. Bicycling paths can offer opportunities not provided by the road system by serving as both recreational areas and/or desirable commuter routes.

According to the AASHTO standards, 2-way bicycling paths should be 10 feet wide under most conditions, with a minimum 2-foot graded area on both sides. In constrained areas, an 8-foot path may be adequate. Bicycling paths are usually shared with pedestrians and if pedestrian use is expected to be significant, the path should be greater than 10 feet, preferably 12 feet wide.

Where possible, bicycling paths should have an adjacent 4-foot unpaved area to accommodate joggers. This jogging path should be placed on the side with the best view, such as adjacent to the waterfront or other vista. Where equestrians are expected, a separate facility should be provided.

Decomposed granite, which is a better running surface for preventing injuries, is the preferred surface type for side areas and jogging path, while asphaltic concrete or Portland cement concrete should be used for the bicycling path. A yellow centerline stripe may be used to separate opposite directions of travel. A centerline strip is particularly beneficial to bicycling commuters who may use unlighted bicycling paths after dark.

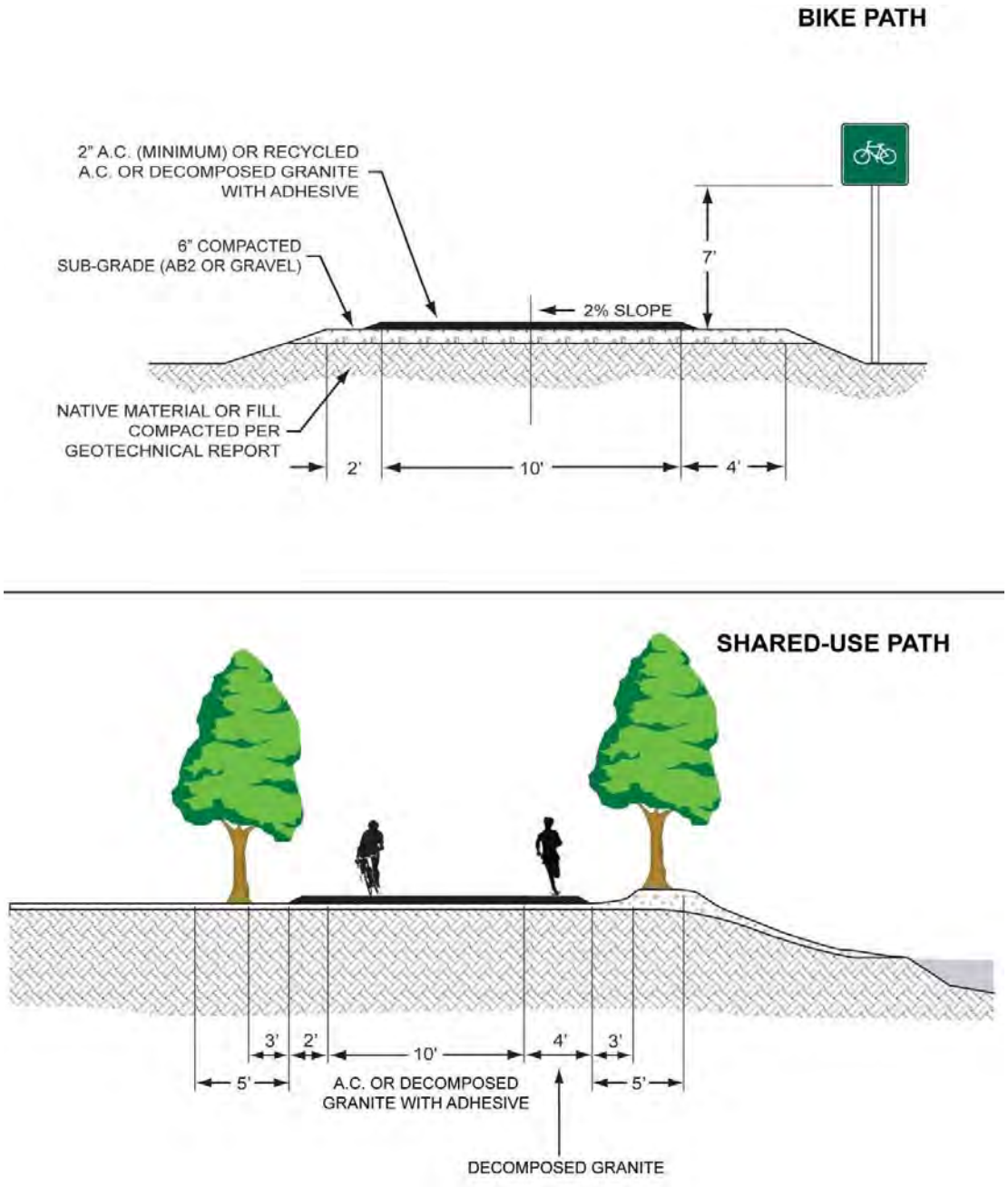
Sidewalks and meandering paths are usually not appropriate to serve as bicycling paths because they are primarily intended to serve pedestrians, generally do not meet Caltrans' design standards, and do not minimize motor vehicle cross flows. Where a shared use path is parallel and adjacent to a roadway, there should be a 5-foot or greater width separating the path from the edge of roadway, or a physical barrier of sufficient height should be installed.

TABLE 8-1 – STANDARDS FOR CLASS I FACILITIES

	AASHTO Standards	Preferred Standards**
Minimum Width	8.0′	10.0′
Vertical Clearance	8.0′	8.0′
Horizontal Clearance	2.0′	3.0′
Maximum Cross Slope	2.0%	2.0%

**The City of Pomona should decide what their preferred minimum standards are, and if they should exceed AASHTO standards.

Figure 8-1 – Typical Class I Path

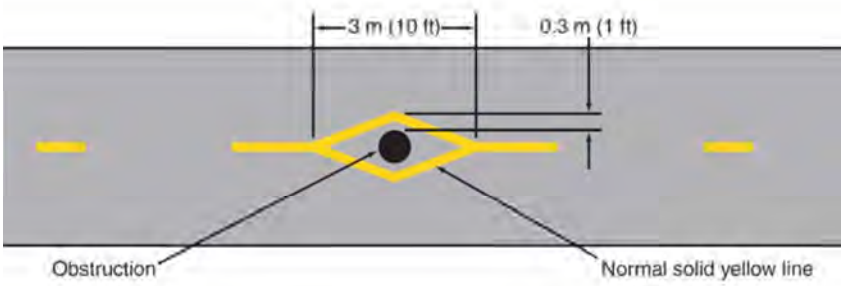


Shared Use Path Structures

The following sections present typical design features found on Class I facilities.

Bollards

Bollards can be placed at bicycling path access points to separate the path from motor vehicles and to warn and slow bicyclists as they approach street crossings. However, bollards are not recommended unless there is a demonstrated need for them (e.g., vehicle non-compliance). Thus, paths should be bollard-ready if the latter instance occurs.



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 (generally 5′ apart). A trail sign post can be incorporated into the bollard layout. The image to the right shows the recommended striping and placement for bollards on shared use paths. Careful consideration should be taken before installing bollards as they can become obstacles for bicycles and result in fixed-object collisions. Where need for bollards is a possibility, but uncertain, install bollard-ready infrastructure, but delay installation of the bollard until a need is demonstrated.

Split Trailway

New 2009 California MUTCD standards discourage the use of bollards if other options are practical. If feasible, the path should be split by direction to go around a small center landscape feature. Rather than one 8′ or 10′ trail, the trail would be split into two 4′ or 5′ paths. This feature not only narrows the trail and prevent vehicles from entering, but also introduces a lateral shift for cyclists, encouraging slower speeds in conflict zones.

Bridges

Bridges will be required wherever bicycling paths cross creeks and drainages. Crossings can utilize pre-fabricated bridges made from self-weathering steel with wood decks. Bridges should be a minimum of 8′ wide (between handrails) sand preferably as wide as the approaching trails. Openings between railings should be 4″ maximum. Railing height should be a minimum of 42″ high.

Fencing

Fencing may be necessary on some bicycling paths to prevent path users from trespassing on adjacent lands, or to protect the user from dangerous areas. In areas near railway lines, safety may be a concern. Fencing should maintain safety without compromising security. They should be tall enough to prevent trespassing, but they should maintain clear sight lights from the trail to the adjacent land uses. 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. However, if fencing is used, there must be at least 2' of lateral clearance from the edge of the bicycling path.

Curb Ramps

Where curbs are present, curb ramps should be provided and be as wide as the entire path.

Crossing Treatments

The following guidance is derived from the AASHTO *Guide to the Development of Bicycle Facilities,* the City of Seattle's *Bicycle Master Plan,* and the City of San Francisco's *Supplemental Bicycle Design Guidelines*.

Shared-use path crossings come in many configurations, with many variables: the number of roadway lanes to be crossed, divided or undivided roadways, number of approach legs, the speeds and volumes of traffic, and traffic controls that range from uncontrolled to yield, stop or signal controlled. Each intersection is unique and requires engineering judgment to determine the appropriate intersection treatment. The safe and convenient passage of all modes through the intersection is the primary design objective. Regardless of whether a pathway crosses a roadway at an existing roadway intersection or at a new midblock location, the principles that apply to general pedestrian safety at crossings (controlled and uncontrolled) are transferable to pathway intersection design.

Signs on Paths

Some jurisdictions have used STOP signs and BICYCLISTS MUST DISMOUNT signs to regulate bicycling traffic on shared-use paths. These signs are generally ineffective and result in frequent violations and disregard for other types of path signage.

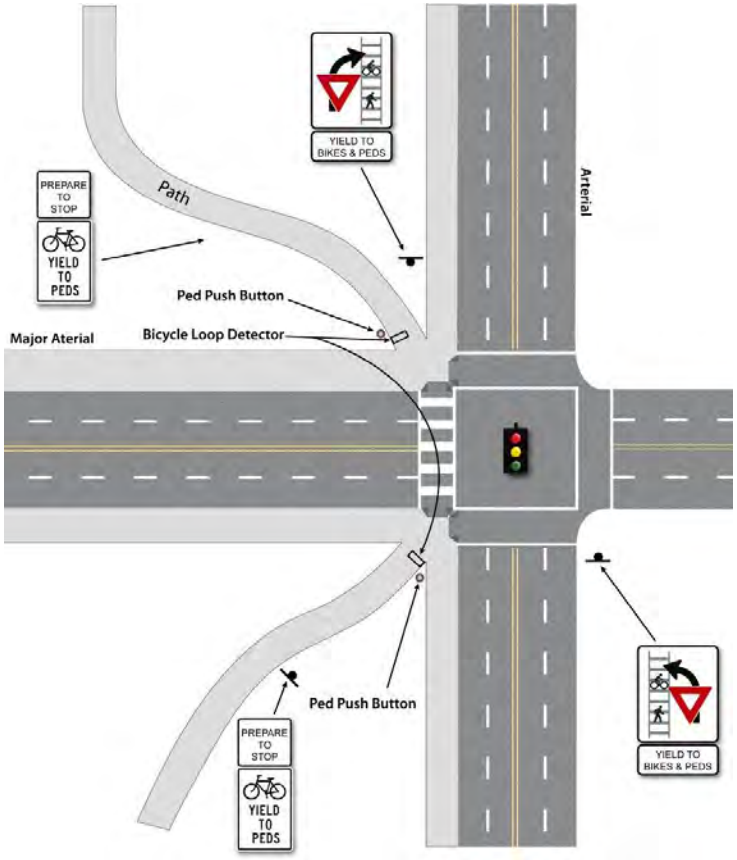
Signalized Intersections. When shared use paths cross roadways at intersections, the path should generally be assigned the same traffic control as the parallel roadway (i.e., if the adjacent roadway has a green signal, the path should also have a green/walk signal or if the parallel roadway is assigned the right-of-way with a stop or yield sign for the intersecting street, the path should also be given priority). At signalized intersections, if the parallel roadway has signals that are set to recall to green every cycle, the pedestrian signal heads for the path should generally be set to recall to walk. Countdown pedestrian signals should be installed at all signalized path crossings as signal heads are replaced. As required by the Manual on Uniform Traffic Control Devices, the walk signal for any path shall not conflict with a protected left- or right-turn interval. Bicyclists benefit from the safe passage that pedestrian signals provide by having a dedicated time during which to cross a roadway without having to yield to oncoming vehicle traffic.

Consideration should be given to providing a leading pedestrian interval at path crossings (i.e., three seconds of green/walk signal time are given to path users before any potentially conflicting motor vehicle movements are given a green signal). This allows pedestrians and bicyclists to have a head start into the roadway to become more visible to turning traffic.

Where the signals for the parallel roadway are actuated, the path crossing will also need to be actuated. For shared-use path crossings, the minimum WALK interval may be 9 to 12 seconds to accommodate increased flow. The USE PED SIGNAL sign should be used at shared-use path crossings at signalized intersections. Pedestrian pushbuttons should be located within easy reach of both pedestrians and bicyclists, who should not have to dismount to reach the pushbutton.

Figure 8-2 illustrates the preferred approach for a shared use path at a controlled intersection. Paths should cross at the intersection to encourage use of the intersection crossing and have path users in the location where they are most anticipated. In many cases, a path will be separated from a roadway by between 20 and 50 feet. Locating path crossings along these alignments (that is 20 to 50 feet away from the intersection) creates a condition where vehicles do not expect to encounter a path crossing and vehicles leaving the intersection are accelerating away from it when they cross the path crossing. For signalized trail crossing, an advance loop detector within 100 feet of the intersection should be considered, so bicyclists can approach the intersection slowly but without having to stop.

Figure 8-2 – Shared Use Path at Controlled Intersection



Unsignalized Intersections. At unsignalized or stop-controlled locations, an engineering study should be conducted to determine an appropriate way to control cross bicycle and pedestrian traffic. The following are general guidelines that can be used for these locations:

- If paths cross at intersections with all way stops, stop signs should be placed at each path approach.
- Consideration should be given to removing stop signs along continuous paths and their parallel roadways and controlling intersecting roadways with stop signs. An engineering study should be conducted before removing or adding any stop signs.
- At intersections with STOP signs controlling only one of the approaches, the trail should be assigned the same right-of-way as the parallel street. Stop signs should not be placed on the path approaches to the intersecting roadway if the parallel street has no stop signs.
- If the two streets have the same roadway classification, and the stop signs face the intersecting street that is parallel to the path, consideration should be given to reversing the stop sign

placement, giving the right-of-way to the path and the parallel street. An engineering study should be conducted before reversing the stop sign placement.

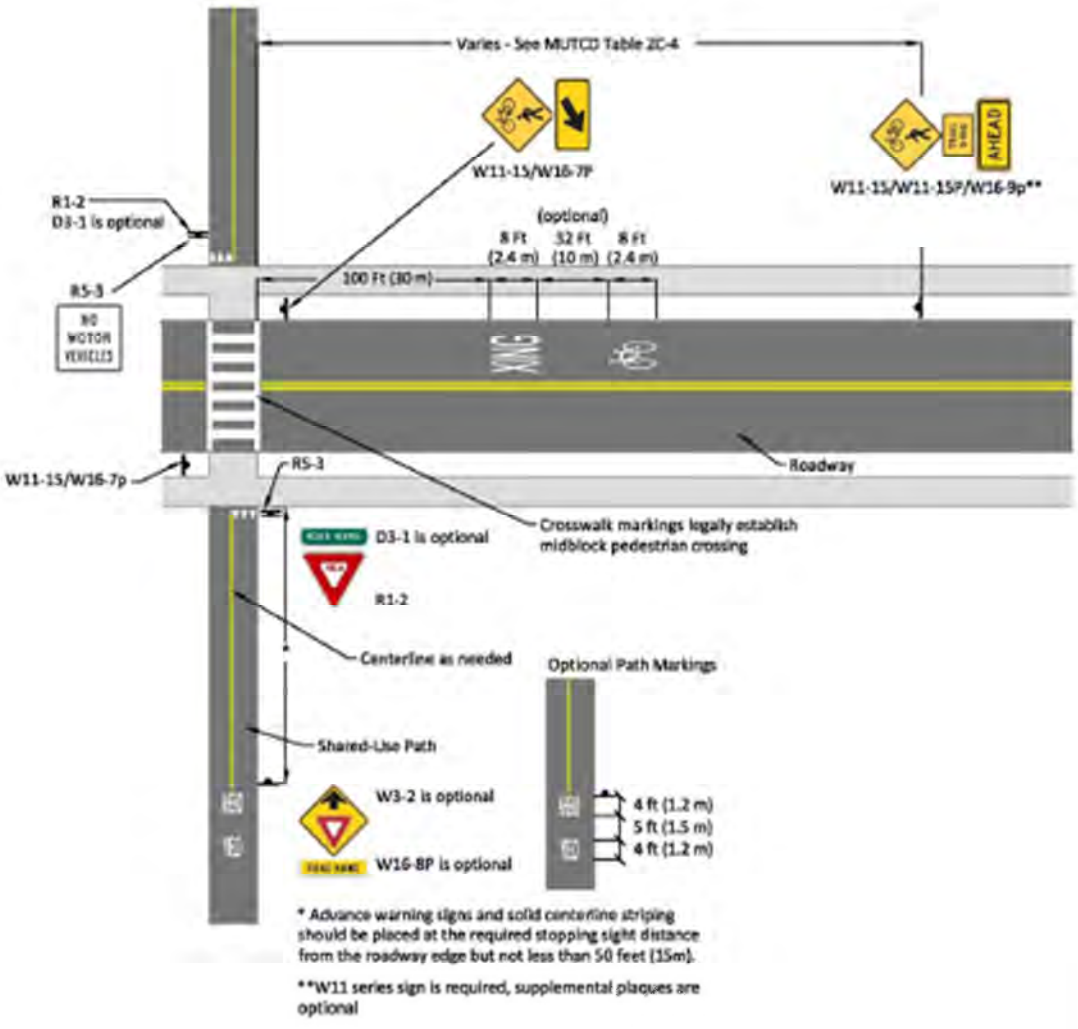
- The decision of whether to use a traffic signal at a mid-block crossing should be primarily based on the latest version of the MUTCD Pedestrian Signal Warrants.

At mid-block crossings, all path users (including bicyclists) should be included in calculating the "pedestrian volume" for the warrant procedure. While the CA MUTCD has not yet been updated with revised pedestrian-related signal warrants, the 2009 national MUTCD contains these revised warrants and should be used. When a path crossing meets the warrants, there may be other reasons why a signal is not necessary at the crossing. Where a decision has been made not to install a traffic signal at a mid-block path crossing, STOP or YIELD signs should be used to assign the right-of-way to the path or the roadway. The assignment of priority at a shared-use path/roadway intersection should be assigned with consideration of the relative importance of the path and the roadway; the relative volumes of path and roadway traffic; and the relative speeds of path and roadway users.

Signage at Shared Use Path Crossings

Signage should be provided in advance of shared use path crossings to alert drivers to pedestrians and bicyclists using the path. Typically, these signs would be placed at the crossing with a downward pointing arrow,

Figure 8-3 – Signage at Shared-Use Path



in advance of the crossing with an AHEAD warning, and in advance of intersections with roadways that are parallel to the path.

Bicycle Signal Heads

Bicycle signal heads permit an exclusive bicycling-only signal phase and movement at signalized intersections. This takes the form of a new signal head installed with red, amber and green bicycle indications. Bicycle signals can be actuated with bicycle sensitive loop detectors, video detection or push buttons. Bicycle signals are an approved traffic control device in California, described in Part 4 and 9 of the CAMUTCD. The City of Pomona may install bicycle signals at intersections with heavy bicycle volumes, on bicycling paths adjacent to intersections where heavy bicycle traffic in the crosswalk may conflict with turning vehicles, or at three-legged intersections where bikes may enter or exit a bicycling path at the intersection. Bicycle signal warrants could be considered when bicycle volumes exceed 50 per hour and vehicle volumes are greater than 1,000 vehicles per hour, or in locations that have a history of bicyclist-involved collisions (>2 in one calendar year), or in locations where a multi-use path intersects a roadway.

Shared-Use Path Amenities

Furnishings along a shared-use path should be concentrated at specific points to form gathering nodes. These nodes occur at intersections between different path types, special viewpoints, or at distinctive landscape features. Shared-use path support facilities consist of staging areas, seating and tables, weather-protection structures, drinking fountains, waste receptacles, fencing, bicycle racks, interpretive and directional signage and restrooms.

Staging Areas

Staging areas should be provided at path entrances. These areas should include basic information such as directional information and signage, bicycle parking, seating and waste receptacles. Restrooms, water fountains, weather structures should be provided where practical and feasible. At path entrances where a substantial number of users are likely to drive, a parking lot should be provided; however, vehicle parking should be minimized to encourage non-motorized access to recreational facilities.

Rest Areas

Rest areas are portions of paths that are wide enough to provide wheelchair users and others a place to rest while on trails without blocking continuing traffic. Rest areas are more effective when placed at intermediate points, scenic lookouts, or near other trail amenities. Most rest areas will have seating, shade, a place to rest bicycles, and waste receptacles. On longer paths, restrooms and/or water fountains may be desirable where feasible. The California State Parks Guidelines calls for rest areas every 200' on

outdoor recreational routes with grades of no steeper than 8.3%. Accessible paths at steeper grades may require resting areas at greater frequency.

Seating

Benches provide people of all ages and abilities a place to site and rest along trails. Seating should be placed away from the path, at least 3' from the trail edge, to allow room for people to sit with outstretched legs. An area adjacent to the bench should be able to accommodate a wheelchair.

Waste

Trash receptacles should be installed along bicycling paths at regular intervals, as well as at rest areas, path entrances, and seating areas, to encourage proper waste disposal and discourage littering.

Class II Bicycling Lanes

This section includes guidelines for Class II bicycling lanes along roadways and at intersections. Most bicyclists benefit by having a lane separate from motor vehicle traffic, and bicycling lanes are typically used on streets with higher traffic volumes or greater speeds.

Standards for Class II Facilities

The figures on the following pages illustrate the preferred widths for bicycling lanes in the following situations:

- **Figure 8-4**. Next to Parallel Parking
- **Figure 8-5**. Next to Back In Angled Parking
- **Figure 8-6**. Without Parking
- **Figure 8-7**. Buffered Bicycling Lane

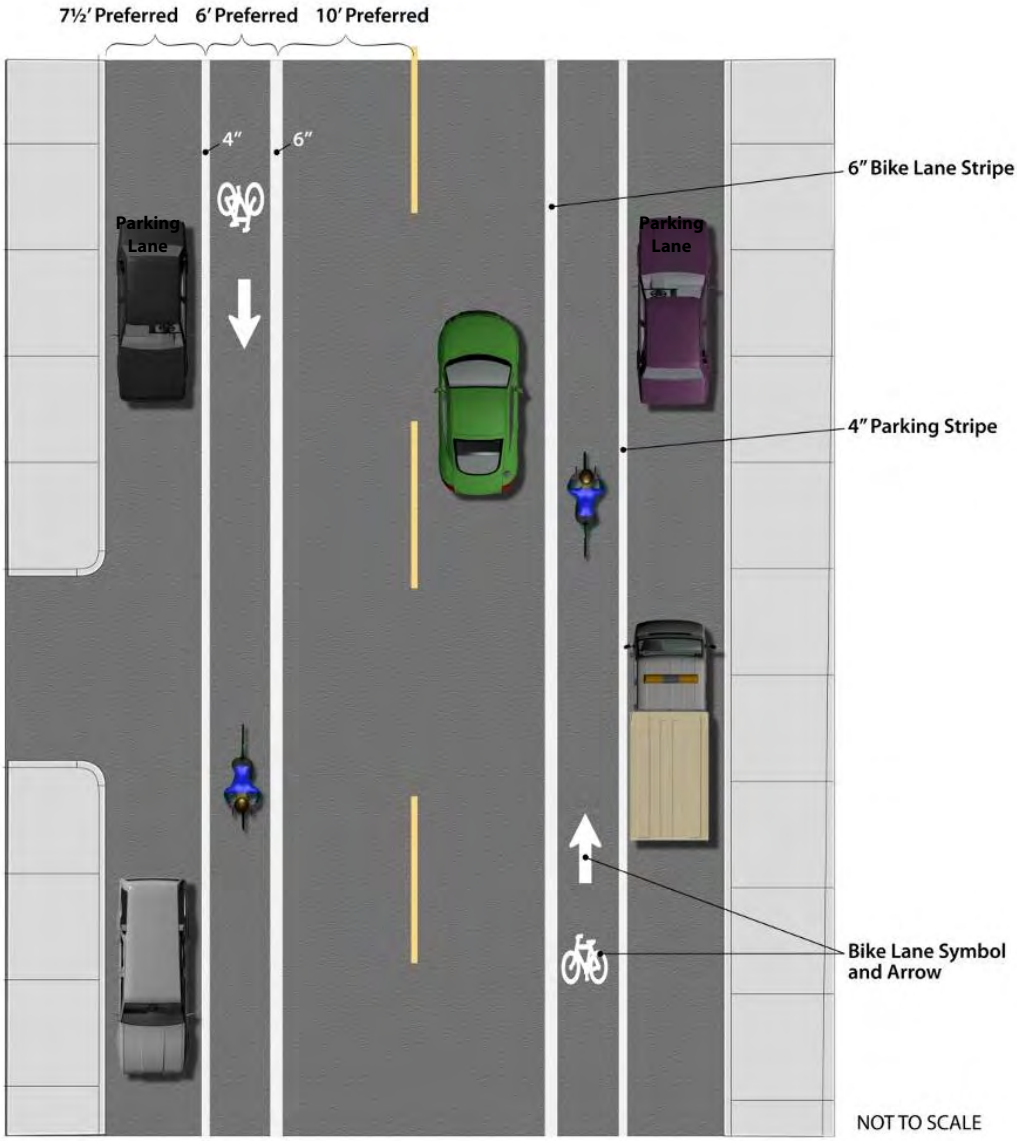
Standard Bicycling Lane

Bicycling lanes should be designed to meet Caltrans standards, which require a minimum width of five feet. The preferred bicycling lane width is six feet. The preferred vehicle travel lane width is 10 feet; however, AC Transit prefers that any roadway with bus routes have 11-foot travel lanes. Signs that say BICYCLISTS WRONG WAY may be used on the back of bicycling lane signs or on separate posts to discourage wrong way riding.

Shared Bicycling/Parking Lane

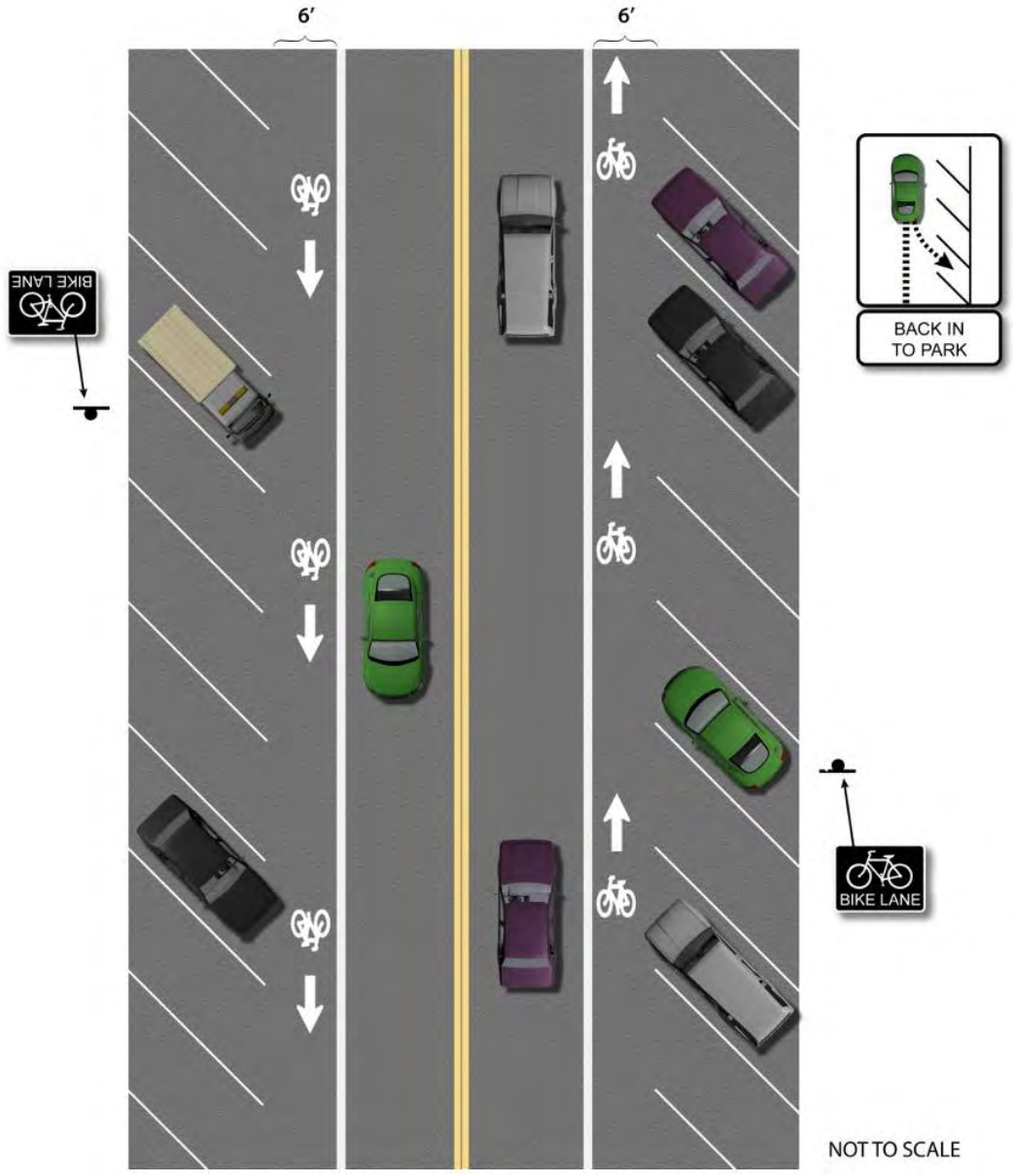
If a bicycling lane is shared with a parking lane, the combined lane should be a minimum of 12.5 feet, with 13 feet desirable. This minimum combined lane should be striped with a 6 foot bicycling lane and 7-foot parking lane. The optimum combined lane should be a 6-foot bicycling lane and a 7-foot parking lane.

Figure 8-4 – Bicycling Lanes Adjacent to Parallel Parking



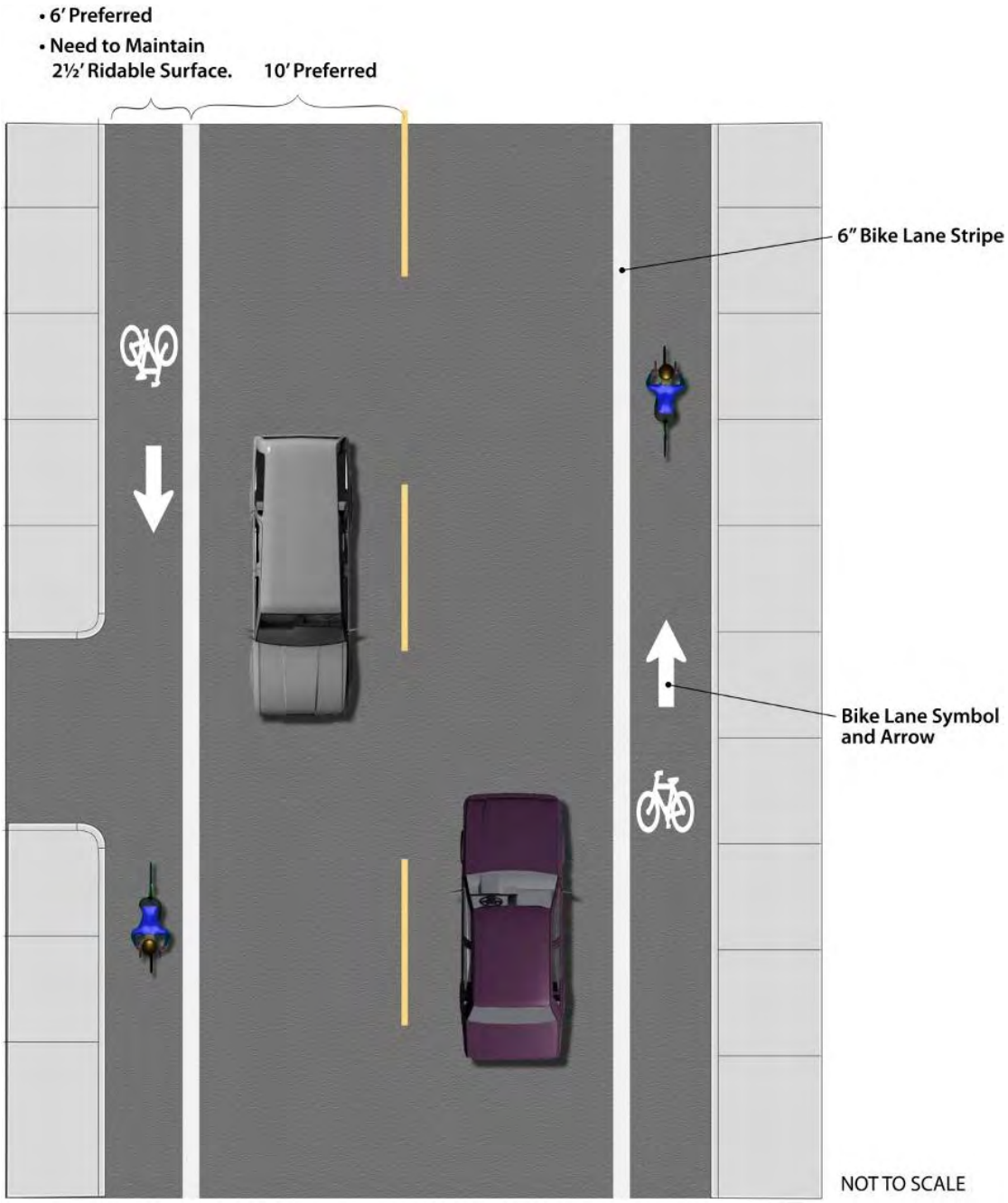
Note: Five feet is minimum bike lane width per 2012 CAMUTCD. Four foot bike lanes may be used on a section without curb/gutter or on segments to the left of right-turn lanes.

Figure 8-5 – Bicycling Lanes Adjacent to Back-In Angled Parking



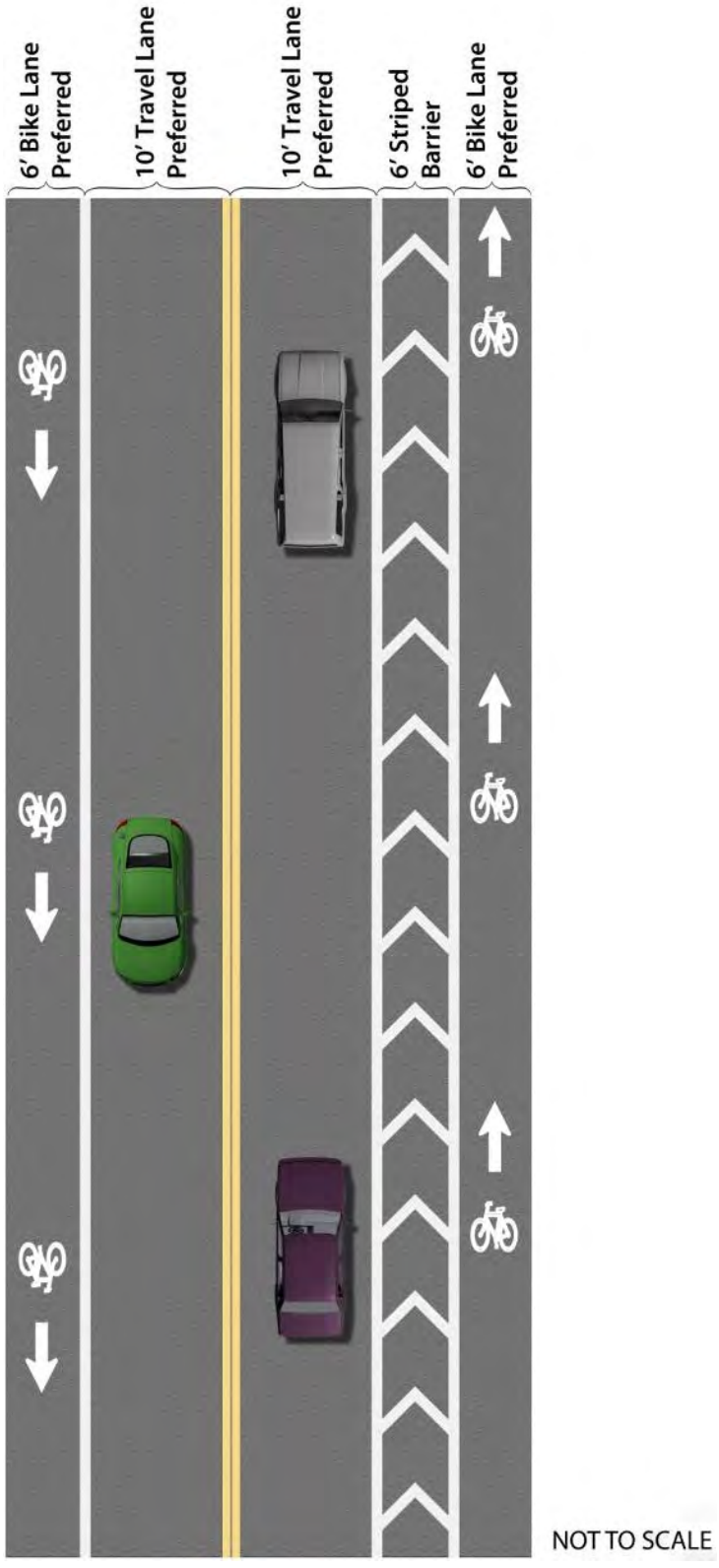
Note: Five feet is minimum bike lane width per 2012 CAMUTCD. Four foot bike lanes may be used on a section without curb/gutter or on segments to the left of right-turn lanes.

Figure 8-6 – Bicycling Lanes without Parking



Note: Five feet is minimum bike lane width per 2012 CAMUTCD. Four foot bike lanes may be used on a section without curb/gutter or on segments to the left of right-turn lanes.

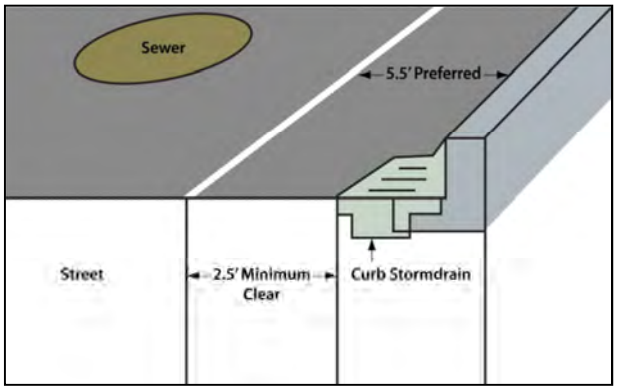
Figure 8-7 – Buffered Bicycling Lanes



Note: Five feet is minimum bike lane width per 2012 CAMUTCD. Four foot bike lanes may be used on a section without curb/gutter or on segments to the left of right-turn lanes.

Bicycling Lane without Parking

In places where there is no on-street parking, the 6-foot preferred width applies. In exceptional circumstances where no other reasonable options exist or retrofit situations, a 4-foot minimum is allowed as long as there is no on-street parking. A 5-foot wide bike lane should be implemented on a curbside lane with a gutter.



Gutter Pans and Bicycling Lanes. Where drainage or other obstructions constrict clearance between the vehicle travel lane and storm drains, designers should take care to maintain a 2.5-foot clear longitudinal surface, free from drainage grates and other obstructions in order to give the cyclist adequate width to ride. It is preferable not to consider the gutter pan as clear surface.

Bicycling Lanes on Hills

In most cases, bicycling lanes should be provided on both sides of a 2-way street; however, in cases where roadways have steep grades, a bicycling lane in the uphill direction and shared lane markings (sharrows) in the downhill direction would be considered acceptable (AASHTO, 2010), as shown in **Figure 8-8**. On narrower roadways, sharrows may be placed in the center of the lane to discourage vehicles from passing cyclists. BIKES ALLOWED FULL USE OF LANE signage may be appropriate on downhill segments. Posted speed limits of 25 mph or lower are preferred.

Bicycling Lanes at Intersections

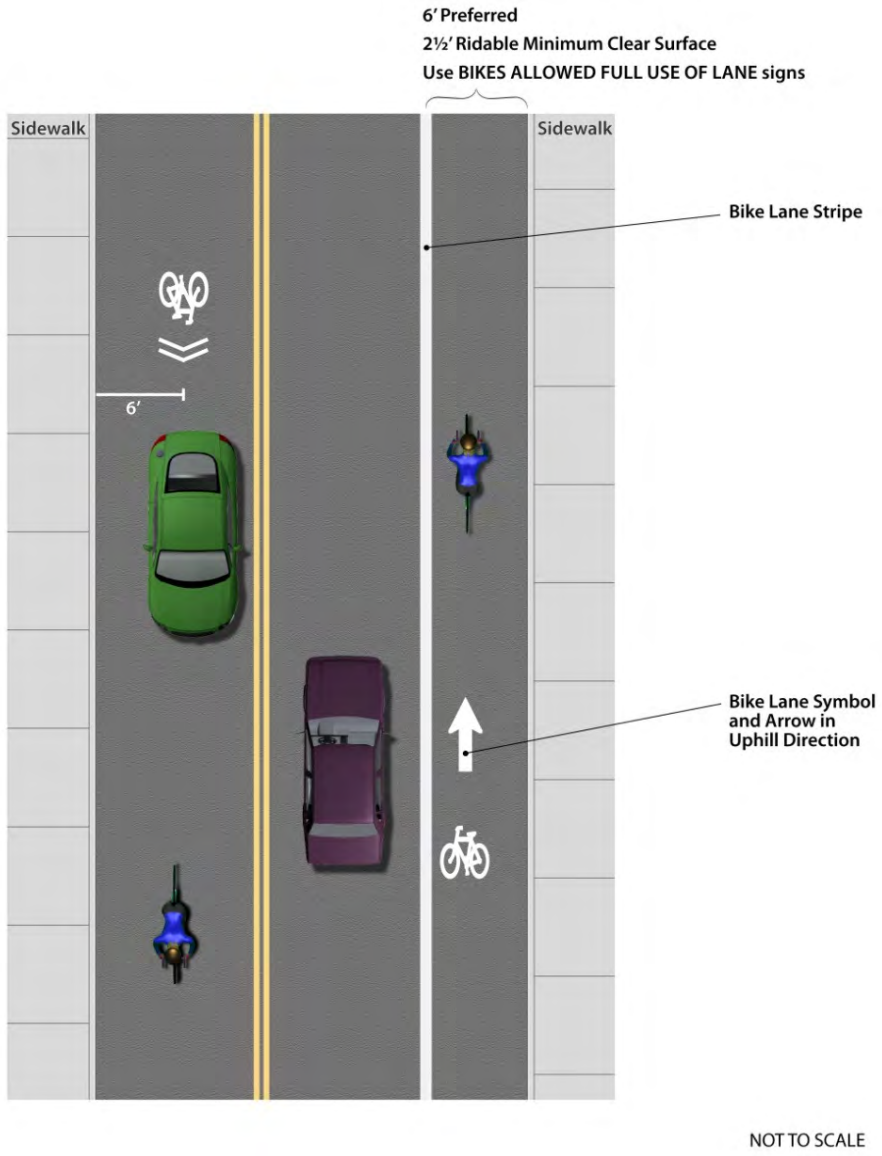
Nationally, the majority of collisions between motorists and bicyclists occur at intersections. While design guidance for bicycling lanes acknowledges that intersections are often constrained by the desire for addition turn lanes for autos and allows engineers to drop bicycling lanes at intersections, this practice is not recommended. There are several engineering treatments to significantly reduce conflicts at intersections.

On the Horizon: Bicycle Boxes

Bicycle boxes are used at signalized intersections to create a dedicated space for cyclists while waiting for a green light. They offer the cyclist a "head start" and allow cyclists to position themselves for various movements (left turns, for instance). They also allow cyclists to avoid conflicts with right-turning vehicles.

Bike boxes have been used in New York, Tucson (AZ), Portland, Eugene, and recently in San Francisco. Bike boxes work best at locations where they are self-enforced, that is, where there is a cyclist in the bike box during the red phase for a majority of the time. Therefore, a good baseline for a bike box would be a location with 90 to 120 bicycles or more per hour.

Figure 8-8 – Climbing Lanes



Caltrans provides recommended intersection treatments in Chapter 1000 of the Highway Design Manual including bicycling lane "pockets" and loop detectors. Bicycling lane pockets between right-turn lanes and through lanes should be provided where available lane width allows. Where there is inadequate space for a separate bicycling lane and right-turn lane, the designer should consider the use of a combined lane, shown in the figure on the following page. The City of Eugene, Oregon evaluated this design and concluded that it was easy for cyclists to use. A majority of the cyclists using the facility felt that it was no different from a standard right-turn lane and bicycling lane.[2] An alternate treatment is a sharrow, or "shared right-of-way" marking, in the through lane adjacent to the right-turn lane.

Figure 8-9 shows the appropriate location and use of loop detector stencils at intersections and typical striping and lane configurations for bicycling lanes and loop detectors at a multi-lane intersection

Figure 8-10 presents several options for the treatment of Class II lanes approaching intersections with right-turn lanes.

Bicycling Lane Markings

Pavement stencils should be reflectorized and be capable of maintaining an appropriate skid resistance under rainy or wet conditions to maximize safety for bicyclists. The minimum coefficient of friction should be 0.30.

The Caltrans standard for placement of bicycling lane stencils states that markings should be on the far side of each intersection and at other locations as desired. Generally, bicycling lane markings should be provided at transition points, particularly where the bicycling lane disappears and reappears, as it transitions from curb side to the left side of the right-turn lane. Otherwise, place them at least every 500 feet or once per block. Symbols shown in the figures are for illustration purposes and should not be used as spacing or placement guidelines

[2] *Evaluation of a Combined Bicycling Lane/Right Turn Lane in Eugene, Oregon,* Federal Highway Administration, 2000

Figure 8-9 – Bicycling Lanes adjacent to Parallel Parking and at Intersections

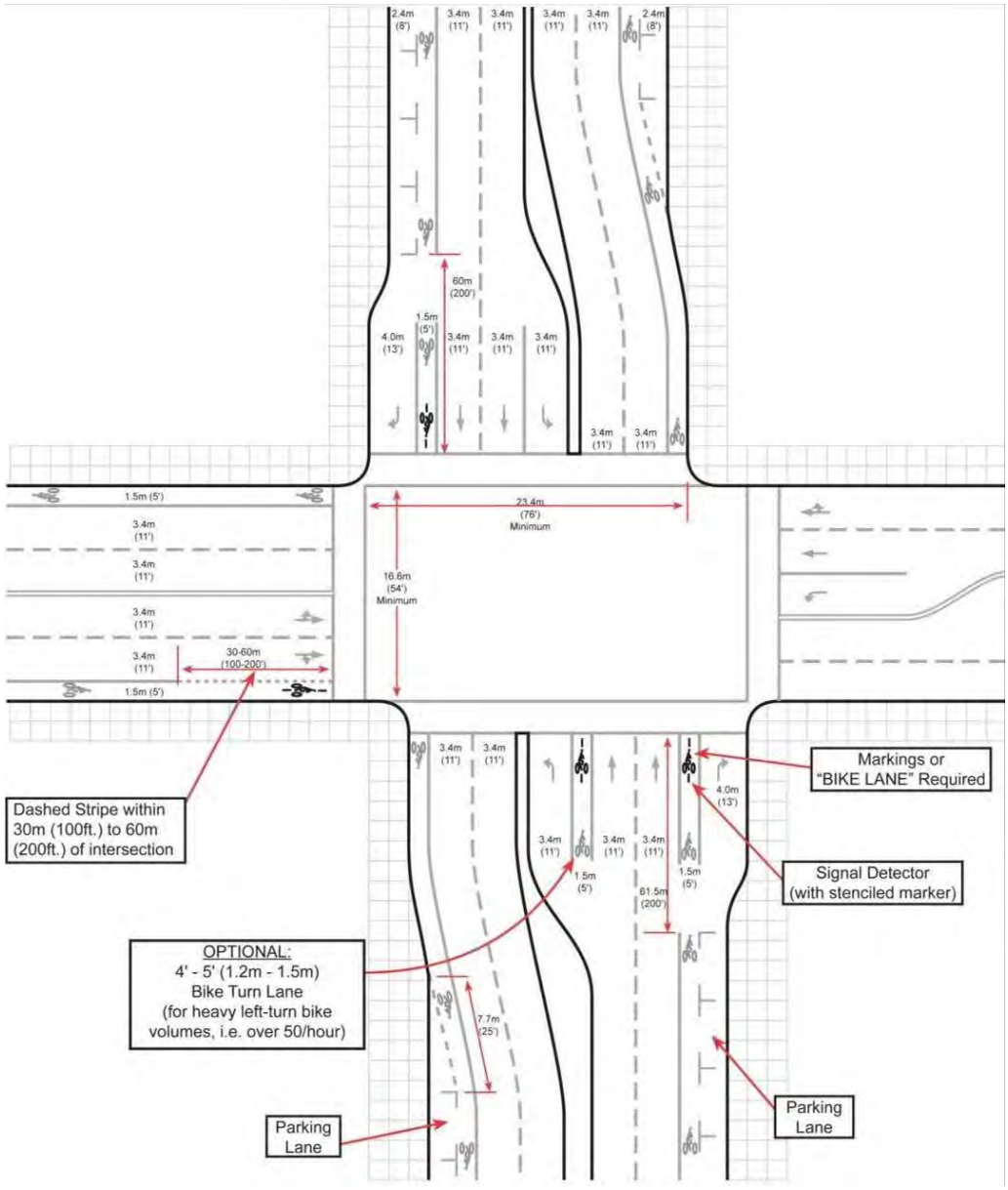
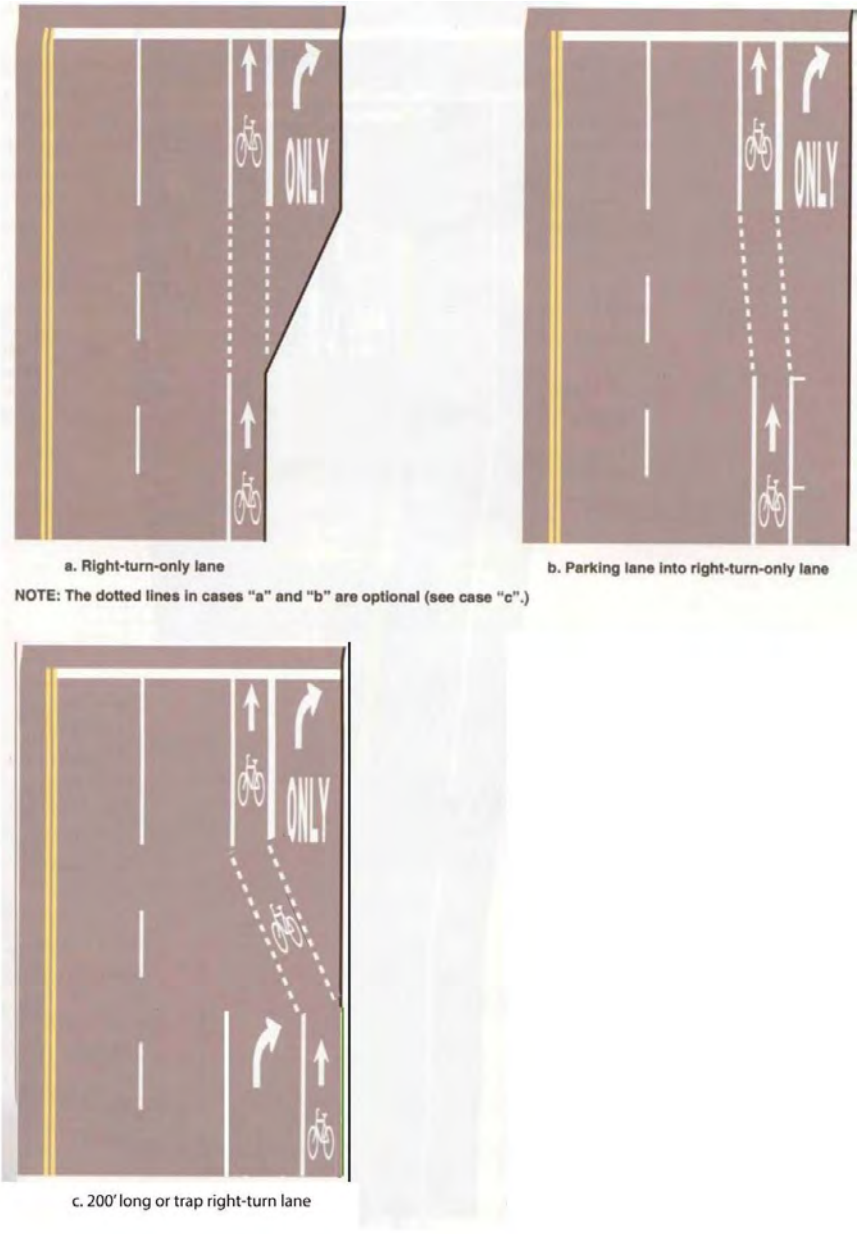


Figure 8-10 – Bicycling Lanes at Right Turns



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. 200' long or trap right-turn lane

Colored Bicycling Lanes. Colored bicycling lanes can be used in high-conflict areas to alert motorists to the presence of bicyclists and bicycling lanes. Cities including Portland, Oregon and New York City have successfully experimented with colored bicycling lanes at highway interchanges and locations where drivers have otherwise encroached on bicycling lanes. These lanes can be painted or treated with thermoplastic. The City of Pomona may consider installing a trial colored bicycling lane before expanding the use of the treatment throughout the City. If the City were to use colored bicycling lanes, it should consider requesting formal permission to experiment from the Federal Highway Administration.

Image: Green Bike Lane in Seattle, WA

Skip-Stripe. At intersections with moderate to high bicycle volumes, or at intersections where bicyclists may need to reposition themselves to continue on the bicycling lane, it may be advisable to stripe the bicycling lane through the intersection using dashed lines. This "skip-striping" directs cyclists to the bicycling lane and increases the visibility of cyclists to motorists traveling through the intersection. To identify the markings are for bicyclists, the City of Pomona may consider striping chevrons or sharrows through the intersection as well.

On the Horizon: Separated Bikeways

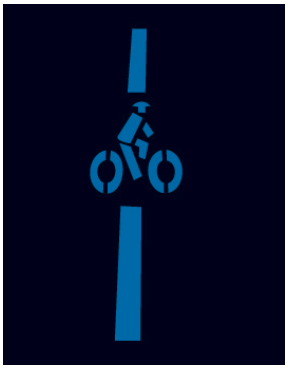
Separated on-street bike lanes provide a buffer between bikes and cars. These facilities are useful along streets with moderate to high bicycle volumes and relatively few driveways or intersections. New York City has recently and extensively used separated on-street bikeways to improve bicycling conditions on several key corridors.

The New York Department of Transportation has experimented with two forms of separated bikeways. The first physically separates the bike lane from vehicle traffic and the bike lane is positioned between the sidewalk and the parking lane. At intersections, bikes receive a signal that allows cyclists to proceed without conflicting with turning vehicles. The second treatment positions the bike lane between the travel lane and the parking lane; however, a striped painted median separates the travel lane from the bike lane. The New York Street Design Manual recommends allowing at least 8' of space to accommodate the separated bike lane and the adjacent separation marking or structure.

Images: (left) 9th Avenue, New York City (RL Layman); (right) Greenwich Street (L Alter)

Treatments at Highway Interchanges. Bicycling and walking routes at highway interchanges require special treatment to ensure the safety and comfort for all road users. Fast moving traffic, highway on and off-ramps and wide travel lanes make interchanges difficult areas for bicyclists and pedestrians to navigate. The guidance below can be used for retrofit projects or new interchange designs:

- Travel lanes should be reduced from 12 feet to 10 or 11 feet to slow motor vehicle speeds and provide additional space for bicycling lanes and sidewalks
- Class II bicycling lanes should be striped continuously across overpasses and underpasses wherever feasible
- Minimize distances in which bicyclists are required to travel between two moving traffic lanes
- Use skip stripes to delineate bicycling path travel through conflict zones
- Consider colored bicycling lanes in conflict areas
- Avoid high-speed, uncontrolled movements. A tight diamond configuration with square off and on-ramps to encourage slower motor vehicle speeds and is recommended
- Avoid multiple right-turn lanes on cross-street. Dedicated right-turn lanes create a conflict for cyclists traveling through an intersection that must cross the right-turn lane to continue to ride straight. Where possible, retain single right-turn lanes, even if greater than 200 feet. Where possible, avoid right-turn lanes longer than 200 feet.



Treatments at Bridges and Tunnels. Bicycling connections to bridges and tunnels require special treatment to ensure the safety and comfort for all road users. Fast moving traffic, transitions between the roadway and the structure and wide travel lanes often make approaches to bridges and tunnels difficult areas for bicyclists and pedestrians to navigate. Appropriate measures to improve bicycling safety at bridge and tunnel approaches include:

- Reduce travel lanes from 12 feet to 10 or 11 feet to slow motor vehicle speeds and provide additional space for bicycling lanes and sidewalks
- Stripe Class II bicycling lanes continuously across bridges and through tunnels wherever feasible
- Minimize distances in which bicyclists are required to travel between two moving traffic lanes
- Use skip stripes to delineate bicycling path travel through conflict zones
- Consider colored bicycling lanes in conflict areas

Bicycle Loop Detectors and Push Buttons. As new signals are installed or major updates occur to existing signalized locations, bicycle loop detectors should be installed on the bikeway system at the stop bar for all actuated movements of the signal. It is suggested that loop detectors be installed in the approach bicycling lane 100 feet in advance of the intersection as well as at the intersection itself. The upstream loop should not be used when it would be triggered by right-turning vehicles. When the upstream loop is triggered, the green time should be extended for the cyclist to reach the loop at the stop bar, at which point the signal should allow the cyclist to clear the intersection. The time that a bicyclist needs to cross an intersection is longer than the time needed for motorist, but shorter than the time needed for pedestrians. The AASHTO Guide for the Development of Bicycle Facilities includes detailed equations for bicycle signal timing. In general, while the normal yellow interval is usually adequate for bikes, an adjustment to the minimum green should be considered.

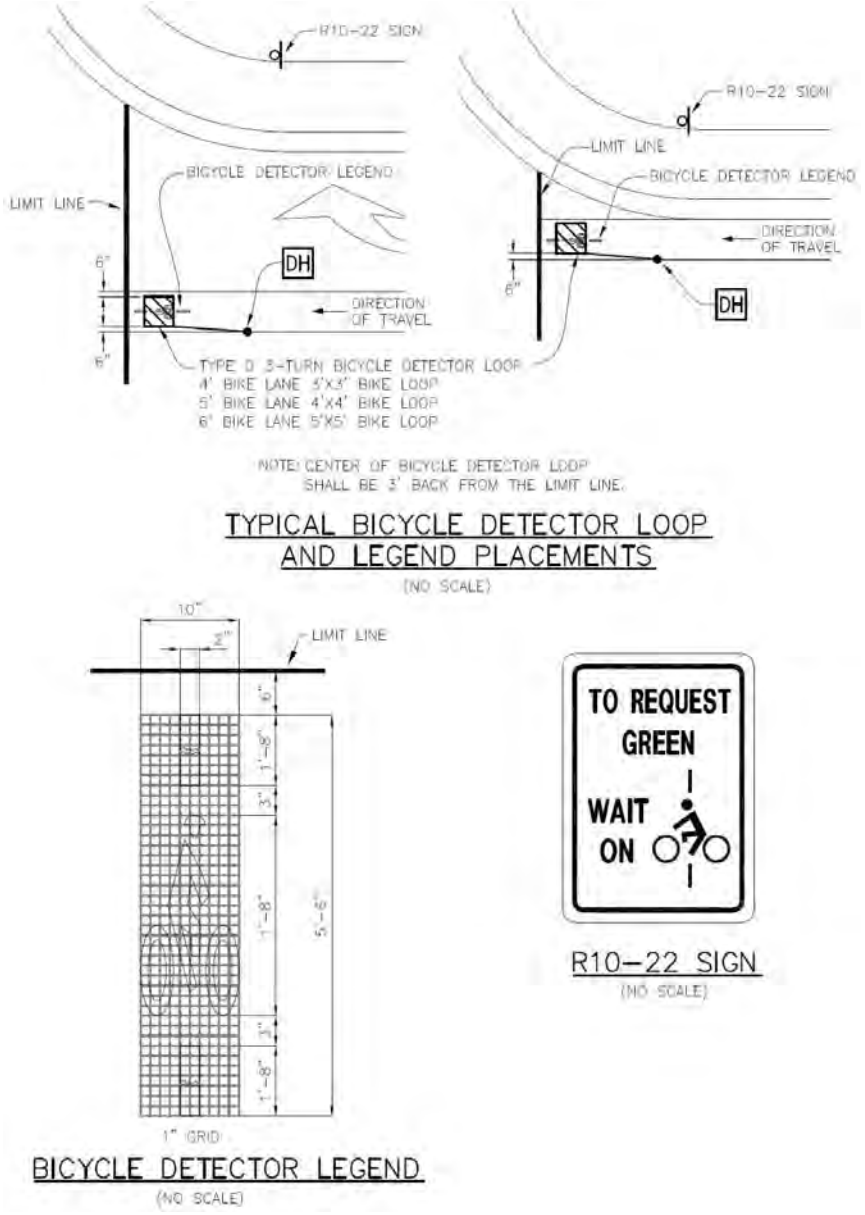
Stencils indicating the loop detector should be marked on the roadway at the intersection where a bicyclist may not be positioned correctly over a loop, as shown in **Figure 8-11**. The figure on the following page shows the appropriate location and use of loop detector stencils at intersections.

Push buttons are appropriate when other methods of detection are not feasible, particularly at narrow tunnels or where multi-use paths cross signalized intersections. A bicycle push button/pad/bar is similar to those used for pedestrians, but installed in a location most convenient for bicycles and actuates a signal timing most appropriate for bicyclists. The sign plate located above the push button/pad/bar indicates that it is for use by bicyclists. The larger the surface of the button, the easier it is for cyclists to use, thus a push pad is preferential to a push button, and a push bar is preferential to a push pad, as it can be actuated without removing one's hands from the handlebars. Advantages of the push button are that it is typically less expensive than other means of detection, and it allows for different signal timing for different user needs. The disadvantages of the pushbutton are that the location of the pushbutton usually does not allow the cyclist to prepare for through or left-turning movements at the intersection, and that it forces the bicyclist to stop completely in order to actuate the signal.

Caltrans Policy Directive 09-06

Caltrans recently modified its policy on bicycle detection at new and modified approaches to traffic-actuated signals. The California MUTCD was amended to require that in-pavement bike detectors or push buttons be placed on approaches to signalized intersections. If more than 50 percent of limit line vehicle detectors need to be replaced, then an entire intersection should be upgraded so that every lane has limit line detection. The signal timing guidance was also updated to reflect a bike speed of 10 mph (14.7 ft/sec) with 6 seconds of startup time based on current research.

Figure 8-11 – Bicycle Loop Detector



Class III Bicycling Routes

Class III bicycling routes are intended to provide continuity throughout a bikeway network and are primarily identified with signage. Bicycling routes can be used to connect discontinuous segments of a Class I or Class II bikeway. Bicycling routes are shared facilities either with motorists on roadways or with pedestrians on sidewalks (not desirable).

Table 8-2 – Recommended Guidelines for Class III Facilities

Curb Lane Width (in feet)	Average Daily Traffic (ADT)	Travel Speed
12′ (arterial); 11′ (collector); no minimum on local street	Under 5,000 vehicles	Under 25 mph
14′	5,000 – 20,000	25 – 35 mph
15′	Over 20,000	Over 35 mph

Source: Fehr & Peers

Minimum widths for bicycling routes are not presented in the Highway Design Manual, as the acceptable width is dependent on many factors. **Table 8-2** presents recommended average daily traffic (ADT) and speed thresholds for bicycling routes.

Share the Road Markings

Share the Road Markings, or "sharrows" are a newer design application used in California, and have been tentatively approved for the 2009 update to the CA MUTCD Standards. Sharrows are on-street stencils that reinforce that bicyclists are legitimate road users, and are helpful connectors between Class I or Class II facilities when roadway widths are too narrow for a bicycling lane. Sharrows are suitable for streets with posted speeds below 35 mph, preferably with on-street parking.

Another potential application for sharrows is in high-conflict zones. Some cities are experimenting with colored bicycling lanes for this purpose; however, sharrows are more immediately understood by motorists and cyclists as a bicycling facility. New York is the latest American city to use sharrows this way, although they have long been used in Paris to raise the visibility of cyclists through complex intersections and to clearly indicate the best path of travel for cyclists.

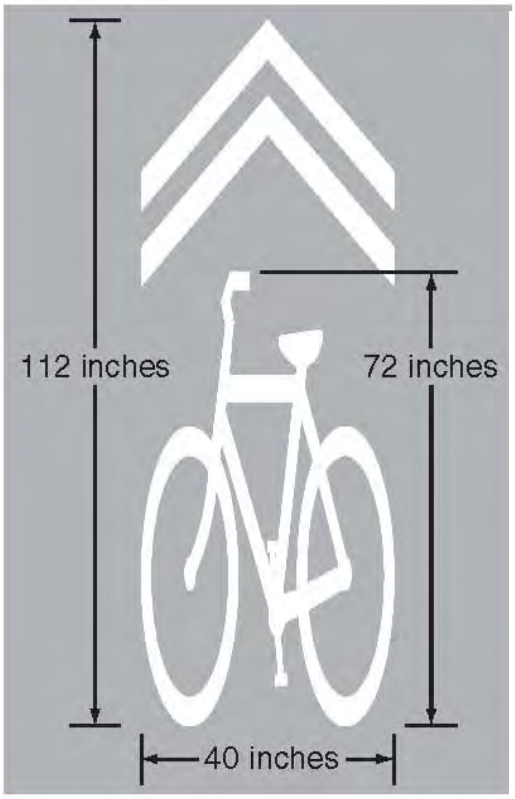
Guidance for Sharrow Placement **(**from Section 9C.07 of the 2009 MUTCD)

If used in a shared lane with on-street parallel parking, shared lane markings should be placed so that the centers of the markings are at least 11 feet from the face of the curb, or from the edge of the pavement where there is no curb.

If used on a street without on-street parking that has an outside travel lane that is less than 14 feet wide, the centers of the shared lane markings should be at least four feet from the face of the curb, or from the edge of the pavement where there is no curb. If used, the shared lane marking should be placed immediately after an intersection and spaced at intervals not greater than 250 feet thereafter.

Option: A "BICYCLES MAY USE FULL LANE" sign that may be used in addition to the shared lane marking to inform road users that bicyclists might occupy the travel lane is shown in **Figure 8-12** along with other shared lane markings guidance. **Figure 8-13** illustrates the typical placement of sharrow markings.

Figure 8-12 – 2009 MUTCD and Caltrans Shared Roadway Marking Guidance for Installation



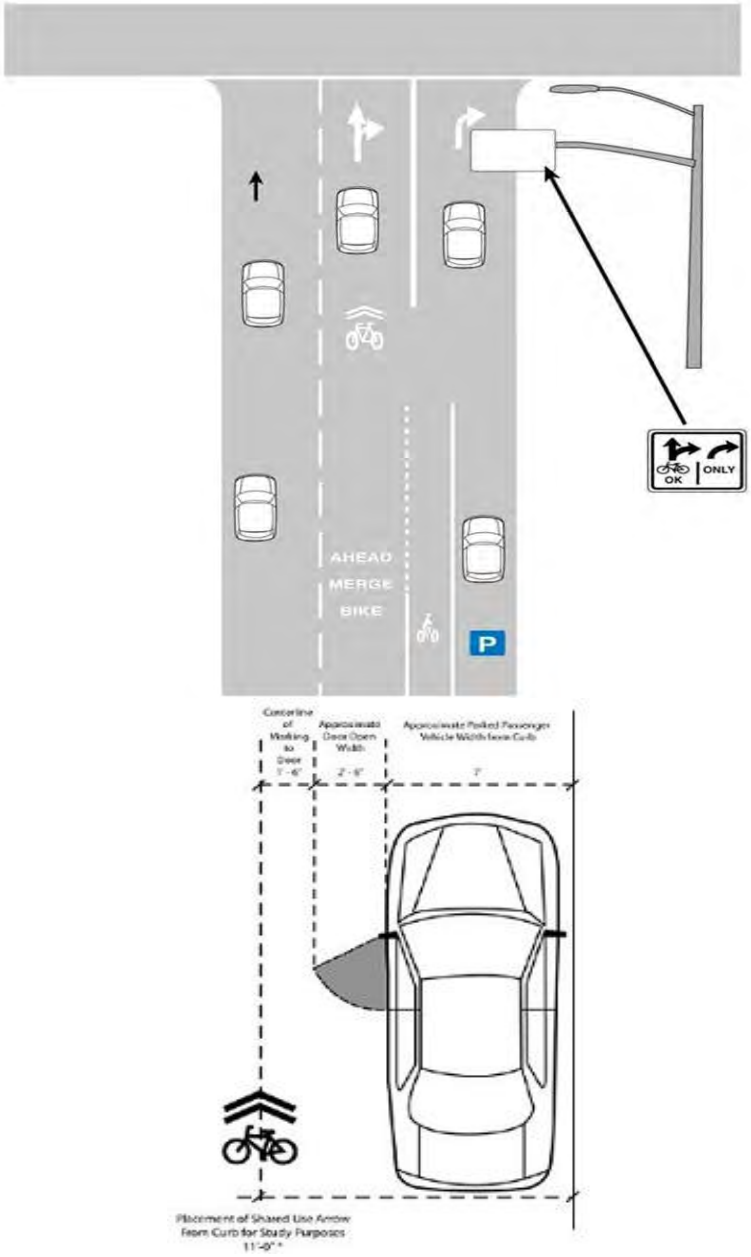
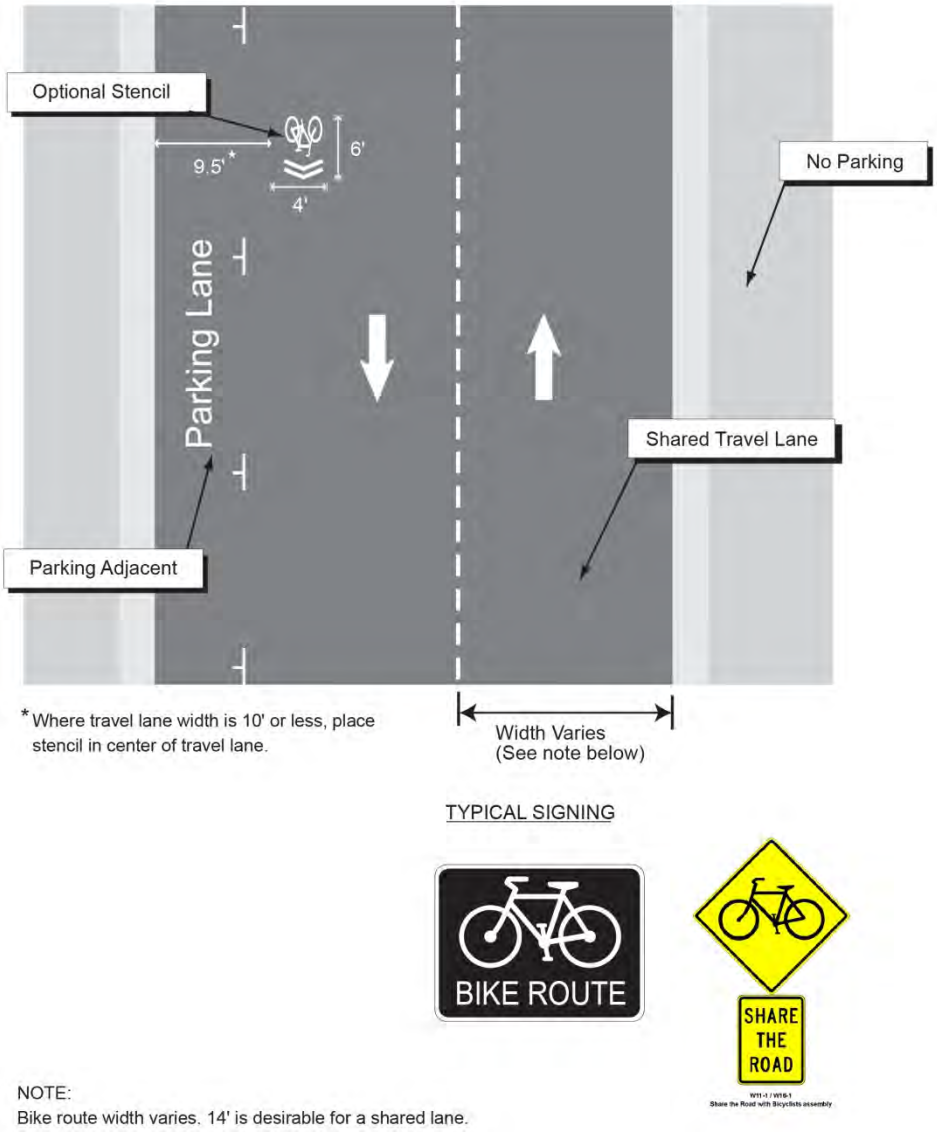


Figure 8-13 – Typical Class III Bicycling Routes



Bicycling Boulevards

An additional type of Class III facility is the Bicycling Boulevard. Typically, bicycling boulevards are on low-volume streets adjacent to higher volume arterials where bicycles have priority and have a relatively stop-free, low-conflict route to their destinations. Traffic calming treatments such as traffic circles, chokers and medians are often used on bicycling boulevards to calm traffic.

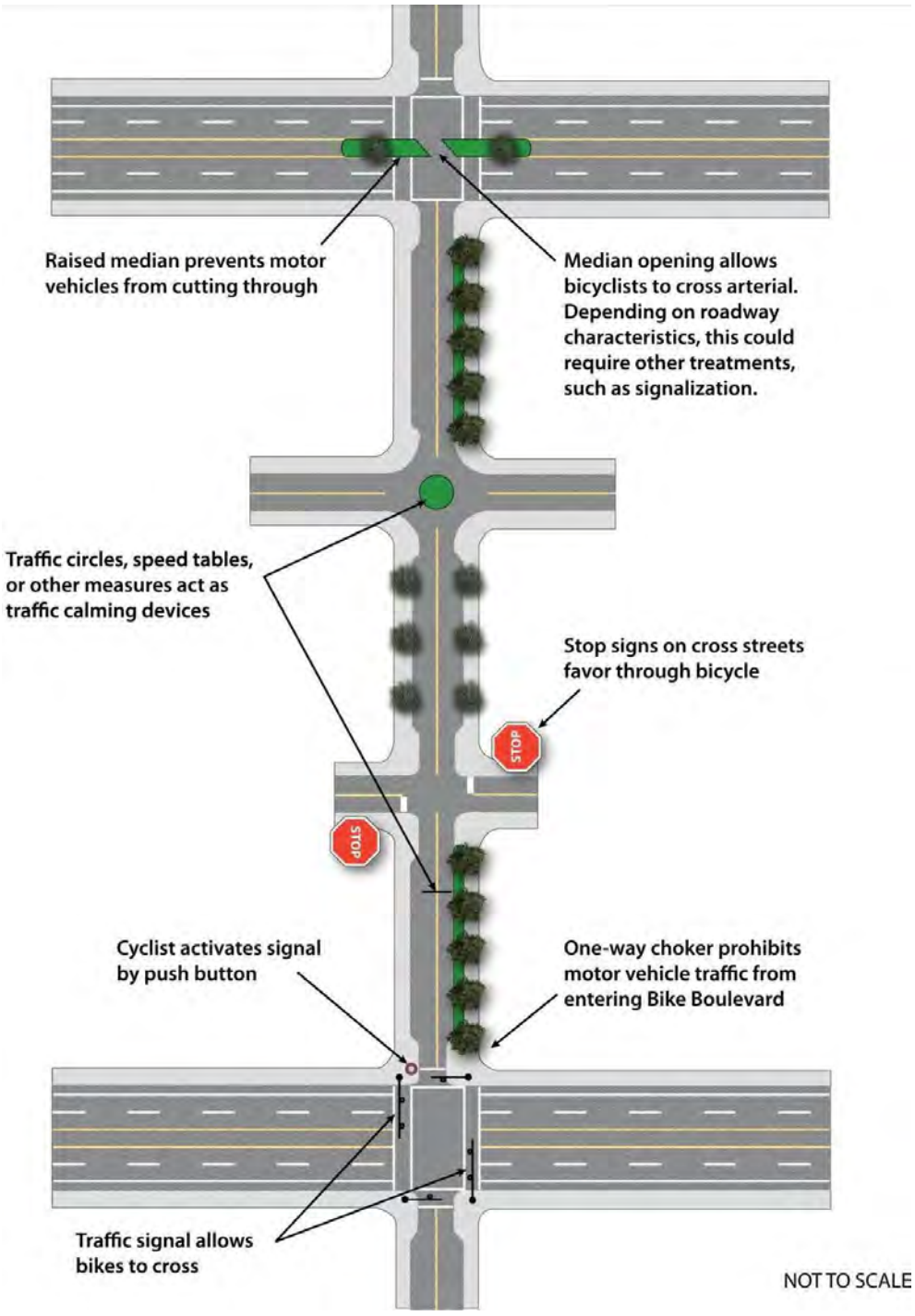
There are six general issues to address during bicycling boulevard implementation, as shown in **Table 8-14**. These issues relate to bicycling and walking safety and traffic circulation. There are two categories of tools that can help address these issues. The first category is called Basic Tools. These strategies are appropriate for all bicycling boulevards. The second category is called Site Specific Tools. These are used to varying degrees on a bicycling boulevard to respond to a specific issue, and they require more analysis and stakeholder involvement.

Table 8-15 – Considerations and Tools for Bicycle Boulevards

Issue	Basic Tool	Site Specific Tools
• Create the look and feel of a bicycling boulevard	• Signage • Unique pavement stencils • Pavement legends • Landscaping and street trees	• Traffic circles • Curb extensions • Traffic signals • High-visibility crosswalks
• Slow traffic and discourage diversion of traffic to the bicycling boulevard when unwarranted STOP signs are removed. Unwarranted STOP signs cause excessive stopping and delay for cyclists. They also increase noise and air pollution, increase fuel consumption, and non-compliance compromises safety for all. They often increase speeds mid-block as well.		
• Address school or walking safety issues		
• Help bicyclists cross major streets		
• Reduce motor vehicle traffic speeds		
• Prevent diversion of motor vehicle traffic onto adjacent neighborhood streets		

Source: Berkeley Bicycle Boulevard Tools and Design Guidelines

Figure 8-14 – Class III Bicycle Boulevard



BICYCLE SIGNAGE

Several new bicycling guide signs, along with information on their use, will be added to the 2009 CA MUTCD guidelines. These signs provide flexibility and may reduce costs for signing bicycling routes in urban areas where multiple routes intersect or overlap.

Wayfinding and Destination Signage

Among these signs are a new Alternative Bicycle Route guide sign and new Bicycling Destination signs, which indicate direction, distance in miles and destinations along bicycling routes.

In July 2009, the City of Oakland adopted a new system for bicycling wayfinding signage[3] based on these new MUTCD sign standards, with the addition of the City of Oakland logo (see image, above). The City of Pomona should consider adopting a similar system, and should consider a logo or City seal that reflects local qualities. Additional examples are provided in **Figure 8-15**.

The green sign system includes three sign types:

- Confirmation Signs **–** Confirm that a cyclist is on a designated bikeway. Confirmation signs are located mid-block or on the far side of intersections, and include destinations and distances.
- Turn Signs – Indicate where a bikeway turns from one street on to another street. Turn signs are located on the near side of intersections, and include directional arrows.
- Decision Signs – Mark the junction of two or more bikeways. Decision signs are located on the near-side of intersections, and include destinations and directional arrows.

Destination symbols, such as to the El Cerrito and North Berkeley BART Stations, shoreline access, and community destinations may be used. The figure on the next page illustrates these sign types.

[3] The City of Oakland's Design Guidelines for Bicycle Wayfinding Signage can be found at http://www.oaklandpw.com/AssetFactory.aspx?did=3528

Figure 8-15 – Bicycling Sign Types for the City of Oakland (source: City of Oakland Design Guidelines for Bicycling Wayfinding Signage, July, 2009)

Signs for Shared Roadways

Share the Road Signage

A "Share the Road" sign assembly (W11-1 + W16-1P) is intended to alert motorists that bicyclists may be encountered and that they should be mindful and respectful of them. However, the sign is not a substitute for appropriate geometric design measures that are needed to accommodate bicyclists. The sign should not be used to address reported operational issues, as the addition of this warning sign will not significantly improve bicycling conditions. The sign may be useful under certain limited conditions, such as at the end of a bicycling lane, or where a shared use path ends and bicyclists must share a lane with traffic. The sign may also be useful during construction operations, when bicyclists may need to share a narrower space than usual on a travelway. This sign should not be used to indicate a bicycling route. A fluorescent yellow-green background can be used for this sign.

Another sign that may be used in shared lane conditions is the BICYCLES MAY USE FULL LANE sign (R4-31 11). This sign may be used on roadways without bicycling lanes or usable shoulders where travel lanes are too narrow for cyclists and motorists to operate side by side within a lane.

Wrong Way Riding

Where wrong-way riding by cyclists is a frequent problem, the MUTCD provides a bicycling WRONG WAY sign and RIDE WITH TRAFFIC plaque (R5-1b and R9-3cP) that can be mounted back-to-back with other roadway signs (such as parking signs) to reduce sign clutter and minimize visibility to other traffic. This sign assembly can be used in shared lane situations, as well as on streets with bicycling lanes and paved shoulders.

MAINTENANCE STANDARDS

Since most cycling occurs on public roads, roadway maintenance is an important part of accommodating cycling. Below are some types of targeted maintenance.[4]

Surface Repairs

Inspect bikeways and road shoulders regularly for surface irregularities, such as potholes, pavement gaps or ridges. Such hazards should be repaired quickly.

Sweeping

Prioritize bicycling routes when establishing a street sweeping schedule. Sweep road shoulders of accumulated sand and gravel in the springtime and fallen leaves in the autumn where they accumulate. Sweepings should be picked up rather than just pushed aside in areas with curbs. Driveway approaches may be paved to reduce loose gravel on paved roadway shoulders. Off-street bicycling facilities should have an established maintenance schedule that includes routine sweeping.

Pavement Overlays

Where new pavement is installed, extend the overlay to the edge of the roadway. If this is not possible, ensure that no ridge remains at the edge of the road shoulder or bicycling lane. Do not leave a ridge within the bicycle travel area. Drain grates should be within 6 millimeters of the pavement height to create a smooth travel surface. Special attention should be given to ensure that utility covers and other road hardware are flush with new pavement.

Rail Crossings

Rail crossings can be hazardous to cyclists, particularly if they are at an oblique angle. Warning signs and extra space at the road shoulder can allow cyclists to cross at a 90° angle. A special smooth concrete apron or rubber flange may be justified at some crossings.

Vegetation

Vegetation may impede sight lines, or roots may break up the travel surface. Vegetation should be cut back to ensure adequate sight lines, and invasive tree roots may be cut back to preserve the travel surface.

[4] Todd Litman, Robin Blair, Bill Demopoulos, Nils Eddy, Anne Fritzel, Danelle Laidlaw, Heath Maddox, and Katherine Forster. *Pedestrian and Bicycle Planning: A Guide to Best Practices.* Victoria Transport Policy Institute (2010)

Street Markings

Bicycling lane markings signal loop indicators may become hard to see over time. These should be inspected regularly and retraced when necessary.

Markings

Whenever roadway markings are used, traction or non-skid paint should be used to avoid the markings becoming slippery in wet weather.

Utility Covers and Construction Plates

Utility covers and construction plates present obstacles to bicyclists due to their slipperiness and change in surface elevation with the surrounding pavement. While covers and plates can be replaced with less slippery designs, as discussed below, to minimize their adverse impacts on bicyclists, it is best to design the roadway so that they are not located within the typical path of bicyclists riding on the roadway. Therefore, new construction should endeavor not place manhole and other utility plates and covers where bicyclists typically ride (i.e., within the six feet adjacent to the curb, or between 7 and 12.5 feet from curb if parking is permitted). These guidelines require a minimum of 2.5 feet straight and clear.

Wet utility covers and construction plate materials can be slippery. Plain steel plates are slippery and should not be used for permanent installation on the roadway. Temporary installations of construction plates on the roadway should endeavor to avoid using plain steel plates if possible. The placement of construction plates should consider bicycles and if possible, be located to provide a clear zone for cyclists to avoid the plates. An example of an effective method for covers and plates (both steel and concrete) to have acceptable skid resistance is for the manufacturer to imprint waffle shaped patterns or right-angle undulations on the surface. The maximum vertical deviation within the pattern should be 0.25 inch (6 mm).[5]

[5] *Santa Clara Valley Transportation Authority Bicycle Technical Guidelines*

PEDESTRIAN DESIGN GUIDELINES

Walking requires two important features in the built environment: people must walk along streets and they must get across streets. Crossing a street should be easy, safe, convenient, and comfortable. While pedestrian behavior and crossing design affect the street crossing experience, motorist behavior (whether and how motorists yield to pedestrians) is the most significant factor in pedestrian safety.

A number of tools exist to improve pedestrian safety, to make crossing streets easier and walking along streets more comfortable and inviting. Effective traffic management can address concerns about traffic speed and volume. A motorist driving more slowly has more time to see, react, and stop for a pedestrian. The number of pedestrians also influences motorists; in general, motorists are more aware of pedestrians when more people walk.

Providing marked crosswalks is only one of the many possible engineering measures. According to Charles Zegeer of the Pedestrian and Bicycle Information Center (PBIC), when considering how to provide safer crossings for pedestrians, the question should not be: "Should I provide a marked crosswalk?" Instead, the question should be: "What are the most effective measures that can be used to help pedestrians safely cross the street?" Deciding whether to mark or not mark crosswalks is only one consideration in creating safe and convenient pedestrian crossings.

In addition, providing adequate sidewalk width and amenities can increase pedestrian comfort and safety. Land uses play an important part in sidewalk design, and dictate appropriate widths for each zone in the pedestrian way.

This section describes the majority of measures available to improve pedestrian crossings and sidewalks, including marked crosswalks, raised crossing islands and medians, lighting, sidewalk design, and streetscape enhancements. The measures are arranged in alphabetical order for crossings first, then for sidewalks.

The estimated costs in this section are for planning purposes. They will vary greatly depending on the existing conditions, design specifics of the treatment, and local materials and labor costs.

Note: The final design of the improvements at specific locations must be left to the professional engineer who will be responsible for the design and who will be charged with exercising good engineering judgment that meets the acceptable standard of care for pedestrian, bicycle, and vehicular traffic. These recommendations are meant to guide the design process.

Intersection Type Guidance

Every location needs tailored design and engineering judgment. That judgment should follow the guidelines described in each of the following device sheets, as well as other guidance from the California Manual on Uniform Traffic Control Devices and other documents. We can, however, identify the treatments commonly used at different types of intersections. They are as listed below.

Stop-Control Crossings

- Marked crosswalks (high-visibility crosswalks depending on traffic volumes, number of lanes, street width, number of pedestrians, presence of schools nearby)
- Advanced stop bars
- Perpendicular curb ramps with tactile warning devices
- Curb extensions where on-street parking exists (depending on traffic volumes, number of lanes, street width, number of pedestrians, presence of schools nearby)
- Crossing islands (depending on number of travel lanes, street width, traffic volumes)

As the number of travel lanes, traffic volume, street width and speed increases, more devices are needed. Pedestrians need signals to cross four-lane crossings with ADTs between 20,000 and 30,000 (or greater); the exact threshold depends on the number of lanes, speeds, and roadway width.

Signalized Crossings

- Countdown pedestrian signal heads
- Advanced stop bars
- High-visibility crosswalks
- Accessible pedestrian signals
- Bulb-outs where on-street parking exists
- Crossing islands (depending on available space, traffic volumes, number of lanes, street width, number of pedestrians, presence of schools nearby)

<u>Accessible Pedestrian Signal</u>

Audio signal at signalized intersection tells pedestrians when it is safe to cross

Description

A device that communicates information to pedestrians in nonvisual format such as audible tones, verbal messages, and/or vibrating surfaces. These signals provide accessibility to those who have visual impairments. Verbal messages are generally preferred to tones.

Benefits

- Creates a more accessible pedestrian network
- Assists those who are visually impaired
- Can contain additional wayfinding information in messages
- More accurate judgments of the onset of the WALK interval
- Reduction in crossings begun during DONT WALK
- Reduced delay
- Significantly more crossings completed before the signal changed

Key Design Features

- Provide pedestrian signal information to those who cannot see the pedestrian signal head across the street
- Provide information to pedestrians about the presence and location of pushbuttons, if pressing a button is required to actuate pedestrian timing
- Provide unambiguous information about the WALK indication and which crossing is being signaled
- Use audible beaconing only where necessary
- Two poles should be installed for APS speakers, located close to departure location and crosswalk
- Ensure accessibility to for pushbutton placement

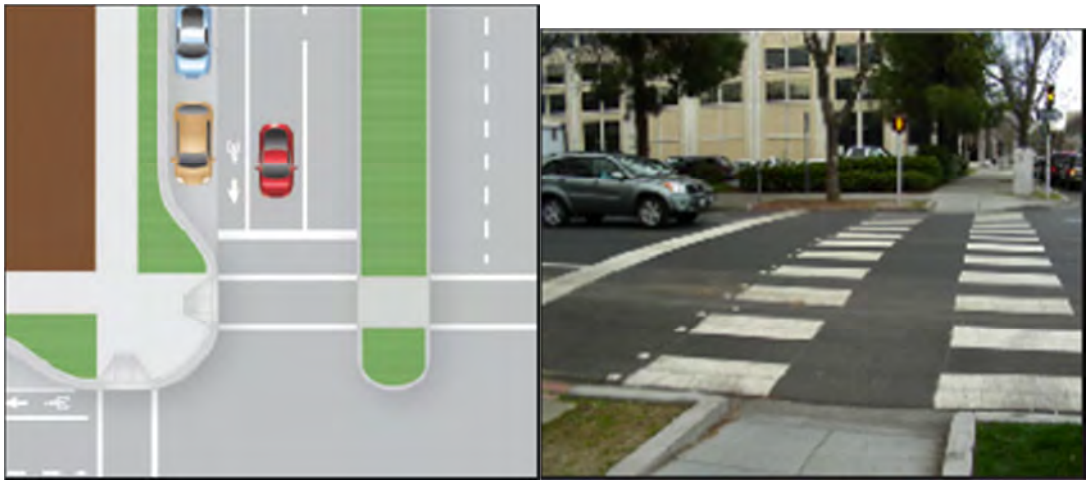
Approximate Cost

- $600 to $800 per signal

Applications

- ADA requires newly constructed or altered public facilities to be accessible, regardless of the funding source
- Installed by request along a specific route of travel for a particular individual, or group of individuals who are blind or visually impaired
- Not intended for use in residential areas

Advanced Stop Bar



Car stops at advanced stop line, prior to crosswalk

Description

An advanced stop bar is the placing of the stop limit line for vehicle traffic at a traffic signal behind the crosswalk for the added safety of crossing pedestrians.

Benefits

- Keeps cars from encroaching on crosswalk
- Low cost, effective device
- Improve visibility of through cyclists and crossing pedestrians for motorists
- Allows pedestrians and motorists more time to assess each other's intentions when the signal phase changes

Key Design Features

- Vehicle stop line moved 4 to 6 feet further back from the pedestrian crossing

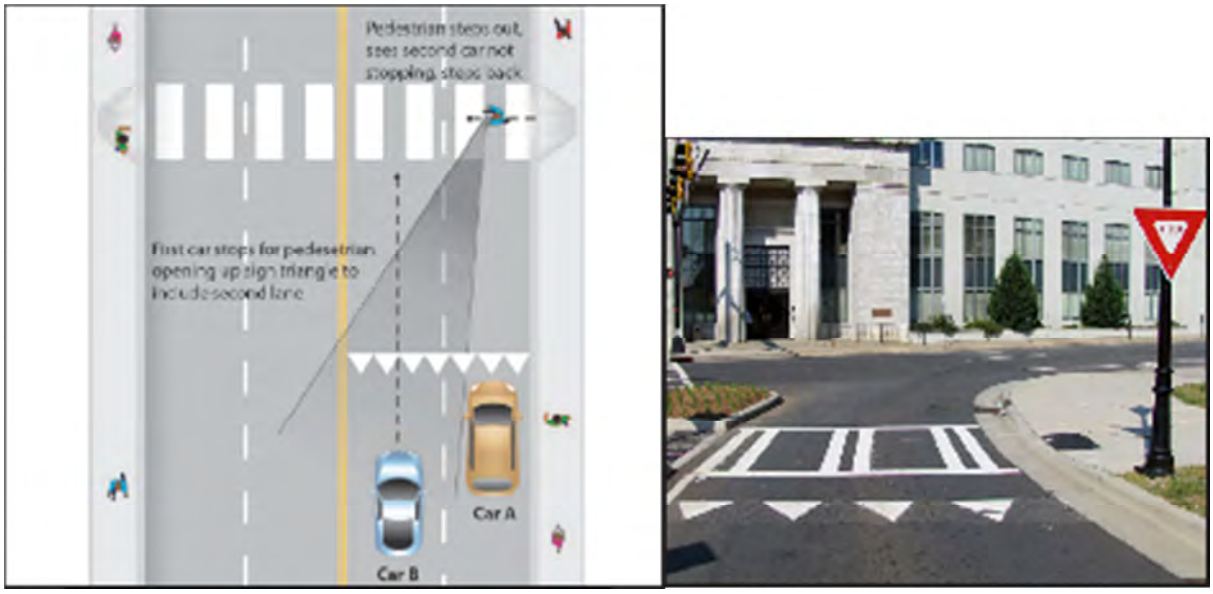
Approximate Cost

- Little cost if done with new paving/repaving
- $200 to $300 per stop bar

Applications

- Can be used at any signalized or stop-controlled intersection
- Presence of advanced stop bar is more important on roadways with higher speeds (30 mph and greater)
- Should be included at all crossings of road with four or more lanes without a raised median or crossing island that has an ADT of 12,000

Advanced Yield Line



Advanced yield line (shark's teeth) denote yield point to motorists

Description

An advanced yield line is the placing of the yield line (shark's teeth) for vehicle traffic in advance of a crosswalk at uncontrolled locations.

Benefits

- Inexpensive treatment
- Improves sight visibility of pedestrians and motorists when used correctly
- Helps reduce potential of multiple-threat crashes
- Yielding vehicle does not screen the view of motorists in the pedestrian's next lane of travel
- Reduce likelihood that vehicle travelling behind yielding vehicle will cross centerline and strike pedestrian

Key Design Features

- Advanced yield line should be placed 20 to 50 feet in advance of crosswalks along with "Yield here to pedestrians" sign placed adjacent to the markings

Approximate Cost

- Little cost if done with new paving/repaving
- $200 to $300 per yield line

Applications

- Crosswalks on streets with uncontrolled approaches
- Right-turn slip lane crossings
- Midblock marked crosswalks
- Presence of advanced yield line are most important on multi-lane streets

<u>Countdown Signal</u>

Pedestrian countdown signal shows there are 12 seconds left to cross before signal will turn

Description

The pedestrian countdown signal is a walk signal that provides a countdown to the next solid "don't walk" signal phase in order to provide pedestrians with information on how much time they have to cross.

Benefits

- Indicates appropriate time for pedestrians to cross
- Provides pedestrian clearance interval

Key Design Features

- Ensure that signals are visible to pedestrians
- When possible, provide a walk interval for every cycle
- Pedestrian pushbuttons must be well positioned and within easy reach for all approaching pedestrians

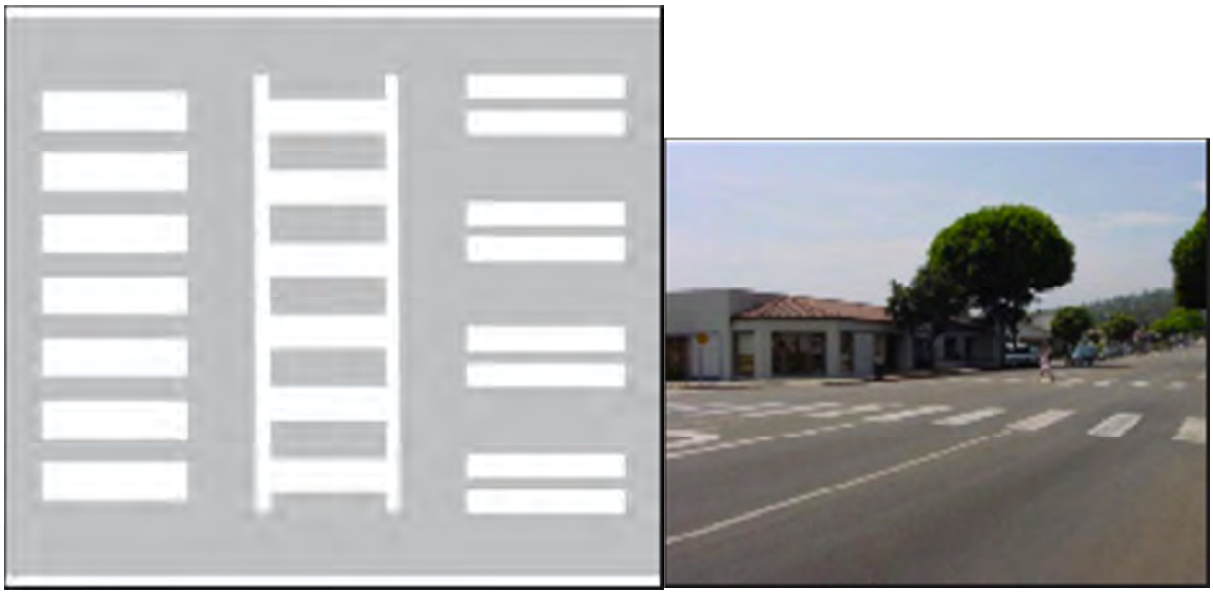
Approximate Cost

- $1,000 to $1,500 per signal

Applications

- Should be placed for each crossing leg at signalized intersections

<u>Crosswalk Markings</u>



Continental-style marked crosswalk at midblock crossing is visible from farther away

Description

High-visibility crosswalks — continental, zebra-stripe, piano key, or ladder style, should be provided at any intersection where a significant number of pedestrians cross. They are most important at uncontrolled crossings of multi-lane streets.

Benefits

- Indicate preferred pedestrian crossings
- Warn motorists to expect pedestrians crossing
- Higher visibility than typical lateral-line marked crosswalks
- Can be placed to minimize wear and tear (between tire tracks)

Key Design Features

- Locations should be convenient for pedestrian access
- Used in conjunction with other measures such as advance warning signs, markings, crossing islands, and curb extensions
- Place to avoid wear due to tires

Approximate Cost

- $300 to $600 for each leg of an intersection, depending on roadway width

Applications

- Enhances all marked crossings
- Necessary at marked midblock and uncontrolled crossing locations

<u>Curb Extensions</u>

Asheville, North Carolina curb extension

Description

A curb extension is a segment of sidewalk, landscaping, or curb that is extended into the street at the corner, and usually associated with crosswalks. A curb extension typically extends out to align with the edge of the parking lane. They can be placed at locations where there is no on-street parking by tapering the extensions to the approach.

Benefits

- Shortens pedestrian crossing
- Reduces curb radius, slowing turning vehicles
- Provides traffic calming
- Improves sight visibility for pedestrians and motorists
- Provides space for landscaping, beautification, water treatment, furnishings, signs, etc.
- Often can provide space for perpendicular curb ramps

Key Design Features

- Curb extensions sited at corners or midblock
- Extends out to approximately align with parking (typically 1′ to 2′ less than parking lane width)
- Reduced effective curb radius
- Can be tapered at approach in cases where there is no on-street parking
- Should not block travel or bicycle lanes
- Paired with bicycle lanes, curb extensions can increase the effective curb radius for larger vehicles
- Bulb-outs are a type of curb extension that has a distinct bulb-shape that extends into the on-street parking lane (see graphic)

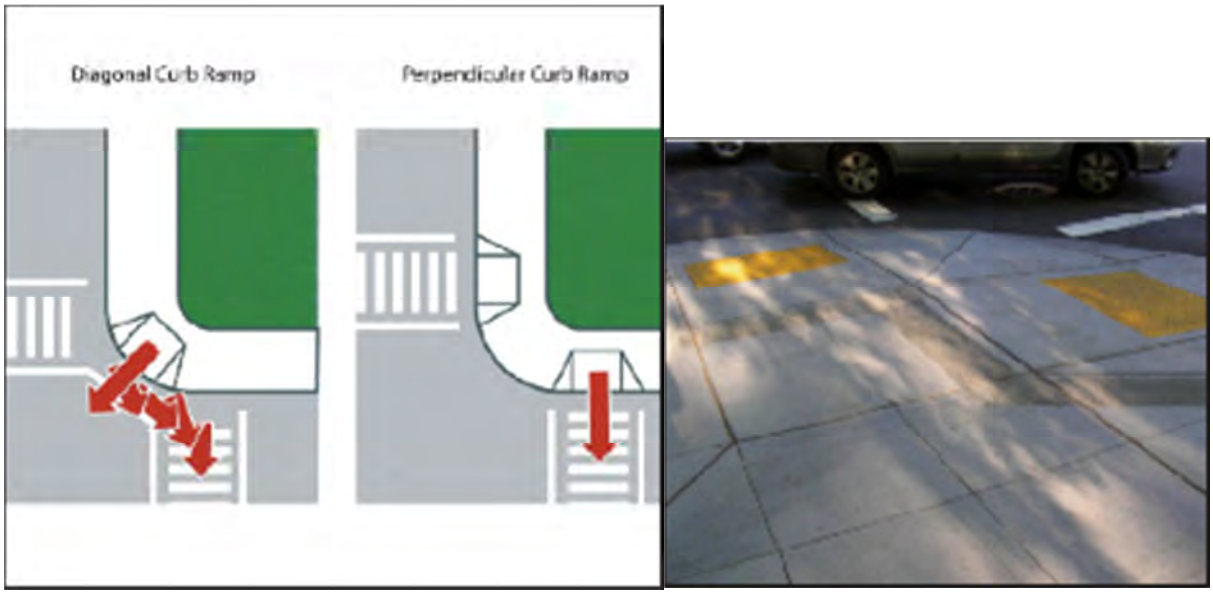
Approximate Cost

- $5,000 to $15,000 depending on size and shape
- Varies with design and jurisdiction

Applications and Considerations

- Areas with high pedestrian traffic (downtown, mixed-use areas) where traffic calming is desired
- Jurisdiction must evaluate placement on case-by-case basis, taking into account drainage, signal pole modification, lane widths, driveways, and bus stops
- Should be placed in pairs on near and far sides of intersections whenever far side is desired.

Curb Ramps



Perpendicular ramps with truncated domes assist sight-impaired and wheelchair users

Description

A curb ramps is a ramp and landing that allows for a smooth transition between sidewalk and street via a moderate slope. The Americans with Disabilities Act requires wheelchair access at every street corner. On streets with low traffic volumes and short crossing distances, diagonal ramps may be acceptable.

Benefits

- Double curb ramps make the trip across the street shorter and more direct than diagonal ramps
- Provide compliance with ADA when designed correctly
- Improve pedestrian accessibility for those in wheelchairs, with strollers, and for children

Key Design Features

- Where feasible, ramps for each crosswalk at an intersection are preferable
- Tactile warnings will alert pedestrians to the sidewalk/street edge
- Curb ramps must have a slope of no more than 1:12 (must not exceed 25.4 mm/0.3 m (1 in/ft) or a maximum grade of 8.33 percent), and a maximum slope on any side flares of 1:10

Approximate Cost

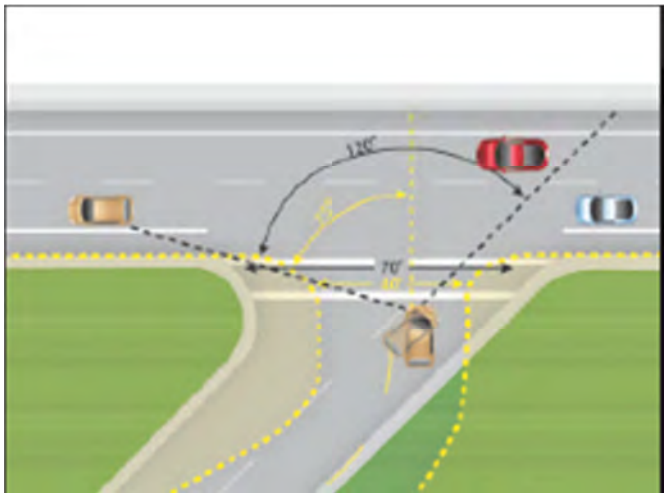
- $3,500 to $4,000 per ramp

Applications

- Curb ramps must be installed at all intersections and midblock locations where pedestrian crossings exist, as mandated by federal legislation (1973 Rehabilitation Act and 1990 Americans with Disabilities Act)

- Priority locations for curb ramps are in downtown areas, near transit stops, schools, parks, medical facilities, and near residences with people who use wheelchairs

Intersection Geometry Modifications



Description

Geometry sets the basis for how all users traverse intersections and interact with each other. Intersection skew can create an unfriendly environment for pedestrians. Skewed intersections are those where two streets intersect at angles other than right angles. Intersection geometry should be as close to 90 degrees as possible.

Benefits

- Skewed intersections are undesirable
- Slows turning vehicles by making angles more acute
- Shortens pedestrian crossing distances
- Improves sight visibility

Key Design Features

- Consider removing one or more legs from the major intersection and creating a minor intersection further up or downstream (if there are more than two streets intersecting)
- Close one or more of the approach lanes to motor vehicle traffic, while still allowing access for pedestrians and bicyclists
- Introduce pedestrian islands if the crossing distance exceeds three lanes (approximately 44 feet)
- General use, travel lanes, and bike lanes may be striped with dashes to guide bicyclists and motorists through a long undefined area

Approximate Cost

- Varies

Applications

- Every reasonable effort should be made to design or redesign the intersection closer to a right angle

Lighting

Well-lit crosswalk in Denmark

Description

Lighting is important to include at all pedestrian crossing locations for the comfort and safety of the road users. Lighting should be present at all marked crossing locations. Lighting provides early cues to drivers to expect pedestrians.

Benefits

- Enhance safety of all roadway users, particularly pedestrians
- Enhance commercial districts
- Improve nighttime safety

Key Design Features

- FHWA HT-08-053, The Information Report on Lighting Design for Mid-block Crosswalks, found that a vertical illumination of 20 lux in front of the crosswalk, measured at a height of 5 feet from the road surface, provided adequate detection distances in most circumstances.
- Illumination just in front of crosswalks creates optimal visibility of pedestrians
- Crosswalk lighting should provide color contrast from standard roadway lighting

Approximate Cost

- $5,000 per standard light pole
- $7,000 to $9,000 for decorative light poles

Applications

- Ensure pedestrian walkways and crosswalks are well lit
- Use uniform lighting levels
- When installing roadway lighting, install on both sides of wide streets
- Consider pedestrian vs. vehicular scale for lighting (each has a different application)
- Not intended for midblock use
-

Neighborhood Traffic Circle

Neighborhood traffic circle in Vancouver B.C., Canada

Description

Neighborhood traffic circles, sometimes called "mini-circles" are small circles that are retrofitted into local street intersections to control vehicle speeds within a neighborhood. Typically, a tree and/or landscaping are provided in the central island to provide increased visibility of the roundabout and enhance the intersection.

Benefits

- Create continuous, slow vehicle speeds
- Better for bicyclists than stop-controls
- Improves traffic flow

- Allows space for landscaping and beautification, as well as stormwater recapture
- Reduces crashes

Key Design Features

- The design of neighborhood traffic circles is primarily confined to selecting a central island size to achieve the appropriate design speed of around 15 to 20 mph
- Neighborhood traffic circles should generally have similar features as roundabouts, including yield-on-entry and painted or mountable splitter islands
- Can replace stop-controlled intersections in residential areas

Approximate Cost

- $6,000 to $12,000 for mini-circle with landscaping

Applications

- Neighborhood traffic circles should be used on low-volume, neighborhood streets
- Larger vehicles can turn left in front of the central island if necessary
- Curb radius should be tight; may impede some large vehicles from turning
- Landscaped circles often require agreements from adjacent residents and maintenance

<u>Pedestrian Hybrid Beacon</u>

Pedestrian hybrid beacon on 4-lane street with high speeds and volumes

Description

A pedestrian hybrid beacon is used to warn and control traffic at an unsignalized location so as to help pedestrians cross a street or highway at a marked crosswalk.

Benefits

- Can be used at a location that does not meet traffic signal warrants or at a location that meets traffic signal warrants but a decision has been made to not install a traffic control signal
- Additional safety measure and warning device at uncontrolled location
- Remain dark until activated

Key Design Features

- Minimum of 20 pedestrians per hour is needed to warrant installation
- Should be placed in conjunction with signs, crosswalks, and advanced yield lines to warn and control traffic at locations where pedestrians enter or cross a street or highway
- A pedestrian hybrid beacon should only be installed at a marked crosswalk

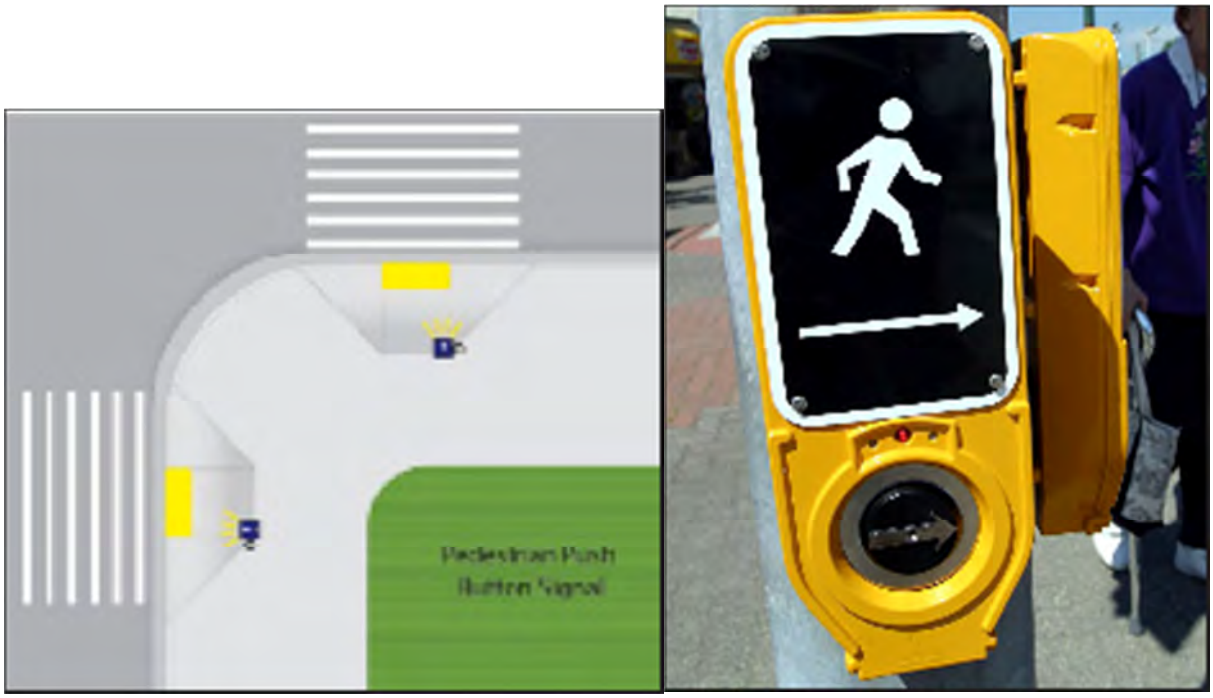
Approximate Cost

- $30,000 to $100,000

Applications

- Installations should be done according to the MUTCD Chapter 4F, "Pedestrian Hybrid Beacons." The California MUTCD has not yet approved the beacons for use. Cities should follow the formal experimental process to use these.

Pedestrian-Activated Push Button



Pedestrian push button

Description

Pedestrian-activated traffic controls require pedestrians to push a button to activate a walk signal. Where significant pedestrian traffic is expected, pedestrian-activated signals are generally discouraged. The "WALK" signal should automatically come on.

Benefits

- Provides for smoother traffic flow if there are few pedestrians, and no need to provide walk signal for every cycle

Key Design Features

- Should be located as close as possible to top of curb ramps without reducing the width of the path
- Buttons should be at a level that is easily reached by people in wheelchairs near the top of the ramp.

- U.S. Access Board guidelines recommend buttons raised above or flush with their housing and large enough (a minimum of 2 inches) for people with visual impairments to see them.
- Buttons should also be easy to push

Approximate Cost

- $1,000 to $1,500/push button

Applications

- Areas where there are few pedestrians
- Midblock crossings at locations where signalized crossing is needed

PUFFIN Crossing

Description

Pedestrian user-friendly intelligent (PUFFIN) crossings detect pedestrians and hold the signal red for motor vehicles until the pedestrian has crossed. They are most appropriate at locations where a significant number of senior citizens or disabled people cross.

Benefits

- Detects whether pedestrians are still in crosswalk before signal changes
- Overall crossing time determined by presence of pedestrians

Key Design Features

- Curbside detector monitors pedestrian's presence in crossing
- Signal mounted at the near road side, set diagonally to road edge
- Lights closer to user assists visually impaired persons

- Adds 4 seconds to "walk" sign, then another 4 seconds if necessary (if pedestrians are still in crosswalk)

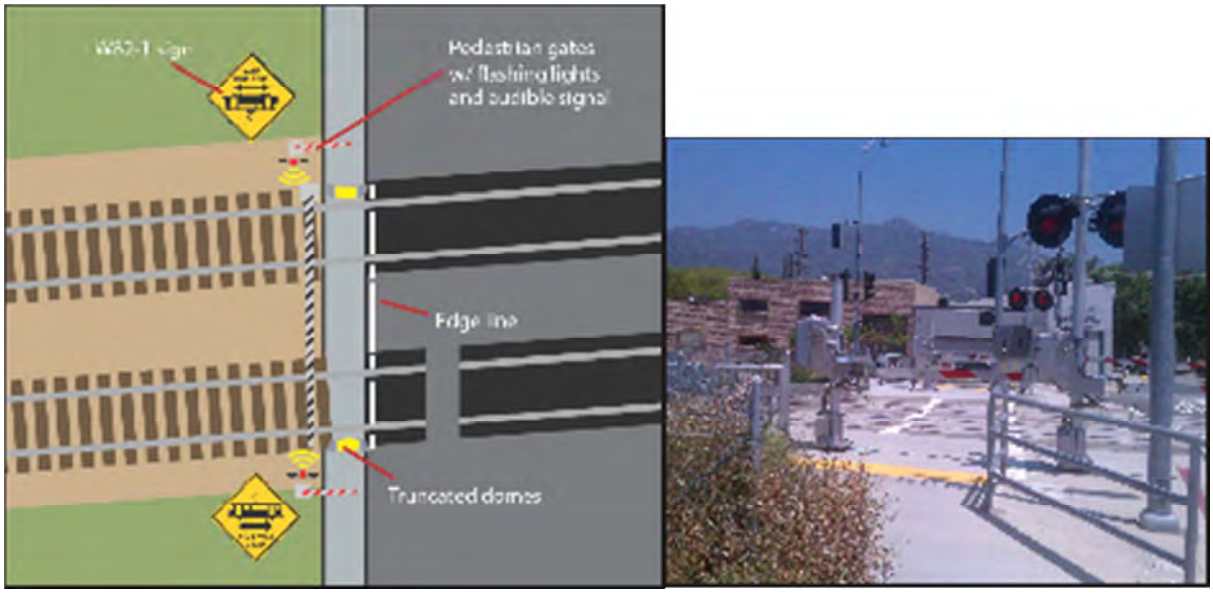
Approximate Cost

- $1,000 to $2,000 per crossing

Applications

- Locations where pedestrians crossing walk more slowly than 3.5 feet / second such as senior centers and near schools
- Signalized intersections

Railroad Crossings



Pedestrian crossing of railroad in Glendale, CA

Description

Pedestrian crossings of railroad tracks apply a special set of tools. In California, the California Public Utilities Commission should approve the design before application.

Benefits

- Enhances safety at railroad crossings (nearly 500 pedestrians are injured or killed at crossings annually)

Key Design Features

- Pedestrian gates
- Channelization of pedestrians through gates and across tracks
- Edge lines across tracks

- Warning flashers
- Signs
- Audible signals
- Tactile devices prior to railroad tracks

Approximate Cost

- Varies

Applications

- All railroad crossings where there are existing streets and pedestrian crossings
- More details can be found in Pedestrian Rail Crossings in California, Richard Clark, California Public Utilities Commission (PUC), May 2008.
- Must follow PUC guidelines and be approved by PUC

Raised Crosswalk

Raised crosswalk on campus

Description

Crosswalks can be raised in order to slow motor vehicles and to enhance the visibility of crossing pedestrians.

Benefits

- Increases visibility of pedestrian, especially to motorists in large vehicles
- Traffic calming
- Continuous level for pedestrians

Key Design Features

- Trapezoidal in shape on both sides and has a flat top where the pedestrians cross
- Level crosswalk area must be paved with smooth materials
- Texture or special pavements used for aesthetics should be placed on the beveled slopes, where they will be seen by approaching motorists
- Often require culverts or another means of drainage treatment

Approximate Cost

- $15,000 to $25,000 depending on drainage accommodation

Applications

- Areas with significant pedestrian traffic and where motor vehicle traffic should move slowly, such as near schools, on college campuses, in Main Street retail environments, and in other similar places
- Effective near elementary schools where they raise small children by a few inches and make them more visible

Rectangular Rapid-Flash Beacons

RRFBs at uncontrolled crossing location

Description

The RRFB uses rectangular-shaped high-intensity LED-based indications, flashes rapidly in a wig-wag "flickering" flash pattern, and is mounted immediately between the crossing sign and the sign's supplemental arrow plaque.

Benefits

- Increases motorist compliance to yield to pedestrians crossing at uncontrolled marked locations
- Provides additional visibility to crosswalks
- Visible at night and during the day

Key Design Features

- Placed at crosswalk and in center median / crossing island
- Crosswalk sign with arrow
- Wig-wag flickering flash pattern mounted between crossing sign and arrow pointing to crosswalk

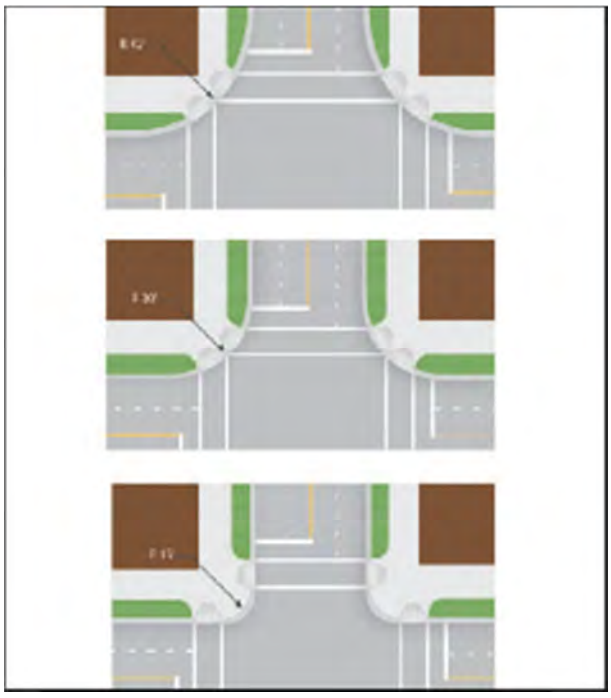
Approximate Cost

- $23,000 per set (including island units)

Applications

- Approved for interim use by the California Traffic Control Device Committee (CTCDC)
- City should go through appropriate CTCDC steps to use
- Use of RRFBs should be limited to locations with the most critical safety concerns, such as pedestrian and school crosswalks at uncontrolled locations

<u>Reduced Curb Radius</u>



Description

The geometry of the corner radius impacts the feel and look of a street. Tight corner radii create shorter crossing distances, and provide a traffic calming effect.

Benefits

- Slower vehicular turning speeds
- Reduced pedestrian crossing distance and crossing time
- Better geometry for installing perpendicular ramps for both crosswalks at each corner
- Simpler and more appropriate crosswalk placement that aligns directly with sidewalks on the other side of the intersection

Key Design Features

- Default design vehicle should be the passenger (P) vehicle; initial corner radius is between 15 and 25 feet
- Larger design vehicles should be used only where they are known to regularly make turns at the intersection (such as in the case of a truck or bus route)
- Design based on the larger design vehicle traveling at near 5 mph or crawl speed Consider the effect that bicycle lanes and on-street parking have on the effective radius, increasing the ease with which large vehicles can turn

Approximate Cost

- $2,000 to $7,000

Applications

- All corners

Right-Turn Channelization Islands

Right-turn lane in Orlando, FL

Description

A raised channelization island between the through lanes and the right-turn lane is a good alternative to an overly large corner radius and enhances pedestrian safety and access. It allows pedestrians to cross

fewer lanes at a time.

Benefits

- Allow motorists and pedestrians to judge the right turn/pedestrian conflict separately
- Reduce pedestrian crossing distance, which can improve signal timing for all users
- Balance vehicle capacity and truck turning needs with pedestrian safety
- Provide an opportunity for landscape and hardscape enhancement
- Slows motorists

Key Design Features

- Provide a yield sign for the slip lane
- Provide at least a 60-degree angle between vehicle flows
- Place the crosswalk across the right-turn lane about one car length back from where drivers yield to traffic on the other street
- Typical layout involves creating an island that is roughly twice as long as it is wide. The corner radius will typically have a long radius (150 feet to 300 feet) followed by a short radius (20 feet to 50 feet)
- Necessary to allow large trucks to turn into multiple receiving lanes

Approximate Cost

- $10 to $12/square foot

Applications

- Right-turn lanes should generally be avoided as they increase the size of the intersection, the pedestrian crossing distance, and the likelihood of right-turns-on-red by inattentive motorists who do not notice pedestrians on their right
- Heavy volumes of right turns (approximately 200 vehicles per hour or more)

Roundabouts

Single-lane roundabout in La Jolla, CA

Description

A roundabout is an intersection design that can replace traffic signals. Users approach the intersection, slow down, stop and/or yield to pedestrians in a crosswalk, and then enter a circulating roadway, yielding to drivers already in the roundabout. The circulating roadway encircles a central island around which vehicles travel counterclockwise.

Benefits

- Reduce conflicts, all forms of crashes and crash severity (particularly left-turn and right-angle crashes)
- Little to no delay for pedestrians
- Improved accessibility for bicyclists
- Approximately 30% more vehicle capacity than signals (allowing possible reduction in number of lanes and roadway width)
- Reduced maintenance and operational costs, delay, travel time, and vehicle queue lengths

Key Design Features

- Deflection encourages slow traffic speeds,
- Landscaped visual obstruction in the central island discourage users from entering the roundabout at high speeds
- Central island should not contain attractions

- Each leg of a roundabout has a triangular splitter island that prevents drivers from turning left (the "wrong-way")
- Truck apron

Approximate Cost

- Varies greatly depending on drainage accommodation
- $150,000

Applications

Before starting the design of a roundabout, it is very important to determine the following:

- Number and type of lane(s) on each approach and departure as determined by a capacity analysis
- Design vehicle for each movement
- Presence of on-street bike lanes
- Right-of-way and its availability for acquisition if needed
- Existence or lack of sidewalks
- Approach grade of each approach
- Transit, existing or proposed
- Roundabouts can be applied at nearly all intersections, but are more legible for single-lane approaches
- Must have adequate space

Scramble Phase

Sign indicating pedestrian scramble phase

Description

A scramble phase provides a separate all-direction red phase in the traffic signal to allow pedestrians to cross linearly and diagonally. They are most appropriate in retail districts with heavy volumes of pedestrians and motor vehicles, and/or many vehicle turning movements.

Benefits

- Reduces pedestrian delay for those crossing both directions
- Reduces pedestrian-vehicle conflicts by providing an all-pedestrian crossing phase
- Does not necessarily eliminate regular walk phase

Key Design Features

- Signs indicating scramble is permitted
- Countdown signals
- Markings indicating diagonal cross
- Allow pedestrians to cross straight and reduces delay

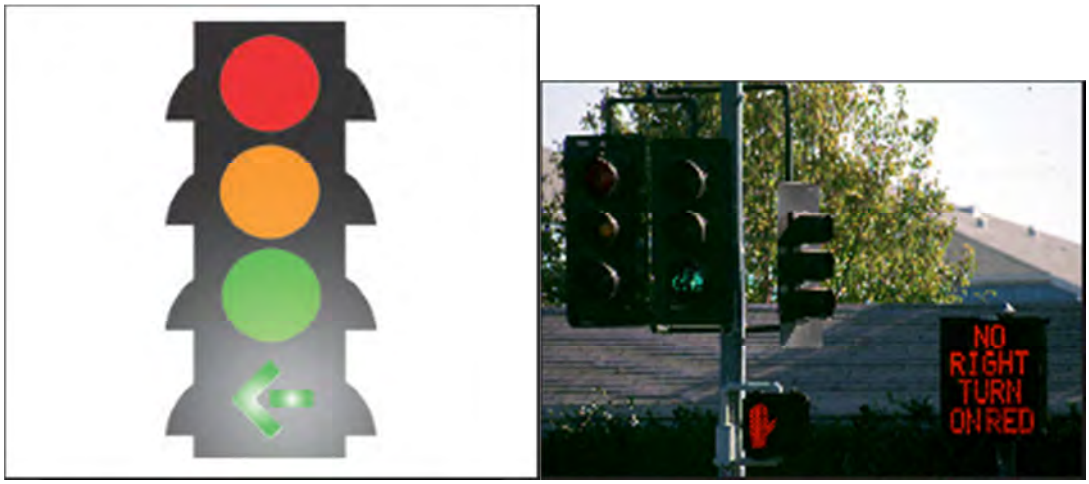
Approximate Cost

- Varies

Applications

- Exclusive pedestrian phases may be used where turning vehicles conflict with very high pedestrian volumes and pedestrian crossing distances are short
- Should be used in areas with high pedestrian volumes such as near shopping centers, downtown, university crossings, turning movements, etc.

<u>Signal Timing/Phasing</u>



Traffic signal with pedestrian countdown signal and restricts right-turns-on-red

Description

Signals provide control of pedestrians and motor vehicles. Signals can be used to control vehicle speeds by providing appropriate signal progression on a corridor. Traffic signals allow pedestrians and bicyclists to cross major streets with only minimal conflict with motor vehicle traffic. Signalized intersections often have significant turning volumes, which conflict with concurrent pedestrian and bicycle movements.

Benefits

- Reduces pedestrian-vehicle conflicts by providing separate phases for travel
- Limiting permissive turning movements at signalized intersections improves safety for pedestrians
- Walk signals timed at 3.5 feet/second reduce conflicts; less where large numbers of seniors or disabled pedestrians crossing

Key Design Features

- Signal progression at speeds that support the target speed of a corridor
- Short signal cycle lengths
- Ensure signals detect bicycles
- Place pedestrian signal heads in locations where they are visible
- Time the pedestrian phase to be on automatic recall
- Where few pedestrians are expected, place pedestrian pushbuttons in convenient locations, using separate pedestals if necessary.
- Include adequate pedestrian crossing time of 3.5 feet/second or more
- Leading Pedestrian Intervals (LPI) allows pedestrians to begin crossing while all directions of traffic have red signal
- Protected left-turn phases are preferable to permissive movements

Approximate Cost

- New signals cost $100,000 to $250,000
- Improvements to timing and phasing can be done at little cost

Applications

- City must follow standard warrants in the California MUTCD

<u>Signs</u>

Pedestrian crossing sign indicating location of marked pedestrian crossing

Description

Signs alert motorists to the presence of crosswalks and pedestrians. Center signs can help slow traffic. These are placed according to the CA MUTCD.

Benefits

- Provide important information
- Give motorists advance warning
- Regulatory signs require certain driver actions and can be enforced

Key Design Features

- Placed with adequate sight distance and according to MUTCD standards
- Should not block pedestrian view or obstruct pathways
- Kept free of graffiti and in good condition
- Should have adequate nighttime reflectivity

Approximate Cost

- $50 to $150/sign
- $150 for sign installation

Applications

- Overuse of signs can create noncompliance and disrespect
- Signs should be placed at locations where appropriate to enforce certain types of behavior
- Uncontrolled crossings
- Commonly used signs are advanced pedestrian crossing sign in advance of marked uncontrolled crossing; pedestrian crossing sign at uncontrolled crossing; and advanced yield signs.

<u>Speed Feedback Signs</u>

Description

Speed feedback signs alert motorists when they are going over the speed limit. They are most appropriate where motor vehicles commonly speed and there are pedestrians or bicyclists.

Benefits

- Heighten awareness of speed limits
- Establish lower speed limit during school crossing times
- Alert drivers of their actual speed and posted speed
- Can record traffic counts and speeds

Key Design Features

- Must be placed in conjunction with speed limit sign
- Should flash "SLOW DOWN" message if driver is going above speed limit

Approximate Cost

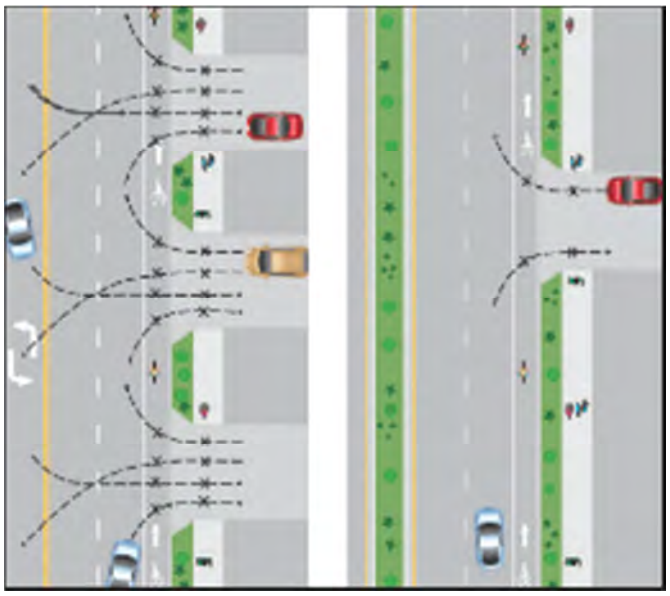
- $8,000 to $10,000 per sign

Applications

- Place in school zones or corridors where speeding is a known issue

Sidewalks

Access Management



Description

Most conflicts between users occur at intersections and driveways. The presence of many driveways in addition to the necessary intersections creates many conflicts between vehicles entering or leaving a street and bicyclists and pedestrians riding or walking along the street.

Benefits

- Number of conflict points is reduced
- Pedestrian crossing opportunities are enhanced with a raised median
- Universal access for pedestrians is easier, since the sidewalk is less frequently interrupted by driveway slopes
- Result in more space available for higher and better uses.
- Improved traffic flow may reduce the need for road widening

Key Design Features

- When possible, new driveways should be minimized and old driveways should be eliminated or consolidated, and raised medians should be placed to limit left turns into and out of driveways

Approximate Cost

- Varies

Applications

- New development
- Redevelopment
- Where driveways make sidewalk inaccessible based on ADA guidelines

<u>Streetscape Features</u>

Street furniture and landscaping in Portland, OR

Description

Well-designed walking environments are enhanced by urban design elements and street furniture, such as benches, bus shelters, trash receptacles, and water fountains. Landscaping and streetwater management can create a more beautiful and sustainable environment.

Benefits

- Enhance the pedestrian environment
- Enliven commercial districts by providing improved public space
- Encourages visitors and residents to walk to destinations rather than drive

Key Design Features

- Street furniture should be carefully placed to create an unobstructed path and sight lines for pedestrians
- Good-quality street furniture will show that the community values its public spaces and is more cost-effective in the long run
- Include plans for landscape irrigation and maintenance at the outset
- Ensure adequacy of overhead clearances and detectability of protruding objects for pedestrians who are blind or visually impaired
- Create a theme
- Placemaking
- Sustainable drainage

Approximate Cost

- Varies

Applications

- Focus improvements in downtown areas and commercial districts
- Landscaping should focus on native plants that will not require excessive watering or maintenance
- Shade-giving trees or shelters are important in jurisdictions with high temperatures

Sidewalk Design

Sidewalks should provide a comfortable space for pedestrians between the roadway and adjacent land uses. Sidewalks along city streets are the most important component of pedestrian mobility. They provide access to destinations and critical connections between modes of travel, including automobiles, transit, and bicycles. General provisions for sidewalks include pathway width, slope, space for street furniture, utilities, trees and landscaping, and building ingress/egress. Besides pedestrian mobility, sidewalks also add to people's outdoor enjoyment of landscape, urban forest, and streetscapes.

Sidewalks in the public right-of-way are generally constructed of concrete, with construction details regarding materials, procedures, and design specified in the Standard Specifications for Public Works Construction (SSPWC), along with its companion SSPWC Standard Plans. However, sidewalks may also be constructed and maintained of other materials such as rubber, decomposed granite, or other hard unyielding surface.

Sidewalk maintenance is also important since trees and large shrubs and plant life are common near and around sidewalks, and root systems sometimes lift sidewalks and create vertical displacements. These vertical displacements must be controlled and maintained to a maximum of one inch.

Sidewalks include four distinct zones: the frontage zone, the pedestrian (aka walking) zone, the furniture zone, and the curb zone. The minimum widths of each of these zones vary based on street classifications as well as land uses. The table at the end of this section recommends minimum widths for each zone for different street types and land uses.

Frontage Zone

The frontage zone is the portion of the sidewalk located immediately adjacent to buildings, and provides shy distance from buildings, walls, fences, or property lines. It includes space for building-related features such as entryways and accessible ramps. It can include landscaping as well as awnings, signs, news racks, benches, and outdoor café seating. In single-family residential neighborhoods, landscaping typically occupies the frontage zone.

Pedestrian Zone

The pedestrian zone, situated between the frontage zone and the furniture zone, is the area dedicated to walking and should be kept clear of all fixtures and obstructions. In the pedestrian zone, the Pedestrian Access Route (PAR) is the path that provides continuous connections from the public right-of-way to building and property entry points, parking areas, and public transportation.

This pathway is required to comply with ADA guidelines and is intended to be a seamless pathway for wheelchair and white cane users. As such, this route should be firm, stable, and slip-resistant, and should comply with maximum cross slope (transverse) requirements (2 percent grade). The walkway grade (longitudinal) shall not exceed the general grade of the adjacent street. Aesthetic textured pavement materials (e.g., brick and pavers) are best used in the frontage and furniture zones, rather than the PAR. The PAR should be a minimum of 4 feet, but preferably at least 5 feet in width to provide adequate space for two pedestrians to comfortably pass or walk side by side. All transitions (e.g., from street to ramp or ramp to landing) must be flush and free of changes in level. The engineer should determine the pedestrian zone width to accommodate the projected volume of users. In no case will this zone be less than the width of the PAR.

Non-compliant driveways often present significant obstacles to wheelchair users. The cross slope on these driveways is often much steeper than the 2 percent maximum grade. Driveway aprons that extend into the pedestrian zone can render a sidewalk impassable to users of wheelchairs, walkers, and crutches. They need a flat plane on which to rest all four supports (two in the case of crutches). To provide a continuous PAR across driveways, aprons should be confined to the furniture and curb zones.

Furniture Zone

The furniture zone is located between the curb line and the pedestrian zone. The furniture zone should contain all fixtures, such as street trees, bus stops and shelters, parking meters, utility poles and boxes, lamp posts, signs, bike racks, news racks, benches, waste receptacles, drinking fountains, and other street furniture to keep the pedestrian zone free of obstructions. In residential neighborhoods, the furniture zone is often landscaped. Resting areas with benches and space for wheelchairs should be provided in high volume pedestrian districts and along blocks with a steep grade to provide a place to rest for older adults, wheelchair users, and others who need to catch their breath.

Curb Zone

The curb zone serves primarily to prevent water and cars from encroaching on the sidewalk. It defines where the area for pedestrians begins, and the area for cars ends. It is the area people using assistive devices must traverse to get from the street to the sidewalk, so its design is critical to accessibility.

Other Sidewalk Guidelines

- Landscaped buffers or fences should separate sidewalks from off-street parking lots or off-street passenger loading areas.
- Pedestrian and driver sight distances should be maintained near driveways. Fencing and foliage near the intersection of sidewalks and driveways should ensure adequate sight distance as vehicles enter or exit.
- Where no frontage zone exists, driveway ramps usually violate cross slope requirements. In these situations, sidewalks should be built back from the curb at the driveway as shown in the adjacent photo.
- Construction tolerances require less than one quarter inch (1/4") vertical displacement between panel levels
- Sidewalks should be maintained so that a one inch (1") vertical displacement is not exceeded.

Land Use

The City of Pomona recently adopted a new General Plan. The Pomona Tomorrow section identifies districts with mixes of land uses, many determined in part due to prevailing street types in the area. Sidewalks will vary according to the type of street and land use. A local street with residences will require different sidewalk dimensions than an arterial with commercial establishments. The descriptions below indicate the type of pedestrian activity expected at each of the specified land uses. The matrix in the following section provides specific minimum requirements for the four sidewalk zones according to combinations of land use and street classifications.

Residential Neighborhoods

Pomona's residential neighborhoods vary greatly, and include a mix of densities, street network types, housing types, and architectural styles.

<u>Low-/Medium-Density Residential</u>

These streets are typically quieter than others and generally do not carry transit vehicles or high volumes of traffic. Pedestrians require a pleasant walking environment within these neighborhoods, as well as to access land uses and transit on nearby streets. Of the four sidewalk zones, the furniture zone is often the widest, to provide room for street trees.

<u>Medium-/High-Density Residential</u>

These streets support greater volumes of pedestrians. Streets with transit service require good pedestrian links to bus stops. The pedestrian zone should be wider than in low-/medium-density residential.

Activity Centers

Activity centers are districts or concentrations of development catalyzed by retail and other complementary uses.

Downtown

Downtown serves as the primary activity center of Pomona, as a place for commercial, residential, cultural, educational, and civic activity. The downtown core or Main Street is a pedestrian-oriented area. This is where the greatest numbers of pedestrians are encouraged and expected. The downtown core serves as the retail, restaurant, and entertainment center of a community. This area will need the widest sidewalks, the widest crosswalks, the brightest street lighting, the most furnishings, and other features that will enhance the pedestrian environment. Of the four sidewalk zones, the pedestrian and frontage zones will be favored, with a furniture zone wide enough for street trees.

Regional Centers

These areas have retail, office, civic, and recreational uses concentrated along major streets. Transit service runs along these streets and pedestrians need buffers from traffic. Of the four sidewalk zones, the pedestrian and furniture zones are favored. These sidewalks also should be designed with the understanding that a significant number of cars will cross sidewalks as they enter and exit commercial driveways.

Community Center/Neighborhood Centers

These are medium-sized centers that act as community shopping and gathering spaces. They often have grocers, laundromats, drug stores, and other neighborhood-serving retail establishments. Sidewalks in neighborhood commercial areas should accommodate pedestrians walking from residences to stores. Of the four sidewalk zones, the pedestrian zone should be the widest, with a generous frontage zone to provide room for features next to buildings such as newspaper boxes. These sidewalks should also be designed with the understanding that cars will cross sidewalks as they enter and exit commercial driveways.

Transit-Oriented Districts

Transit-oriented districts are the most active and walkable districts in the City, and feature development types of greater intensity. Sidewalks with wide pedestrian, frontage, and furniture zones best suit these areas.

Neighborhood Edges

The major vehicle corridors that traverse Pomona connect employment centers and mixed-use activity centers. They are primarily commercial, but represent an opportunity for shift to intensification of residential uses, streetscape enhancements, and mixed-use development. They are primarily along arterial and collector streets, and will need large furniture zones for bus stop areas and shade-giving trees.

Urban Neighborhoods

Urban neighborhoods are moderately intense clusters of development that contain a mix of uses. The sidewalks along these streets should support significant pedestrian volumes due to their integrated nature and higher densities. Of the four sidewalk zones, the pedestrian and frontage zones will be favored. Transit service may run along these streets and sidewalks will require buffers from traffic.

Workplace Districts

Industrial

Industrial streets are zoned for manufacturing, office warehousing, and distribution. Pedestrian volumes are likely to be lower here given that these land uses typically employ fewer people per square foot than general commercial areas. Employees will need good sidewalks to get to work.

Office Campus

These streets are home to national and regional offices of financial institutions, government, large companies, and other uses. Cities can expect pedestrians during the morning and evening commutes walking to and from their cars. Visitors will use the sidewalks throughout the day and employees will need them during the lunch hour. The furniture zone should provide adequate buffer from parking lots.

Special Campuses

Public Facilities

Public facilities streets, particularly streets near schools, libraries, and civic centers, require special attention and treatment. High pedestrian volumes are expected during peak times, such as school pick-up and drop-off, and during the morning and evening commute hours. Sidewalk design should accommodate these peak travel times and include adequate furniture zones to buffer pedestrians from the street. Public facilities are located on various types of streets ranging from local streets to arterials with transit service.

Other Campuses

Sidewalks at special campuses at the Fairplex, Lanterman Center, and Cal Poly Pomona require special consideration given the different types of development and uses within each campus.

The following table lists minimum widths for the frontage, pedestrian, furniture, and curb zones, as well as minimum total widths. These minimums should not be considered the design width; in many cases, wider zones will be needed.

Category	Land Use	Arterial	Collector	Local
RESIDENTIAL NEIGHBORHOODS	Low / Medium-Low Density Residential	Not applicable	Frontage: 18″ Pedestrian: 5′ Furniture: 4′, 6′-8′ at bus stops and where large trees are desired Curb: 6″	Frontage: 18″ Pedestrian: 5′ Furniture: 4′
	Med / High Density Residential	Frontage: 18″ Pedestrian: 6′ Furniture: 5′, 6′-8′ at bus stops and where large trees are desired Curb: 6″	Frontage: 18″ Pedestrian: 6′ Furniture: 5′, 6′-8′ at bus stops and where large trees are desired Curb: 6″	Frontage: 18″ Pedestrian: 6′ Furniture: 4′, 6′-8′ at bus stops and where large trees are desired Curb: 6″
ACTIVITY CENTERS	Downtown	Frontage: 30″, 8′ with cafe seating Pedestrian: 6′ Furniture: 5′, 6′-8′ at bus stops and where large trees are desired Curb: 6″	Frontage: 30″, 8′ with cafe seating Pedestrian: 6′ Furniture: 5′, 6′-8′ at bus stops and where large trees are desired Curb: 6″	Frontage: 30″, 8′ with cafe seating Pedestrian: 6′ Furniture: 5′
	Regional Centers	Frontage: 18″ Pedestrian: 6′ Furniture: 5′, 6′-8′ at bus stops and where large trees are desired	Frontage: 18″ Pedestrian: 6′ Furniture: 5′, 6′-8′ at bus stops and where large trees are desired	Not applicable

Category	Land Use	Arterial	Collector	Local
	Community / Neighborhood Centers	Not applicable	Frontage: 18″ Pedestrian: 6′ Furniture: 5′, 6′-8′ at bus stops and where large trees are desired Curb: 6″	Frontage: 18″ Pedestrian: 6′ Furniture: 4′, 6′-8′ at bus stops and where large trees are desired Curb: 6″
TRANSIT ORIENTED DISTRICTS		Frontage: 30″ Pedestrian: 8′ Furniture: 5′, 6′-8′ at bus stops and where large trees are desired Curb: 6″	Frontage: 30″ Pedestrian: 8′ Furniture: 5′, 6′-8′ at bus stops and where large trees are desired Curb: 6″	Frontage: 18″ Pedestrian: 6′ Furniture: 5′, 6′-8′ at bus stops and where large trees are desired Curb: 6″
NEIGHBORHOOD EDGES		Frontage: 18″ Pedestrian: 6′ Furniture: 5′, 6′-8′ at bus stops and where large trees are desired	Frontage: 18″ Pedestrian: 6′ Furniture: 5′, 6′-8′ at bus stops and where large trees are desired	Frontage: 18″ Pedestrian: 6′ Furniture: 5′, 6′-8′ at bus stops and where large trees are desired
URBAN NEIGHBORHOODS		Frontage: 30″, 8′ with cafe seating Pedestrian: 6′-12′ Furniture: 5′, 6′-8′ at bus stops and where large trees are desired Curb: 6″	Frontage: 30″, 8′ with cafe seating Pedestrian: 6′-12′ Furniture: 4′, 6′-8′ at bus stops and where large trees are desired Curb: 6″	Frontage: 18″ Pedestrian: 6′-12′ Furniture: 4′

Category	Land Use	Arterial	Collector	Local
WORKPLACE DISTRICTS	Industrial	Frontage: 18″ Pedestrian: 5′ Furniture: 5′ Curb: 18″	Frontage: 18″ Pedestrian: 5′ Furniture: 4′ Curb: 18″	Frontage: 18″ Pedestrian: 5′ Furniture: 4′ Curb: 18″
	Office Campus	Frontage: 18″ Pedestrian: 5′ Furniture: 5′ Curb: 6″	Frontage: 18″ Pedestrian: 5′ Furniture: 5′ Curb: 6″	Not applicable
SPECIAL CAMPUS	Public Facilities	Frontage: 30″ Pedestrian: 8′ Furniture: 5′, 6′-8′ at bus stops and where large trees are desired Curb: 6″	Frontage: 30″ Pedestrian: 8′ Furniture: 5′, 6′-8′ at bus stops and where large trees are desired Curb: 6″	Frontage: 18″ Pedestrian: 6′ Furniture: 5′, 6′-8′ at bus stops and where large trees are desired Curb: 6″

General Guidelines

For those few areas not covered by the table above, the following list provides general guidelines for sidewalks:

- The recommended minimum frontage zone width is 18 inches.
- The recommended minimum pedestrian zone width is 5 feet.
- The recommended minimum curb zone width is 6 inches or 18 inches where pedestrian or freight loading is expected and may conflict with obstacles in the furniture zone.
- The recommended minimum furniture zone width is 4 feet and 6 feet to 8 feet where bus stops exist.
- Low curbs (3 to 4 inches high) reduce the division between the traveled way and the sidewalk. They are favored in areas with significant pedestrian traffic. Low curbs also improve the geometry and feasibility of providing two perpendicular curb ramps per corner.
- Some judgment may be needed on a case-by-case basis to establish actual widths of each of the four zones.

APPENDIX A:
PUBLIC INPUT

IN-PERSON AND ON-LINE BIKEWAY FACILITY STAKEHOLDER INPUT

Facilities	Comments	Times Mentioned at Meetings	Times Mentioned on Website	Total
Fairplex Dr		2	2	4
	Fairplex Dr/McKinley Ave dangerous	1		1
Orange Grove Ave		8	1	9
	sharrows or lanes	1		1
	used as existing route	2		2
	bad conditions	1		1
Pomona Blvd		5	1	6
	already safe, unnecessary to improve	2		2
	used as existing route	1		1
	class 1 facility requested	1		1
	Connect to Humane Way	1		1
Holt Ave		9	3	12
	identify as potential future project	1		1
	lots of bikers already - bad conditions	5		5
	add bike lanes - lots of side parking	3		3
Mission Blvd		11	2	13
	add bike lane - minimize sidewalk	2		2
	continue bike lane from Diamond Bar	2		2
	good west of Dudley St (Appian Way and Allegro Ln)	1		1
	improve pavement condition, provide lanes at hills	2		2
	used as existing route	3		3
	safer for cyclists; doesn't cross 71	1		1
Rio Rancho Rd		1	1	2
	add bike lane by removing third lane	1		1
San Antonio Ave		4	1	5
	sharrows or lanes	1		1
	used as existing route	1		1
Towne Ave		5	2	7
	bad conditions	2		2
	used as existing route	2		2
Garey Ave		5	1	6
	bus/transit plaza dangerous	1		1
	new facilities	2		2
Park Ave		5	1	6
	sharrows or lanes	1		1
	used as existing route	1		1
Valley Blvd		8	4	12
	lots of bikers already - no alternative routes	2		2
	bad conditions	1		1
	bad conditions: resurfacing	1		1
	new facilities	1		1
2nd St		1		1
	new facilities	3		3
				0
Temple Ave		4	4	8
	new facilities	1		1
	bad conditions	1		1
	bad conditions: resurfacing	2		2
South Campus Dr		6		6
	bad conditions	1		1
	bad conditions: resurfacing	1		1
	new facilities	1		1
Indian Hill Blvd		3		3
	new facilities	1		1
	used as existing route	1		1
Palomares St		3	1	4
	new facilities	1		1
White Ave		5	1	6
	used as existing route	2		2
Philadelphia St		2		2
	used as existing route	1		1
San Bernardino Ave		3		3
	bad conditions: resurfacing	1		1
	used as existing route	1		1
McKinley Ave		2		2
	new facilities	1		1
	existing route: sharrows requested	1		1
Humane Way		3		3
	used as existing route	1		1
Hamilton Blvd		1		1
	improved lighting	1		1
1st St		1		1
	bikeway requested	1		1
9th St		1	1	2
	bikeway requested	1		1
Foothill Blvd		1	1	2

	bad conditions	1		1
Kingsley		1		1
	used as existing route	1		1
Reservoir St		1		1
	used as existing route	1		1
State St		2		2
Val Vista St		2		2
Arrow Hwy		1	1	2
La Verne Ave/San Jose Ave		1	1	2
Bonita Ave		2	2	4
Kellogg Dr		1	1	2
Laurel Ave		1		1
Avenida Rancheros/Village Loop Rd/Rio Rancho Rd		4	3	7
Dudley St		2		2
Ridgeway Ave		1		1
Improve Connectivity		4		4
	along and across 71	2		2
	to other existing bike paths (Pacific Electric Trail), via Arrow Hwy?	2		2
	Investigate bike/ped path east side of SR-71	1		1
Community Embrace		2		2
	introduce sharrows	1		1
	finish bike paths to increase excitement	1		1

POMONA STAKEHOLDER FACILITY PRIORITIZATION

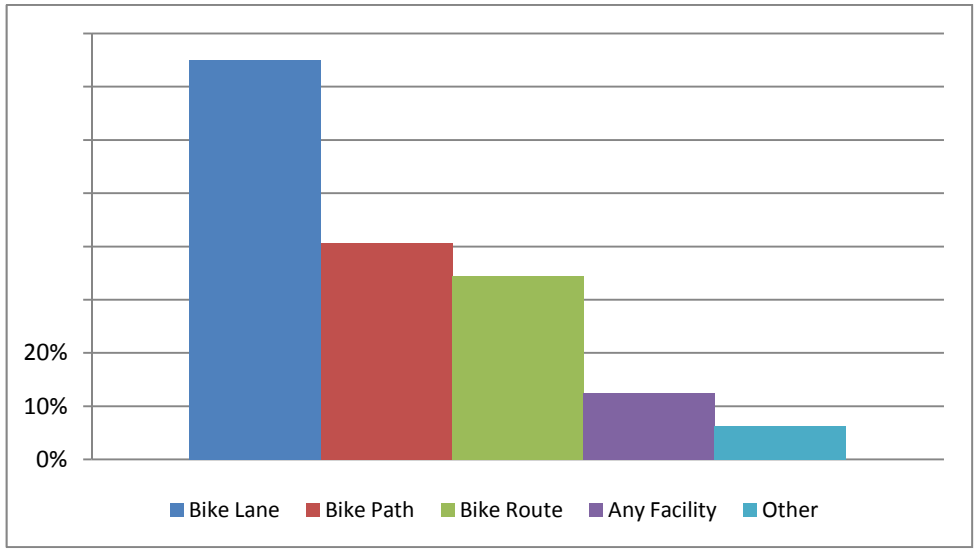
Facilities	Green	Blue	Red	Priority (G=3,B=2,R=1)	Total Votes
Holt Ave	4	3	2	20	9
Mission Blvd	5	1	3	20	9
Pomona Creek	2	0	3	9	5
San Antonio Ave	2	1	1	9	4
Orange Grove Ave	0	2	3	7	5
Bonita Ave	0	2	0	4	2
Park Ave	0	2	0	4	2
Towne Ave	1	0	0	3	1
White Ave	0	1	1	3	2
Fairplex Dr	0	1	0	2	1
9th St	0	1	0	2	1
Rio Rancho Rd	0	1	0	2	1
Indian Hill Blvd	0	1	0	2	1
Monterey Ave	0	0	1	1	1
Garey Ave	0	0	1	1	1
Connection across 71	0	1	0	2	1

STAKEHOLDER PARKING INPUT - JULY PUBLIC MEETING

Intersection		Specific Location	Comments
Park Ave	2nd St		
Indian Hill Blvd	Holt Ave	Swap Meet	very busy during meet hours
Towne Ave	Lexington Ave	Cemetery	walking path needs repaving
Garey Ave	Philadelphia Ave	Shopping Center	
Towne Ave	Market Pl	Shopping Center	
SR 71	Mission Blvd	Golf Course	
SR 71	2nd St	Pomona Labor Center	
White Ave	Monterey Ave	Post Office	
Garey Ave	La Verne Ave	Post Office & other	
		Fairgrounds	at all major intersections and lots
Garey Ave	Santa Fe St	North Metrolink Station	
White Ave	Mckinley Ave	Ganesha Park	more evenly distributed
Dudley St	Mission Blvd	Seven Eleven	
Mission Blvd	Dudley St	Seven Eleven	
	Temple	Kwik Country Mart	
White Ave			
Schools		Ranch Hills Elementary	
Rio Rancho Road	Country Mile Road	Shopping center	just east of country mile road
2nd Street	Park/Parcel		
Palomares Park			
La Verne	Arrow		
Destinations			
		Taco Shops	and other fast-food / convenience stores
		Older Bike Racks	retrofit for safety
		Banks	

Question 1: What type of bicycle facilities do you prefer?	
Type of facility	*Total*
Bike lanes on major streets/commercial corridors	24
Bike paths along railroads or waterways/flood channels	13
Bike routes/bike boulevards on smaller or more residential streets	11
Riding in regular vehicular travel lanes	4
Other (examples)	2
Connections to Downtown Pomona	
Open streets event/ciclovia	

# of Surveys	32
75%	Bike Lanes
41%	Bike Paths
34%	Bike Routes
13%	Any Facility
6%	Other (connections to downtown Pomona/Open streets event)
169%	



Question 2: Please list up to five locations where you would like to see bicycle parking.			
Intersection		**Specific Location**	**Times mentioned**
Street 1	Street 2		
2nd St	Thomas St	Glasshouse Records	2
2nd Street	Main Street		1
2nd Street			1
3rd St	Thomas St	Pho Vi	1
Fairplex Dr.	I-10 Freeway		1
Franklin Ave	Town Ave		1
Garey	Marketplace		1
Garey	Mission	Public Library, City Hall, Courthouse	2
Garey	Willow	Garey Plaza	1
Garey		"all of it"/ from Foothill to S. Pomona	5
Garey Avenue	2nd St	Glasshouse Records	3
Garey Avenue	3rd St	Fox Theater	1
Grand	Towne		1
Holt		"all of it"	3
Indian Hill	Hott	Pomona Indoor Swap Meet	1
Mission	Dudley	Adult School	1
Monterey	White	post office	1
S. Campus Blvd.			1
Town Ave			1
W. Temple Ave		near college's connection to West Covina	1
White	Arrow		1
White	Foothill	near Fairplex	1
White	McKinley		1
White Ave	Orange Grove	Subway/7-11	2
White Ave			1
		Brackett Field Airport	1
		Community pools	1
		Council District 1	1
		Council District 2	1
		Council District 3	1
		Council District 4	1
		Council District 6	1
		Downtown Pomona	11
		Fairplex	2
		Fairplex Park & Ride	1
		Ganesha Park Community Center	4
		large shopping centers	1
		Lincoln Park	1
		Mission Promenade	1
		N. Pomona Metrolink Station	5
		small businesses	1
		Cal Poly Pomona	4
		Palomares Adobe	1
		parks	3
		Pomona Transit Center	4
		public areas	1
		schools	2
		stores/restaurants	1
		Thomas Plaza	1
		Washington Park	1

Writeup

Participants suggested 52 places for bicycle parking, ranging from specific businesses and intersections to entire City Council districts. Many locations were mentioned more than once. Downtown Pomona and locations within it were mentioned 26 times. The North Pomona Metrolink station and the Pomona Transit Center were mentioned 11 times. Participants described a need for bicycle parking at local and regional destinations including parks, Cal Poly Pomona, the Fairplex and public facilities such as post offices and libraries. Major transportation corridors were also a key location for bicycle parking. Garey Avenue and intersections along it were mentioned 13 times. Other frequently mentioned corridors include White Avenue (mentioned 6 times), 2nd Street (6 times) and Holt Avenue (3 times).

Question 3: Would you like to share anything else that would make bicycling in Pomona easier for you?	
Factor	**Times mentioned**
Better visibility for commuters	1
Use Cal Poly Pomona bike racks designed by architecture students	1
Downtown-Cal Poly connection	1
Improve conditions/cyclist detection at busy intersections	1
Streetlights	2
Safety	1
Better pavement on streets	1
Triple bike racks on buses/assurance that bike will be able to fit on bus	2
Better bike parking	1
Bike carrying space on Metrolink	1
Bike carrying space on Foothill Transit buses	1
Traffic calming	1
Education for drivers and police on cyclists' right to the road	1
Education and enforcement of right-side riding	1
Bike lanes	2
Water fountains	2
Clearer roads on major boulevards	1
Signage	1
Increased care for bikes by drivers	1
Secure bike parking at transit centers	1
Bicycle boulevards along major corridors (Garey, Holt, Temple, Mission) for bike commuting	1
Green-painted bike lanes like in City of LA	1
Bilingual bicycle signs	1
Bike lanes that leave room for the doors of parked cars	1

Summary	
Facilitating bicycles on transit	4
Metrolink	1
Foothill Transit buses	1
Triple bike racks	1
Secure bike parking at transit	1
Bicycle facilities	13
Bicycle lanes(inc. green lanes, wide lanes near parked cars)	4
Bicycle parking (including secure parking at transit centers)	2
Bilingual signage	1
Water fountains	2
Bicycle loop detectors at intersections	1
Lighting and visibility	3
Education	4
Increased driver awareness and respect for bicyclists	2
Police education about right to road	1
Bicyclist education about riding on the right side of the street	1
General street maintenance and engineering	3
Traffic calming	1
Better condition pavement	1
Keeping major roads clear of debris	1
Bicycle access to destinations	3
Cal Poly Pomona	1
Downtown Pomona	1
Major corridors (Garey, Holt, Temple, Mission)	1
Safety	1

APPENDIX B:
BIKE LANE FEASIBILITY ANALYSIS

As part of the Pomona Bicycle Master Plan project, Fehr & Peers developed a list of proposed bicycle facilities for the City with the goal of increasing connectivity and generally expanding the dedicated bicycle network. Fehr & Peers assessed the proposed facilities for feasibility and classified the proposed facilities based on the facility type that could be implemented under current configurations or with associated modifications. This appendix describes the methodology behind the assessment and presents the findings in tabular format, where applicable.

We assessed the facilities against criteria specific to the group they were presented in. In some cases, they were assessed against criteria from other groups to determine if a facility could be built to a higher level. The criteria are as follows:

Class 1 Bikeways: We measured the typical width and horizontal clearance in Google Earth for sections where these might be constraining factors. The minimum width for a Class 1 Bikeway is considered to be 10' for this study, with at least 2' of clearance on each side from other obstructions. Crossings at streets or physical barriers were also assessed, with special considerations noted.

Class 2 Bike Lanes: Feasibility is determined by comparing the actual curb-to-curb width of a roadway with the minimum width necessary to support the current number of lanes plus 5' bike lanes in each direction. For this analysis, the minimum lane widths are considered to be 10' for through/turn lanes, and 12' for lanes that are curb-adjacent. Where parking is permitted, 8' was added to the total lane width. Painted medians and two-way left turn lanes were considered to be through/turn lanes in most cases. Raised medians and curb lines are considered to be static; these analyses assume that no physical construction or demolition would occur.

Through this comparison we determined if bike lanes can be installed along a roadway segment without decreasing the number of lanes or eliminating any parking. The analysis typically breaks proposed improvement sections into smaller segments depending on changes in layout or physical characteristics. Thus a bike lane may be feasible within one block and infeasible within the next block if lanes are added or total width changes.

Class 3 Bike Routes: Bike routes are typically selected where connectivity could be improved by filling gaps in the system, but there isn't sufficient space to install bike lanes. For this analysis, the total widths of the proposed bike route streets were compared to the minimum widths necessary for bike lanes (as outlined previously) to ensure that a full Class 2 facility could not be implemented.

Future Potential Bicycle Facilities: Feasibility for different facility types was tested using the steps above. In many cases, public input, bicycle network gaps, and accessibility to key destinations indicated that there was demand for a facility that could not be implemented with the existing roadway configuration. These locations will undergo future study to determine the feasibility of bicycle facility implementation and consideration of new treatments that will result in the provision of bicycle facilities.

This appendix shows the results of the analysis along with notes about facilities and any field measurements or observations. This was done where the total width was within 4' of the minimum width. Tables comparing widths show the difference between the necessary width and existing width in the columns labeled "Delta", and use a color coding system to indicate feasibility of improvements. Green indicates feasible, red indicated infeasible. A blue color indicates a value within 4' of the minimum, which was therefore verified in the field.

			Existing Lanes					Width Needed (feet) (including 2-way bike lanes)														
								12	10	8	1	1	5									
Facility	Between... (N/W)	... and (S/E)	Curb Travel	Travel/Turn	Parking	Striped Median/Center-Left Turn Lane (ft.)	Raised Median (feet)	Curb/#2 Travel Lane	Travel	Parking	Striped Median/Center-Left Turn Lane (ft.)	Raised Median (feet)	Bike Lanes (2 x 5 ft.)	TOTAL	Existing Width (ft.)	Delta	Notes	Add'l Notes	ADT (2006)	Truck Route	Facility Type	Distance (miles)
#2: San Antonio Avenue																						
San Antonio Avenue	Towne Avenue	McKinley Avenue		2	2			0	20	16	0	0	10	46	54	8	Parking not signed or striped		7,023	N	Bike Lane	1
	McKinley Avenue	Columbia Avenue		4	2			0	40	16	0	0	10	66	64	-2	Parking not signed or striped		10,939	N	Bike Lane After Road Diet (to Alvarado)	0.3
	Columbia Avenue	San Francisco Avenue		3	2			0	30	16	0	0	10	56	62	6	Parking lane striped		8,551	N	Bike Lane (from Alvarado to Holt)	0.35
	San Francisco Avenue	Holt Avenue		3	2			0	30	16	0	0	10	56	62	6	Parking not signed or striped		8,551	N	Bike Lane (from Alvarado to Holt)	
	Holt Avenue	Phillips Boulevard		3	2			0	30	16	0	0	10	56	68	12	Parking not signed or striped		9,831	N	Bike Lane After Road Diet (to 2nd)	0.35
	Phillips Boulevard	Philadelphia Street		2	2			0	20	16	0	0	10	46	60	14	Parking not signed or striped		3,724	N	Bike Lane (2nd to Philadelphia)	1.7
	Philadelphia Street	County Road		2	2			0	20	16	0	0	10	46	34	-12	Parking not signed or striped; lanes not striped		3,581	N	Bike Route	0.5
#3: Park Avenue																						
Park Ave	Garey Avenue	10 Fwy		2	2			0	20	16	0	0	10	46	56	10			3,135	N	Bike Route	1.5
	10 Fwy	Orange Grove Avenue		4	2			0	40	16	0	0	10	66	52	-14	Parking not signed or striped; left turn pockets for minor may be unnecessary		3,135	N	Bike Route	
	Orange Grove Avenue	Alvarado Street		3	2			0	30	16	0	0	10	56	48	-8	Parking not signed or striped; left turn pockets for minor may be unnecessary		3,135	N	Bike Route	
	Alvarado Street	3rd Street		3	2			0	30	16	0	0	10	56	54	-2	Parking not signed or striped		5,075	N	Bike Route	
	3rd Street	Mission Boulevard		3	2			0	30	16	0	0	10	56	64	8	Parking not signed or striped		5,075	N	Bike Lane	2
	Mission Boulevard	11th Street		3	2			0	30	16	0	0	10	56	56	0	Parking not signed or striped		4,701	N	Bike Lane	
	11th Street	Franklin Avenue		3	2			0	30	16	0	0	10	56	62	6	Parking not signed or striped		4,701	N	Bike Lane	
	Franklin Avenue	Rio Rancho Road		3	2			0	30	16	0	0	10	56	60	4	Parking not signed or striped		5,415	N	Bike Lane	
	Rio Rancho Road	Olive Street		2	2			0	20	16	0	0	10	46	45	-1	Parking not signed or striped		8,499	N	Bike Lane	
	Olive Street	Geneva Street		2	2			0	20	16	0	0	10	46	35	-11	Parking not signed or striped; lanes not striped		N/A	N	Bike Route	0.35
#4: Palomares																						
Palomares St	McKinley Avenue	Alvarado Street		2	2			0	20	16	0	0	10	46	40	-6	Parking not signed or striped,		1,400	N	Bike Route	0.7
	Alvarado Street	Pasadena Street		2	2			0	20	16	0	0	10	46	44	-2	Parking not signed or striped,		2,494	N	Bike Route	
	Pasadena St	Commmercial Street		2	2			0	20	16	0	0	10	46	52	6	Parking not signed or striped,		2,494	N	Bike Lane	1.3
	Commercial Street	4th Street		2	2			0	20	16	0	0	10	46	52	6	Diagonal parking is striped and includes at-grade crossing at tracks. Bike Lanes would require removal		3,442	N	Bike Lane	
	4th Street	Phillips Boulevard		2	2			0	20	16	0	0	10	46	54	8	Parking not signed or striped,		3,487	N	Bike Lane	
	Phillips Boulevard	Franklin Avenue		2	2			0	20	16	0	0	10	46	44	-2	Parking not signed or striped; lanes not striped; adjacent to Philadelphia Elementary School		2,564	N	Bike Route	0.25
#5: Garey Ave																						
Garey Ave	Foothill Boulevard	La Verne Avenue		4	2		10	0	40	16	0	10	10	76	82	6	Raised median becomes LTL at intersections; parking not signed or striped		17,867	Y	Bike Lane	1.6
	La Verne Avenue	Monterey Avenue		5	2			0	50	16	0	0	10	76	68	-8	Parking not signed or striped		19,951	Y	Bike Lane	
	Monterey Avenue	Pomona Mall Street	2	4			6	24	40	0	0	6	10	80	90	10			14,330	Y	Bike Lane	
	Pomona Mall Street	Mission Boulevard		5	2			0	50	16	0	0	10	76	70	-6	Parking limited or restricted		21,742	Y	Bike Lane	
	Mission Boulevard	9th Street		5	2			0	50	16	0	0	10	76	66	-10	Parking not signed or striped		22,868	Y	Bike Lane	
	9th Street	Grand Avenue		4	2		9	0	40	16	0	9	10	75	66	-9	Parking not signed or striped; raised median becomes LTL at intersections		22,868	Y	Potential Future Bike Facilities	2.7
	Grand Avenue	County Road	2	2			9	24	20	0	0	9	10	63	68	5			22,868	Y	Bike Lane	1.6
	County Road	Riverside Drive	2	2			28	24	20	0	0	28	10	82	84	2	median becomes LTL		20,295	Y	Bike Lane	
#6: Valley Bl/Holt Ave																						

			Existing Lanes					Width Needed (feet) (including 2-way bike lanes)												
								12	10	8	1	1	5							
Facility	Between... (N/W)	... and (S/E)	Curb Travel	Travel/Turn	Parking	Striped Median/Center-Left Turn Lane (ft.)	Raised Median (feet)	Curb/#2 Travel Lane	Travel	Parking	Striped Median/Center-Left Turn Lane (ft.)	Raised Median (feet)	Bike Lanes (2 x 5 ft.)	TOTAL	Existing Width (ft.)	Delta	Notes	Add'l Notes	ADT (2006)	Truck Route	Facility Type	Distance (miles)
Valley Boulevard	Temple Avenue	Fairplex Drive		4	2	10		0	40	16	10	0	10	76	76	0	Striped median becomes LTL at intersections; parking not signed or striped; width between 76' and 80'; median becomes raised for last block between Humane Way and Fairplex Drive (under Chino Freeway), Truck route, ADT 21,700-37,900	X-section at 76' with BLs and 10' lanes, 2A at 76'	18,543	Y		
Holt Avenue	Valley Boulevard	Union Avenue		4	2	10		0	40	16	10	0	10	76	86	10	Parking not signed or striped, Truck route, ADT 21,700-37,900	X-section at 76' with BLs and 10' lanes, 2A at 76' - need to consider 86'	30,236	Y		
	Union Avenue	Dudley Street		5	2			0	50	16	0	0	10	76	76	0	Parking not signed or striped, Truck route, ADT 21,700-37,900	X-section at 76' with BLs and 10' lanes, 2A at 76'	30,236	Y		
	Dudley Street	Reservoir Street		5	2			0	50	16	0	0	10	76	68	-8	Parking not signed or striped, Truck route, ADT 21,700-37,900	No recommendation	25,332	Y	Bike Lane After Removal of Parking (San Antonio to Reservoir)	0.2
	Reservoir Street	East End Avenue		5	2			0	50	16	0	0	10	76	80	4	Parking not signed or striped, Truck route, ADT 21,700-37,900	X-section 2B at 80' with 7' BL and 10' lanes, widen outside lanes	30,358	Y	Bike Lane (Reservoir to NE End)	0.5
	East End Avenue	Indian Hill Blvd		5	2		2	0	50	16	0	2	10	78	80	2	Parking not signed or striped; rasied median of varying width, depending on LTL; e/o Indian Hill, Holt continues with ~80ft curb-to-curb and raised median of varying width, Truck route, ADT 21,700-37,900	X-section 2B at 80' with 7' BL and 10' lanes, widen outside lanes	32,965	Y		
#7: San Bernardino Avenue																						
San Bernardino Ave	Gibbs Street	Towne Avenue		2	2			0	20	16	0	0	10	46	36	-10	Parking not signed or striped		N/A		No Proposed Facilities	
	Towne Avenue	San Antonio Avenue		3	2			0	30	16	0	0	10	56	55	-1	Parking not signed or striped		9,731		No Proposed Facilities	
San Bernardino Ave	San Antonio Avenue	Bonnie Brae Street		3	2			0	30	16	0	0	10	56	55	-1	Parking not signed or striped		9,731		Bike Lane	1.5
	Bonnie Brae Street	Mills Avenue		2	2			0	20	16	0	0	10	46	52	6	Parallel access road also potential route		9,731		Bike Lane	
#8: Caswell Ave/Kingsley Ave																						
Caswell Ave	Alvarado St	Kingsley Ave																	N/A		Bike Route	0.1
Kingsley Ave	Caswell Ave	ECL																	5,303		Bike Route	1.3
#9: Alvarado St																						
Alvarado St	Huntington St	San Antonio Ave																	3,797		Bike Route	1.5
#10: McKinley Avenue																						
McKinley Ave	Fairplex Dr	Paige Drive	2	1				24	10	0	0	0	10	44	46	2			10,484	N	Bike Lane	1.7
	Paige Drive	White Avenue	2	2				24	20	0	0	0	10	54	58	4			10,484	N	Bike Lane	
	White Avenue	Orange Grove Avenue		2	2			0	20	16	0	0	10	46	50	4			5,955	N	Bike Lane	
	Orange Grove Avenue	Gibbs Avenue		2	2			0	20	16	0	0	10	46	55	9			2,290	N	Bike Lane	
	Gibbs Avenue	Palomares Street		2	2			0	20	16	0	0	10	46	36	-10			2,290	N	Bike Route	0.1
	Palomares Street	Towne Ave		2	2			0	20	16	0	0	10	46	50	4			2,290	N	Bike Lane	0.2
#11: 2nd Street																						
2nd St	Chino Valley Fwy	Oak Avenue		2	2			0	20	16	0	0	10	46	45	-1	Parking not signed or striped; lanes not striped		666	N	Bike Route	3
	Oak Avenue	Buena Vista Avenue		2	2			0	20	16	0	0	10	46	50	4	Parking not signed or striped		1,814	N	Bike Route	
	Buena Vista Avenue	Park Avenue		2	2			0	20	16	0	0	10	46	45	-1			1,968	N	Bike Route	
	Park Avenue	Gibbs Street		2	2			0	20	16	0	0	10	46	35	-11	Width varies with parking and landscaping		N/A	N	Bike Route	
	Gibbs Street	Towne Avenue						0	0	0	0	0	10	10		-10	Landscaped pedestrian promenade, closed to vehicular traffic		N/A	N	Bike Route	
	Towne Avenue	Reservoir St		2	2			0	20	16	0	0	10	46	45	-1	Parking not signed or striped; lanes not striped		N/A	N	Bike Route	
#12: Phillips Boulevard																						
Phillips Blvd	Dudley St	Buena Vista Ave		4	2			0	40	16	0	0	10	66	74	8	No TWLTL on this segment.		N/A	N	Bike Lane	0.3
	Buena Vista Ave	Reservoir Street		5	2			0	50	16	0	0	10	76	67	-9	Parking is not signed or striped; no parking in certain areas; width between 67' and 81'. Need road diet on		6,615	Y	Bike Lane After Road Diet	2
	Reservoir Street	Signal Drive		3	2			0	30	16	0	0	10	56	69	13	Parking is not signed or striped; width between 52' (adjacent to Reservoir) and 69'		4,825	Y	Bike Lane	0.5

			Existing Lanes					Width Needed (feet) (including 2-way bike lanes)													
								12	10	8	1	1	5								
Facility	Between... (N/W)	... and (S/E)	Curb Travel	Travel/Turn	Parking	Striped Median/Center-Left Turn Lane (ft.)	Raised Median (feet)	Curb/#2 Travel Lane	Travel	Parking	Striped Median/Center-Left Turn Lane (ft.)	Raised Median (feet)	Bike Lanes (2 x 5 ft.)	TOTAL	Existing Width (ft.)	Delta	Notes	Add'l Notes	ADT (2006)	Truck Route	Facility Type	Distance (miles)
	Signal Drive	ECL	2	1				24	10	0	0	0	10	44	47	3	Two travel/turn lanes east of bridge over drainage channel; width between 31' and 47'		4,825	Y	Bike Lane	
#13: 9th Street																						
9th St	Butterfield Rd	Dudley St		2	2			0	20	16	0	0	10	46	34	-12	Parking not signed or striped. Lanes not striped (residential street). Speed humps 300 ft east of intersection with Butterfield and 300 ft wet of intersection with Curran Pl.		N/A	N	Bike Route	0.35
	Dudley St	Buena Vista Ave		2	2			0	20	16	0	0	10	46	65	19	Parking not signed or striped.		3,651	N	Bike Lane	3
	Buena Vista Ave	Hamilton Blvd		2	2			0	20	16	0	0	10	46	65	19	1 EB travel lane and 18 ft wide angled parking adjacent to high school, otherwise unstriped parallel parking and 2 EBtravel lanes.	Need to deal with angled parking.	3,651	N	Bike Lane	
	Hamilton Blvd	White Ave		2	2			0	20	16	0	0	10	46	60	14	Parking not signed or striped.		3,651	N	Bike Lane	
	Hamilton Blvd	ECL		2	2			0	20	16	0	0	10	46	55	9	Parking not signed or striped. Width varies between 50 and 60 ft between Hamilton and Eastern City Limits.		3,765	N	Bike Lane	
#14: Hamilton Boulevard																						
Hamilton Blvd	Orange Grove Avenue	Laurel Av		4	2			0	40	16	0	0	10	66	62	-4			4,299	N	Bike Lane After Road Diet	0.3
	Laurel Av	Holt Ave		5	2			0	50	16	0	0	10	76	66	-10			4,299	N	Bike Lane	0.7
	Holt Ave	Mission Bl		4	2			0	40	16	0	0	10	66	65	-1			6,019	N	Bike Lane	
	Mission Blvd	6th St		3	2			0	30	16	0	0	10	56	68	12	Class II bike lanes in place: 5 ft wide SB		6,019	N		
	6th St	Phillips Blvd		3	2			0	30	16	0	0	10	56	68	12	Class II bike lanes in place:5.5 ft wide NB, 5 ft wide SB		6,019	N		
#15: Artesia St																						
Artesia St	Alameda Street	Park Av		2	2			0	20	16	0	0	10	46	40	-6	Class III or remove parking		N/A	N	Bike Route	0.4
#16: Alameda Street																						
Alameda St	Park Ave	Artesia St		2	2			0	20	16	0	0	10	46	36	-10	Class III or remove parking		N/A	N	Bike Route	0.3
#17: Orange Grove Ave																						
Orange Grove Ave	Fairplex Drive	Dudley Street		4	2			0	40	16	0	0	10	66	60	-6	Parking not signed or striped		6,152	N	Bike Lane After Road Diet	1
	Dudley Street	Lewis Street		4	2			0	40	16	0	0	10	66	56	-10	Parking not signed or striped		5,777	N	Bike Lane After Road Diet	
	Lewis Street	Casa Vista Drive		3	2			0	30	16	0	0	10	56	56	0	Parking striped on EB side of road		5,777	N	Bike Route	1.3
	Casa Vista Drive	Huntington Street		3	2			0	30	16	0	0	10	56	48	-8	Parking not signed or striped		8,381	N	Bike Route	
Orange Grove Ave	Huntington Street	White Avenue		3	2			0	30	16	0	0	10	56	42	-14	Parking not signed or striped		10,229	N	Bike Route	
	White Avenue	Garey Avenue		4	2			0	40	16	0	0	10	66	56	-10	Parking not signed or striped		11,299	N	Bike Route	
	Garey Avenue	Artesia Street	2	3				24	30	0	0	0	10	64	56	-8	Red curb; passes under I-10		9,645	N	Bike Route	
	Artesia Street	La Verne Avenue	2	3				24	30	0	0	0	10	64	56	-8	Red curb/no parking		10,543	N	Bike Lane After Road Diet	0.5
	La Verne Avenue	E Arrow Hwy		2	2			0	20	16	0	0	10	46	56	10	Parking not signed or striped; street resurfacing underway in aerial, not clear what current striping is		5,538	N	Bike Lane	0.6
#18: Murchison Ave																						
Murchison Ave	Ridgeway	Fairplex Dr	2	2				24	20	0	0	0	10	54	55	1			8,094	N	Bike Lane	0.7
#19: Ridgeway Street																						
Ridgeway St	Murichson Ave	South Campus Drive		4	2			0	40	16	0	0	10	66	63	-3	Parking not signed or striped; no parking in certain areas		8,155	N	Bike Lane	0.5
	South Campus Drive	Valley Bl	2	2				24	20	0	0	0	10	54	43	-11	No parking		8,155	N	Bike Lane	
	Valley Bl	Mt. Vernon Av	1	1	1			12	10	8	0	0	10	40	34	-6	Parking not signed or striped.		8,155	N	Bike Route	0.25
#20: La Verne Ave																						
La Verne Ave/ San Jose Ave	Arrow Highway	Fulton Road		2	2			0	20	16	0	0	10	46	45	-1	Parking not signed or stiped; use of parking seems unlikely		9,100	N	Bike Lane	1.1

			Existing Lanes					Width Needed (feet) (including 2-way bike lanes)												
								12	10	8	1	1	5							
Facility	Between... (N/W)	... and (S/E)	Curb Travel	Travel/Turn	Parking	Striped Median/Center-Left Turn Lane (ft.)	Raised Median (feet)	Curb/#2 Travel Lane	Travel	Parking	Striped Median/Center-Left Turn Lane (ft.)	Raised Median (feet)	Bike Lanes (2 x 5 ft.)	TOTAL	Existing Width (ft.)	Delta	Notes	Add'l Notes	ADT (2006)	Truck Route	Facility Type	Distance (miles)
	Fulton Road	Orange Grove Avenue		2	2			0	20	16	0	0	10	46	56	10	Parking not signed or striped		10,104	N	Bike Lane	
	Orange Grove Avenue	Towne Avenue		2	2			0	20	16	0	0	10	46	54	8	Parking not signed or striped		8,361	N	Bike Lane	
	Towne Avenue	Mountain Avenue		3	2			0	30	16	0	0	10	56	56	0	Parking not signed or striped		7,939	N	Bike Route	0.8
	Mountain Avenue	Indian Hill Blvd		3	2			0	30	16	0	0	10	56	56	0	Class II bike lanes already in place		4,796	N		
	Indian Hill Blvd	Colgate Place		4	1			0	40	8	0	0	10	58	60	2	Class II bike lane in place on WB side		N/A	N		
	Colgate Place	College Avenue		3	1			0	30	8	0	0	10	48	50	2	Class II bike lane in place on WB side; confusion between parking and bike lane – cars parked in bike lane		N/A	N		
	College Avenue	Mills Avenue		2				0	20	0	0	0	10	30	34	4	Class II bike lanes already in place? Confusion between parking and bike lane – cars parked in bike lane. Lane not well marked and no signs prohibiting parking		N/A	N		
#21: Casa Vista Dr																						
Casa Vista Dr	Murchison Ave	Orange Grove Ave																	N/A	N	Bike Route	0.3
#22: Laurel Ave																						
Laurel Ave	Dudley St	White Ave		2	2			0	20	16	0	0	10	46	45	-1	Parking not signed or striped; lanes not striped		N/A	N	Bike Route (Erie to Hamilton)	0.9
#23: Rio Rancho Road																						
Rio Rancho Road	Old Wood Road	Phillips Ranch Road	2	2			13	24	20	0	0	13	10	67	60	-7			12,519	N	Bike Path	1
	Village Loop Road	Rio Rancho Road	2	2			13	24	20	0	0	13	10	67	70	3			12,519	N	Bike Route	1.5
	Phillips Ranch Road	Chino Valley Freeway Bridge	1	4	1		13	12	40	8	0	13	10	83	85	2	Parking on eastbound side of street		17,265	N	Bike Route	
	Chino Valley Freeway Bridge	Park Ave (Garey Avenue)	2	2			13	24	20	0	0	13	10	67	65	-2	65 feet appears to be most constrained section; width and turn lanes vary significantly across this 0.3-		14,613	N	Bike Route	
#24: Dudley St																						
Dudley St	Val Vista	Gillette Road		2	2			0	20	16	0	0	10	46	36	-10	Parking not signed or striped; use of parking seems unlikely		6,827	N	Bike Route	0.2
	Gillette Road	Murchison Avenue		2	2			0	20	16	0	0	10	46	50	4	Parking not signed or striped; use of parking seems unlikely		6,827	N	Bike Lane	0.3
	Murchison Avenue	Holt Ave		5	2			0	50	16	0	0	10	76	64	-12	Parking not signed or striped		5,979	N	Bike Route	0.6
#25: Fremont St/Franklin Avenue																						
Fremont St	Hansen Ave	Garey		2	2			0	20	16	0	0	10	46	38	-8	Parking not signed or striped,		N/A	N	Bike Route	2.6
Franklin Ave	Garey	ECL		2	2			0	20	16	0	0	10	46	46	0	Parking not signed or striped,		3,411	N	Bike Route	
#26: Lexington Avenue																						
Lexington Ave	Hamilton/Waters	White Avenue		2	2			0	20	16	0	0	10	46	45	-1	Parking not signed or striped, western residential segment		3,405	N	Bike Route	0.8
	White Avenue	Garey Avenue		3	2			0	30	16	0	0	10	56	55	-1	Adjacent to many schools, squeeze in lane or consider removal of TWLTL?		6,284	N	Bike Route	
	Garey Avenue	ECL		2	2			0	20	16	0	0	10	46	54	8			1,090	N	Bike Lane	1.3
#27: Philadelphia Street																						
Philadelphia St	Garey Avenue	Virginia Avenue		5	2			0	50	16	0	0	10	76	68	-8	Parking not signed or striped		9,419	N	Bike Lane After Road Diet	1.3
	Virginia Avenue	San Antonio Avenue		5	2			0	50	16	0	0	10	76	75	-1	Parking not signed or striped		9,419	N	Bike Lane After Road Diet	
	San Antonio Avenue	Reservoir Street		5	2			0	50	16	0	0	10	76	73	-3	Parking not signed or striped		8,792	N	Bike Lane After Road Diet	
Philadelphia St	Reservoir Street	East End Avenue		5	2			0	50	16	0	0	10	76	70	-6	Parking not signed or striped; narrows to 2 lanes, no parking, and 26 feet at eastern city limit, just before		5,769	N	Bike Lane After Road Diet	
#28: Olive St																						
Olive St	Park Ave	ECL																	2,232	N	Bike Route	1.5
#29: Mountain Avenue																						
Mountain Ave	San Jose Ave	Bonita Ave						0	0	0	0	0	10	10		-10			N/A	N	Bike Route (Arrow to San Bernardino)	0.6

			Existing Lanes					Width Needed (feet) (including 2-way bike lanes)													
								12	10	8	1	1	5								
Facility	Between... (N/W)	... and (S/E)	Curb Travel	Travel/Turn	Parking	Striped Median/Center-Left Turn Lane (ft.)	Raised Median (feet)	Curb/#2 Travel Lane	Travel	Parking	Striped Median/Center-Left Turn Lane (ft.)	Raised Median (feet)	Bike Lanes (2 x 5 ft.)	TOTAL	Existing Width (ft.)	Delta	Notes	Add'l Notes	ADT (2006)	Truck Route	Facility Type	Distance (miles)
#30: Monterey Ave																						
Monterey Ave	Hamilton Bl	Huntington Street		3	2			0	30	16	0	0	10	56	45	-11	Parking not signed or striped, TWLTL, bike lanes only possible with removal of parking or TWLTL		1,727	N	Bike Route (from Myrtle)	2
	Huntington Street	White Avenue		3	2			0	30	16	0	0	10	56	62	6	Parking not signed or striped, TWLTL		1,727	N	Bike Route	
	White Avenue	Rebecca St		3	2			0	30	16	0	0	10	56	54	-2	Parking not signed or striped, TWLTL		5,145	N	Bike Route	
	Rebecca St	Park Avenue		3	2			0	30	16	0	0	10	56	44	-12	Parking not signed or striped, TWLTL		5,145	N	Bike Route	
	Park Avenue	Thomas St		3	2			0	30	16	0	0	10	56	54	-2	Parking not signed or striped, TWLTL		5,145	N	Bike Route	
	Thomas St	Garey Avenue	2	1				24	10	0	0	0	10	44	44	0	Road narrows, no street parking,		5,145	N	Bike Route	
	Garey Avenue	Towne Avenue		3	2			0	30	16	0	0	10	56	44	-12	44 to 54 feet, varies block to block, not sufficient to accommodate BLs		3,891	N	Bike Route	
	Towne Avenue	San Antonio Avenue		3	2			0	30	16	0	0	10	56	62	6	Parking not signed or striped, TWLTL, industrial land uses		3,637	N	Bike Route (to Lorrane)	
#31: Foothill Blvd																						
Foothill Blvd	Williams Avenue	Garey Avenue		5	2			0	50	16	0	0	10	76	82	6	Center left turn lane occasionally replaced by raised median, red curb eastbound		42,000	N		
#32: Val Vista																						
Val Vista St	Dudley St	Loma Vista Street		2	2			0	20	16	0	0	10	46	35	-11	Parking not signed or striped		2,512	N	Bike Route	1.2
	Loma Vista Street	White Ave	2				8	24	0	0	0	8	10	42	46	4	Large median, need to verify lanes approx 17 feet or greater		2,515	N	Bike Route	
Preciado Street	Park Ave	White Ave		2	2			0	20	16	0	0	10	46	44	-2	Parking not signed or striped		N/A	N	Bike Route	0.3
#33: Fairplex Drive																						
Fairplex Dr (w/o McKinley Ave)	McKinley Avenue	Mountain Meadows Drive	2	4			12	24	40	0	0	12	10	86	70	-16	Parking not allowed		9,493	N	Bike Route	0.15
	Mountain Meadows Drive	1-10 Freeway	2	2				24	20	0	0	0	10	54	56	2	Parking not allowed, painted median approx 3 feet wide		13,153	N	Bike Lane	0.95
#34: College Ave																						
College Ave	San Bernardino Avenue	American Avenue																	N/A	N	Bike Route	0.35
#35: Old Pomona Road																						
Old Pomona Rd	Village Loop Road	SR-71																	2,977	N	Bike Route	0.45
#36: Pomona Bl																						
Pomona Blvd	State St	Humane Ave		3	2			0	30	16	0	0	10	56	64	8	Parking not signed or striped, Truck Route & 6,400 ADT	X-section 3 a 62' with 6.5' BL and 11' travel lanes	8,932	Y	Bike Lane (Temple Ave to Roselawn St)	1.5
#37: Towne Avenue																						
	Arrow Highway	San Antonio Avenue	2	3				24	30	0	0	0	10	64	70	6			19,144	N	Bike Lane	0.2
#38: Towne Avenue																						
	San Antonio Avenue	Holt Bl		4	2		4	0	40	16	0	4	10	70	68	-2			16,838	N	Potential Future Bike Facility	1.75
#39: Mission Blvd																						
Mission Blvd	Temple Ave/Avenida Rancheros	Humane Way	2	3				24	30	0	0	0	10	64	65	1	Truck route & ADT approx 16,000	X-section 4A at 64' with 6' bike lanes and 10' travel lanes	19,167	Y	Potential Future Bike Facility	5
	Humane Way	Dudley Street	2	4			8	24	40	0	0	8	10	82	100	18	up to 115 feet wide in places, but with wider center raised median; overpass construction over Chino Valley Freeway (SR-71), Truck route & ADT 16,400	X-section 4B at 100' with 7' BL, 11' travel lanes, and upto 20' raised median	22,787	Y	Potential Future Bike Facility	
	Dudley Street	ECL		5	2			0	50	16	0	0	10	76	68	-8	Parking not signed or striped; widens and adds raised median east of city limit	No recommendation	25,457	Y	Potential Future Bike Facility	
#40: Garey Avenue																						
Garey Ave	La Verne Avenue	Monterey Avenue		5	2			0	50	16	0	0	10	76	68	-8	Parking not signed or striped		23,145			
	Monterey Avenue	Pomona Mall Street	2	4			6	24	40	0	0	6	10	80	90	10			23,145			
	Pomona Mall Street	Mission Boulevard		5	2			0	50	16	0	0	10	76	70	-6	Parking limited or restricted		14,330		Potential Future Bike Facility	
	Mission Boulevard	9th Street		5	2			0	50	16	0	0	10	76	66	-10	Parking not signed or striped		21,742			

			Existing Lanes					Width Needed (feet) (including 2-way bike lanes)													
								12	10	8	1	1	5								
Facility	Between... (N/W)	... and (S/E)	Curb Travel	Travel/Turn	Parking	Striped Median/Center-Left Turn Lane (ft.)	Raised Median (feet)	Curb/#2 Travel Lane	Travel	Parking	Striped Median/Center-Left Turn Lane (ft.)	Raised Median (feet)	Bike Lanes (2 x 5 ft.)	TOTAL	Existing Width (ft.)	Delta	Notes	Add'l Notes	ADT (2006)	Truck Route	Facility Type	Distance (miles)
	9th Street	Grand Avenue		4	2		9	0	40	16	0	9	10	75	66	-9	Parking not signed or striped; raised median becomes LTL at intersections		22,868			
#41: State St																						
	Pomona Boulevard	(bridge)	2					24	0	0	0	0	10	34	60	26	One-way couplet divided by a large, planted median		N/A			
	(bridge)	Hill Street	2					24	0	0	0	0	10	34	32	-2	Assuming no parking (street view not available)		N/A			
	Hill Street	Center Street		2	2			0	20	16	0	0	10	46	56	10	One-way couplet divided by a large, planted median; some perpendicular parking		N/A		Potential Future Bike Facility	
	Center Street	(roundabout)		2	2	44		0	20	16	44	0	10	90	104	14	Diagonal parking in center median indicated here as stiped median		N/A			
	(roundabout)	(parking lot)	1	1	1			12	10	8	0	0	10	40	42	2			N/A			
	(parking lot)	Diamond Bar Boulevard	2					24	0	0	0	0	10	34	40	6			N/A			
#42: Humane Way																						
Humane Way	Valley Blvd	POTENTIAL FUTURE FACILITY																	9,149	N	Potential Future Bike Facility	0.7
#43: Butterfield Road																						
Butterfield Rd (west of Hwy 71)		POTENTIAL FUTURE FACILITY																	N/A	N	Potential Future Bike Facility	0.3
South Campus Drive																						
South Campus Dr	Temple Avenue	Kellogg Drive	2	3				24	30	0	0	0	10	64	62	-2	Existing Truck Route, ADT 9,600	62' x-section shows all 10' lanes on truck route	13,237	Y	Bike Lane	1.5
	Kellogg Drive	East Campus Drive		4	2			0	40	16	0	0	10	66	65	-1	Existing Truck Route, ADT 9,600	62' x-section shows all 10' lanes on truck route	13,237	Y	Bike Lane	
	East Campus Drive	Corporate Center Drive	2	3				24	30	0	0	0	10	64	62	-2	Existing Truck Route, ADT 9,600	62' x-section shows all 10' lanes on truck route	7,924	Y	Bike Lane	
	Corporate Center Drive	Ridgeway Street	2	3				24	30	0	0	0	10	64	65	1	Existing Truck Route, ADT 9,600	62' x-section shows all 10' lanes on truck route	7,924	Y		
Bonita Avenue																						
Bonita Ave	Fulton Road	Metropolitan Place		4	2			0	40	16	0	0	10	66	60	-6	Parking not signed or striped; use of parking seems unlikely		8,855	Y	Bike Lane	1.4
	Metropolitan Place	Garey Avenue		3	2			0	30	16	0	0	10	56	60	4	Parking not signed or striped; use of parking seems unlikely		8,855	Y	Bike Lane	
	Garey Avenue	Melbourne Avenue		4	0			0	40	0	0	0	10	50	60	10	Parking not signed or striped		7,938	Y	Bike Lane	
	Melbourne Avenue	Carnegie Avenue		4	2			0	40	16	0	0	10	66	64	-2	Parking not signed or striped		7,938	Y	Bike Lane	
Arrow Hwy																						
Arrow Highway	Fulton Road	Garey Avenue	1	4	1		14	12	40	8	0	14	10	84	80	-4	PM peak period parking restrictions (3:30-6:00pm)on eastbound side of street		14,364	Y	No Proposed Facilities	
	Garey Avenue	Towne Avenue	1	5	1		12	12	50	8	0	12	10	92	80	-12	PM peak period parking restrictions (3:30-6:00pm)on eastbound side of street		17,245	Y		
	Towne Avenue	Cambridge Avenue	1	4	1		12	12	40	8	0	12	10	82	80	-2	Bike lane begins at Cambridge Avenue		22,452	Y		
Ranch Road																						
N Ranch Rd	Sage Canyon Rd	Hunter Point Rd	2					24	0	0	0	0	10	34	40	6	Parking not signed or striped. Part of Route A (based on community input at 4/26/12 meeting).		N/A	N	No Proposed Facility	
White Avenue																						
White Ave	Arrow Highway	(KOA entrance)	2	2			13	24	20	0	0	13	10	67	84	17			14,128	Y	No Proposed Facilities	
	(KOA entrance)	McKinley Avenue	2	4			14	24	40	0	0	14	10	88	84	-4	Raised median becomes LTL intermittently; slight widening at McKinley Avenue		14,128	Y		
	McKinley Avenue	Val Vista Street	1	4	1		18	12	40	8	0	18	10	88	100	12			14,450	Y		
	Val Vista Street	10 Fwy	2	4			13	24	40	0	0	13	10	87	90	3			14,450	Y		
	10 Fwy	Monterey Avenue		5	2			0	50	16	0	0	10	76	68	-8	Parking not signed or striped		12,197	Y		
	Monterey Avenue	2nd Street		4	2		8	0	40	16	0	8	10	74	82	8	Parking not signed or striped; use of parking seems unlikely		18,863	Y		
	2nd Street	9th Street		5	2			0	50	16	0	0	10	76	68	-8	Parking not signed or striped		13,958	N		
	9th Street	Lexington		4	2			0	40	16	0	0	10	66	68	2	Parking not signed or striped		11,061	N		
Temple Avenue																						

			Existing Lanes					Width Needed (feet) (including 2-way bike lanes)													
								12	10	8	1	1	5								
Facility	Between... (N/W)	... and (S/E)	Curb Travel	Travel/Turn	Parking	Striped Median/Center-Left Turn Lane (ft.)	Raised Median (feet)	Curb/#2 Travel Lane	Travel	Parking	Striped Median/Center-Left Turn Lane (ft.)	Raised Median (feet)	Bike Lanes (2 x 5 ft.)	TOTAL	Existing Width (ft.)	Delta	Notes	Add'l Notes	ADT (2006)	Truck Route	Facility Type	Distance (miles)
Temple Ave	University Drive	Valley Boulevard	2	4			18	24	40	0	0	18	10	92	88	-4			17,502	Y		
	Valley Boulevard	Orange Freeway Ramps	2	4			16	24	40	0	0	16	10	90	90	0	Truck route, ADT 13,500	X-section 5B @ 88' with 6' BL and 10' travel lanes	17,502	Y	Bike Lane (Valley to Pomona)	0.15
	Orange Freeway Ramps	Mission Blvd	2	4			12	24	40	0	0	12	10	86	88	2	Truck route, ADT 13,500	X-section 5B @ 88' with 6' BL and 10' travel lanes, can widen travel lanes with extra 2'	29,642	Y		

APPENDIX C:
POMONA PEDESTRIAN POLICIES AND PRINCIPLES

Pomona Pedestrian Policies and Principles

The vision stated in the Pomona General Plan is one for a city that is economically vibrant, and capitalizes on creating places defined by active street life. The General Plan's policies address the pedestrian environment through a variety of channels including new development, redevelopment, land use planning, street network improvements, and landscaping.

This section reiterates several policies in the General Plan, explains how they improve the pedestrian environment, and provides additional guidance to implement the policy.

General Principles

The following general principles should guide new development and redevelopment.

- Pedestrians should be able to walk safely to all destinations that motor vehicles access.
- Pedestrian access should be made safe and convenient.
- All urban streets and thoroughfares, except limited access highways, should have sidewalks, street lighting, and safely designed intersections for pedestrians.
- All urban streets and thoroughfares, except limited access highways, should have sidewalks, street lighting, and safely designed intersections for people with disabilities.
- Rural highways, except limited access highways and those where terrain prohibits, should have wide shoulders for pedestrians.
- Areas with potential for high pedestrian activity should have a variety of streetscape features to make the pedestrian experience interesting.The design and operation of pedestrian oriented areas should carefully integrate the needs of people arriving by foot, as well as motor vehicles, transit and bicycle. Public events such as farmers' markets, arts and craft shows and festivals liven the streets and create public space. Streetscape features in pedestrian activity centers need to be tailored for each location. They can include such features as:

    - Bus shelters
    - Trees and landscaping
    - Benches and street furniture
    - Colored or textured pavers (smooth in the Pedestrian Through Zone)
    - Attractive street lights
    - Attractive trash and recycling receptacles
    - Attractive, consolidated news racks
    - Clocks
    - Public Art
    - Banners and Flags
    - Fountains

- Information kiosks
- District-wide logo/signage program

Several General Planning principles of embody these principles. The following are examples.

6B.P9 Integrate old and new pedestrian connections, streetscape improvements, and complementary architecture and site design approaches including orienting new development towards streets and decreasing building heights near adjacent neighborhoods.

6D.P7 - Support renovation of existing commercial strip development. Potential treatments could include adding landscaping and street trees, adding or widening sidewalks, bulbing the sidewalks in key locations, providing pedestrian-scale lighting and orienting buildings to the street.

7D.P10 Require proposed development to implement or fund capital improvements to 1) maintain sidewalks, roadway paving, and landscaping 2) implement streetscape design improvements, and 3) accommodate growth with an emphasis on reduced reliance on the automobile.

Land Use Planning and Zoning

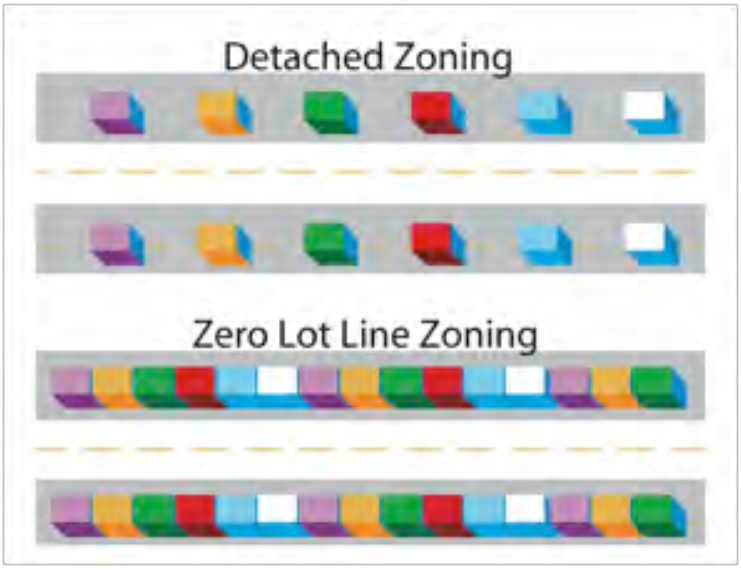
Land use planning that adheres to smart growth principles provides opportunities for people to travel on bicycle, on foot or on trails. Mixing land uses brings origins and destinations closer to one another so that people can travel between them by non-motorized means. Compact land use that builds up more than out does the same. Comprehensive land use planning integrates parks and greenways so that bikeways and trails can be built in.

<u>Pedestrian-oriented Buildings</u>

- High storefront density in retail districts makes walking interesting and attracts pedestrians.

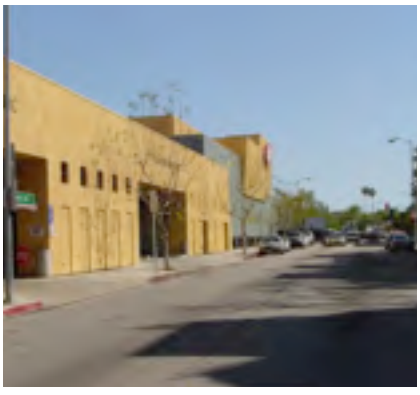
Street with High Storefront Density

- 6D.P13 - Where street activity is important, locate new development closer to the sidewalk with buildings lining the majority of the property frontage. Require the majority of each building frontage to be located at or near the sidewalk. Define specific standards, including maximum setbacks, in the Zoning Ordinance.
- Zero lot line zoning allows buildings to abut one another, keeping the distance between them convenient for walkers.



- Setbacks shall be required where adequate width does not presently exist to meet the minimum widths for sidewalks. The minimum width for sidewalks is 5'. Setbacks and ideal sidewalk zone widths depend upon surrounding land uses and street typology. These widths will be further defined in this Plan's design guidelines.
- Clear glass as opposed to opaque windows on building fronts enhances the feeling of permeability and makes for interesting window shopping.
- Ground floor retail and other interesting uses on the ground floor of buildings also attract window shoppers and make for interesting and pleasant walking environments, as opposed to large blank walls.

Building with Ground Floor Retail



Building with Blank Wall

- Policy 6A.P3, which states, "Establish regulation that require development with retail uses to feature pedestrian oriented shopfronts located along the sidewalks of publicly accessible streets and pedestrian ways," will ensure future retail development will be clustered and face the sidewalks. For implementation purposes, the City should establish minimum widths between buildings and setbacks.
- Sidewalks adjacent to business and storefronts make access more convenient than those with parking separating sidewalks from entrances. This is safer for pedestrians as well. Sidewalks next to businesses attract window shoppers and make for interesting and pleasant walking environments.

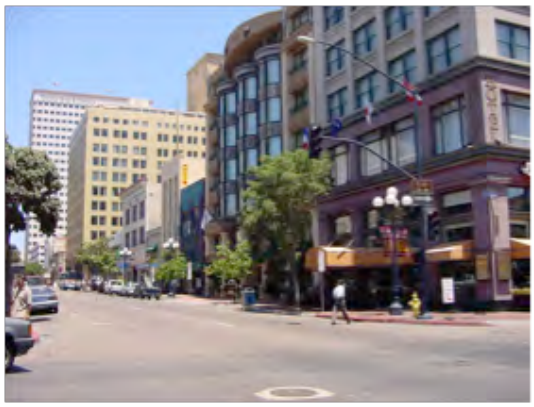
Stores Adjacent to Sidewalk

Store with Parking in Front

- In main street environments a building entrance from the sidewalk shall be provided at least every 75 feet where there are retail and office establishments. This will ensure a pedestrian-oriented compactness.
- 6A.P11 - Require development to feature pedestrian oriented shopfronts with primary entrances oriented toward streets or pedestrian ways
- Architecture that blends well with its surroundings brings visual and functional interest and attracts pedestrians.

Building with Attractive Architecture

- 6A.P14 - Establish regulations that identify architectural and site design treatments which create an appropriate relationship between neighborhood serving retail clusters and adjacent housing
- Pedestrian-friendly street standards produce narrower streets that slow traffic and are easier to cross. They also make for more compact neighborhoods than wide streets.



Commercial Street with Narrow Lanes

Commercial Street with Wide Lanes

- Walls around new development take life off streets and prevent people from walking in and out. Walled development has become necessary with high-speed arterial streets feeding large housing tracts. As street standards are revised, the walls become unnecessary and allow for neighborhoods to integrate with each other.

Walled in Housing Development

Mixed Land Use

- Mixed land uses make it convenient to walk between land uses -- from home to work, from home to the store, from work to restaurants, etc.

Building with Retail, Office and Housing

- Mixed-use development should be encouraged through planning and zoning codes.

Transit-oriented Design

- Convenient transit access encourages a mode of travel that stimulates walking at either end of the trip.

Commercial Area with Bus Lane

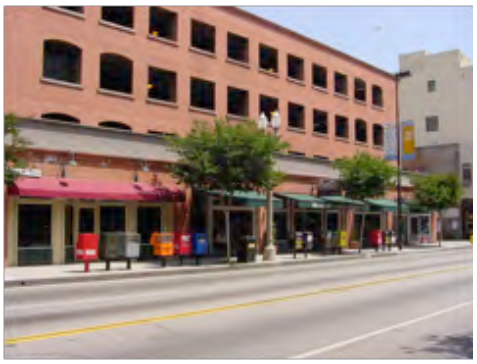
- 6B.P2 - Permit the highest densities and intensities within comfortable walking distance of major transit.

- 6B.P5 - Establish transit oriented design and development standards that enhance pedestrian and bicycle circulation, comfort, and safety
  - Establish maximum setbacks
  - Establish building transparency requirements
  - Prohibit auto-oriented and drive-through establishments
  - Establish street connectivity requirements
  - Consolidate parking in structures or off-street parking lots located behind buildings or away from the street edge
  - Install streetscape improvements to enhance walkability and create a clear identity for each district
- 6B.P14 - Require development in the area around the station to provide streets and pedestrian connections that link the station to the surrounding district

Parking

- Compact parking structures spread walking destinations less than large surface parking lots.
- In commercial or civic areas, vehicular parking shall be located in the back of the building or in a subterranean garage. This is to prevent parking lots in front of buildings that spread walking distances between buildings, visually impact the pedestrian environment, and conflict with pedestrian movement in driveways.
- Along multi-family residential streets, vehicular parking shall be located in the back of the building or in a subterranean garage. A maximum of one level of parking garage shall be permitted above natural grade up to a maximum of 7 feet in height. Any portion of the parking garage above grade shall be mechanically ventilated and enclosed, except for the driveway.
- Commercial properties that have vehicle parking in front should also have a physical separation between the parking and sidewalk to prevent intrusion into the sidewalk.
- Parking structure entrances shall be designed in a way that minimizes the occurrence of vehicles waiting for gates to open. Entry controllers shall be set back a minimum of 20 feet from the property line.
- Parking lots in new commercial development should be pedestrian friendly in keeping with the goals of the City. Walkways should be in place to gain entry to the parking lot and pedestrian friendly arteries should be in place to allow for easy and safe walking between buildings.

- 6A.P5 - Encourage consolidated, shared parking facilities that support "park once and walk" shopping and entertainment experiences.



Building with Compact Parking Structure Above Retail

Large Surface Parking Lot

- 6D.P14 Encourage development with parking located to the side or rear of buildings, in shared parking facilities, and in parking structures.

Driveways

- In commercial or civic areas the number and width of driveways should be limited.
- Drive-through commercial establishments should be prohibited.
- Driveways and driveway landscaping shall be designed to minimize interference with pedestrians. Motorists' view shall not be obstructed from 8 feet inside the property line to a distance of 10 feet from the side of the driveway on the driver's right side and 10 feet from the centerline of the driveway to the driver's left side. It will minimize conflicts between pedestrians and vehicles backing out of driveways on private lots.
- Driveway aprons shall not extend beyond the sidewalk furniture zone into the pedestrian zone. This will maintain an even walking surface for persons in wheelchairs and others.

Public Space

- 6A.P17 - Require development to incorporate publicly accessible open spaces such as plazas or park spaces.

Pedestrian Amenities

- 6D.P21 - Require developers to provide pedestrian amenities along with new development and focus on connections between parks, transit, and surrounding properties.

Street Networks Conducive to Non-Motorized Travel

- Ahwahnee Principle: Streets, pedestrian paths and bike paths should contribute to a system of fully-connected and interesting routes to all destinations. Their design should encourage pedestrian and bicycle use by being small and spatially defined by buildings, trees and lighting and by discouraging high-speed traffic.

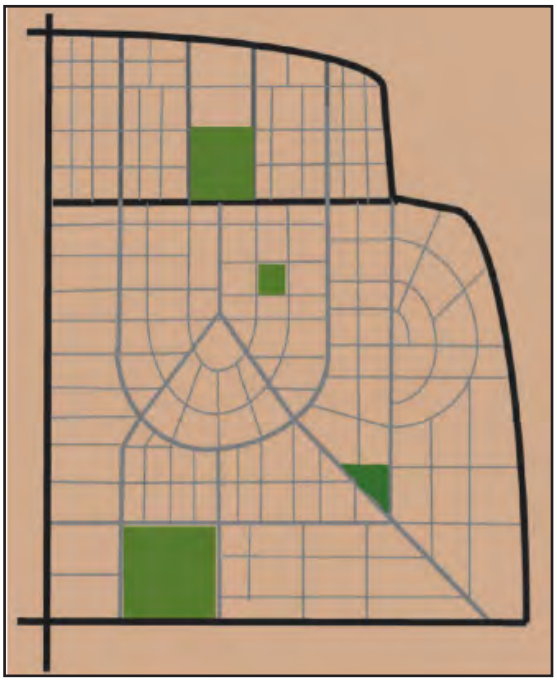
Street networks play a key role in bikeable and walkable neighborhoods. Typical suburban developments with 45 and 50 mph arterials isolate neighborhoods. In such developments, people have to travel long distances to enter or exit a neighborhood and must find their way to the few streets that lead in and out. Individual neighborhoods, although adjacent, may be isolated from each other. Schools, stores and workplaces are too far to walk to and the wide, busy streets are inhospitable to walk along, bicycle along, or to cross. Neighborhoods that have disconnected streets, significant numbers of culs-de-sac, and walls force people to take longer, indirect routes that involve travel along high-speed arterial roads that are inhospitable to non-motorized users.

7D.P17 Ensure that new developments provide an integrated pattern of streets and pedestrian paths that provide connections between neighborhoods.

7D.P9 Prepare an Active Transportation Plan to improve neighborhood connectivity for bicycles, pedestrians, and neighborhood electric vehicles (NEV).

Bikeable and walkable neighborhoods need both the streets that lend themselves, and street networks that lend to cycling and walking. Bicyclists and pedestrians fare best in neighborhoods with well-connected streets that have small blocks. Such street networks bring many origins and destinations within walking and bicycling distance. They also spread traffic among more streets so that fewer wide, high-speed streets that discourage bicycling and walking are needed. Many destinations can be accessed along quiet, direct streets. The graphics below contrast these two neighborhood types.

Not this …



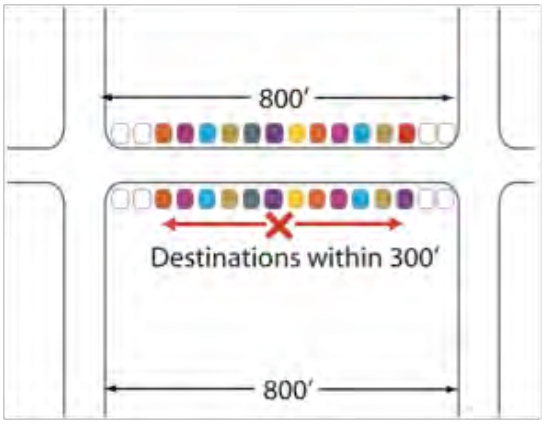
This

Disconnected and Connected Street Networks

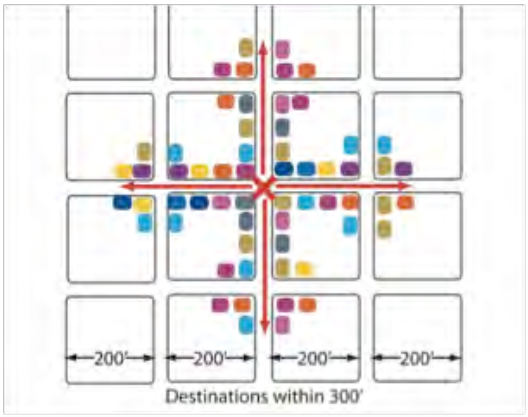
- Streets should consist of interconnected grid patterns. Culs-de-sac without pedestrian and bicycle connectivity should be avoided.

Block Size

- Blocks should be short. Short blocks allow for more route options that keep a greater number of destinations closer than long blocks. Ideally 200-foot long blocks are best. Blocks that are longer than 400 to 500 feet discourage walking.
- Short blocks bring more destinations within walking distance than long blocks.



Destinations Reached on Long Blocks

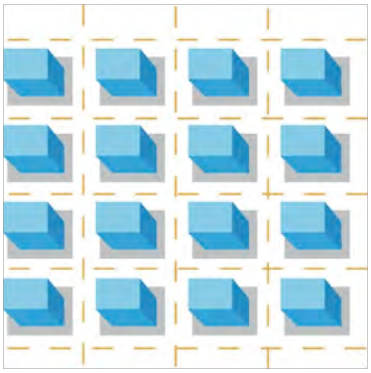


Destinations Reached on Short Blocks

- 6A.P10 - Require large retail centers to incorporate smaller blocks with an internal grid of streets for both pedestrian and vehicular circulation
- 7D.P8 Develop a master street layout that promotes short blocks and bett er connections throughout the City's neighborhoods, and require individual developments to incorporate these into their layout.
- In the City's core, the streets should not be designed for travel at over 35 miles per hour. Local streets and pedestrian-oriented streets should be designed for speeds of 20 to 25 miles per hour. Design speed determines how fast cars will travel. Therefore, design speed should not be engineered in excess of desired speed.
- Freeway on and off-ramps should be designed as close to 90 degrees with the access street as possible.
- The number of lanes, and lane widths should be kept to the minimum necessary. Table 12-2 presents sample road standards for consideration. The traffic engineer in each community will need to investigate the particulars of each situation.

Compact Development

- Compact, clustered developments locate a greater number of destinations within walking distance than linear development.



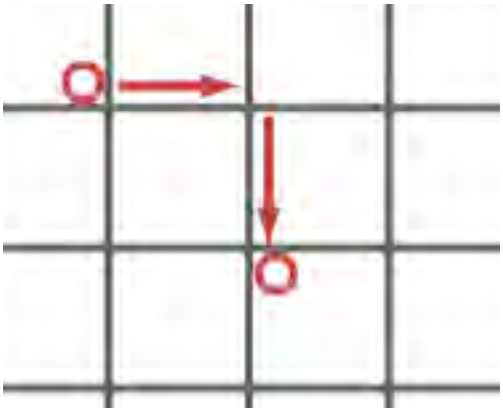
Clustered Grid Development

Linear Development

- General Plan policy 6D.P18 states to, "Improve connectivity between larger corridors and surrounding neighborhoods by requiring large scale new developments to provide new streets and pedestrian paths throughout the project."

- Culs-de-sac separate streets and neighborhoods from one another, making walking either inconvenient or impossible. Streets should connect. Where culs-de-sac are built they should be linked to allow for pedestrians and bicycles to pass through.

Cul-de-Sac Trip



Grid Trip

- Where culs-de-sac are used they can be made to work with bikeways and trails. In order for this to function, the ends of the cul-de-sac need to be connected to the bike paths and trails that run in between. This can actually give bicyclists and trail users an advantage over motorists for short trips.

Connecting Culs-de-Sac

Road Standards

The "DNA" of community form rests in both land use planning and street network planning. The mold for street networks in local jurisdictions is found in their road standards. The road standards spell out how many lanes will be built on each street type, how wide the lanes will be, whether bike lanes will be striped, etc. Given this, it is important that local road standards create a mold that will yield walkable, bikeable communities. They should embody the concepts previously described. Some guidance is provided here.

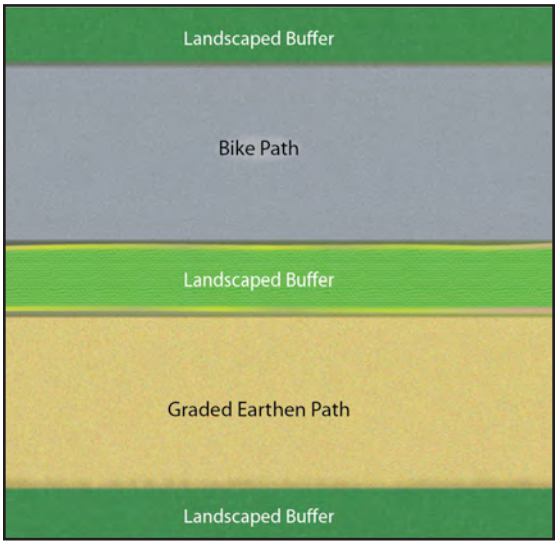
New collector streets and streets higher on the hierarchy should include bicycle lanes. This means that the curb-to-curb cross section of these types of streets should have bike lanes included. Ideally 6' wide lanes should be used as a minimum with 7' or 8' bike lanes on wide, high-speed arterials or rural highways. By including bike lanes in such road standards they will be built along with the new roads. Table 12-2 below shows guidelines for ideal road standards.

Table 12-2: Example Road Standards

STREET TYPE	LAND USE	# OF TRAVEL LANES	STREET OR LANE WIDTH	BIKE LANES
Street (Local)	Single-family residential, home-office and/or small retail	2	26 to 28 feet total including on-street parking	Not needed
Avenue (Collector and Secondary Arterial)	Single-family residential, multifamily residential, small retail, or industrial	2 to 4	10 feet per lane plus on street parking, up to 11 feet per lane where there are many trucks and buses	Yes, minimum 5 feet wide; 6 feet is preferred
Boulevard (Arterial)	Multi-family residential, mixed-use commercial or industrial	4	10 feet per lane plus on street parking, up to 11 feet per lane where there are many trucks and buses	Yes, preferably 6 feet wide
Main Street	Retail or mixed use with retail and/or office	2 lanes are preferred; 4 lanes with slowing features	10 feet per lane plus on street parking; may have angled parking	In some cases

Integrating Trails into the Street Network

The best way to integrate trails into new neighborhoods is to integrate them into the street network. This way the trail right-of-way receives the same treatment as another street with appropriate street crossings. Every section of street blocks would have one of its streets in the north-south, and one in the east-west direction designed as a bikeway and trail. The ideal cross-section would include a bike path and a parallel hiking/equestrian trail. The ideal crossing of two-lane streets would be an appropriately sized roundabout. This would allow users to yield and continue on without stopping. Crossings of multi-lane streets should include the suitable treatments with crossing islands, flashing LED beacons, zebra-stripe crosswalks and/or signals where warranted. The graphics below illustrate how this concept would work. The minimum width for a paved trail is 12', and 6' to 8' for the earthen portion as shown in Figure 12-49.



Integrated Trail and Street Networks

Pedestrian Crossings

Safe pedestrian crossings are critical components of the pedestrian network. Although the California Vehicle Code states that a crosswalk implicitly exists on every leg at every intersection, it is important to recognize that visibility and safety are important factors that determine where people will attempt to cross a street. The following guidelines are recommended for pedestrian crossings, including both signalized and unsignalized crosswalks.

- Crosswalks should be a minimum of 6 feet in width, and at least 10 feet in business districts. Wider crosswalks should be considered in areas of high pedestrian volumes.
- Appropriate pedestrian crossing signage should be displayed in advance of and adjacent to all marked unsignalized crosswalks in order to the enhance visibility of pedestrians by motorists.
- Unsignalized pedestrian crosswalks should be adequately lighted, have clear sight distances, and be free from obstructions, such as foliage and poles.
- Unsignalized crosswalks should be well marked with high visibility paint.
- Mid-block crosswalks should be designated in areas with relatively high pedestrian activity and crossing patterns, and where the distance to the nearest marked crosswalk is greater than 200 feet.
- At signalized intersections, efforts should be made to install marked crosswalks at every leg of the intersection where feasible given traffic and other considerations.
- Pedestrian signals should be timed in order to accommodate slower pedestrians. This should take into consideration people with slower walking speeds, such as seniors and persons with disabilities, in areas where this is appropriate. This may be also be achieved by using Pedestrian-Friendly-User-Intelligent (PUFFIN) signals that detect pedestrians in the crosswalk and extend the walk time to allow pedestrians to finish their crossing.
- In Pedestrian-Oriented Retail Districts the "walk" signals should be automatically timed with the traffic signal and no push buttons should be needed.
- All crossings should meet all ADA standards and guidelines.
- ADA-compliant curb ramps should be provided at all corners. Where physically feasible, every corner should have two perpendicular ramps.
- Where feasible, pedestrian crossing islands should be considered where pedestrians are required to cross a wide multi-lane street, especially at uncontrolled locations.
- Consideration should be given to reducing the turning radius of corners at intersections in order to minimize the crossing distance of pedestrians and to slow traffic, especially across busy multi-lane arterials. The presence of buses, trucks and other large vehicles should be considered in designing the turning radii.
- Curb extensions should be considered at intersection corners as a way to minimize the crossing distance of pedestrians and to increase visibility.

APPENDIX D:
PEDESTRIAN IMPROVEMENTS AT INTERSECTIONS

Pedestrian Improvements

City of Pomona

Los Angeles County Department of Public Health
Healthy Policies Initiative

City of Pomona

ryan snyder associates

transportation planning for livable communities

PEDESTRIAN IMPROVEMENTS

In order to make walking in Pomona safer and more comfortable, potential improvements are included at 35 key intersections. The City and consultant team chose the intersections based on pedestrian crash data and community input. The following improvements were developed giving priority to pedestrians. As the City proceeds with future projects at those intersections and other pedestrian improvement areas, the recommendations will serve as a useful baseline for improvements, and may need to be modified to ensure pedestrian needs are balanced with vehicle, truck, and bus movements. Each of the following potential improvements will need to undergo further concept/preliminary analysis and design. This analysis/design may modify the actual constructed project.

Potential improvements at intersections aim to shorten pedestrian crossing distance and to reduce vehicle speeds. Bulb-outs, perpendicular curb ramps, reduced curb returns, and crossing islands have these effects. Improvements also aim to increase pedestrian visibility and driver awareness of pedestrians. Zebra-stripe crosswalks, advanced stop bars or yield markings, and signs accomplish this goal. The potential improvements also aim to create an accessible environment for travel by disabled persons; therefore, truncated domes, audio signals, compliant landing areas, and pushbutton relocations are included where applicable. Where high pedestrian volumes are observed, a potential improvement includes removing pedestrian pushbuttons and changing signal timing such that the walk signal comes on automatically. This increases convenience and reduces travel times for pedestrians. Where high pedestrian volumes are coincident with high traffic volumes, protected left turn phases are proposed.

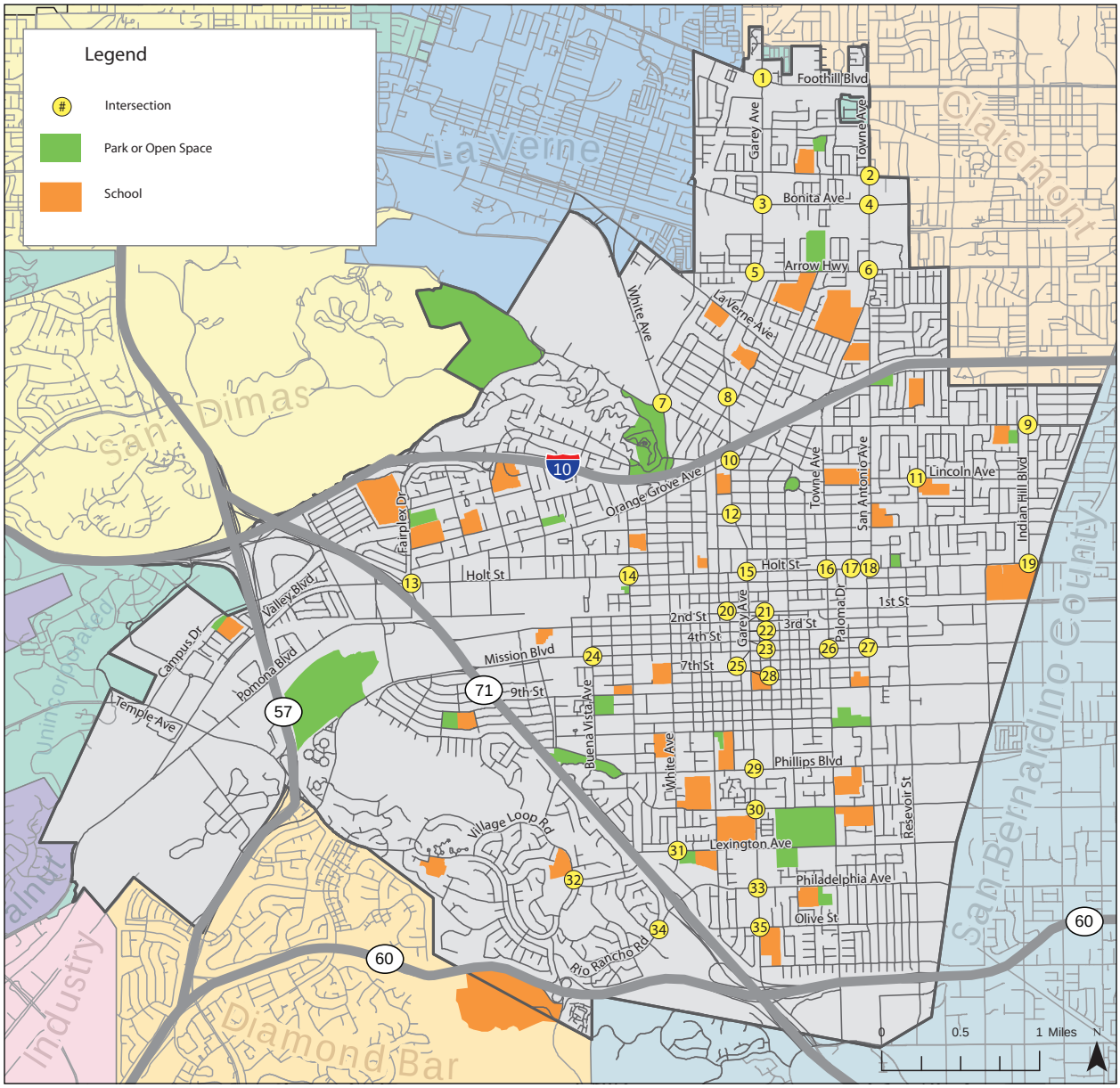
With new bulb-outs, perpendicular curb ramps with truncated domes can be added. Bulb-outs should be designed such that the effective curb radius is short, in order to constrain the speed of turning vehicles. Perpendicular ramps with truncated domes can also be constructed when a bulb-out is proposed on only one face of a corner with a reduced curb return. When there are two ramps per corner, they should be designed to be perpendicular or nearly perpendicular when possible. The graphics depict in a general manner what potential improvements will look like, but are not to scale and are for illustrative purposes only.

The intersections are ordered geographically, from west to east, and north to south (as shown on Map 1-1).

Index of Intersections

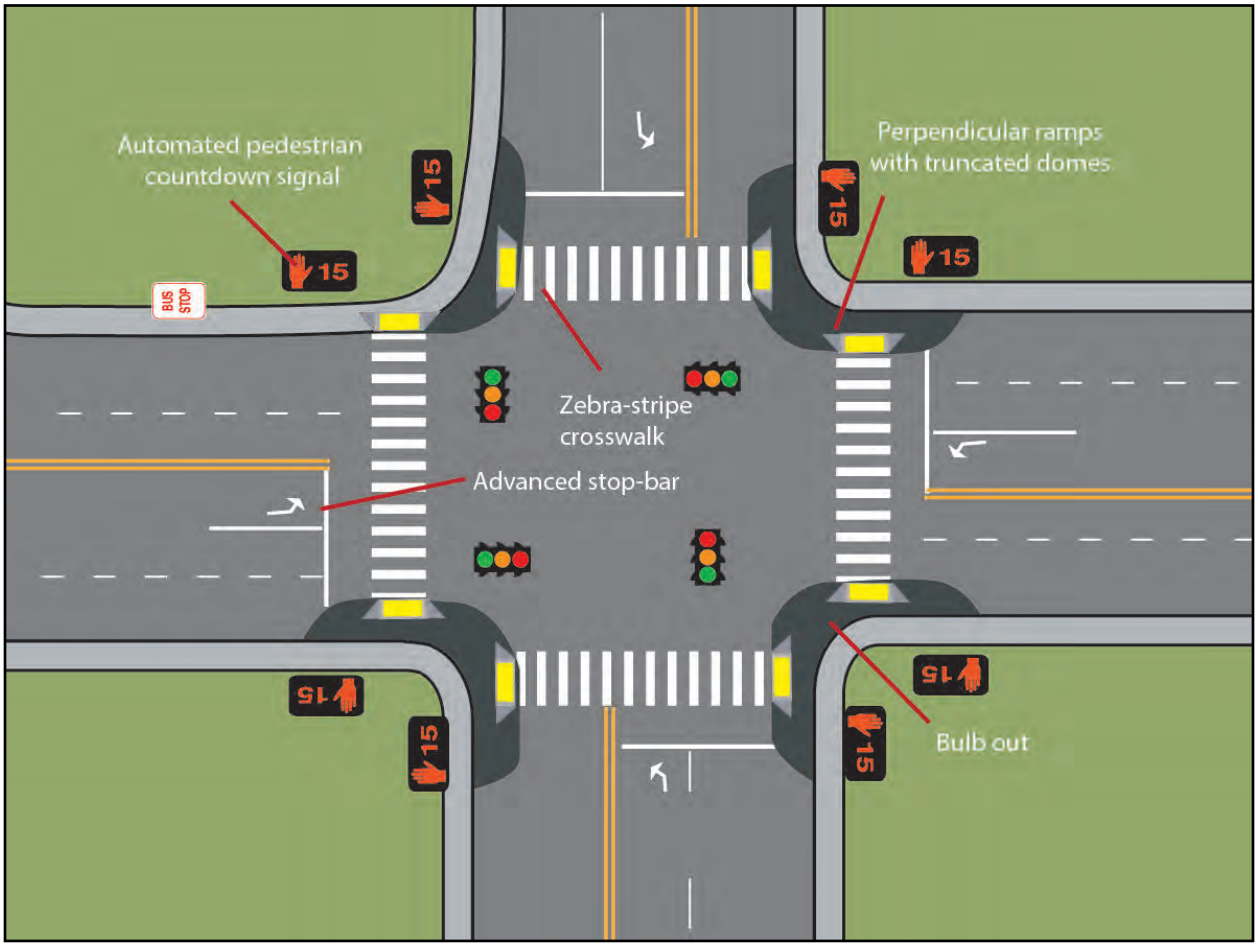
Potential Improvements

Map 1-1: Locations of Potential Pedestrian Improvements



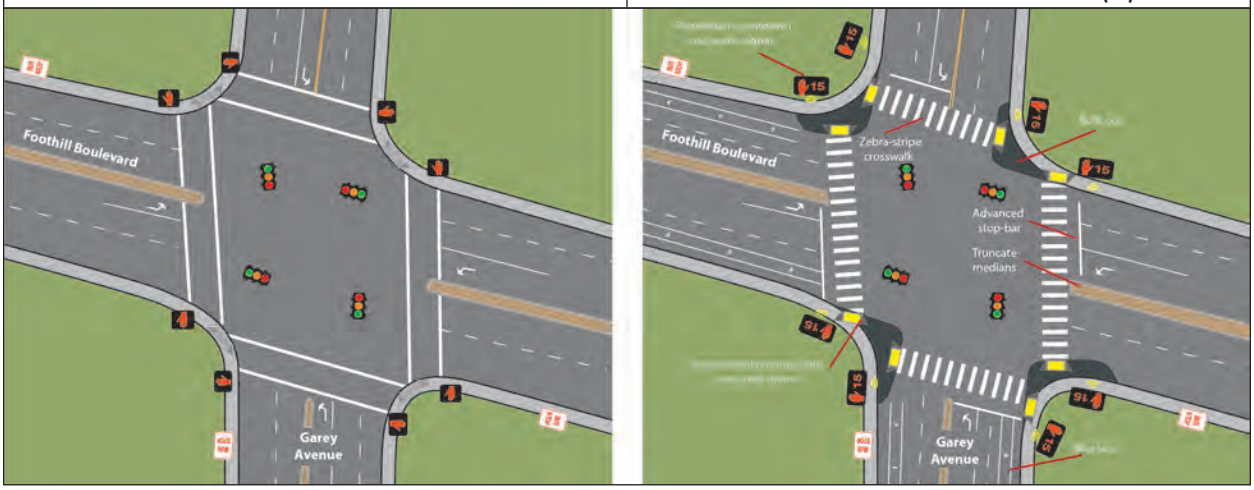
Sample Intersection with Potential Improvements

The graphic below indicates some of the potential improvements proposed to the following 35 key intersections. The design features, applications, costs, and benefits of each type of potential improvement are further described in the Pedestrian Design Guidelines.



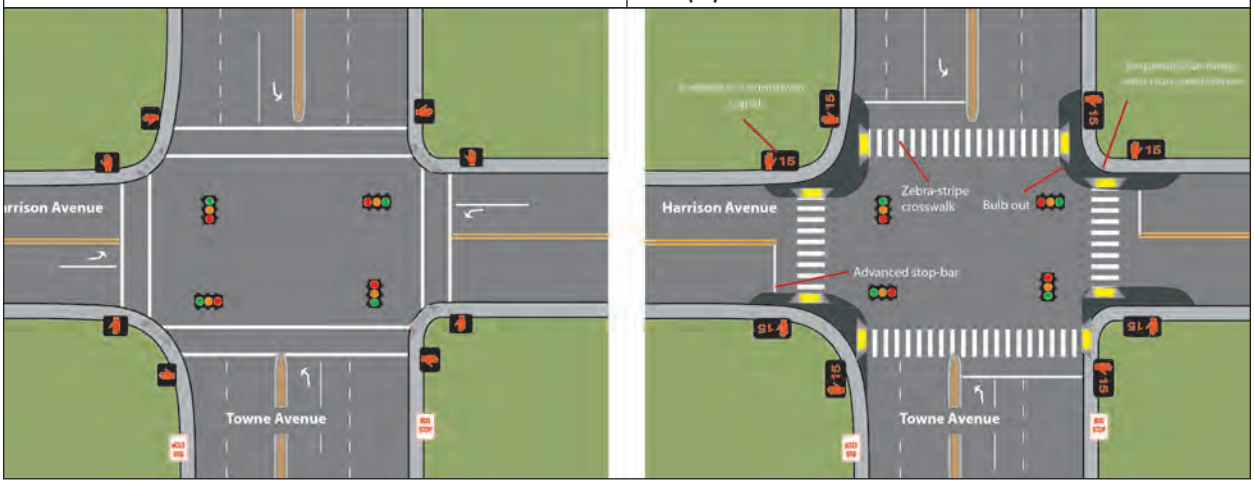
1) FOOTHILL BOULEVARD AND GAREY AVENUE

EXISTING	POTENTIAL
• Foothill Blvd. has 4 lanes, center-turn lane / median, and on-street parking • Garey Ave. has 4 lanes and on-street parking north of Foothill Blvd., and 4 lanes, and a median / center-turn lane south of Foothill Blvd. • Signalized intersection with permissive left turns • Bus stops on Foothill Blvd. (eastbound and westbound, far side), and on Garey Ave. (southbound, far side) • Medians on Foothill Blvd. extend into the crosswalk and are about 5' wide	• Coordinate with City of Claremont for any improvements • Add zebra-stripe crosswalks to all crossings (4) • Add pedestrian countdown signals to all crossings (8) • Add audio signals to all crossings (8) • Add advanced stop bars to all crossings (4) • Add bulb-outs on the northwest and southeast corners to cross Foothill Blvd. and on the northeast and southwest corners to cross Garey Ave. (4) • Truncate medians on Foothill Blvd. so they do not extend into the crosswalk (2)



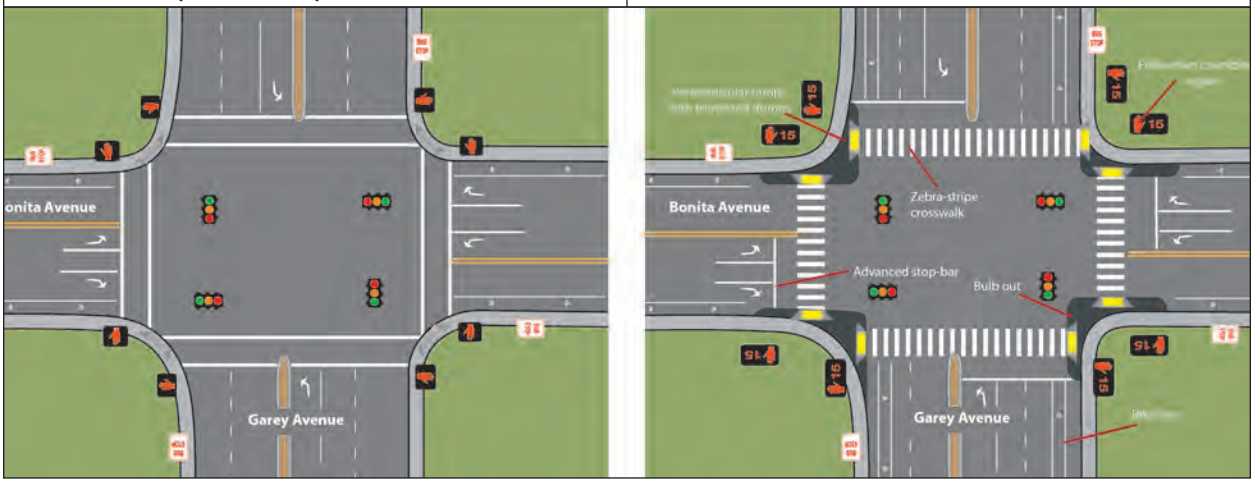
2) HARRISON AVENUE AND TOWNE AVENUE

EXISTING	POTENTIAL
• Harrison Ave. has 2 lanes, center-turn lane (37' wide) • Towne Ave. has 4 lanes, center-turn lane / median, and on-street parking • Signalized intersection with permissive left turns • Bus stops on Towne Ave. (northbound, near side; and southbound, far side)	• Coordinate with City of Claremont for any improvements • Add zebra-stripe crosswalks to all crossings (4) • Add pedestrian countdown signals to all crossings (8) • Add advanced stop bars to all crossings (4) • Add bulb-outs on the northeast and northwest corners to cross Towne Ave. (2) • Remove center-turn lane on Harrison Ave. and add bulb outs to cross Harrison Ave. (4) • Remove or relocate pedestrian pushbuttons (8)



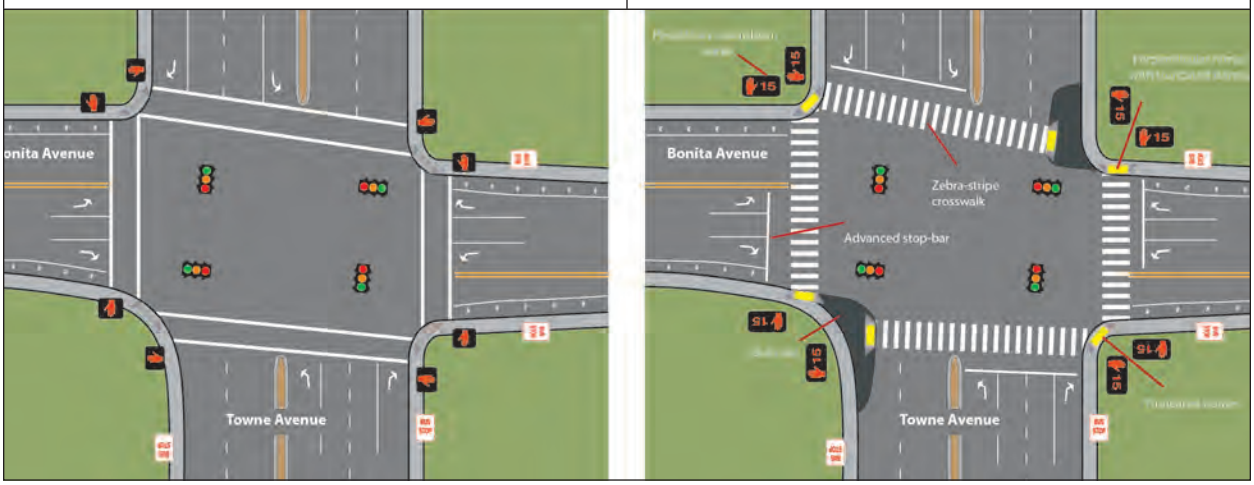
3) BONITA AVENUE AND GAREY AVENUE

EXISTING	POTENTIAL
• Bonita Ave. has 2 lanes, turn pockets, and bike lanes • Garey Ave. has 4 lanes, center-turn lane / median, and on-street parking • Signalized intersection with protected left turns from Garey Ave. • Bus stops on Bonita Ave. (eastbound and westbound, far side) and on Garey Ave. (northbound, far side, and southbound, far side) • Medians on Garey Ave. extend into crosswalks and are about 3' wide • No ADA accessible landing area on northeast, northwest, and southwest corners	• Add zebra-stripe crosswalks to all crossings (4) • Add pedestrian countdown signals to all crossings (8) • Remove or relocate all pushbuttons (8) • Add advanced stop bars to all crossings (4) • Add bulb-outs to northwest and southeast corners to cross in both directions, and northeast and southwest corners to cross Bonita Ave. (6)



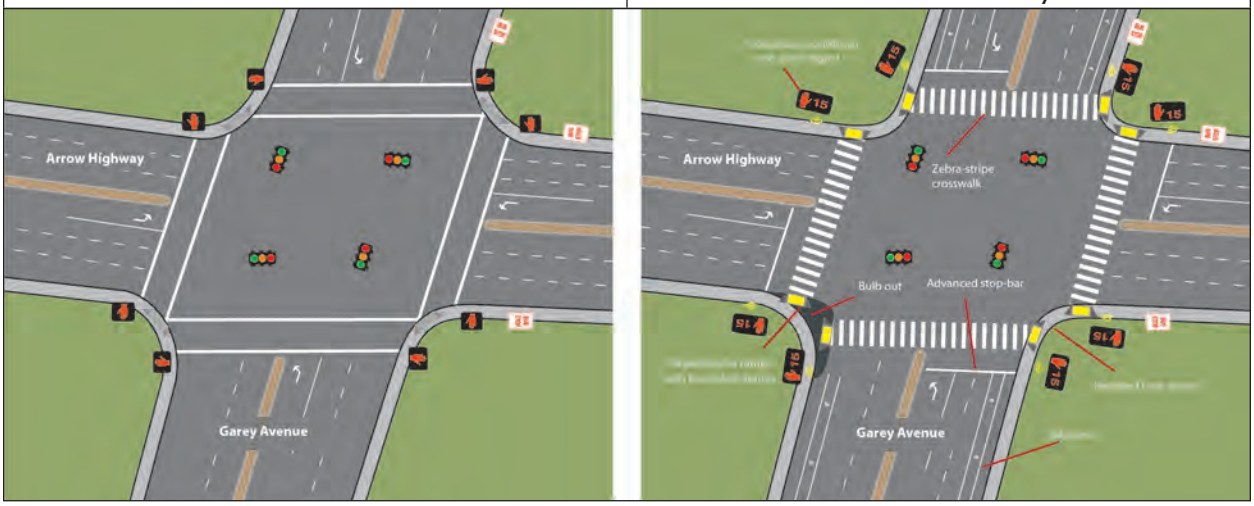
4) BONITA AVENUE AND TOWNE AVENUE

EXISTING	POTENTIAL
• Bonita Ave. has 2 lanes, turn pockets, and bike lanes • Towne Ave. has 4 lanes, center-turn lane / median, and right-turn lanes at the intersection • Signalized intersection with permissive left turns • Bus stops on Bonita Ave. (eastbound, far side; westbound, near side) and Towne Ave. (northbound, near side; southbound, far side) • No ADA accessible landing area on northeast and southeast corners	• Add zebra-stripe crosswalks to all crossings (4) • Add pedestrian countdown signals to all crossings (8) • Remove or relocate all pushbuttons (8) • Add advanced stop bars to all crossings (4) • Add bulb-outs on the northeast and southwest corners to cross Towne Ave. (2) • Create ADA compliant landing area on the southeast corner (1) • Add truncated domes to the northwest and southeast curb ramps (2)



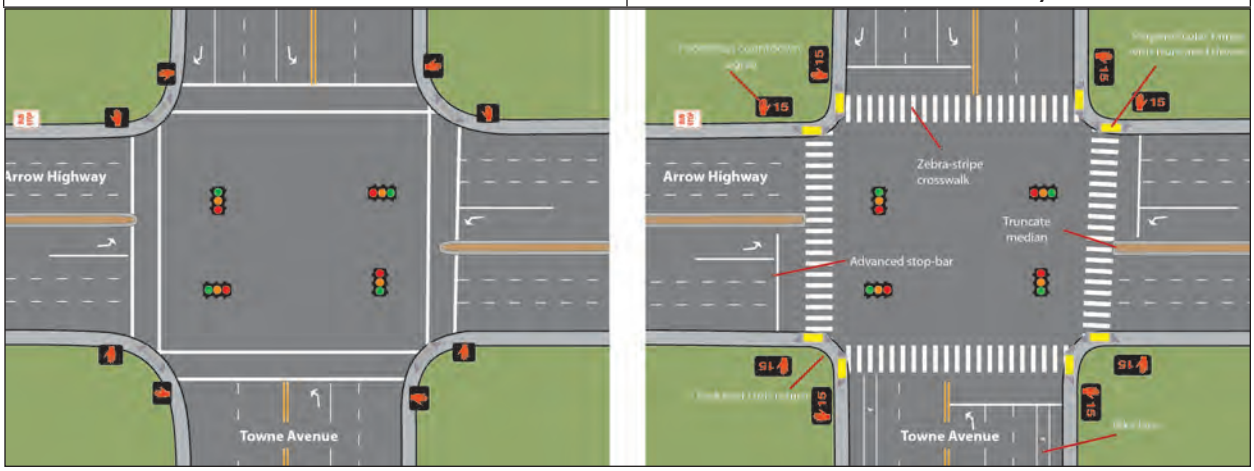
5) ARROW HIGHWAY AND GAREY AVENUE

EXISTING	POTENTIAL
• Arrow Hwy. has 6 lanes, center-turn lane / median (34' wide on either side of the median) • Garey Ave. has 4 lanes, on-street parking, and a center-turn lane / median • Signalized intersection with protected left turns • No ADA accessible landing area on northeast and southwest corners • Bus stops on Arrow Hwy. (eastbound, far side; westbound, near side), and on Garey Ave. (northbound, far side) • ADTs on Arrow Hwy. as of 7/06: 17,200	• Add zebra-stripe crosswalks to all crossings (4) • Add pedestrian countdown signals to all crossings (8) • Add audio signals to all crossings (8) • Add advanced stop bars to all crossings (4) • Add bulb-out on the southwest corner to cross Garey Ave. (1) • Reduce curb return on northeast, northwest and southeast corners (3) • Remove or relocate pedestrian pushbuttons on northeast, southeast, and southwest corners (6) • Option: road diet on Arrow Hwy. and add bulb-outs to cross Arrow Hwy.



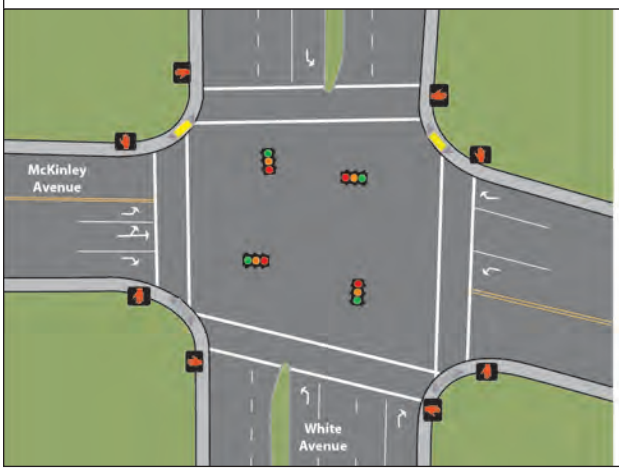
6) ARROW HIGHWAY AND TOWNE AVENUE

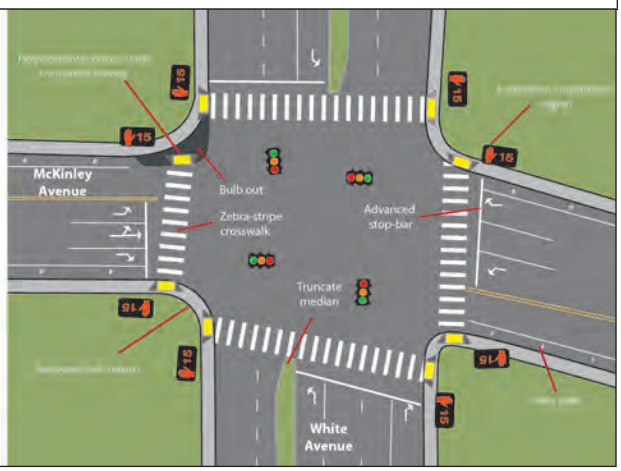
EXISTING	POTENTIAL
• Arrow Hwy. has 6 lanes, center-turn lane / median (34' wide on either side of the median) • Towne Ave. has 4 lanes and on-street parking, and a southbound right-turn lane • 2' wide medians on Arrow Hwy. extend into the crosswalk • Signalized intersection with protected lefts • Bus stop on Arrow Hwy. (westbound, far side) • ADTs on Arrow Hwy. as of 7/06: 17,200	• Add zebra-stripe crosswalks to all crossings (4) • Add pedestrian countdown signals to all crossings (8) • Add advanced stop bars to all crossings (4) • Reduce curb return on all corners (4) • Remove or relocate pedestrian pushbuttons (8) • Truncate medians on Arrow Hwy. so they do not extend into the crosswalk (2) • Option: road diet on Arrow Hwy. and add bulb outs to cross Arrow Hwy.



7) MCKINLEY AVENUE AND WHITE AVENUE

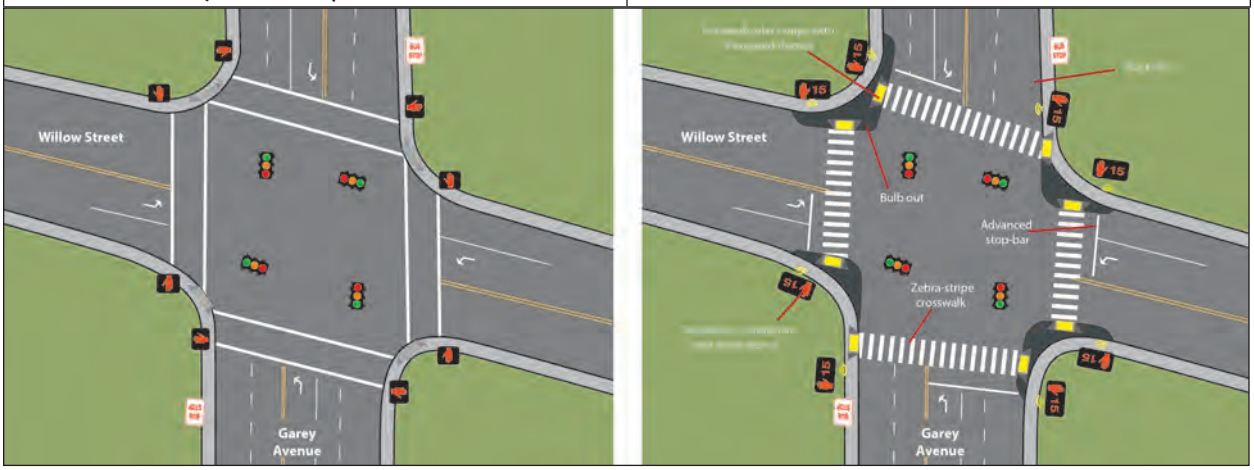
EXISTING	POTENTIAL
• McKinley Ave. has 2 lanes and a center-turn lane. At the intersection, it has an eastbound left/through option lane, and right-turn lanes in both directions • White Ave. has 5 to 6 lanes, center-turn lane / median, and parking on the east side of the street only • Medians on White Ave. extend into crosswalks • Signalized intersection with protected left turns • Diagonal ramps with truncated domes on the northeast and northwest corners • No ADA accessible landing area on southeast corner	• Add zebra-stripe crosswalks to all crossings (4) • Add pedestrian countdown signals to all crossings (8) • Remove or relocate all pushbuttons (8) • Add advanced stop bars to all crossings (4) • Add bulb-out on the northwest corner to cross McKinley Ave. (2) • Reduce curb returns on the northeast, southeast, and southwest corners (3) • Add truncated domes on the northeast, southwest, and southeast corner ramps (3) • Truncate medians on White Ave. so they do not extend into crosswalk (2)





8) WILLOW STREET AND GAREY AVENUE

EXISTING	POTENTIAL
• Willow St. has 2 lanes with center-turn lane and on-street parking west of the intersection. East of the intersection, Willow St. is an access road in the hospital parking lot • Garey Ave. has 4 lanes, center-turn lane, and on-street parking • Signalized intersection with permissive left turns • Bus stops on Garey Ave. (northbound and southbound, far sides)	• Add zebra-stripe crosswalks to all crossings (4) • Add pedestrian countdown signals to all crossings (8) • Add audio signals to all crossings (8) • Remove or relocate all pushbuttons (8) • Add advanced stop bars to all crossings (4) • Add bulb-outs to all crossings *except* northeast and southwest corners to cross Garey Ave. (6)

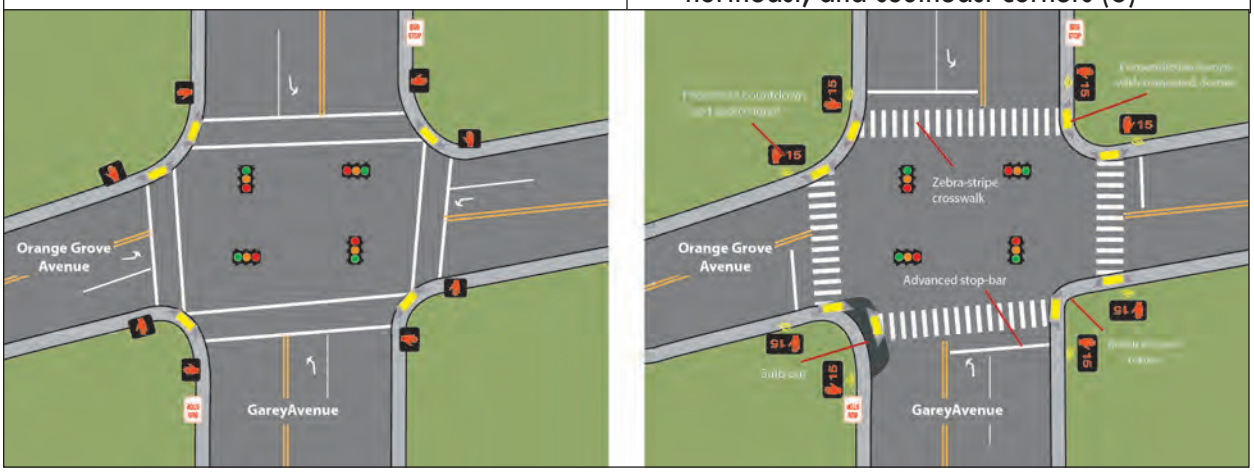


9) SAN BERNARDINO AVENUE AND INDIAN HILL BOULEVARD

EXISTING	POTENTIAL
• San Bernardino Ave. has 2 lanes, center-turn lane, right-turn lanes at the intersection, and on-street parking • Indian Hill Blvd. has 4 lanes and on-street parking • Signalized intersection with protected left turns on Indian Hill Blvd. • Pushbuttons to cross Indian Hill Blvd., automatic walk phase to cross San Bernardino Ave. • Bus stop on Indian Hill Blvd. (northbound and southbound, near sides) • ADTs on San Bernardino Ave. as of 7/06: 9,700	• Add zebra-stripe crosswalks to all crossings (4) • Add pedestrian countdown signals to all crossings (8) • Add audio signals to all crossings (8) • Add advanced stop bars to all crossings (4) • Add bulb-outs on the northwest and southeast corners to cross Indian Hill Blvd. and on all corners to cross Indian Hill Blvd (6) • Remove or relocate pedestrian pushbuttons (4)

10) ORANGE GROVE AVENUE AND GAREY AVENUE

EXISTING	POTENTIAL
• Orange Grove Ave. has 4 lanes, center-turn lane, and *no* on-street parking • Garey Ave. has 4 lanes, center-turn lane, and on-street parking • Signalized intersection with protected left turns in all directions • Bus stops on Garey Ave. (northbound and southbound, far sides) • Northwest corner has perpendicular ramps	• Add zebra-stripe crosswalks to all crossings (4) • Add pedestrian countdown signals to all crossings (8) • Add audio signals to all crossings (8) • Add advanced stop bars to all crossings (4) • Add bulb-out on the southwest corner to cross Garey Ave. (1) • Reduce curb return on the northeast and southeast corners (2) • Add truncated domes on the northwest, northeast, and southeast corners (6)



11) LINCOLN AVENUE AND WASHINGTON AVENUE

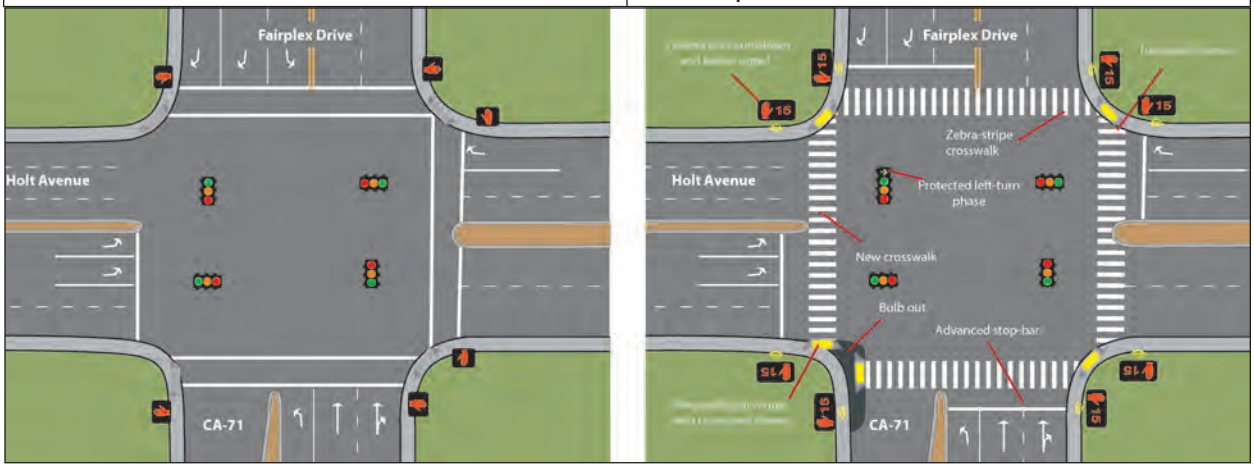
EXISTING	POTENTIAL
• Lincoln Ave. is 2 lanes with on-street parking • Washington Ave. is 2 lanes with on-street parking • Stop-controlled intersection • Yellow lateral-line crosswalks for all crossings • Truncated domes on northwest, northeast, and southwest corner ramps	• Add yellow zebra-stripe crosswalks to all crossings (4) • Add advanced stop bars to all crossings (4) • Add bulb-outs to all crossings (8) • Relocate stop signs further back from intersection after bulb-outs are installed (4) • Option: install roundabout with splitter islands • Option: add raised crosswalks to one crossing of Lincoln Ave. and one crossing of Washington Ave. (2)

12) ALVARADO STREET AND GAREY AVENUE

EXISTING	POTENTIAL
• Alvarado St. has 2 lanes, center-turn lane, and on-street parking • Garey Ave. has 4 lanes, center-turn lane, and on-street parking • Signalized intersection with permissive left turns • Bus stops on Garey Ave. (northbound and southbound, far sides) • Pedestrian crossing of Garey Ave. prohibited on the south leg	• Open pedestrian crossing of Garey Ave. on the south leg (may need engineering study) • Add zebra-stripe crosswalks to all crossings (4) • Add pedestrian countdown signals to all crossings (8) • Add audio signals to all crossings (8) • Add advanced stop bars to all crossings (4) • Add bulb-outs to the northwest and southeast corners to cross Alvarado St. (2) • Close driveway to vacant lot near northeast corner (subject to coordination with private property owner)

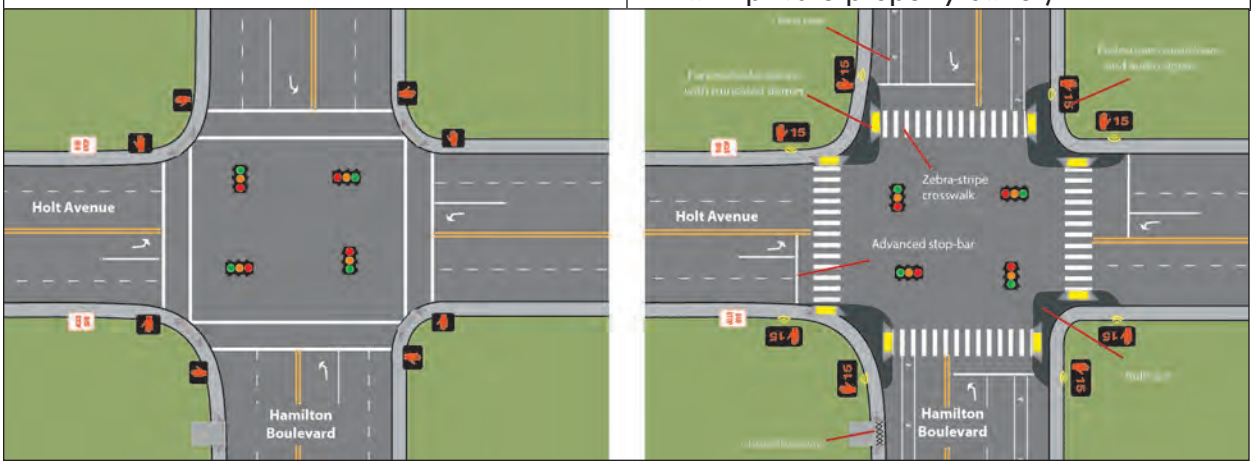
13) HOLT AVENUE AND FAIRPLEX DRIVE

EXISTING	POTENTIAL
• Holt Ave. has 4 lanes, median / center-turn lane, two eastbound left turn lanes, westbound right turn lane, westbound merging lane on the far side of the intersection to access CA-71 N on-ramp, and on-street parking • Fairplex Dr. has 4 lanes, center-turn lane, and ends at CA-71 • South leg of intersection is on- and off-ramps to CA-71 • Signalized intersection with permissive left turns, except for eastbound left turn • Pedestrian crossing of Holt Ave. prohibited on west leg • Perpendicular ramp on southwest corner	• Coordinate with Caltrans for any improvements • Open pedestrian crossing of Holt Ave. on the west leg (may be subject to engineering study) • Add zebra-stripe crosswalks to all crossings (4) • Add pedestrian countdown signals to all crossings (8) • Add audio signals to all crossings (8) • Add advanced stop bars to all crossings (4) • Add bulb-out to the southwest corner to cross Fairplex Ave. (1) • Add truncated domes to the northwest, northeast, and southeast corner ramps (3) • Add protected left turn phase for southbound to eastbound turns from Fairplex Dr.



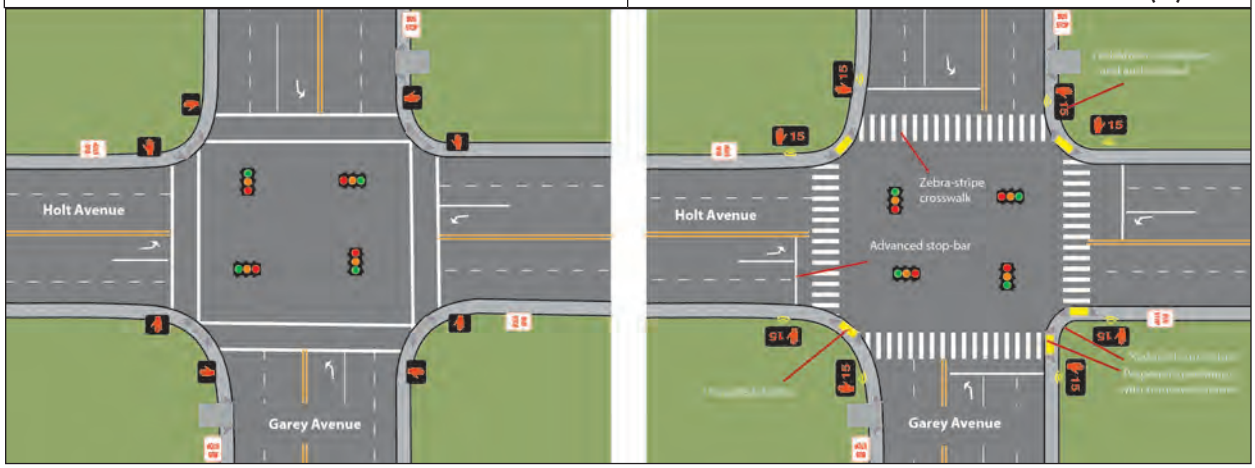
14) HOLT AVENUE AND HAMILTON BOULEVARD

EXISTING	POTENTIAL
• Holt Ave. has 4 lanes, center-turn lane, and on-street parking • Hamilton Blvd. has 4 lanes, center-turn lane at the intersection, and on-street parking • Signalized intersection with protected lefts from Hamilton Blvd. • Bus stops on Holt Ave. (eastbound, near side, and westbound, far side)	• Add zebra-stripe crosswalks to all crossings (4) • Add pedestrian countdown signals to all crossings (8) • Add audio signals to all crossings (8) • Remove or relocate all pushbuttons (8) • Add advanced stop bars to all crossings (4) • Add bulb-outs to all crossings except on the northwest and southwest corners to cross Holt Ave. (6) • Close driveway to Hamilton Blvd. on southwest corner (subject to coordination with private property owner)



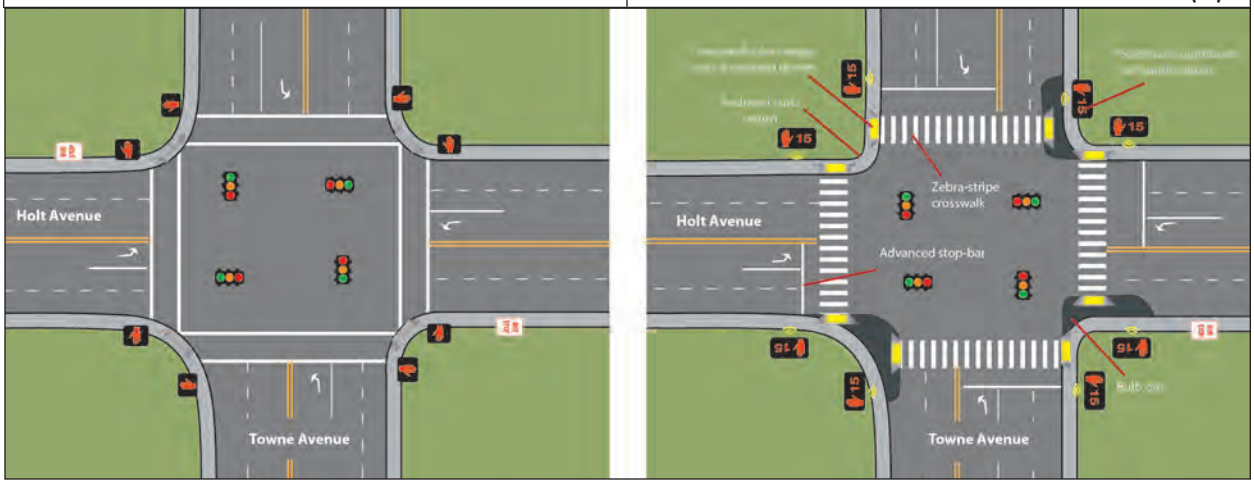
15) HOLT AVENUE AND GAREY AVENUE

EXISTING	POTENTIAL
• Holt Ave. has 4 lanes, center-turn lane, and on-street parking • Garey Ave. has 4 lanes, center-turn lane, and on-street parking • Signalized intersection with protected left turns in all directions • Bus stops on Holt Ave. (eastbound and westbound, far sides) and Garey Ave. (northbound and southbound, far sides)	• Add zebra-stripe crosswalks to all crossings (4) • Add pedestrian countdown signals to all crossings (8) • Add audio signals to all crossings (8) • Remove or relocate all pushbuttons (8) • Add advanced stop bars to all crossings (4) • Reduce curb return on southeast corner (1) • Add truncated domes on all corners (5)



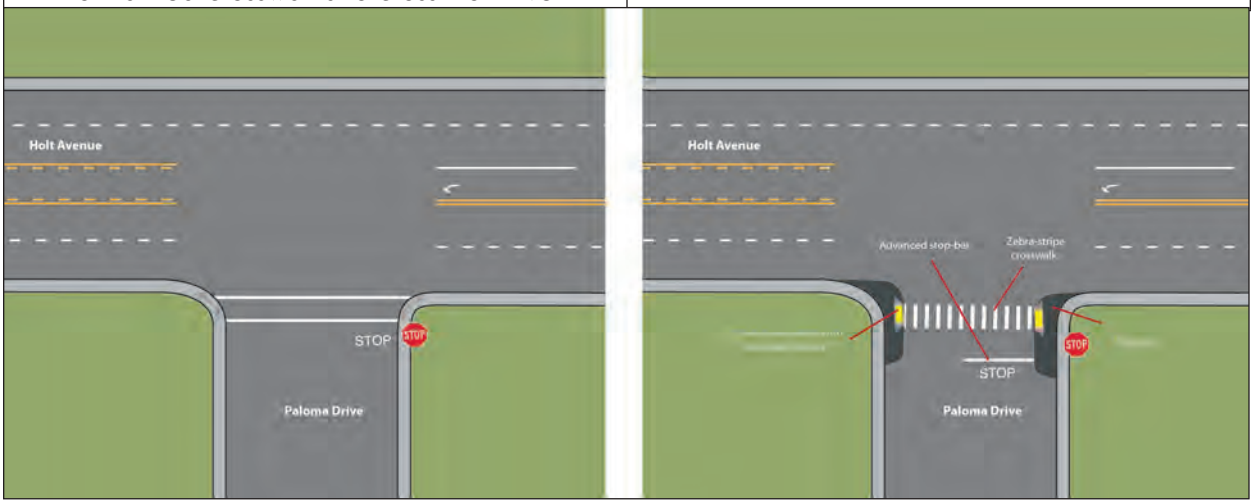
16) HOLT AVENUE AND TOWNE AVENUE

EXISTING	POTENTIAL
• Holt Ave. has 4 lanes, center-turn lane, and on-street parking • Towne Ave. has 4 lanes, median / center-turn lane, and on-street parking • Signalized intersection with protected left turns in all directions • Bus stops on Holt Ave. (eastbound and westbound, far sides)	• Add zebra-stripe crosswalks to all crossings (4) • Add pedestrian countdown signals to all crossings (8) • Add audio signals to all crossings (8) • Remove or relocate all pushbuttons (8) • Add advanced stop bars to all crossings (4) • Add bulb-outs on southeast corner to cross Holt Ave., and on northeast and southwest corners to cross Towne Ave. (3) • Reduce curb return on northwest corner (1)



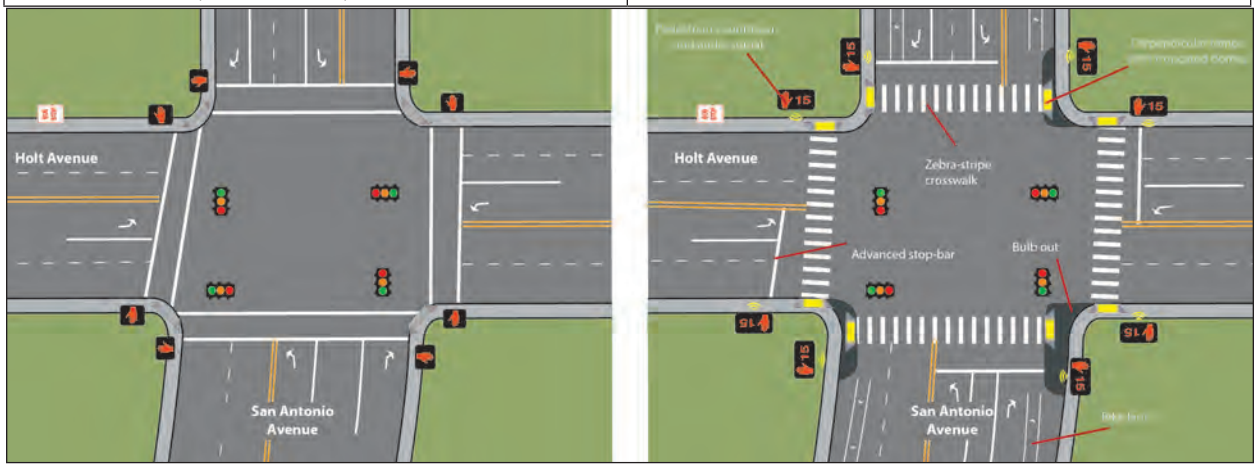
17) HOLT AVENUE AND PALOMA DRIVE

EXISTING	POTENTIAL
• Holt Ave. has 4 lanes, center-turn lane, and on-street parking • Paloma Dr. has 2 lanes and on-street parking • Unsignalized T-intersection: Paloma Dr. ends at Holt Ave. Stop sign on Paloma Dr. • Lateral line crosswalk to cross Paloma Dr., no marked crosswalks to cross Holt Ave.	• Add zebra-stripe crosswalk to cross Paloma Dr. (1) • Add advanced stop bar (1) • Add bulb-outs to cross Paloma Dr. (2) • Relocate stop sign (1)



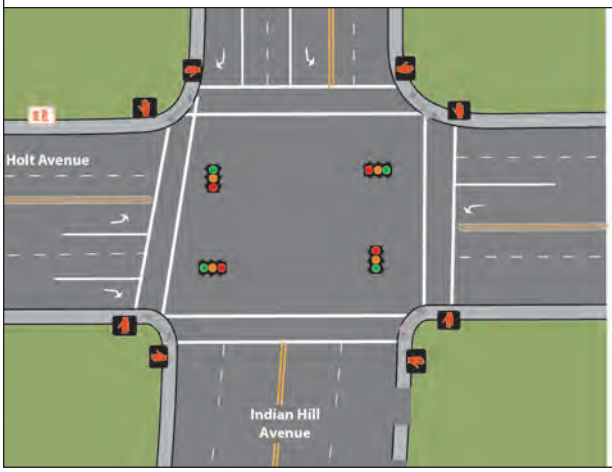
18) HOLT AVENUE AND SAN ANTONIO AVENUE

EXISTING	POTENTIAL
• Holt Ave. has 4 lanes, center-turn lane, and on-street parking • San Antonio Ave. has 1 lane northbound, 2 lanes southbound, left turn lanes, on-street parking, and right-turn lanes at the intersection • Signalized intersection with permissive left turns • Bus stop on Holt Ave. (westbound, far side) • ADTs on Holt Ave. as of 7/06: 33,000 • ADTs on San Antonio Ave. as of 7/06: between 8,600 and 9,800	• Add zebra-stripe crosswalks to all crossings (4) • Add pedestrian countdown signals to all crossings (8) • Add audio signals to all crossings (8) • Add advanced stop bars to all crossings (4) • Add bulb-outs on the northeast, southeast and southwest corners to cross San Antonio Ave. (3) • Remove or relocate pedestrian push-buttons (8)



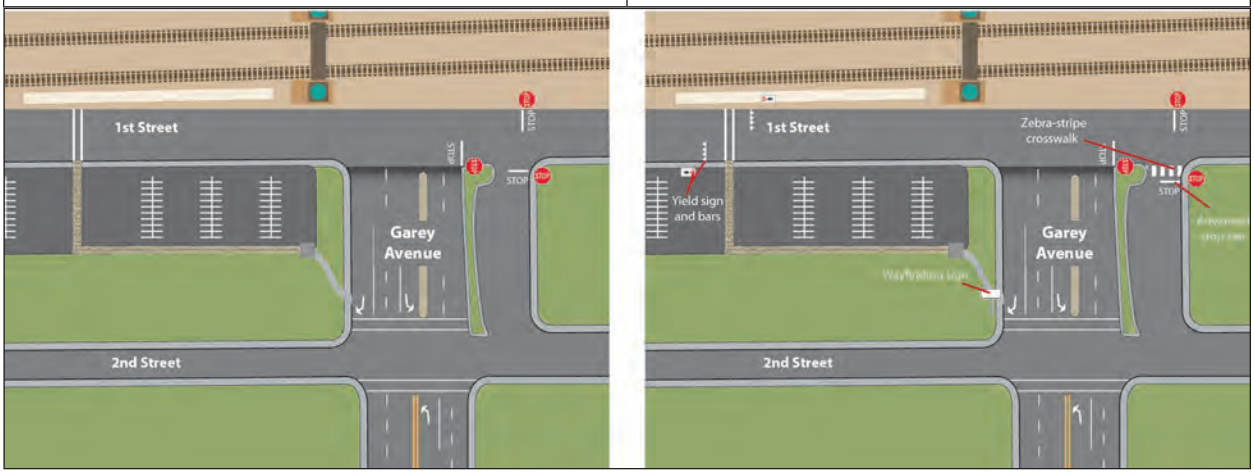
19) HOLT AVENUE AND INDIAN HILL BOULEVARD

EXISTING	POTENTIAL
• Holt Ave. has 4 lanes, 2 left-turn lanes eastbound, 1 left-turn lane westbound, and on-street parking only west of Indian Hill Blvd. • Indian Hill Blvd. has 4 lanes, left-turn lanes, a southbound right-turn lane at the intersection, and on-street parking • Indian Hill Blvd. ends at Holt Ave., and south leg of intersection is a driveway entrance to a parking lot • Signalized intersection with protected left turns on Holt Ave. and right-turn overlap phase on Indian Hill Blvd. southbound • Bus stop on Holt Ave. (westbound, far side) • ADTs on Holt Ave. as of 7/06: 33,000	• Add zebra-stripe crosswalks to all crossings (4) • Add pedestrian countdown signals to all crossings (8) • Add audio signals to all crossings (8) • Add advanced stop bars to all crossings (4) • Add bulb-outs to all crossings (8) • Remove or relocate pedestrian push-buttons (8) • Create ADA compliant landing areas on southwest and southeast corners (2)



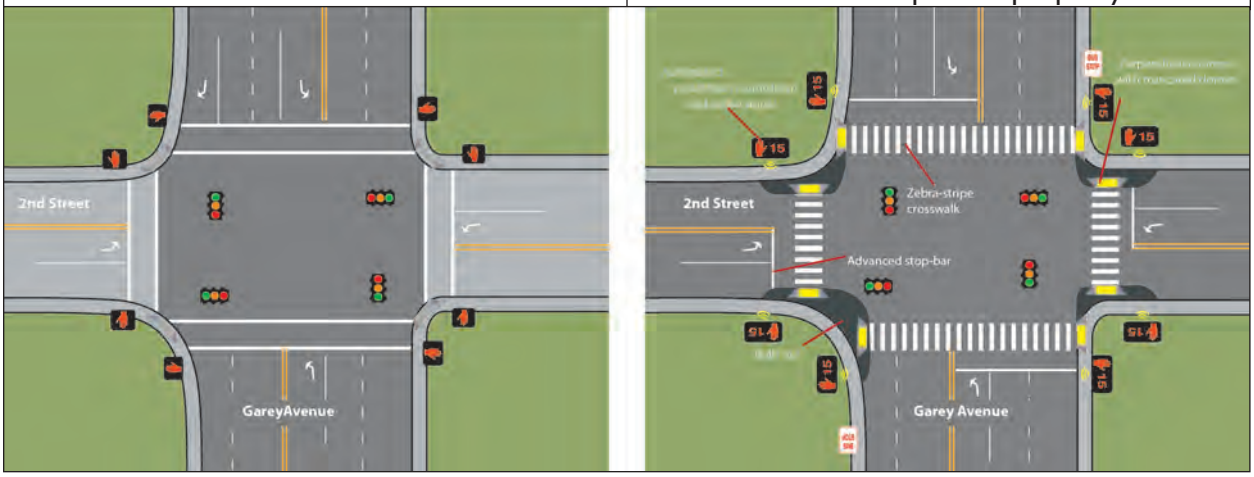
20) POMONA TRANSCENTER

EXISTING	POTENTIAL
• Metrolink, Foothill Transit and Amtrak Service • Bridge to cross tracks • Access stairways from west side of Garey Ave. north of tracks • First St. accesses station from the south	• Add wayfinding sign near northwest corner of the intersection of 2nd St. and Garey Ave. • Add zebra-stripe crosswalk to south leg of intersection of 1st St. and access road that runs north-south to the east of Garey Ave. (2) • Add advanced stop bars to crossing of access road (1) • Add advanced yield markings (2) • Add advanced yield signs (2)



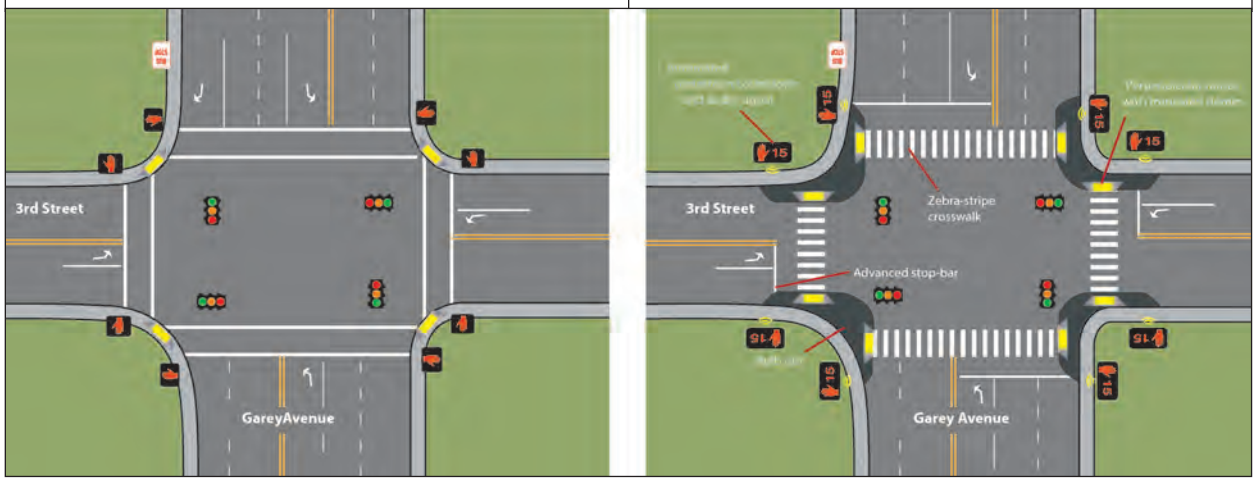
21) 2ND STREET AND GAREY AVENUE

EXISTING	POTENTIAL
• 2nd St. has 2 lanes, center-turn lane, and on-street parking • Garey Ave. has 4 lanes, center-turn lane, southbound right-turn lane, and on-street parking • Signalized intersection with protected left turns on Garey Ave. • West leg of intersection is a driveway and is not ADA-compliant	• Add zebra-stripe crosswalks to all crossings (4) • Add pedestrian countdown signals to all crossings (8) • Add audio signals to all crossings (8) • Add advanced stop bars to all crossings (4) • Add bulb-outs on the northwest corner to cross 2nd St., on the northeast corner to cross 2nd St., on the southwest corner to cross 2nd St. and Garey Ave., and on the southeast corner to cross 2nd St. (5) • Remove pushbuttons and set walk phase to automatic for north/south crossings • Reconstruct driveway on west leg of intersection to create flat crossing area and landing areas. Crosswalk will be aligned to the west of existing signal pole. Subject to coordination with private property owner.



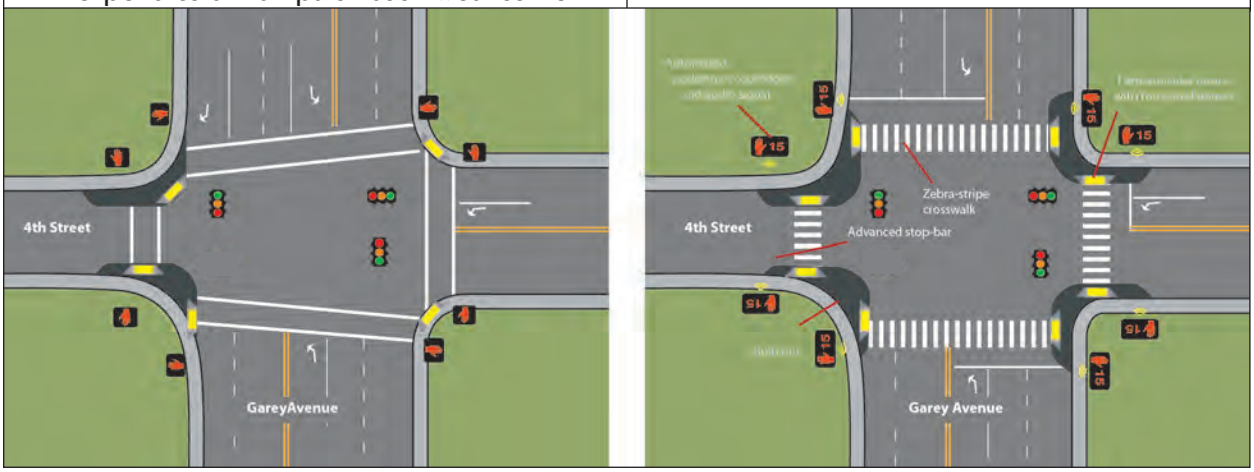
22) 3RD STREET AND GAREY AVENUE

EXISTING	POTENTIAL
• 3rd St. has 2 lanes, center-turn lane, and on-street parking • Garey Ave. has 4 lanes, center-turn lane, southbound right-turn lane, and on-street parking • Signalized intersection • Diagonal ramps on all corners, existing truncated domes	• Add zebra-stripe crosswalks to all crossings (4) • Add pedestrian countdown signals to all crossings (8) • Add audio signals to all crossings (8) • Add advanced stop bars to all crossings (4) • Add bulb-outs to all crossings (8) • Remove pushbuttons and set walk phase to automatic for north/south crossings



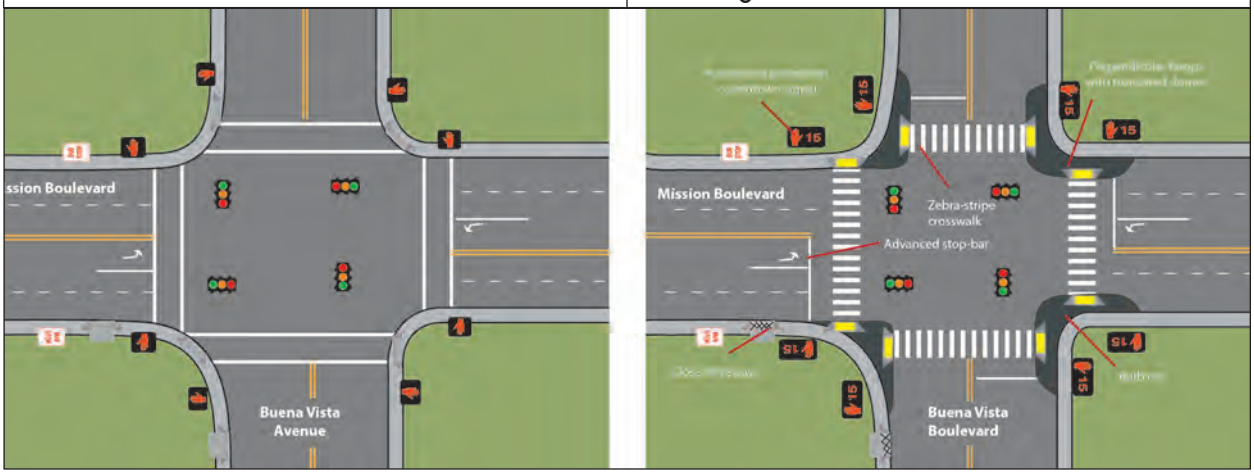
23) 4TH STREET AND GAREY AVENUE

EXISTING	POTENTIAL
• 4th St. has 2 lanes, center-turn lane, and parking east of Garey Ave., and is one lane with one-way westbound traffic west of Garey Ave. • Garey Ave. has 4 lanes, center-turn lane, southbound right-turn lane, and on-street parking • Bulb-outs on the west side of the intersection to cross 4th St. • Signalized intersection • Diagonal ramps on northwest, northeast, and southeast corners, existing truncated domes • Perpendicular ramps on southwest corner	• Add zebra-stripe crosswalks to all crossings (4) • Add pedestrian countdown signals to all crossings (8) • Add audio signals to all crossings (8) • Add advanced stop bars to all crossings (4) • Add bulb-outs to all faces on all corners, except where they are existing on northwest and southwest corners to cross 4th St. (6) • Remove pushbuttons and set walk phase to automatic for north/south crossings



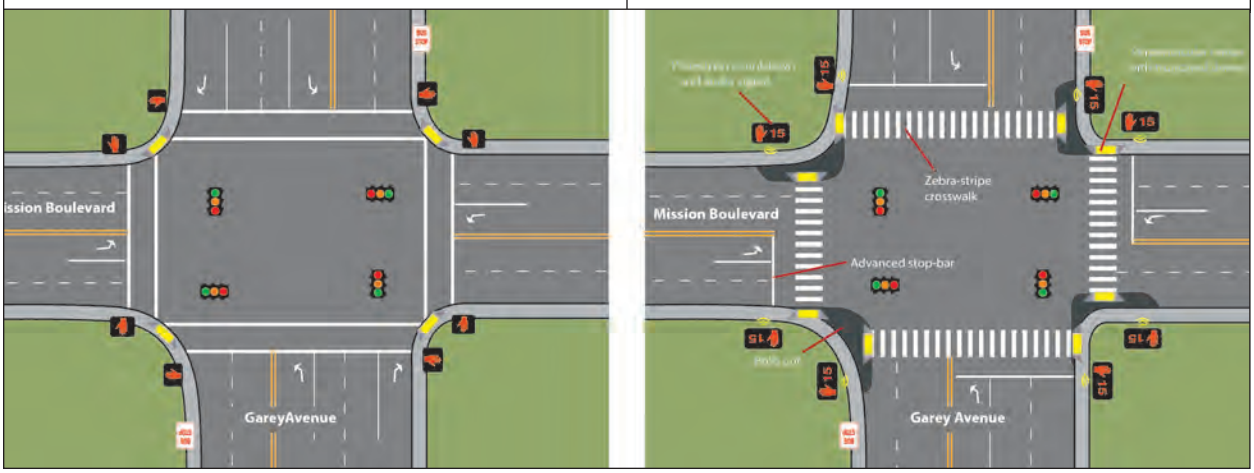
24) MISSION BOULEVARD AND BUENA VISTA AVENUE

EXISTING	POTENTIAL
• Mission Blvd. has 4 lanes, center-turn lane, and on-street parking • Buena Vista Ave. has 2 lanes and on-street parking • Signalized intersection with permissive left turns • Bus stops on Mission Blvd. (eastbound, near side; and westbound, far side) • Perpendicular ramps on the northwest and southeast corners to cross Buena Vista Ave., with no ramps on these corners to cross Mission Blvd. • Pushbuttons are not accessible per ADA requirements on all corners	• Add zebra-stripe crosswalks to all crossings (4) • Add pedestrian countdown signals to all crossings (8) • Add advanced stop bars to all crossings (4) • Add bulb-outs to the northwest corner to cross Buena Vista Blvd., to the northeast corner to cross Buena Vista Blvd. and Mission Blvd., to the southeast corner to cross Buena Vista Blvd. and Mission Blvd., and to the southwest corner to cross Buena Vista Blvd. (6) • Close driveways on southwest corner on Mission Blvd. and Buena Vista Ave. to vacant lot (subject to coordination with private property owner) • Set walk phase to cross Buena Vista Ave. to automatic and remove pushbuttons • Relocate pushbuttons to cross Mission Blvd. (4) • Bulb outs and ADA compliant ramps on the northwest and southeast corner may require relocation of poles or unusual design



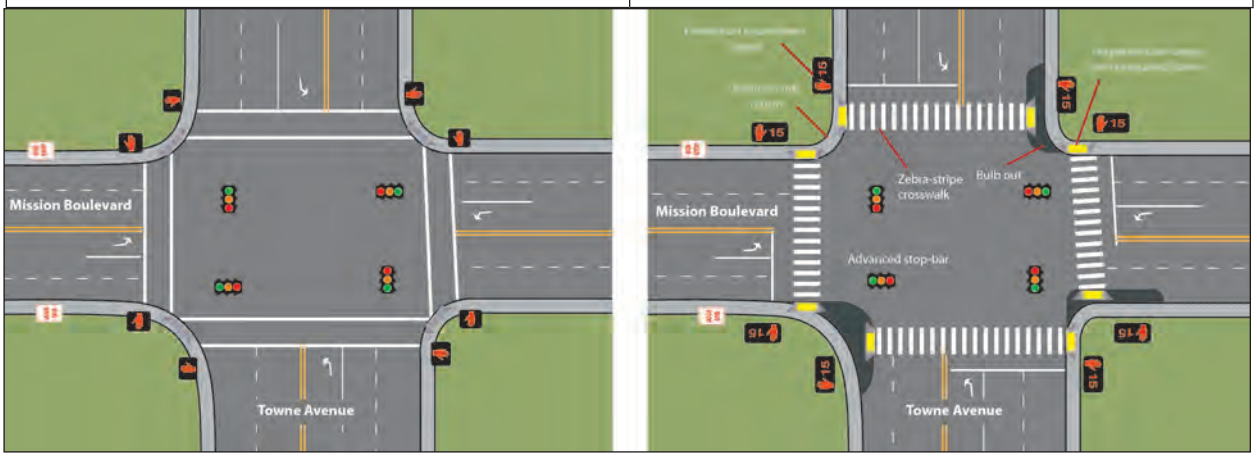
25) MISSION BOULEVARD AND GAREY AVENUE

EXISTING	POTENTIAL
• Mission Blvd. has 4 lanes, center-turn lane, and on-street parking • Garey Ave. has 4 lanes, center-turn lane, right-turn lanes at the intersection, and on-street parking • Signalized intersection with protected lefts • Bus stops on Garey Ave. (southbound and northbound, far sides)	• Add zebra-stripe crosswalks to all crossings (4) • Add pedestrian countdown signals to all crossings (8) • Add audio signals to all crossings (8) • Add advanced stop bars to all crossings (4) • Add bulb-outs on the northwest and southeast corners to cross Mission Blvd., and on the northeast and southwest corners to cross Garey Ave. (4)



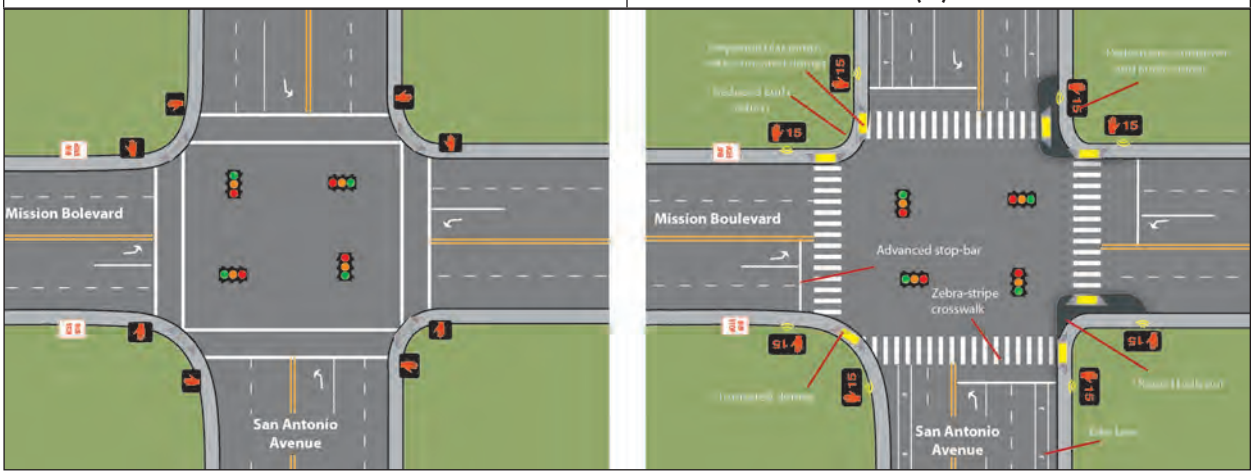
26) MISSION BOULEVARD AND TOWNE AVENUE

EXISTING	POTENTIAL
• Mission Blvd. has 4 lanes, center-turn lane, and on-street parking • Towne Ave. has 4 lanes, center-turn lane, and on-street parking • Diagonal ramps on all corners with grey truncated domes • Bus stops on Mission Blvd. (eastbound, near side; and westbound, far side)	• Add zebra-stripe crosswalks to all crossings (4) • Add pedestrian countdown signals to all crossings (8) • Add advanced stop bars to all crossings (4) • Add bulb-outs on the northeast and southwest corners to cross Towne Ave., and southeast corner to cross Mission Blvd. (3) • Reduce curb return on northwest corner (1) • Relocate pedestrian push-buttons (8) • Option: relocate bus stop on Mission Blvd. eastbound to far side of intersection



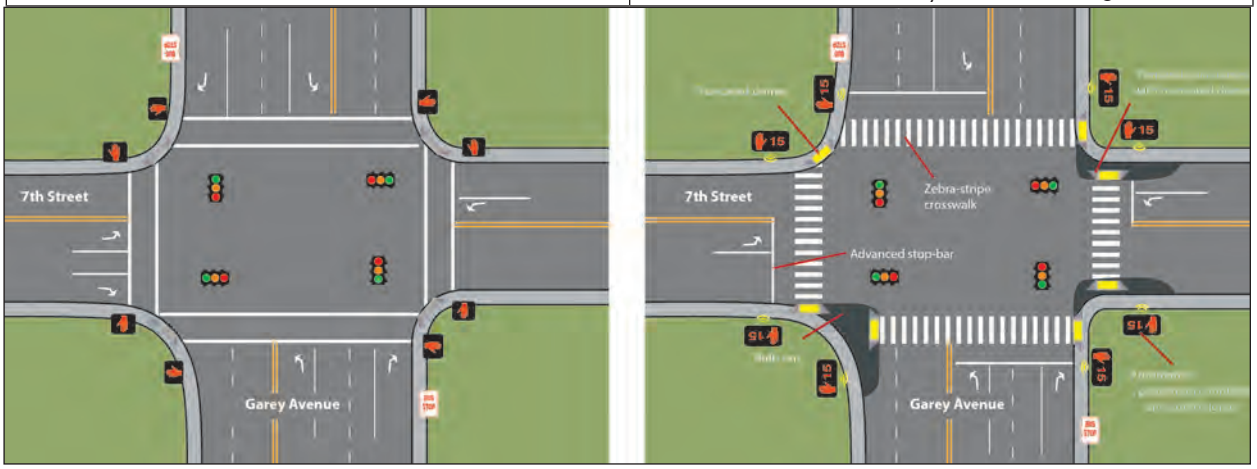
27) MISSION BOULEVARD AND SAN ANTONIO AVENUE

EXISTING	POTENTIAL
• Mission Blvd. has 4 lanes, center-turn lane, and on-street parking • San Antonio Ave. has 4 lanes, center-turn lane, and on-street parking • Signalized intersection with permissive left turns • Bus stops on Mission Blvd. (eastbound, near side; westbound, far side) • Street rises to sidewalk level at northeast and southeast corners	• Add zebra-stripe crosswalks to all crossings (4) • Add pedestrian countdown signals to all crossings (8) • Add audio signals to all crossings (8) • Remove or relocate pushbuttons on southeast corner (2), northeast corner (1), and southwest corner (2) • Add advanced stop bars to all crossings (4) • Add bulb-outs on the southeast corner to cross Mission Blvd., and on the northeast corner to cross San Antonio Ave. (2). • Bulb outs on the northeast and southeast corners will be raised • Reduce curb return on northwest corner (1) • Add truncated domes to the southwest and northwest corners (2)



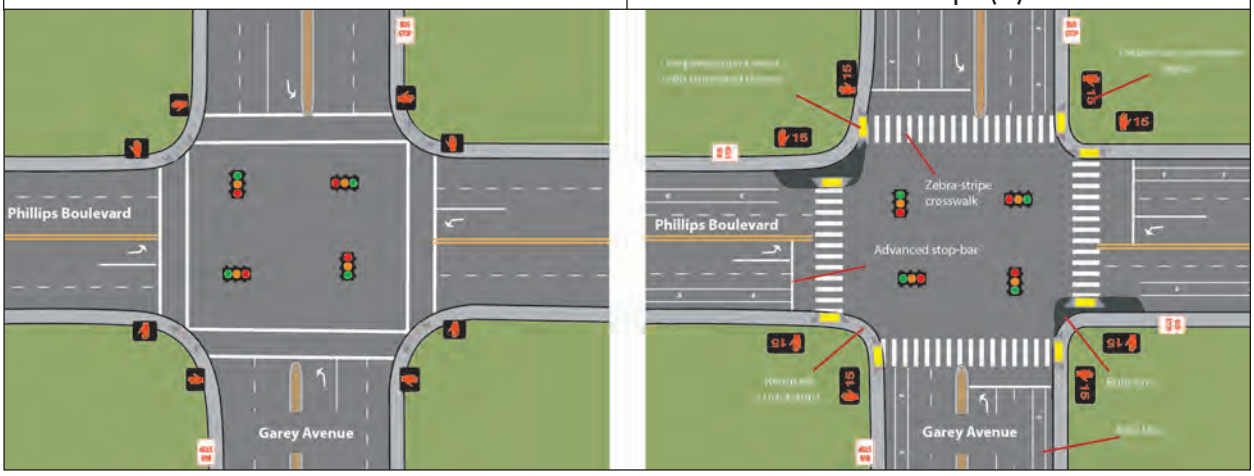
28) 7TH STREET AND GAREY AVENUE

EXISTING	POTENTIAL
• 7th St. has 2 lanes, left-turn lanes, and on-street parking • Garey Ave. has 4 lanes, center-turn lane, right-turn lanes at the intersection, and on-street parking • Signalized intersection with permissive left turns • Bus stops on Garey Ave. (southbound and northbound, near sides)	• Add zebra-stripe crosswalks to all crossings (4) • Add pedestrian countdown signals to all crossings (8) • Add audio signals to all crossings (8) • Add advanced stop bars to all crossings (4) • Add bulb-outs on the northeast and southeast corners to cross 7th St., and on the southwest corner to cross Garey Ave. (3) • Remove right-turn lane on 7th St. and southbound right-turn lane on Garey Ave. • Remove pushbuttons and set walk phase to automatic for north/south crossing



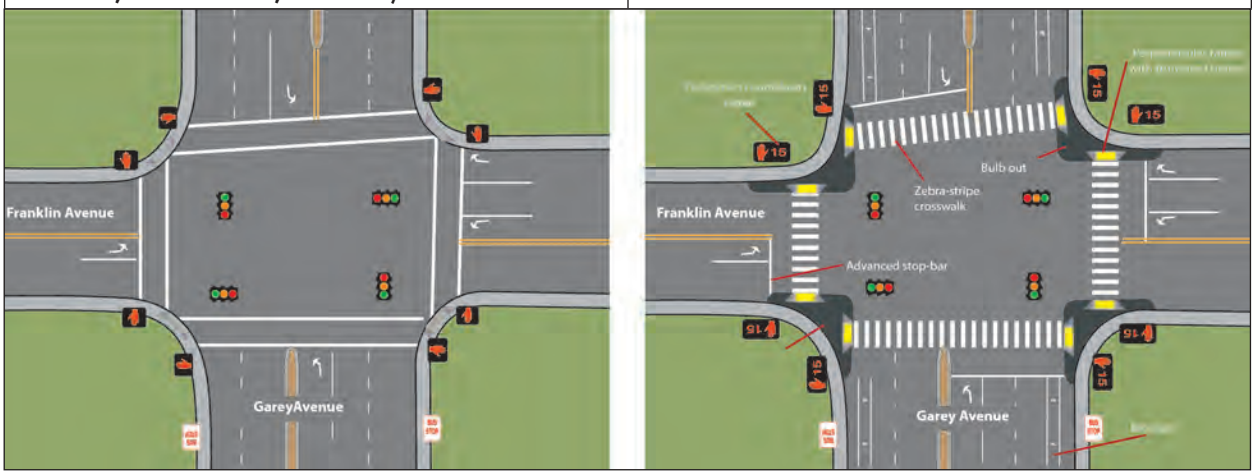
29) PHILLIPS BOULEVARD AND GAREY AVENUE

EXISTING	POTENTIAL
• Phillips Blvd. has 4 lanes, center-turn lane, and on-street parking. • Garey Ave. has 4 lanes, center-turn lane / median, and on-street parking • Signalized intersection with protected left turns from Garey Ave. • Bus stops on Garey Ave. (northbound and southbound, far sides)	• Add zebra-stripe crosswalks to all crossings (4) • Add pedestrian countdown signals to all crossings (8) • Remove or relocate all pushbuttons (8) • Add advanced stop bars to all crossings (4) • Add bulb-outs on the northwest and southeast corners to cross Phillips Blvd. (2) • Reduce curb return on the northeast and southwest corners (2) • Add truncated domes on the northeast and southwest corner ramps (2)



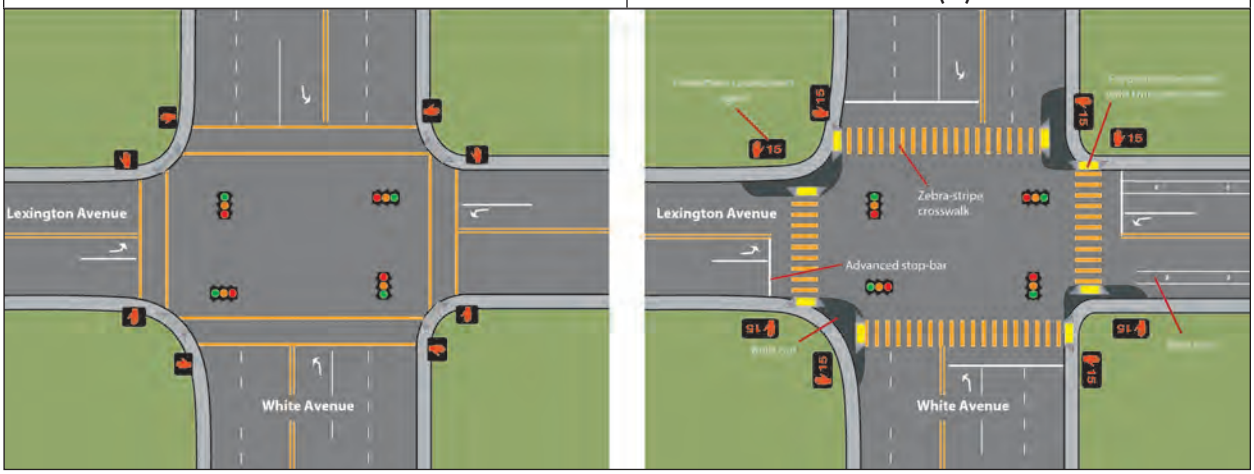
30) FRANKLIN AVENUE AND GAREY AVENUE

EXISTING	POTENTIAL
• Franklin Ave. has 2 lanes, on-street parking, center-turn lane at the intersection, and a westbound right-turn lane • Garey Ave. has 4 lanes, on-street parking, and center-turn lane/median • Signalized intersection with permissive left turns • Bus stops on Garey Ave. (northbound, near side; southbound, far side)	• Add zebra-stripe crosswalks to all crossings (4) • Add pedestrian countdown signals to all crossings (8) • Remove or relocate all pushbuttons (8) • Add bulb-outs to all crossings (8) • Add advanced stop bars to all crossings (4)



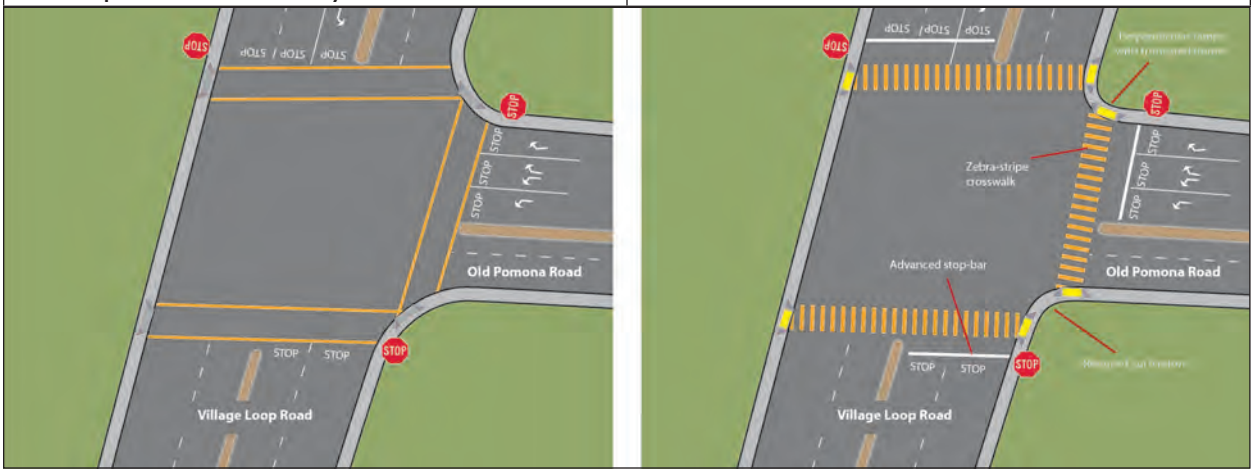
31) LEXINGTON AVENUE AND WHITE AVENUE

EXISTING	POTENTIAL
• Lexington Ave. has 2 lanes with on-street parking, and center-turn lane at the intersection • White Ave. has 4 lanes, on-street parking, and center-turn lane at the intersection • Signalized intersection with permissive left turns • Yellow lateral line crosswalks on all crossings	• Add yellow zebra-stripe crosswalks to all crossings (4) • Add pedestrian countdown signals to all crossings (8) • Remove or relocate all pushbuttons (8) • Add advanced stop bars to all crossings (4) • Add bulb-outs on the northwest and southeast corners to cross Lexington Ave., and on the northeast and southwest corners to cross White Ave. (4)



32) OLD POMONA ROAD AND VILLAGE LOOP ROAD

EXISTING	POTENTIAL
• Old Pomona Rd. has 2 lanes eastbound, westbound left-turn lane, westbound right-or-left-turn lane, and westbound right-turn lane, with no on-street parking • Village Loop Rd. has 4 lanes, southbound center-turn lane • Stop-controlled 3-way intersection	• Add zebra-stripe crosswalks to all crossings (3) • Add advanced stop bars to all crossings (3) • Reduce curb return on all corners (2) • Option: road diet Village Loop Rd. to two lanes, install roundabout at intersection

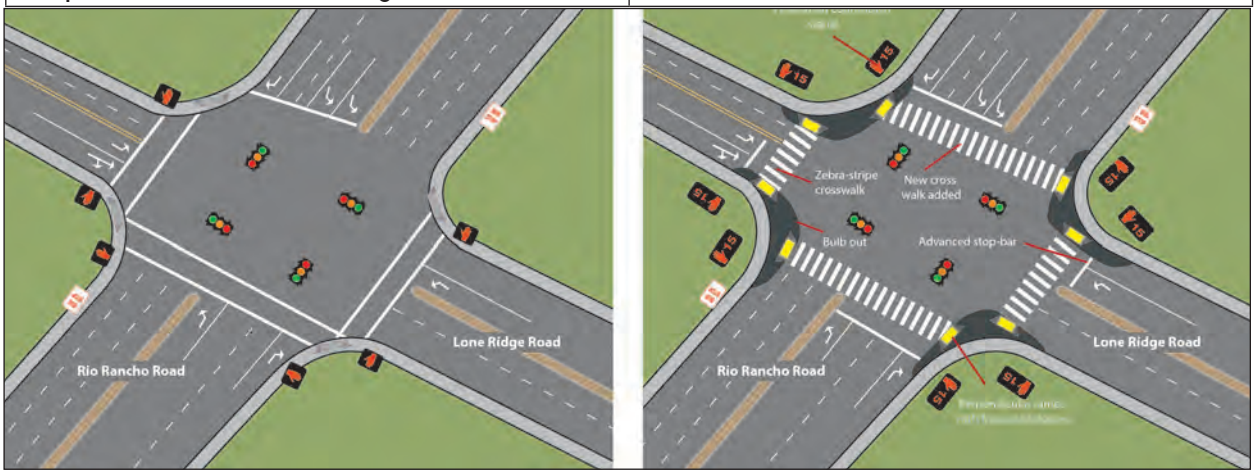


33) PHILADELPHIA STREET AND GAREY AVENUE

EXISTING	POTENTIAL
• Philadelphia St. has 4 lanes, median / center-turn lane, and on-street parking • Garey Ave. has 4 lanes, median / center-turn lane, and on-street parking • Signalized intersection with protected lefts from Garey Ave. • Bus stops on Philadelphia St. (eastbound, far side; westbound, near side) and Garey Ave. (northbound and southbound, far sides)	• Add zebra-stripe crosswalks to all crossings (4) • Add pedestrian countdown signals to all crossings (8) • Add audio signals to all crossings (8) • Remove or relocate all pushbuttons (8) • Add advanced stop bars to all crossings (4) • Reduce curb return on all corners (4) • Add perpendicular curb ramps to all corners (8) • Add truncated domes to all corner ramps (8)

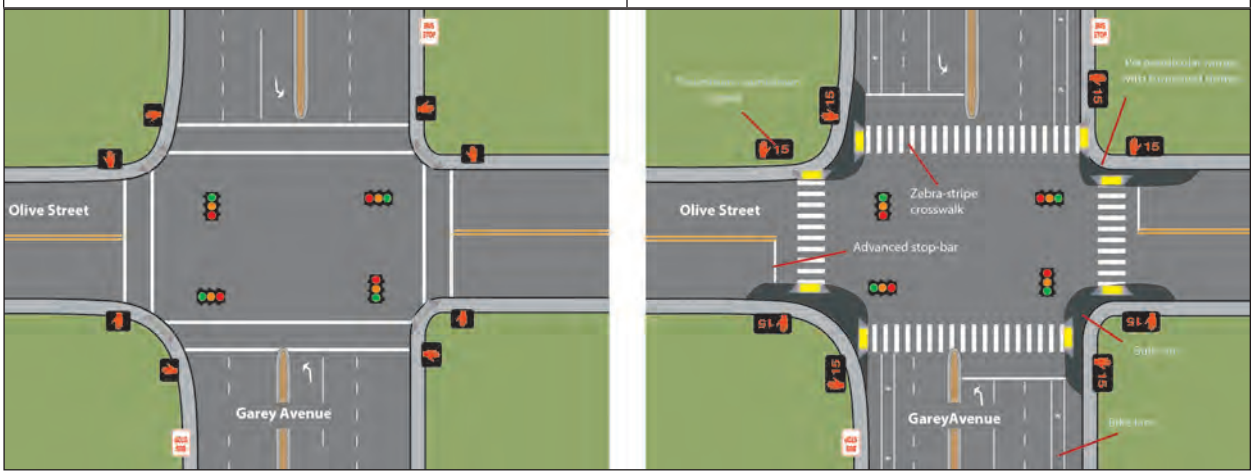
34) RIO RANCHO ROAD AND LONE RIDGE ROAD

EXISTING	POTENTIAL
• Rio Rancho Rd. has 6 lanes, median / center-turn lane, northbound and southbound right-turn lanes, and a second southbound left-turn lane • Lone Ridge Rd. north of the intersection has 2 lanes and a center-turn lane. South of the intersection, Lone Ridge Rd. has 2 lanes southbound, 1 lane northbound, a median, and a center-turn lane • Signalized intersection with protected left turns off Rio Rancho Rd. • Bus stops on Rio Rancho Rd. in both directions on the far side of the intersection • Pedestrian crossing of Rio Rancho Rd. prohibited on the east leg	• Open pedestrian crossing of Rio Rancho Rd. on the east leg (may be subject to engineering study) (1) • Add pedestrian heads and pushbuttons to the east leg (2) • Add zebra-stripe crosswalks to all crossings (4) • Add pedestrian countdown signals to all crossings (8) • Relocate pushbuttons on the southwest corner (2) • Add advanced stop bars to all crossings (4) • Add bulb-outs to all crossings (8)



35) OLIVE STREET AND GAREY AVENUE

EXISTING	POTENTIAL
• Olive St. has 2 lanes with on-street parking • Garey Ave. has 4 lanes, median / center-turn lane, and on-street parking • Signalized intersection with protected lefts on Garey Ave. • Bus stops on Garey Ave. (southbound and northbound, far sides) • Truncated domes on northwest and southwest corners	• Add zebra-stripe crosswalks to all crossings (4) • Add pedestrian countdown signals to all crossings (8) • Add advanced stop bars to all crossings (4) • Add bulb-outs on the northwest and southeast corners to cross Garey Ave. and on the northeast, southeast, and southwest corners to cross Olive St. (5)



Intersection Improvement Implementation Prioritization

The following list orders the intersection improvements by project priority. This prioritization is based on crash data (the first 26 intersections) and community input (the last 9 intersections). The City will prioritize improvements based on safety concerns, but is not limited to this order.

Project Priority	Intersection	Project Number
1	Olive Street and Garey Avenue	35
2.	Willow Street and Garey Avenue	8
3.	Arrow Highway and Garey Avenue	5
4.	Alvarado Street and Garey Avenue	12
5.	Foothill Boulevard and Garey Avenue	1
6.	McKinley Avenue and White Avenue	7
7.	Mission Boulevard and Buena Vista Avenue	24
8.	Arrow Highway and Towne Avenue	6
9.	Harrison Avenue and Towne Avenue	2
10.	Franklin Avenue and Garey Avenue	30
11.	Philadelphia Street and Garey Avenue	33
12.	2nd Street and Garey Avenue	21
13.	7th Street and Garey Avenue	28
14.	Holt Avenue and Hamilton Boulevard	14
15.	Holt Avenue and Fairplex Drive	13
16.	Holt Avenue and Indian Hill Boulevard	19
17.	Holt Avenue and Paloma Drive	17
18.	Holt Avenue and San Antonio Avenue	18
19.	San Bernardino Avenue and Indian Hill Boulevard	9
20.	Mission Boulevard and Towne Avenue	26
21.	Phillips Boulevard and Garey Avenue	29
22.	Rio Rancho Road and Lone Ridge Road	34
23.	Mission Boulevard and San Antonio Avenue	27
24.	Old Pomona Road and Village Loop Road	32
25.	Holt Avenue and Garey Avenue	15
26.	Orange Grove Avenue and Garey Avenue	10
27.	Mission Boulevard and Garey Avenue	25
28.	Lexington Avenue and White Avenue	31
29.	Lincoln Avenue and Washington Avenue	11
30.	Holt Avenue and Towne Avenue	16
31.	Bonita Avenue and Garey Avenue	3
32.	Bonita Avenue and Towne Avenue	4
33.	Pomona Transcenter	20
34.	3rd Street and Garey Avenue	22
35.	4th Street and Garey Avenue	23