City of Grand Terrace

Active Transportation Plan

Administrative Draft October 2018

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City of Grand Terrace

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Chapter 1

Introduction

Purpose of the Plan

This comprehensive Active Transportation Plan (ATP) will provide the recommended actions to support increasing bicycling and walking in the City and to provide non-motorized travel infrastructure and options to support the projected population growth. Most importantly, to provide safer, walkable streets for the students who travel to school each day in Grand Terrace. This plan includes an inventory of existing bike and pedestrian infrastructure and identifying deficiencies, developing and prioritizing improvements and producing materials for future grant applications for implementation.

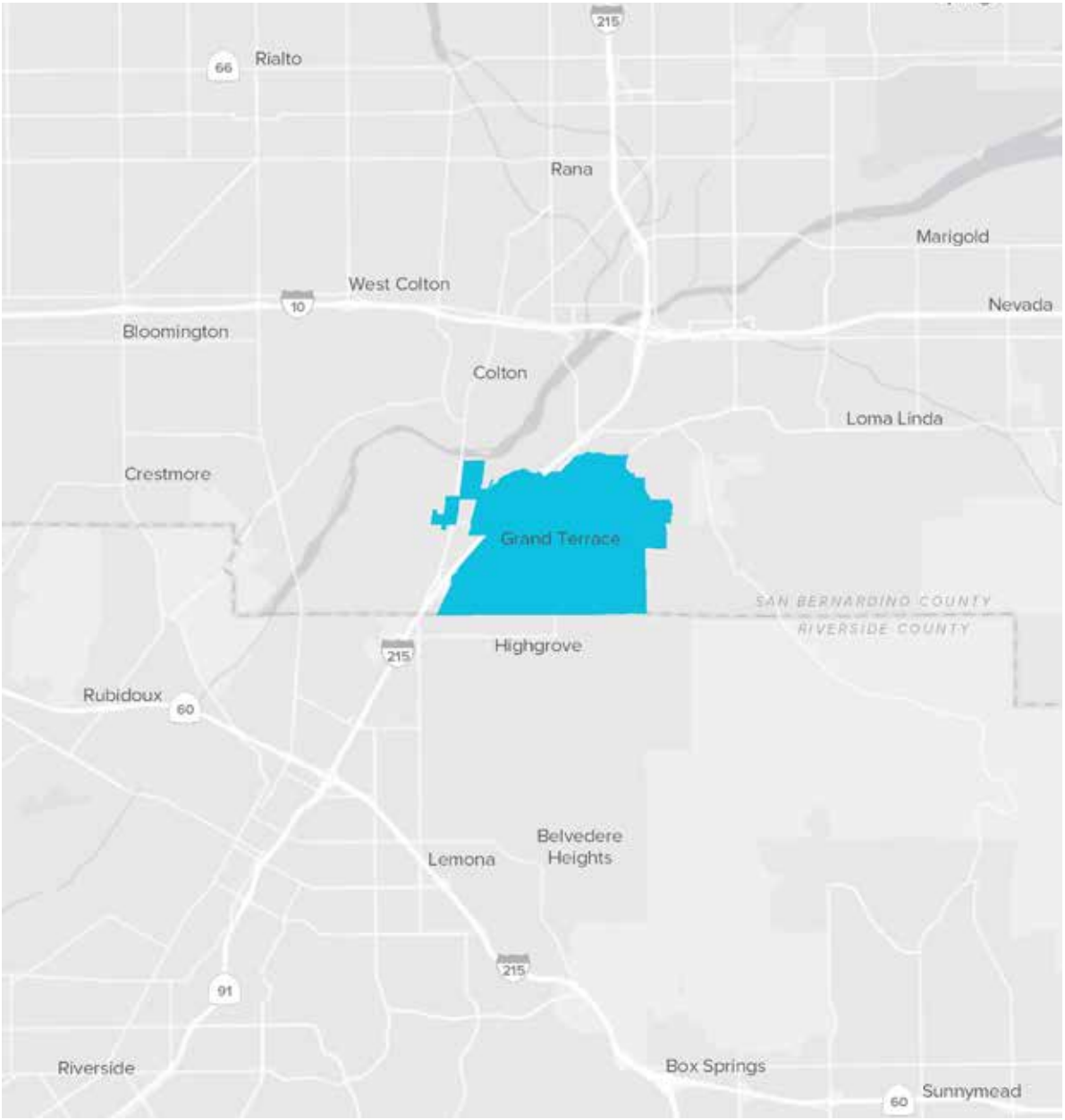
This Caltrans administered plan aims to assist the City in meeting statewide mandates to reduce greenhouse gas emissions by providing improvements for active transportation options. Along with infrastructure improvements, programs are also recommended to assist in increasing walking, bicycling and transit modes.

Community Profile

The City of Grand Terrace is located in San Bernardino County and shares a border with Riverside County. With a population just over 12,000 people, Grand Terrace is primarily a bedroom community within the Inland Empire. It situated off the I-215 freeway, between the I-10 and the 60 freeways, encompassing an area of approximately 3.6 square miles and is lies between two mountain ridges: Blue Mountain to the east and the La Loma Hills to the west.

Grand Terrace is known for its exceptional quality of life, including safe neighborhoods, clean streets and pristine parks. According to the 2012-2016 American Community Survey's 5 year estimates, it also has the highest median income in the Inland Empire Region at $64,188. The City also hosts a variety of community events throughout the year.

Figure 1-1: Location Map



Consistency with Other Documents

The Active Transportation Plan is consistent with and supports implementation of the following City planning documents:

2016 Land Use Element

The Active Transportation Plan implements General Plan policies to provide a circulation system that allows residents and workers to travel between land uses, and it ensures that the street system adequately serve these intended land uses. This plan encourages reducing vehicle miles traveled, which would support a reduction in traffic congestion and air pollution. Additionally, the Active Transportation Plan promotes long term recreational opportunities within and between open space areas, parks, and schools.

2010 Circulation Element

The Circulation Element provides a strong support for developing an efficient and safe bikeway system. In order to achieve this, the Circulation Element provides goals and policies to create a continuous bicycle network that connects residential neighborhoods to schools, parks, retail centers, and employment areas. It also ensures that traffic calming elements are implemented on local residential streets, and it encourages pedestrian movement by creating environments that are conducive to walking.

Barton Road Specific Plan

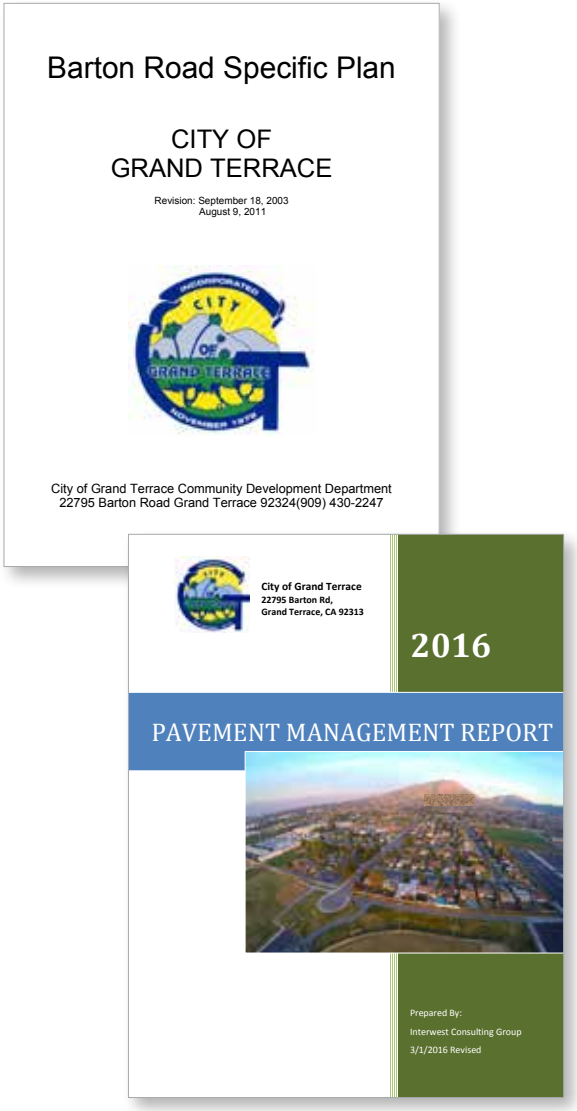
The Barton Road Specific Plan is intended to create a dynamic and high quality commercial corridor along Barton Road. The plan encourages a balanced mixtures of land uses with safe and efficient circulation and access. The Specific Plan promotes bicycle and pedestrian linkages between commercial facilities and adjacent residential areas. It also encourages commercial facilities to provide bicycle parking.

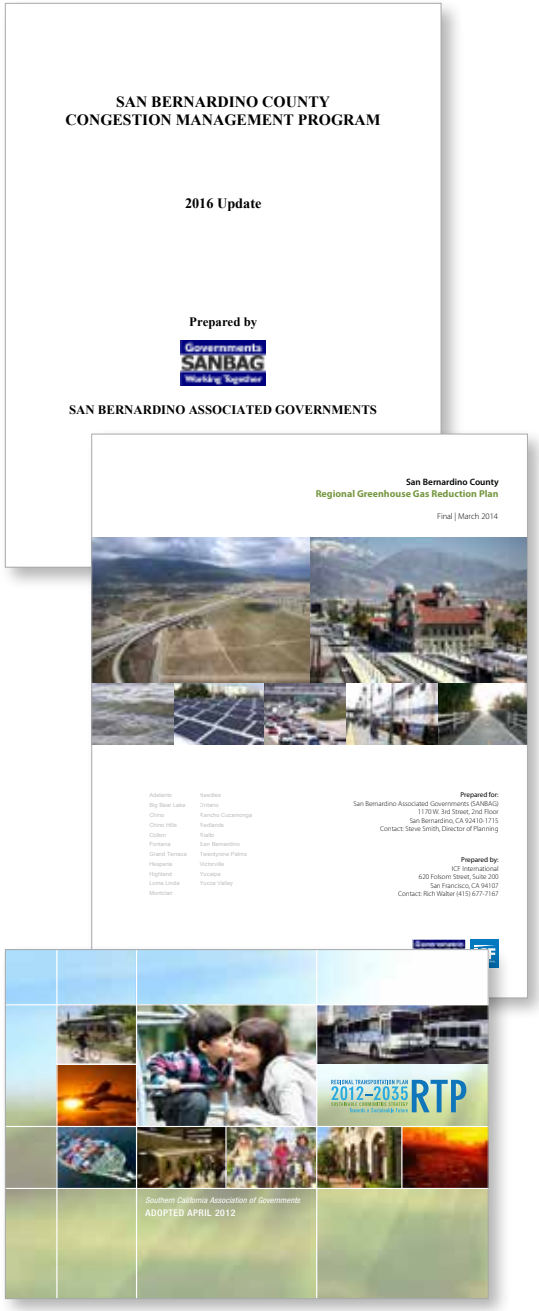
City of Grand Terrace Pavement Management Report

The City of Grand Terrace's pavement network provides vital transportation traveling needs for bicycles, buses, and passenger vehicles, as well as commercial vehicles that deliver goods and services throughout the city. A well-maintained roadway system is critical for both the local and regional economy and community as a whole. The purpose of the Pavement Management Plan is to establish strategies to extend the overall expected life cycle of Grand Terrace's roadway network system in an economical and efficient manner.

San Bernardino Countywide Transportation Plan

The purpose of the San Bernardino Countywide Transportation Plan is to lay out a strategy for long term investment in and management of the county's transportation assets. This plan seeks to improve safety and mobility for all modes of transportation and to integrate countywide transportation plans and initiatives to better serve the needs of the county. Some of the objectives of this





plan include reducing the number of vehicle hours traveled and vehicle emissions, as well as increasing the share of people carpooling, bicycling, walking, and using transit.

Congestion Management Plan

The Congestion Management Plan (CMP) identifies the roadway network, level of service standards, and procedures for mitigation of the impacts of new developments on the transportation system. One of the goals of the CMP is to maintain and enhance the performance of the multimodal transportation system, while ensuring travel safety and reliability for all people in the region. It also intends to protect the environment and health of residents by improving air quality and encouraging active transportation. This plan intends to promote alternative modes of transportation by providing incentives and studying and recommending methods for encouraging transit, walking, and bicycle-oriented developments.

Regional Transportation Plan (RTP)

The Regional Transportation Plan aligns the plan investments and policies with improving regional economic development and competitiveness, while maximizing mobility and accessibility for all people and goods in the region. This plan ensures travel safety and reliability in the region and preserves a sustainable regional transportation system. Likewise, the Regional Transportation Plan proposes to protect the environment and health of residents by improving air quality and encouraging active transportation and encouraging land use and growth patterns that facilitate transit.

Active Transportation Plan

The SCAG's Active Transportation Plan is written to "demonstrate the agency's strong commitment to Active Transportation and, importantly, legitimizes walking and cycling as travel modes that may actually be chosen over driving, thereby reducing congestion and air pollution. Further, it states that, in conjunction with supportive land use, these modes will increase in popularity." Its focus is intended to help the "region work towards reducing congestion and air pollution, walking and bicycling," as SCAG sees this "will become more essential to meet the future needs of (its) residents." It states that "as the population in the SCAG region grows and matures, and as parts of the region move towards denser, mixed-use, and transit oriented development, the demand and use of active transportation will increase."

San Bernardino County Regional Greenhouse Gas Reduction Plan

The San Bernardino County Regional GHG Reduction Plan is summarized as "both a synopsis of the GHG Reduction strategies being pursued by member jurisdictions and a plan for SANBAG (the predecessor agency

to SBCTA) to better address GHG reduction. SANBAG's role in regional GHG reduction is as a project sponsor, where transportation contributes 35% of the regions GHG emissions, and as a 'facilitator of regional dialogue and cooperation on GHG issues.' As it pertains to Grand Terrace the "plan includes direct actions, provided by the jurisdictions, for reducing GHGs...Grand Terrace's stated measures for reducing GHGs include improving the emissions standards for motor vehicles, but make no mention of active transportation."

Non-Motorized Transportation Plan

The goal of the San Bernardino County Non-Motorized Transportation Plan (NMTP) is to develop "a cohesive, integrated plan and identify sources of funds to implement that plan...It identifies a comprehensive network, with a focus on the bicycle system. It is also a response, in part, to the initiatives to reduce vehicle travel and greenhouse gas emissions embedded in California Senate Bill 375 (SB 375)."

Projects and Studies

- Barton Road Exchange Project
- Michigan Street Cul-de-sac Project
- Taylor Street/Commerce Way Alignment Study

Demographics and Transportation Characteristics

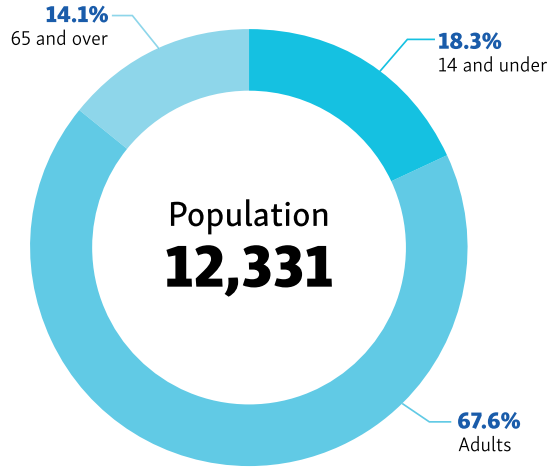
The majority of Grand Terrace consists of established residential neighborhoods and some commercial business located along major streets (e.g. Barton Road and Mount Vernon Avenue), as well as schools that are evenly distributed within city limits. Industrial buildings and warehouses can be found at the eastern edge of the city, especially along Interstate 215 and the eastern end of Barton Road.

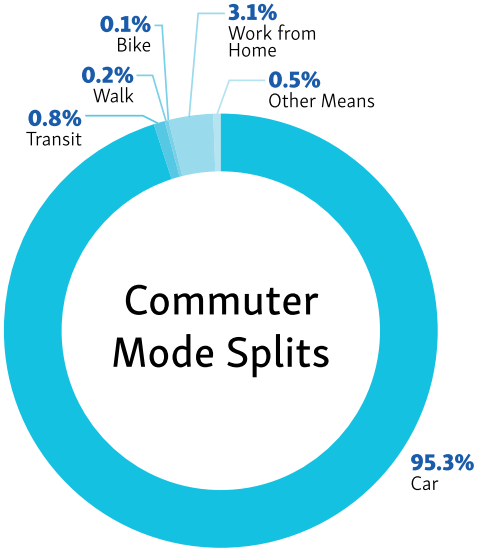
Approximately 12,331 residents live in Grand Terrace. About 18.3 percent are 14 years old or younger, while seniors (65 years old and over) account for 14.1 percent of the population. Adults (ages 15-64) represent 67.6 percent of the total population.

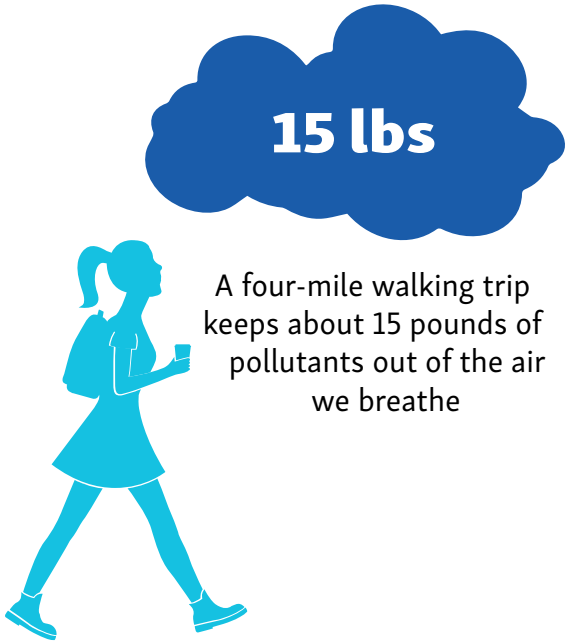
There are an estimated 5,670 worker in Grand Terrace. Mode splits for workers' commute trips are:

- Car: 95.3%
- Transit: 0.8%
- Walk: 0.2%
- Bike: 0.1%
- Work from Home: 3.1%
- Other Means: 0.5%

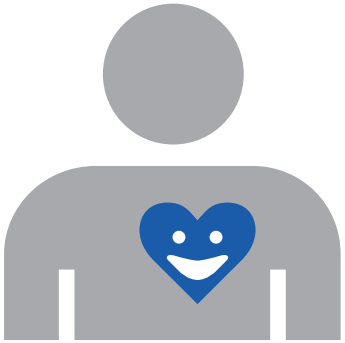
Over 95 percent of workers in Grand Terrace drive to work. This suggests that investments in transit and other mobility choices should be done to reduce employee commuter trips and reduce traffic congestion in Grand Terrace.







A four-mile walking trip keeps about 15 pounds of pollutants out of the air we breathe



Walkable neighborhoods have substantially lower rates of obesity, overweightness and diabetes

Bicycle and Walking Benefits

Numerous economic, environmental, and health benefits are attributed to bicycling and walking, especially as a substitute for driving a vehicle. This section summarizes benefits from research by the Pedestrian and Bicycle Information Center (PBIC).

Environmental Benefits

Increased bicycling reduces fossil fuel emissions. In California, 40 percent of carbon dioxide (CO2) emissions are produced by the transportation sector. While CO2 is not the most harmful greenhouse gas, it is the most abundant. Even after accounting for the other greenhouse gases' global warming potentials (comparing them in terms of CO2), 95 to 99 percent of vehicle emissions are CO2. The Environmental Protection Agency (EPA) found that the average vehicle emits 0.95 pounds of CO2 per mile, meaning that almost 10 pounds of carbon dioxide emissions could be avoided each day if an individual with a five mile (each way) commute switched from driving to an active transportation mode like bicycling.

Health Benefits

Despite dramatic strides in recent decades through regulations and technological improvements, vehicle emissions still pose a significant threat to air quality and human health. Vehicle-generated air pollution contains harmful greenhouse gas emissions, including carbon dioxide, carbon monoxide, methane, nitrous oxide and volatile organic compounds. These pollutants and irritants can cause asthma, bronchitis, pneumonia and decreased resistance to respiratory infections. Taking steps to reduce these emissions is particularly important in the United States, which leads the world in petroleum consumption. Converting vehicular trips to bicycling trips is an opportunity to help reduce emissions and improve public health.

In addition to the universal public health benefits, such as improved air quality described above, bicycling has the potential to positively impact personal health. A significant percentage of Americans are overweight or obese and recent projections indicate that 42 percent of the population will be obese by 2030. To combat this trend and prevent a variety of diseases and their associated societal costs, the Centers for Disease Control and Prevention (CDC) suggest 30 minutes of moderate intensity physical activity five days per week minimum. Not only does bicycling qualify as "moderate intensity activity," it can also be seamlessly integrated into daily routine, especially for utilitarian purposes like commuting or running errands.

Other health benefits associated with moderate activity, such as bicycling, include improved strength and stamina through better heart and lung function. Regular exercise reduces the risk of high blood pressure, heart attacks and strokes. In addition to heart disease, regular exercise can also help to pre-

vent other health problems such as non-insulin dependent diabetes, osteoarthritis, and osteoporosis. Lastly, exercise has been shown to improve mental health by relieving depression, anxiety and stress symptoms.

Economic Benefits

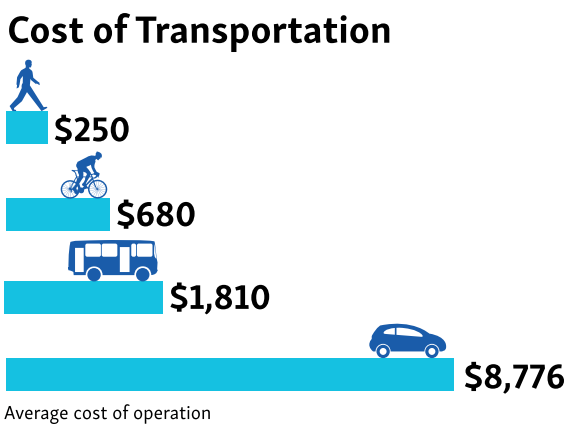
Cycling infrastructure and programs has increasingly been shown to deliver economic benefit to both individuals and society at large. The benefits of cycling may, in fact, outweigh its costs. Cycling, and utilitarian cycling in particular, offers somewhat obvious cost savings to individuals. Beyond the upfront cost of operating a vehicle are additional maintenance, insurance and often parking costs. According to the American Automobile Association, the annual cost of owning a car and driving 15,000 miles a year is now just over $9,000.

Converting even a fraction of automobile trips to cycling or walking trips can create significant transportation-related savings as a result of reduced vehicle traffic congestion. Increased cycling also translates to health-related savings, for both individuals and taxpayers, in the form of less need for preventative care. More cycling and walking have also been tied to increases in commercial and residential property values and retail sales. Shoppers who reach their destination by bicycle have been shown to make smaller purchases, but shop more often and spend more money overall. Shoppers who arrive by bicycle or on foot, by virtue of their more limited range, are also more likely to support local businesses, and do not require a vehicle parking spot.

Perhaps more compelling than reducing GHG emissions or combating the obesity epidemic is the benefits bicycling has to offer in terms of quality of life. Bicycling, and especially utilitarian bicycling, is increasingly seen as a fun, low-cost, healthy and sustainable way of getting around. How then, can we make it easier for any person to choose a bicycle for his or her daily trips?

In an effort to re-position bicycling as a safe and common mode of transportation and increasing the number of people bicycling, attention needs to be shifted away from creating "cyclists" and toward making it easier for any person to choose bicycling for their everyday trips. Research shows a strong latent interest in bicycling among those who identify as "interested, but concerned." These individuals do not identify themselves as "cyclists," but they do not necessarily need to do so to benefit from programs to encourage bicycling. While all segments of the population may be encouraged to ride, it is through the encouragement of this "interested, but concerned" segment of the population where the greatest gains in mode share will be made. The field of bicycle planning is being redefined toward this end.

Source: American Automobile Association



Conventional Bicycle Facility Types

There are four conventional bicycle facility types in California. These facilities are recognized by the CA Department of Transportation and details of their design, wayfinding and pavement markings can be found in the CA MUTCD and CA Highway Design Manual.

Class 1: Multi-Use Paths

Class 1 multi-use paths (frequently referred to as “bicycle paths”) are physically separated from motor vehicle routes, with exclusive rights-of-way for non-motorized users like bicyclists and pedestrians.

Class 2: Bicycle Lanes

Bicycle lanes are one-way facilities that carry bicycle traffic in the same direction as the adjacent motor vehicle traffic. They are typically located along the right side of the street, between the adjacent travel lane and curb, road edge or parking lane.

Class 3: Bicycle Routes

A bicycle route is a suggested bicycle route marked by signs designating a preferred route between destinations. They are recommended where traffic volumes and roadway speeds are fairly low (35 mph or less).

Class 4: Separated Bikeways

A protected bikeway is an exclusive bike facility that combines the user experience of a separated path with the on-street infrastructure of a conventional bike lane. They can be either one-way or two-way depending on the street network, available right-of-way and adjacent land use. A separated bikeway is physically separated from motor traffic and distinct from the sidewalk. There are a variety of physical protection measures that range from reflective bollards to parked vehicles.

Multi-Use Path

Bicycle Lane

Bicycle Route

Separated Bikeway

Buffered Bicycle Lane

Shared Lane Marking ("Sharrow")

Bike Box

Enhanced Bicycle Facility Types

While the conventional bicycle facility types can be found throughout the country, there has been a shift towards enhancing these facilities. The CA MUTCD has approved the installation of buffered bicycle lanes, while Shared Lane Markings or "Sharrows" have been around since 2008.

These enhancements are low cost, easy to install, and provide additional awareness to the location of cyclists. In many instances, installation of these bicycle facility enhancements can be coordinated with street resurfacing projects. The use of green paint has also become a simple and effective way to communicate the presence of bicyclists.

Buffered Bicycle Lanes

Buffered bicycle lanes are additional space between the bicycle lane and traffic lane, parking lane or both provide a more protected and comfortable space for cyclists than a conventional bicycle lane.

Shared Lane Markings ("Sharrows")

The shared lane marking is commonly used where parking is allowed adjacent to the travel lane. It is now common practice to center them within the typical vehicular travel route in the rightmost travel lane to ensure adequate separation between cyclists and parked vehicles.

Bike Boxes

A bike box is a designated area at the head of a traffic lane at a signalized intersection that provides bicyclists with a safe and visible way to get ahead of queuing traffic during the red signal phase.

Bicycle Boulevard

Signage and Wayfinding

Colored Bicycle Facilities

Low Stress Bicycle Facility Types

There are a number of other non-conventional facilities that the City may find useful in specific situations. In many cases, the conventional bicycle facilities may not meet the safety perceptions of the bicycling community. Protected bicycle lanes, low-stress streets, bicycle prioritized routes are an ever-evolving, ever-improving state of practice.

The facilities in this section have been implemented in other countries with great success and are quickly being implemented in the US. Bicycle boulevards can be found throughout California since they are proven to improve bicycling safety and increase bicycle mode share.

Details of these facilities and other treatments can be found in the NACTO Urban Bikeway Design Guide or AASHTO Guide of the Development of Bicycle Facilities.

Bicycle Boulevards

Bicycle boulevards provide a convenient, low-stress cycling environment for people of all ages and abilities. They are installed on streets with low vehicular volumes and speeds and often parallel higher volume, higher speed arterials as an alternative. Bicycle boulevard treatments use a combination of signs, pavement markings, traffic calming measures that discourage through trips by motor vehicles and create safe, convenient bicycle crossings of busy arterial streets.

Signage and Wayfinding

The purpose to signage and wayfinding on bicycle boulevards is to identify routes to both bicyclists and motorists, provide destination information, branding and inform about changes in road conditions and users of the street.

Colored Bicycle Facilities

Colored pavement increase the visibility of bicycle facilities, identifying potential areas of conflict, and reinforcing priority to bicyclists in these areas. Colored pavement can be used as a corridor treatment, along the length of a bike lane or protected bikeway. Additionally, it can be used as a spot treatment, such as crossing markings at particularly complex intersections where the bicycle path may be unclear. Consistent application of color across a bikeway corridor is important to promote a clear understanding for all users.

Green Intersection Conflict Striping

Intersection crossing markings indicate the intended path of bicyclists. Colored striping should be used to highlight conflict areas between bicycle lanes and turn lanes, especially where bicycle lanes merge across motor vehicle turn lanes or where existing lanes for motor vehicles cross bike through movements.

Green Conflict Striping

Protected Intersections

Protected intersections maintain integrity (low-stress experience) of their adjoining separated bike lanes by fully separating bicyclists from motor vehicles. Hallmark features of these protected intersections include a two-stage crossing supported by an advance queueing space, protective concrete islands, special bike-cross markings (alongside crosswalks), and special signal phasing.

Protected Intersection

Two-Stage Turn Queue Box

Two-stage turn queue boxes can provide a more comfortable crossing for many bicyclists since they entail two simple crossings, rather than one complex one. They also provide a degree of separation from vehicular traffic, since they do not require merging with traffic to make left turns.

Two-Stage Turn Queue Box

Bike Signals

This category includes all types of traffic signals that are directed at bicyclists. These can include traffic style green, yellow, and red lightings with signage indicating what the light controls are, or special bikeway icons displayed in the signage light itself. New-side bicycle signals may incorporate a “countdown to green” display, as well as a “countdown to red.”

Bicycle Detection

Bicycle detection is used at intersections with traffic signals to alert the signal controller that a bicycle crossing event has been requested. Bicycle detection occurs either through the use of push buttons or by automated means.

Bicycle Detection

Bike Signal

Traffic Calming

Traffic calming involves changes in street alignment, installation of barriers, and other physical measures to reduce traffic speeds and/or cut-through volumes. The intent of traffic calming is to alter motorist behavior and for street safety, livability, and other public purposes. Other techniques consist of operational measures such as police enforcement and speed displays.

The following examples identify traffic calming measures that apply to the many areas of Grand Terrace.

Traffic Circle

A traffic circle is an example of a traffic calming measure on bicycle boulevards. They slow traffic on each approach and reduce right-of-way conflicts, and tends not to divert traffic to nearby streets. They are appropriate for usage on low volume local residential streets with alternative access points.

Signals and Warning Devices

Pedestrian Hybrid Beacons (PHB) and Rectangular Rapid Flashing Beacons (RRFB) are a special signals and warning devices used to warn and control traffic at an unsignalized location to assist pedestrians in crossing a street or highway at a marked crosswalk.

Speed Tables/Raised Crosswalk

Speed tables, are flat-topped road humps, often constructed with brick or other textured materials on the flat section. Speed tables and raised crosswalks reduce vehicle speeds and enhance pedestrian safety.

Traffic Circle

Signals and Warning Devices

Speed Table

Speed Displays

Speed display contribute to increased traffic safety. Speed displays measure speed of approaching vehicles by radar and inform drivers of their speeds using a LED display. They are particularly effective in reducing the vehicular speeds traveling ten or more miles-per-hour over the speed limit.

Chicanes

Chicanes are a series of narrowing or curb extensions that alternate from one side of the street to the other forming S-shaped curves.

On-Street Edge Friction

A combination of vertical elements such as on-street parking, bicycle facilities, chicanes, site furnishings, street trees and shrubs that reduce the apparent width of the street.

Traffic Diverters

A traffic diverter is a roadway design feature which is placed upon a street or roadway in order to prohibit vehicular traffic from entering into, or exiting from, or both, any street.

Speed Display

Chicanes

On-Street Edge Friction

Traffic Diverter

Pedestrian Facility Enhancements

With a relatively flat terrain, Grand Terrace has the framework for a bicycle and pedestrian-friendly environment. Many of the streets already have sidewalks, especially through the newer neighborhoods. While many of the intersections are signalized and crosswalks exists, there are some segments with long blocks without places to cross. Providing crossing treatments will help reduce the jaywalking and mid-block crossings.

Pedestrian Refuge

Refuge islands provide pedestrians and bicyclists a refuge area within intersection and mid-block crossings. Refuge islands provide a location for pedestrians or bicyclists to wait partially through their crossing.

Mid-block Crossings

Mid-block crossings provide convenient locations for pedestrians to cross urban thoroughfares in areas with infrequent intersection crossings or where the nearest intersection crossing creates substantial out-of-direction travel.

Curb Extensions

Also called bulb-outs or neck-downs, curb extensions extend the line of the curb into the travel way, reducing the width of the street. Typically occurring at intersections, they reduce the length a pedestrian has to cross.

Mid-block Crossing

Curb Extension

Lighting

Pedestrian Scramble

Pedestrian Refuge

Placemaking

The inclusion of urban elements such as parklets, and community gardens encourage walking and provide usable space for all ages. These elements can range in cost depending on the extent of the design and materials. In many cities, these urban elements have helped transform urban villages and downtowns into world-class cities and destinations. Coordinating with local business and organizations already present in Grand Terrace can provide collaborative design and funding efforts between the City, its businesses and residents.

Parklets

Parklets are small, outdoor seating areas that often take over one or two existing parking spots, temporarily reclaiming the space for pedestrians and improving the aesthetics and streetscape of the urban environment.

Community Gardens

Community gardens provide fresh produce, plants and inherently assist in neighborhood improvement, sense of community and connection to the environment. They are typically managed by local governments or non-profit associations.

Furnishings and Public Art

Transit shelters, bike racks, seating and public art provide important amenities for functionality, design and vitality of the urban environment. They announce that the street is a safe and comfortable place to be and provide visual detail and interest.

"Owners reported a 20 percent increase in sales in the two weeks following a parklet installation."

*University City District, 2015

Parklets

Community Garden

Public Art

Chapter 2

State of Practice

Over the past five years the state of practice for bicycle facilities in the United States has undergone a significant transformation. Much of this may be attributed to bicycling's changing role in the overall transportation system. Once viewed as an "alternative" mode, it is increasingly viewed as a legitimate transportation mode and one that should be actively promoted as a means of achieving environmental, social and economic goals. (Due to a long history of routine accommodation for pedestrians, such as sidewalks, crosswalks, dedicated signals, etc., there are relatively few innovations in pedestrian facilities.)

Recent reserach indicates that, beyond cnnectivity and convenience, "low-stress" bicycle facilities are essential to the increased acceptance and practice of daily cycling. Facility types and specific design interventions intended to encourage ridership among the "interested, but concerned" demographic tend to be those that provide separation from high volume and high speed vehicular traffic.

Just as the state of practice of bicycle facilities has evolved, so has the technical guidance. While bikeway design guidance in California has traditionally come from the State, especially Caltrans and the California Manual on Uniform Traffic Control Devices (CA MUTCD), cities are increasingly turning to national organizations for guidance on best practices. Primary organizations include the American Association of State Highway and Transportation Officials (AASHTO), the National Association of City Transportation Officials (NACTO) and the Federal Highway Administration (FHWA).

Fortunately for California cities, there is increased flexibility in design guidance offered by both Caltrans and the FHWA. In 2014, Caltrans officially endorsed the NACTO Urban Street Design Guide and Urban Bikeway Design Guide as valuable toolkits for designing and constructing safe, attractive local streets. California cities may also apply for experimental designation from the FHWA for projects not in conformance with the CA MUTCD.

The guidance provided by these manuals support the creation of more Complete Streets. The guidance is also supported by several pieces of important legislation. The following section provides a review of the state of practice for bicycle facilities, drawing on the AASHTO and NACTO guides. It also includes a discussion on Complete Streets/ Routine Accommodation and as well as summaries of relevant legislation at the local, regional, State and national levels.

Primary Guidance

AASHTO Guide to Bikeway Facilities

This memorandum expresses the Federal Highway Administration's (FHWA) support for taking a flexible approach to bicycle and pedestrian facility design. The AASHTO bicycle and pedestrian design guides are the primary national resources for planning, designing, and operating bicycle and pedestrian facilities. The NACTO Urban Bikeway Design Guide and the Institute of Transportation Engineers (ITE) Designing Urban Walkable Thoroughfares guide builds upon the flexibilities provided in the AASHTO guides, which can help communities plan and design safe and convenient facilities for pedestrians and cyclists. FHWA supports the use of these resources to further develop non-motorized transportation networks, particularly in urban areas.

NACTO Urban Bikeway and Urban Street Design Guides

The NACTO guides represent the industry standard for innovative bicycle and streetscape facilities and treatments in the United States. In 2014, Caltrans followed AASHTO and officially endorsed the NACTO Urban Bikeway Design Guide. It is important to note that virtually all of its design treatments (with two exceptions) are permitted under the Federal MUTCD. The NACTO Urban Street Design Guide is the more generalized of the two

guides and organized into six sections. Each section is further subdivided, depending on topic. The NACTO Urban Bikeway Design Guide is also organized into six sections, but its information is bicycle-specific. For each section, it offers three levels of guidance: Required Features, Recommended Features and Optional Features. The following section introduces the broad facility types included in the NACTO Urban Bikeway Design Guide.

In 2014, Caltrans officially endorsed the NACTO Urban Street Design Guide and Urban Bikeway Design Guide as valuable toolkits for designing and constructing safe, attractive local streets. At the time, Caltrans was only the third State Department of Transportation to officially endorse the Guides.

NACTO Transit Street Design Guide

As transit starts to gain a more prominent role in cities, more people are using buses, streetcars, and light rail than ever before. As a result, street design is shifting to give transit the space it deserves. The NACTO Transit Street Design Guides provide design guidance for the development of transit facilities on streets, as well as for prioritizing transit, improving its service quality, and to support other related goals.

The majority of design elements included in this guide are consistent with MUTCD standards, including signage, markings, and signal elements that have received interim approval. These guidelines were developed using other design guidance as a basis, along with city case studies, best practices, research and evaluation of existing designs, and professional consensus.

NACTO Urban Street Stormwater Guide

The NACTO Urban Street Stormwater Guide provides guidelines on how to create resilient cities that are better prepared for climate change, while creating public spaces that deliver social and economic value to these places. This guide focuses on green infrastructure within urban streets, including the design and engineering of stormwater management practices that support and improve mobility. It also intends to reduce the impacts of runoff and human activity on natural ecological processes.

One of the main goals of this guide is to encourage interdepartmental partnerships around sustainable infrastructure, which includes communicating the benefits of such projects. However, this guide does not address stormwater management strategies on private property, nor it addresses drainage and infiltration around controlled-access highways.

Further categorization and design details are included in Appendix X: Design Guidelines.

Complete Streets and Routine Accommodation

An adopted Bicycle and Pedestrian Master Plan provides a roadmap to support planning and implementing a bicycle and pedestrian network, can help to integrate bicycle and pedestrian planning into broader planning efforts and is required for State funding of bikeway projects.

For many cities, however, a bicycle and pedestrian plan alone is not enough to ensure the implementation of the plan's goals and projects. A hurdle many cities face is that their various plans are not well integrated. Despite many cities' attempts to support a "Complete Streets approach," entrenched and often contradictory policies can make implementation difficult. For instance, a Bicycle and Pedestrian Master Plan, an ADA transition plan and a specific plan may address the same area, but ignore each other's recommendations. One plan may identify a certain project, but it may not be implementable due to prevailing policies and practices that prioritize vehicular flow and parking over other modes.

An adopted Complete Streets policy has the potential to address these shortcomings through the designation of some important corridors as Complete Streets, accommodating all roadway users, and other corridors as priority corridors for a certain modes. A system that assigns priority for different modes to specific corridors, offset from one another, is referred to as a layered network.

Efforts to implement Complete Streets policy often highlight other significant obstacles, chief among them documents defining "significant impacts" to traffic, acceptable vehicular "Level of Service" thresholds and parking requirements. Drafting a Complete Streets policy often means identifying roadblocks like these and ultimately mandating increased flexibility to allow for the creation of a more balanced transportation system. In the case of a Bicycle and Pedestrian Master Plan, the network identified could become the bicycle and pedestrian layers. Identification in such a plan, reiteration within a Complete Streets policy framework and exemption from traditional traffic analyses can make implementation more likely and much more affordable.

Legislative support for Complete Streets can be found at the State level (AB-1358) and is being developed at the national level (HR-2468). As explained in further detail in the following section on applicable legislation, AB-1358 requires cities and counties to incorporate Complete Streets in their general plan updates and directs the State Office of Planning Research (OPR) to include Complete Streets principles in its update of guidelines for general plan circulation elements. Examples of best practices in Complete Streets Policies from around the United States can be found at: http://www.smartgrowthamerica.org/complete-streets-2013-analysis.

Enhanced Crosswalks and Painted Bicycle in Crossings in Wauwatosa, WI

Dedicated Bicycle Signal in Denver, CO

Applicable Legislation

Several pieces of legislation support increased bicycling and walking in the State of California. Much of the legislation addresses greenhouse gas (GHG) reduction and employs bicycling and walking as means to achieve reduction targets. Other legislation highlights the intrinsic worth of bicycling and walking and treats the safe and convenient accommodation of cyclists and walkers as a matter of equity. The most relevant legislation concerning bicycle and pedestrian policy, planning, infrastructure and programs are described in the following sections.

State Legislation and Policies

AB-32 California Global Warming Solutions Act

AB-32 calls for the reduction of greenhouse gas emissions and codifies the 2020 emissions reduction goal. This act also directs the California Air Resources Board to develop specific early actions to reduce greenhouse gases while also preparing a scoping plan to identify how best to reach the 2020 limit.

SB-375 Redesigning Communities to Reduce Greenhouse Gases

This bill seeks to reduce vehicle miles traveled through land use and planning incentives. Key provisions require the larger regional transportation planning agencies to develop more sophisticated transportation planning models, and to use them for the purpose of creating "preferred growth scenarios" in their regional plans that reduce greenhouse gas emissions. The bill also provides incentives for local governments to incorporate these preferred growth scenarios into the transportation elements of their general land use plans.

AB-1358 Complete Streets Act

AB-1358 requires the legislative body of a city or county, upon revision of the circulation element of their general plan, to identify how the jurisdiction will provide for the routine accommodation of all users of the roadway including drivers, pedestrians, cyclists, individuals with disabilities, seniors and public transit users. The bill also directs the OPR to amend guidelines for general plan circulation element development so that the building and operation of local transportation facilities safely and conveniently accommodate everyone, regardless of their travel mode.

AB-1581 Bicycle and Motorcycle Traffic Signal Actuation

This bill defines a traffic control device as a traffic-actuated signal that displays one or more of its indications in response to the presence of traffic detected by mechanical, visual, electrical or other means. Upon the first placement or replacement of a traffic-actuated signal, the signal would have to be installed and maintained, to the extent feasible and in conformance with professional engineering practices, so as to detect lawful bicycle or motorcycle traffic on the roadway. Caltrans has adopted standards for implementing the legislation.

AB-1371 Passing Distance/Three Feet for Safety Act

This statute, widely referred to as the "Three Foot Passing Law," requires drivers to provide at least three feet of clearance when passing cyclists. If traffic or roadway conditions prevent drivers from giving cyclists three feet of clearance, they must "slow to a speed that is reasonable and prudent" and wait until they reach a point where passing can occur without endangering the cyclist. Violations are punishable by a $35 base fine, but drivers who collide with cyclists and injure them in violation of the law are subject to a $220 fine.

California Bicycle Coalition Three Feet Passing for Safety Education Logo

Protected Bicycle Lane in San Francisco, CA

SB-743 CEQA Reform

Just as important as the aforementioned pieces of legislation that support increases in bicycling and walking infrastructure and accommodation is one that promises to remove a longstanding roadblock to them. That roadblock is vehicular Level of Service (LOS) and the legislation with the potential to remove it is SB-743.

For decades, vehicular congestion has been interpreted as an environmental impact and has often stymied on-street bicycle projects in particular. Projections of degraded Level of Service have, at a minimum, driven up project costs and, at a maximum, precluded projects altogether. SB-743 could completely remove LOS as a measure of vehicle traffic congestion that must be used to analyze environmental impacts under the California Environmental Quality Act (CEQA).

This is extremely important because adequately accommodating cyclists, particularly in built-out environments, often requires reallocation of right-of-way and the potential for increased vehicular congestion. The reframing of Level of Service as a matter of driver inconvenience, rather than an environmental impact, allows planners to assess the true impacts of transportation projects and will help support bicycling projects that improve mobility for all roadway users.

CEQA for Bicycle and Pedestrian Plans

Planning projects such as this are exempt from CEQA analysis since they are planning and conceptual recommendations. As individual recommendations move forward toward further design and implementation, the City will then need to determine if there are environmental impacts that may warrant an EIR.

15262. Feasibility and Planning Studies

A project involving only feasibility or planning studies for possible future actions which the agency, board, or commission has not approved, adopted, or funded does not require the preparation of an EIR or Negative Declaration but does require consideration of environmental factors. This section does not apply to the adoption of a plan that will have a legally binding effect on later activities. Association of Environmental Professionals 2014 CEQA Guidelines 229

Note: Authority cited: Section 21083, Public Resources Code; Reference: Sections 21102 and 21150, Public Resources Code.

AB-1193 Bikeways

This act amends various code sections, all relating to bikeways in general, specifically by recognizing a fourth class of bicycle facility, cycle tracks. However, the following may be even more significant to future bikeway development:

Existing law requires Caltrans, in cooperation with county and city governments, to establish minimum safety design criteria for the planning and construction of bikeways, and requires the department to establish uniform specifications and symbols regarding bicycle travel and traffic related matters. Existing law also requires all city, county, regional and other local agencies responsible for the develop-

ment or operation of bikeways or roadways to utilize all of those minimum safety design criteria and uniform specifications and symbols.

This bill revises these provisions to require Caltrans to establish minimum safety design criteria for each type of bikeway by January 1, 2016, and also authorizes local agencies to utilize different minimum safety criteria if adopted by resolution at a public meeting.

SB-1 Transportation Funding

This bill creates the Road Maintenance and Rehabilitation Program to address deferred maintenance on the state highway system and the local street and road system. A total of $5.4 billion will be invested annually over the next decade, which will undertake a backlog of repairs and upgrades. Additionally, cleaner and more sustainable travel networks will be ensured for the future, including upgrades to local roads, transit agencies, and an expansion of the state's growing network of pedestrians and bicycle routes.

SB-672 Traffic-Actuated Signals: Motorcycles and Bicycles

This bill extends indefinitely the requirement to install traffic-actuated signals to detect lawful bicycle or motorcycle traffic on the roadway. By extending indefinitely requirements regarding traffic-actuated signals applicable to local governments, this bill would impose a state-mandated local program.

Existing law requires the state to reimburse local agencies and school districts for certain costs mandated by the state.

SB-760 Transportation Funding: Active Transportation: Complete Streets

This bill seeks to establish a Division of Active Transportation within Caltrans to give attention to active transportation program matters to guide progress toward meeting the department's active transportation program goals and objectives. This bill requires the California Transportation Commission to give high priority to increasing safety for pedestrians and bicyclists and to the implementation of bicycle and pedestrian facilities. The bill also directs the department to update the Highway Design Manual to incorporate "complete streets" design concepts, including guidance for selection of bicycle facilities.

AB-1218 California Environmental Quality Act Exemption: Bicycle Transportation Plans

This bill extends CEQA requirements exemptions for bicycle transportation plans for an urbanized area until January 1, 2021. These exemptions include restriping of streets and highways, bicycle parking and storage, signal timing to improve street and highway intersection operations, and related signage for bicycles, pedestrians, and vehicles under certain conditions. Additionally, CEQA will also exempt from its requirements projects consisting of restriping of streets and highways for bicycle lanes in an urbanized area that are consistent with a bicycle transportation plan under certain conditions.

Driving Through an Activated RRFB in Carslbad, CA

Buffered Bike Lane in San Diego, CA

Electric Bicycle

Caltrans' Deputy Directive 64-R1

Deputy Directive 64-R1 is a policy statement affecting Caltrans mobility planning and projects requiring the agency to: "...provide for the needs of travelers of all ages and abilities in all planning, programming, design, construction, operations, and maintenance activities and products on the State highway system. 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 directive goes on to mention the environmental, health and economic benefits of more Complete Streets.

AB 902 Traffic Violations and Diversion Programs

Existing law provides that a local authority may not allow a person who has committed a traffic violation under the Vehicle Code to participate in a driver awareness or education program as an alternative to the imposition of those penalties and procedures, unless the program is a diversion program for a minor who commits an infraction not involving a motor vehicle and for which no fee is charged.

This bill would instead allow any person of any age who commits an infraction not involving a motor vehicle to participate in a diversion program that is sanctioned by local law enforcement. The bill would eliminate the requirement that such a program charge no fee. The bill would make other technical, non-substantive changes.

AB 1096 Electric Bicycles as Vehicles

Existing law defines a "motorized bicycle" as a device that has fully operative pedals for propulsion by human power and has an electric motor that meets specified requirements. The bill would define an "electric bicycle" as a bicycle with fully operable pedals and an electric motor of less than 750 watts, and would create 3 classes of electric bicycles, as specified.

The bill would prohibit the operation of a class 3 electric bicycle on specified paths, lanes, or trails, unless that operation is authorized by a local ordinance. The bill would also authorize a local authority or governing body to prohibit, by ordinance, the operation of class 1 or class 2 electric bicycles on specified paths or trails.

Federal Legislation

Safe Streets Act (S-2004/HR-2468)

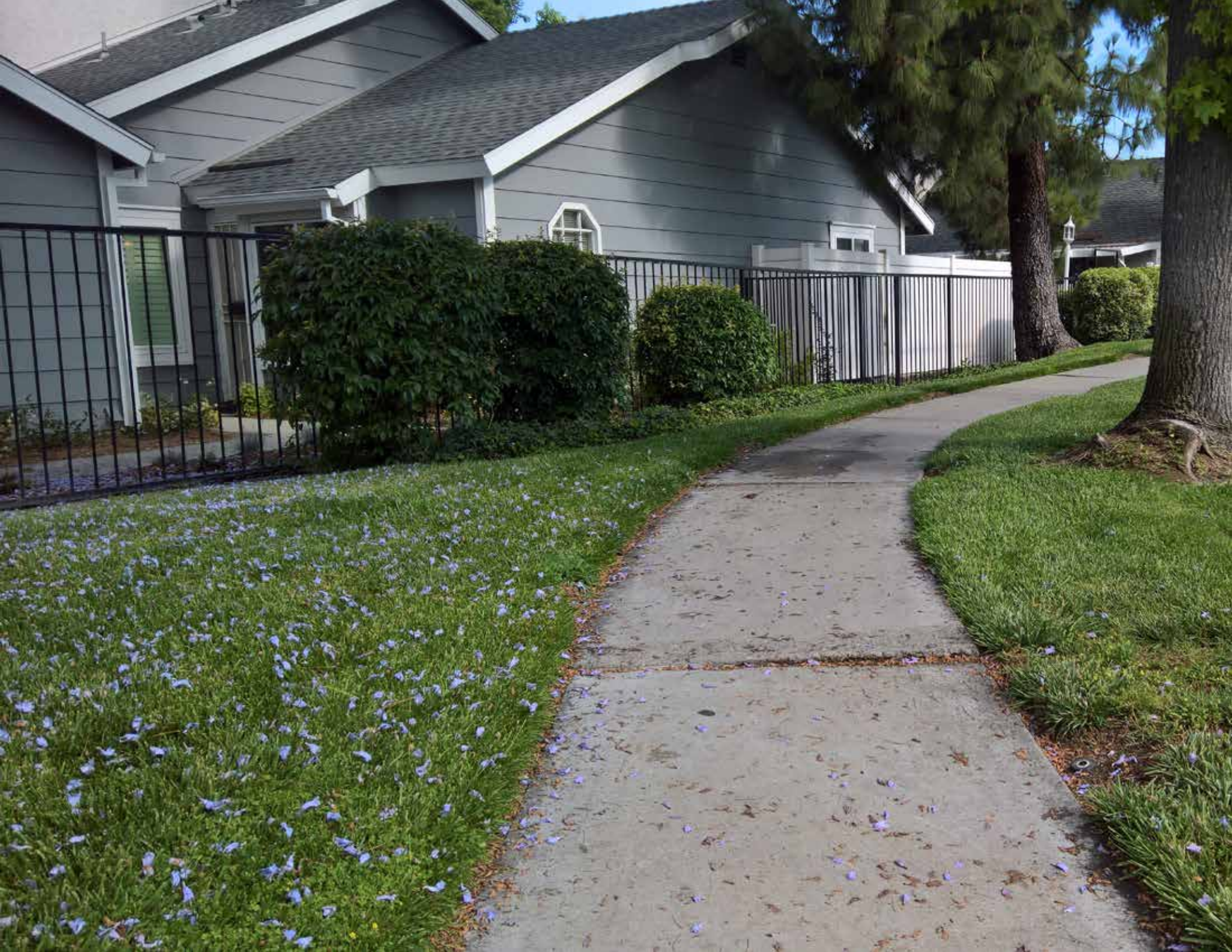
HR2468 encourages safer streets through policy adoption at the state and regional levels, mirroring an approach already being used in many local jurisdictions, regional agencies and states governments. The bill calls upon all states and metropolitan planning organizations (MPOs) to adopt Safe Streets policies for federally funded construction and roadway improvement projects within two years. Federal legislation will ensure consistency and flexibility in road-building processes and standards at all levels of governance.

Pending Legislation

AB-390 Pedestrian Crossing Signals

Under existing law, a pedestrian facing a “WALK” or approved “Walking Person” symbol may proceed across the roadway in the direction of the signal. Existing law makes a violation of this provision a crime. This bill would authorize a pedestrian facing a flashing “DON’T WALK” or “WAIT” or approved “Upraised hand” symbol with a “countdown” signal to proceed so long as a pedestrian completes the crossing before the display of the steady “DON’T WALK OR WALK” or “WAIT” or approved “Upraised Hand” symbol. Because the bill would change the definition of a crime, it would impose a state-mandated local program.

Signalized Crossing



Chapter 3

Outreach Summary

The Stakeholder Outreach Plan (SOP) for the Grand Terrace Active Transportation Plan was designed to include stakeholder education and involvement of a broad spectrum of stakeholders working towards a common goal. Stakeholders included elected officials, schools, members of recreational, environmental, community-based, faith-based and business organizations, property owners, residents, and other interested parties.

The SOP included goals, key messages, a list of contacts, and an outline for potential public workshops. The full SOP can be found in Appendix B.

Goals

- Involve the public in the process as early as possible so their views can be considered in decisionmaking;
- Educate and engage stakeholders from all walks of life;
- With technical team members, design and facilitate three public workshops that lead to group understanding and iterative design;
- Define clearly the nature, scope, expected and actual output of public participation activities;
- Develop knowledgeable and credible Project Champions who can support the project so it can proceed on schedule and within budget;
- Deliver consistent, transparent, positive messages.

Key Messages

- It is important to connect destinations such as schools, workplaces, shopping and dining and other places of interest so that they are accessible by walking or bicycling;
- Improving connectivity to public transit will facilitate greater access to opportunities throughout the broader San Bernardino region;
- ATP improvements can elevate the attractiveness of the community, promote the cultural and artistic qualities of neighborhoods, spur economic growth for commercial districts, and improve the physical health of Grand Terrace residents.

Strategies

- A range of engagement tools that encouraged people to participate were used in three community workshops.
- Workshop flyers and survey were distributed at public counters, such as libraries and recreational and senior centers.
- Existing channels of information were used to disseminate workshop flyers, including the public access channel and city publications.
- An accessible online survey was developed for those who could not attend the public workshops.

Stakeholders

As part of the outreach effort, the project team developed a list of local and regional stakeholders to ensure diverse city participation. This list included stakeholders who had been previously engaged with other city projects, as well as potentially interested groups. The organizations that were contacted included:

Local Stakeholders

Youth Sports Groups – Obtain contacts from the City staff

- Grand Terrace Foundation
- Chamber of Commerce
- Grand Terrace Lions Club
- Grand Terrace Leos
- Colton Joint Unified School District
  - Grand Terrace Elementary School
  - Terrace View Elementary School
  - Grand Terrace High School
  - Terrace Hills Middle School
- Grand Terrace Club - Toastmasters
- Friends of Blue Mountain
- Grand Terrace Woman's Club
- The REC Center, Executive Director and Board Members

Regional Stakeholders

- Women's Transportation Seminar, Inland Empire
- Inland Empire Biking Alliance
- Bicycle Commuter Coalition of the Inland Empire
- Inland Empire Transit Coalition
- SBCTA
- SBCOG
- Omni Trans

Outreach Materials

As part of the community engagement process, outreach materials were developed to maximize public participation. Because of Grand Terrace's diverse population, the project needed to have a variety of outreach methods, including printed media and an online presence. This included a fact sheet that provided a project introduction and overview. Flyers were also created to promote the walk audits that took place at various schools in Grand Terrace. Additionally, a web-based survey was designed for those who could not attend the public workshops. According to the 2015 US Census, approximately 46.0% are Hispanic or Latino. Because of these demographics, both illustrative and online outreach materials were created both in English and Spanish.

In addition to this, the project team developed social media messages, including Facebook, Twitter, and Instagram posts to reach out to interested member of the community. Various community blogs and neighborhood sites were also contacted to ask for their assistance in posting workshop flyers. Furthermore, meeting notices and other communications were sent via email blast to notify the stakeholders about upcoming meetings and project updates.

Community Workshops

A series of workshops were conducted throughout the planning process to gather input and solicit feedback on recommendations. It was determined during team management meetings that the pop-up workshop approach would be the best avenue to gather input for the project. Conventional workshops have not been well attended for various past projects so this approach was preferred since the consultant and City can gather feedback at events where there is already an audience.

Community Workshop 1

The first workshop was conducted on June 3rd, 2017 as part of the City's Community Day event at Richard Rollins Park. This yearly event draws hundreds of residents from Grand Terrace and nearby communities with games, vendors and shows. A project booth was present alongside the City's to gather information on opportunities and constraints from participants. Games, bicycle lights and helmet giveaways were provided at the booth. Maps, data and surveys were displayed at the booth to gather information with an estimated interaction with over 200 people. Over 120 surveys were filled out and six helmets given away.

Community Workshop 2: School Walking Tours

The second round of workshops were conducted as walking tours with schools and participation at local school events. After each walking, tables were set up to gather additional input from those that were not able to attend the walks. This provided an opportunity to assess opportunities and deficiencies around schools and talk with students, parents, teachers and crossing guards on improvements they'd like to see.

May 23, 2017: Terrace Hills Middle School walk audit

- General number of attendance: 15
- Summary: Received recommendations to improve students' safety especially on Mt. Vernon and in drop-off and pick-up areas

August 9, 2017: Grand Terrace Elementary School Back to School Night

- General number of attendance: 200+
- Summary: Provided information and administered 50+ questionnaires. Interest and support for the ATP and SRTS and appreciation for the City's efforts. Grand Terrace Elementary already conducted a walk audit from a previous safe routes to school effort.

September 6, 2017: Grand Terrace High School Back to School Night

- General number of attendance: 200 +
- Summary: Interest and support for the ATP and SRTS and appreciation for the City's efforts

September 9, 2017: Terrace View Elementary School, School Site Council

- Meeting unfortunately was cancelled at the last minute, however Ms. Joanne Grier, school administrator, provided comments on the map about issues and areas that needed improvements
- Summary: Unsafe conditions for children during drop off and pick-ups was a key concern.

September 12, 2017: Terrace View Elementary School, Safety Comittee Meeting

- General number of attendance: 3
- Summary: There was confirmation of key issues and concerns for children's safety at the front of the school during pick-up and drops-offs captured in the September 9th Meeting with Mr. Grier. Faculty members provided additional comments on the map identifying unsafe conditions that needed improvements.

September 19, 2017 Grand Terrace High School walk audit

- General number of attendance: 10
- Summary: Faculty and parents pointed out unsafe areas and suggested improvements on Main Street and streets bordering the school.

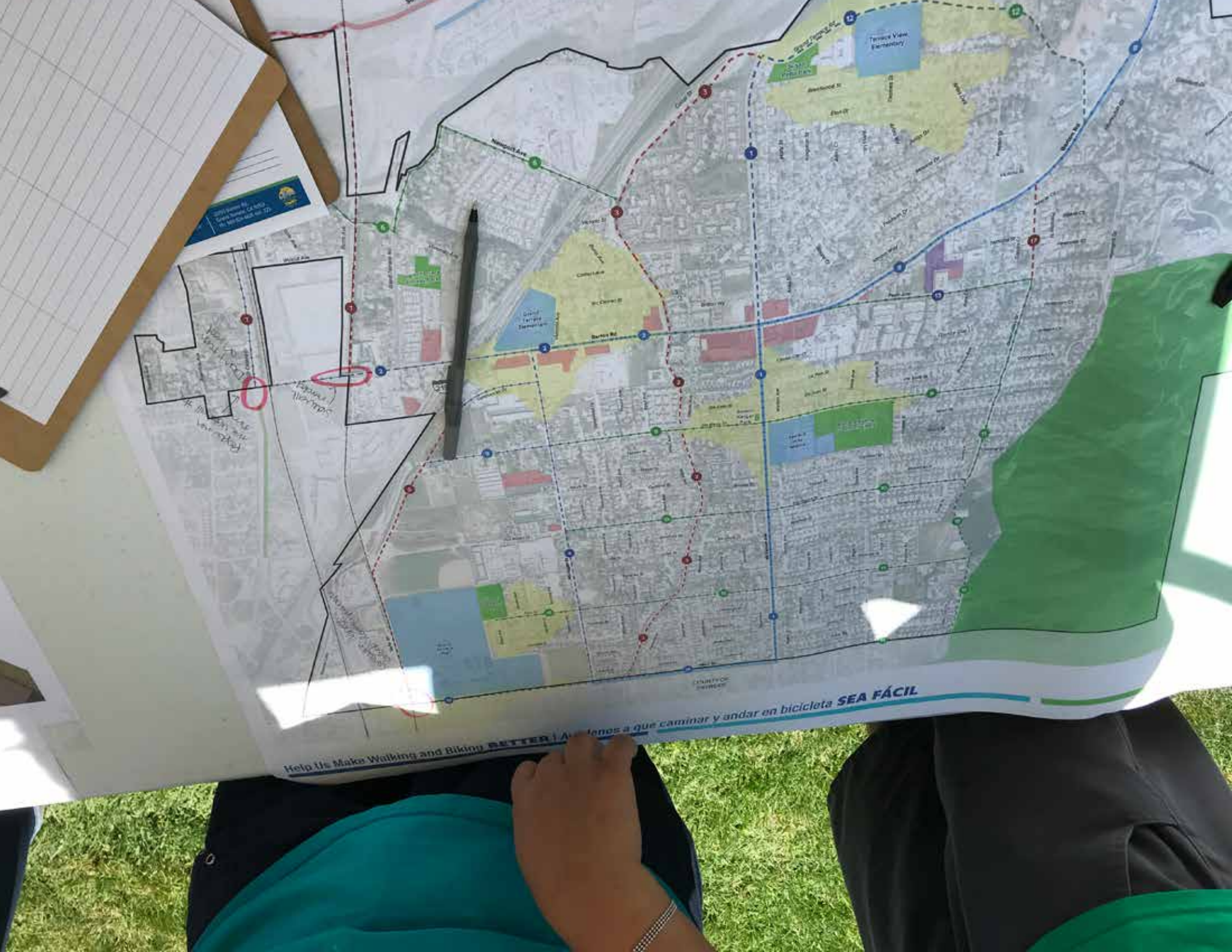
City Council Update

A presentation on the on-going plan was presented to City Council on September 26, 2017 to gather feedback from the Council and residents in attendance.

Community Workshop 3

The third workshop took place on June 2nd, 2018 and was again conducted as part of the Grand Terrace's annual Community Day event at Richard Rollins Park. A project booth with maps, data visualizations, and surveys was present alongside the City's to gather general feedback from surveys on proposed concepts for Mt. Vernon Ave, Barton St, and Gage Canal Trail. This year's iteration also included a pop-up at Santa Ana River Trail to gather surveys from cyclists currently using the path.

Residents confirmed the prevalence of driving, but showed a desire for greater pedestrian and cycling improvements near schools and parks. Many residents felt the streets were not safe for pedestrian due to reckless driving behavior, but believed that these concepts helped increase safety. Others excited about the prospects of improving health and fitness through improved bike facilities. Overwhelmingly, the Gage Canal Trail had a very positive reception because it allowed multi-use paths to be away from streets, making it safer for both cyclists pedestrians. Aside from safety improvements, Gage Canal Trail also improved connectivity, efficiency, and recreational opportunities.


Terrace View Elementary
Help Us Make Walking and Biking BETTER
SEA FÁCIL

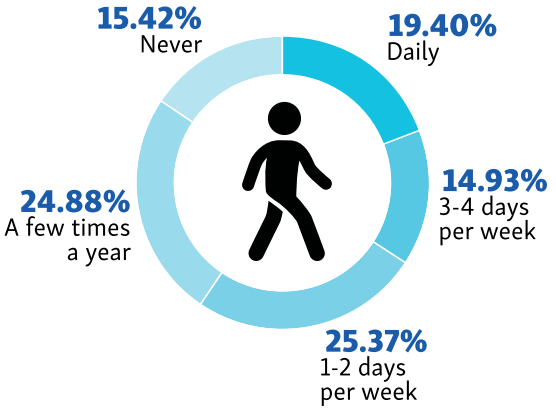
Survey and Online Map

An online survey and map were developed as additional resources to collect feedback from the community. A paper copy of the survey was distributed at all public events and community workshops.

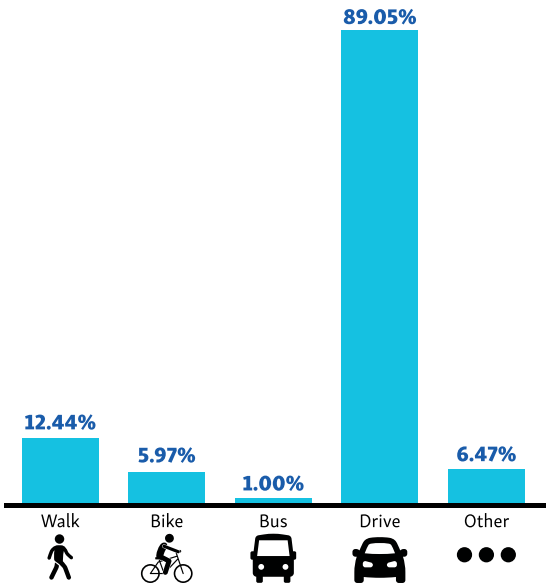
A total of 203 people completed the survey and provided comments. The results from these two resources were analyzed and used for the development of the potential project list. They also provided the City with a current view of people's opinions, concerns and desires for pedestrian and bicycle facilities.

The following six figures depict results from the survey. About 60 percent of respondents walk more than once a week, while only 15 percent of respondents bike more than once a week. Over 90 percent of respondents drive to work or school and 74 percent of them drive to the park. In addition, when asked what would make walking and biking better in Grand Terrace, respondents answered continuous sidewalks and bike lanes on the street respectively. These results communicate the importance of improving the walking and biking infrastructure in the City.

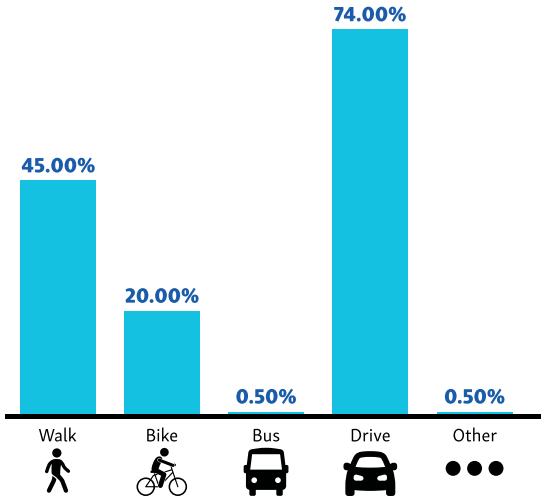
How often do you walk in Grand Terrace?



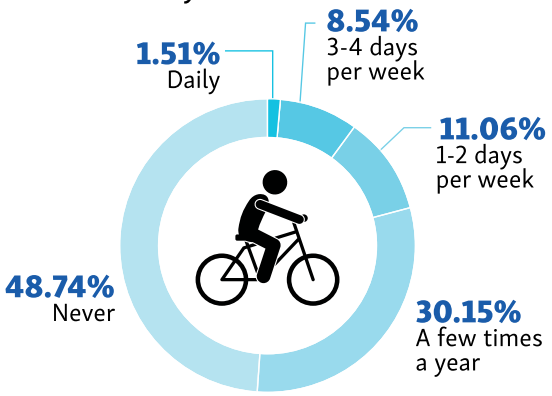
How do you get to work or school?



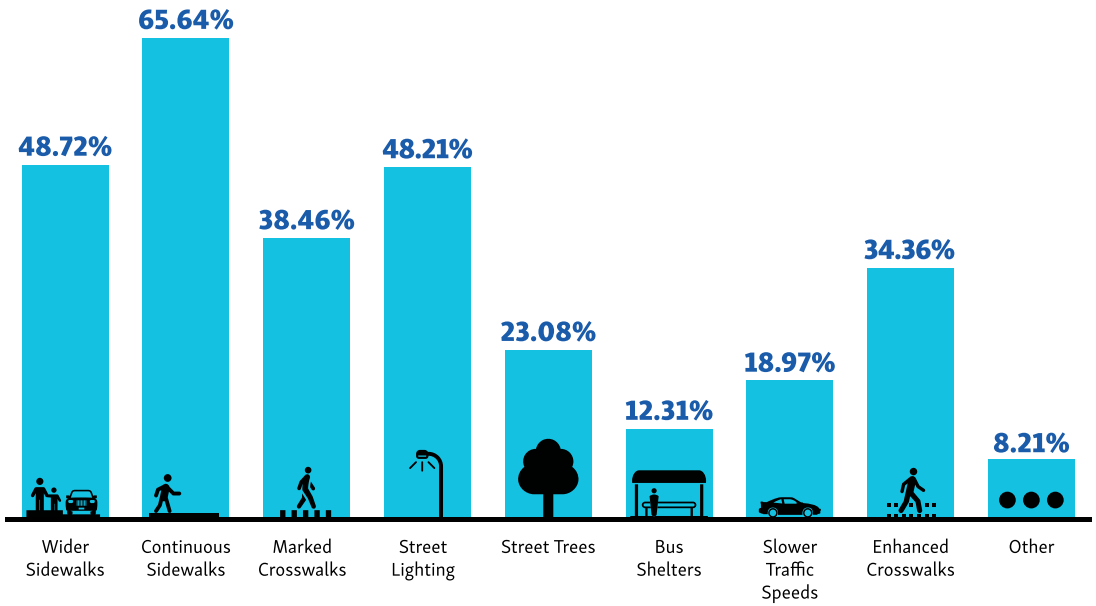
How do you get to the park?



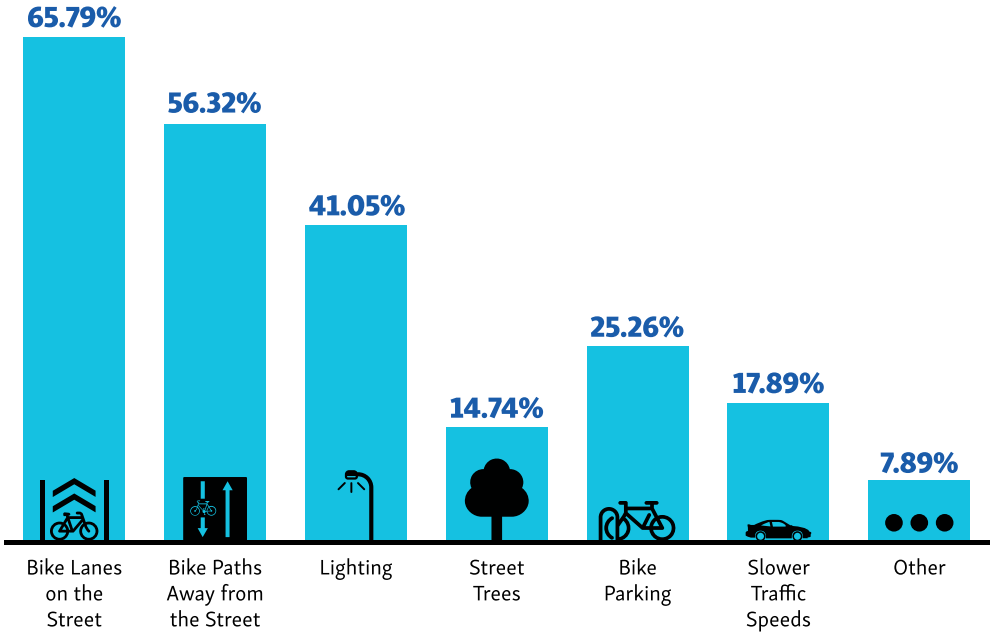
How often do you bike in Grand Terrace?



What would make **walking** better in Grand Terrace?



What would make **bicycling** better in Grand Terrace?



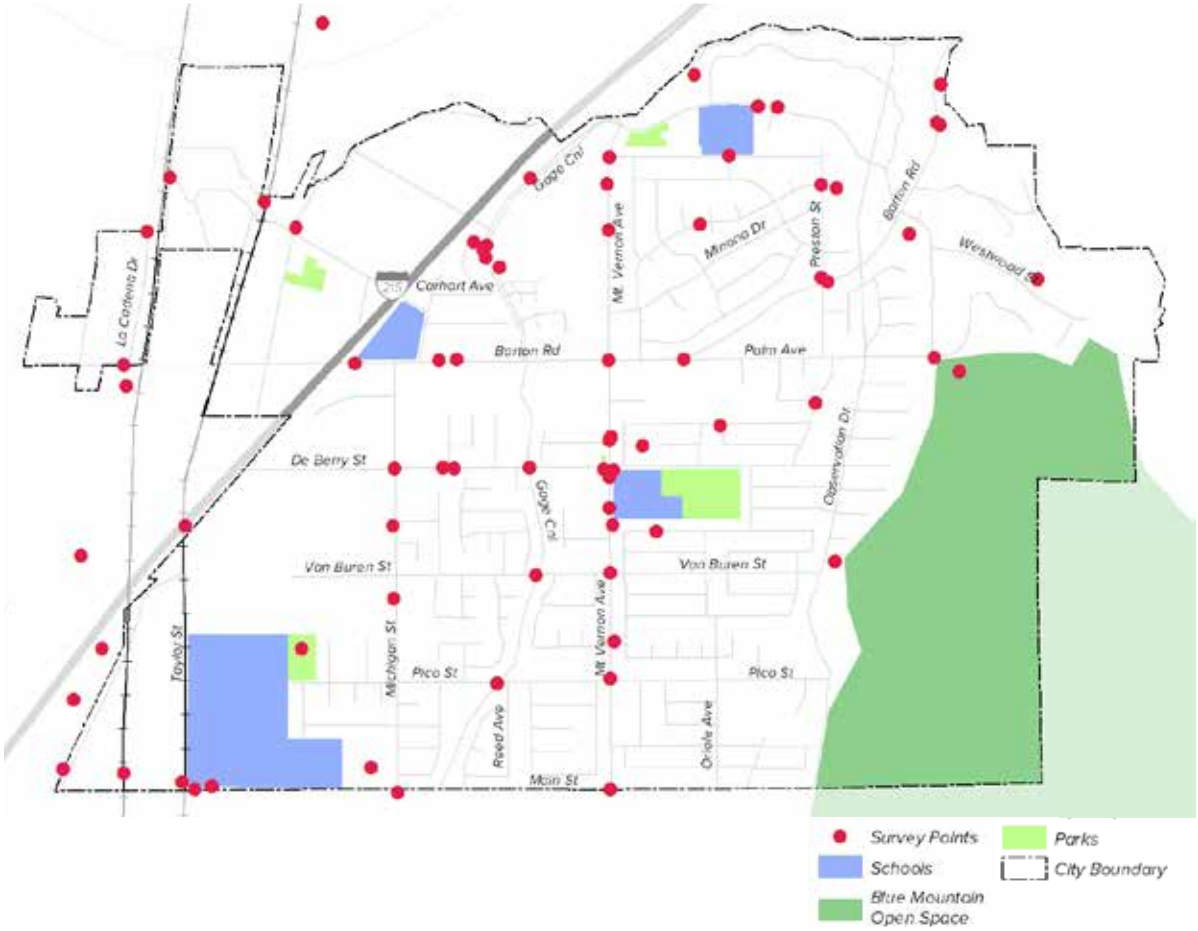
In addition to the online survey, an online map was provided through the ArcInfo Online platform. This map was created as a supplemental input method that respondents could use to highlight location-specific issues. It allowed respondents to input comments about existing issues or to highlight good existing infrastructure. It also provided the option to attach photos and describe whether the highlighted issues had a pedestrian, bicycle, or other related focus. Since all inputs are automatically geo-referenced, the project team was able to document and analyze these comments as they relate to specific locations and issues identified by respondents.

The complete list of survey results are located in Appendix B.

Public Review

A Grand Terrace Active Transportation Plan draft report was made available for public review from October 5, 2018 to October 26, 2018 prior to City Council adoption on November 13, 2018.

Figure 3-1: Online Map Comment Points



Chapter 4

Bicycle and Pedestrian Analysis

A city's development pattern and existing bicycle and pedestrian facilities guide the location and type of new or upgraded facility recommendations. For instance, employment and retail centers should be served by bike lanes and storage facilities and schools should have continuous, safe bike and pedestrian connections to serve them. This chapter summarizes the various datasets and models used to establish existing conditions and then develop the bicycle and pedestrian projects presented in this plan.

Analysis Overview

To develop the Master Plan, a thorough analysis of existing conditions in Grand Terrace was conducted that involved GIS analyses, field work, community outreach, and meetings with city staff to gather data and input. GIS-specific analyses involved processing datasets from the City, SBCTA, and open source databases - such as SWITRS - and combining them to reveal patterns and relationships within Grand Terrace. In addition to physical characteristics, data from the 2015 American Community Survey were used to analyze the demographic and commuting characteristics of the city's residents. Field work was conducted on several occasions to catalog and measure existing conditions and to collect georeferenced photography to aid in illustrating concepts in the Plan.

Existing Bicycle Facilities

The existing bicycle facility network in Grand Terrace is comprised of bike lanes and shared bike routes making up 3.6 miles of existing bikeways. The city possesses a long stretch of existing bike lanes originating in the northeast corner of the city, winding down to almost reach Grand Terrace High School. One shared bike route exists along Barton Road from Grand Terrace Elementary to Mount Vernon Avenue. Although existing facilities are linked, the system does not fully cover the City, leaving major gaps. Just outside the city lies the Santa Ana River Trail, a Class I multi-use path that is not currently served by any connecting city bicycle facilities.

Proposed Bicycle Facilities – SANBAG Non-Motorized Transportation Plan

According to the San Bernardino County Non-Motorized Transportation Plan, previously proposed bicycle facilities in Grand Terrace fall along the major transportation corridors throughout the City as well as the Gage Canal corridor. All proposed projects are classified as either Class I or Class II facilities. According to the plan, the priority improvements for the City include Mount Vernon Avenue, Barton Road, Commerce Way, and Michigan Street. In neighboring Riverside County, there are also plans to develop the Gage Canal into a multi-use path. If these projects are completed, the City will have almost 10 miles of bicycle facilities, providing connectivity throughout the community as well as connections to neighboring jurisdictions.

Bike lane along Mt Vernon Ave

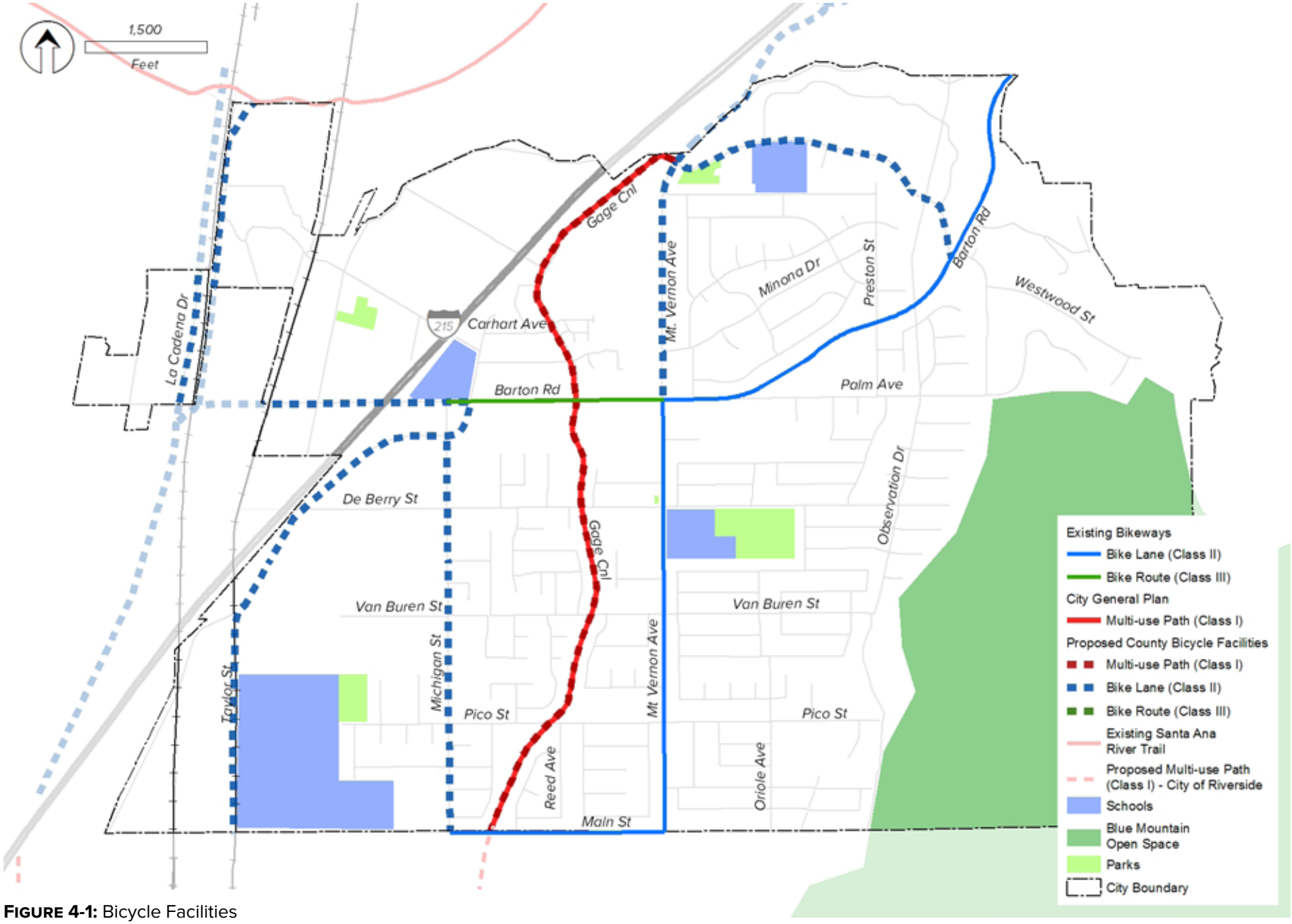
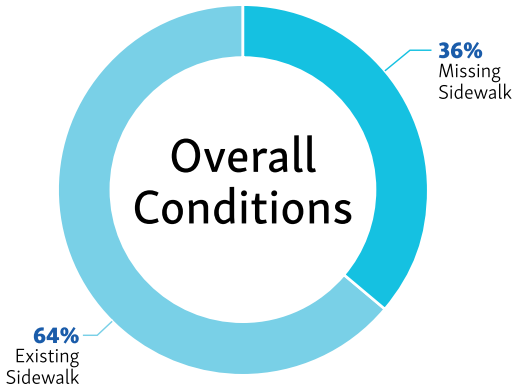
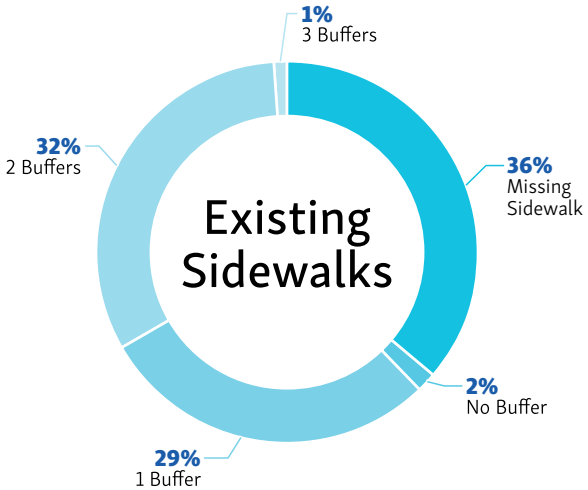


Figure 4-1: Bicycle Facilities

Existing Pedestrian Facilities

To establish existing pedestrian conditions, KTUA inventoried all roadways for sidewalk presence and noted any existing buffers. Common sidewalk buffers include parking, bike lanes, and parkway strips or planted trees separating the sidewalk from traveling vehicles. The pedestrian network in Grand Terrace is largely made up of roadways with missing sidewalks (36%), followed by sidewalks with multiple buffers (32%), and finally by sidewalks with one buffer (29%). Only 1% of the City's existing sidewalks have three buffers, and only 2% have no buffer.





Existing Sidewalks in Grand Terrace

Figure 4-2: Existing Pedestrian Facilities

Planned CIP Projects

Significant improvements are planned for the western portion of Grand Terrace. The Barton Road Interchange project began in the Summer of 2017 and will be completed in Spring 2020. This project is a joint effort between SANBAG and Caltrans with the aim of improving the dangerous and inefficient interchange between Interstate 215 and Barton Road. Enhancements include the widening of Barton Road from west of Grand Terrace Road to east of Vivienda Avenue, the addition of a roundabout west of the bridge at the interchange, the transition of Michigan Street into a cul-de-sac, a new connection of Vivienda Avenue to Commerce Way, realignment of La Crosse Avenue, and a lengthening of the Barton Road bridge to accommodate future freeway improvements.

Additionally the city is designing a corridor that extends Commerce Way to meet Taylor Street, ultimately connecting with Barton Road via the realignment of Commerce Way. This corridor is planned to accommodate a striped median, four travel lanes, bike lanes, and a sidewalk with a parkway strip.

Lastly significant pavement improvements and sidewalk repairs are planned throughout the city as part of the City's CIP program. These improvements are targeted at roadways with a current Pavement Condition Index lower than 70, or in the poor and fair categories as well as sidewalks with significant barriers caused by trees or utility equipment.

Barton Road Interchange

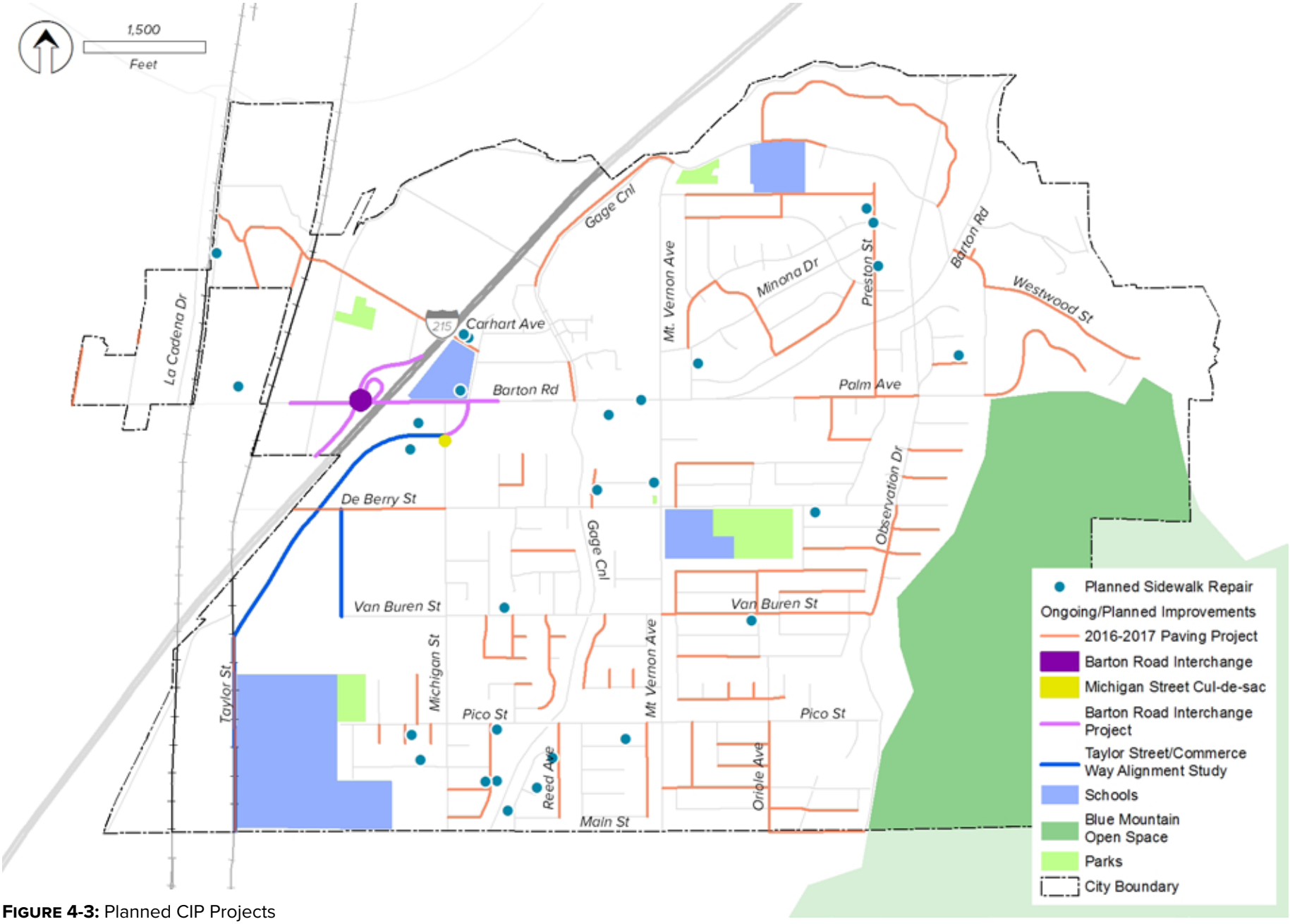
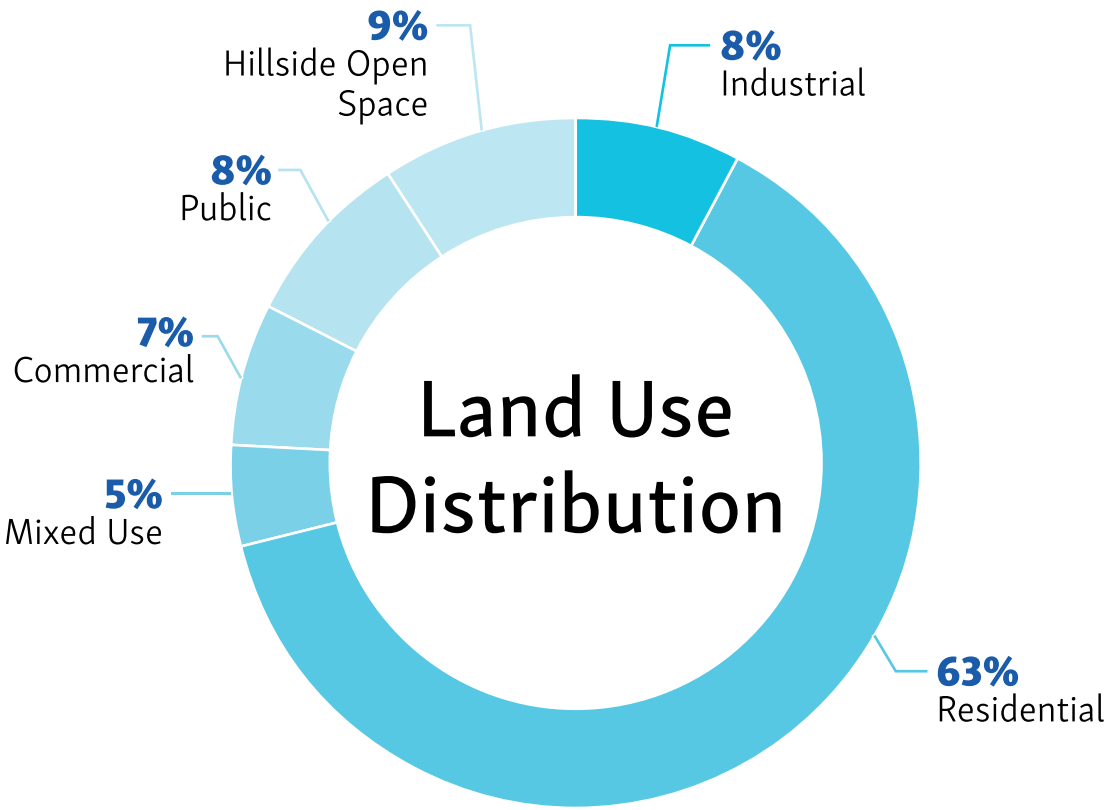


Figure 4-3: Planned CIP Projects

Activity Centers/Land Use

To be eligible for State funding, a city's bicycle and pedestrian plan must address connections between specific activity center types. These activity centers are essential destinations, including the community's major employers, office buildings, industrial sites, government sites, retail centers, hospitals, tourist attractions, schools and parks.

Activity Centers in Grand Terrace are spread throughout the City with commercial and office sites mostly concentrated along Palm Avenue and Barton Road, public sites (including schools and parks) evenly distributed, and industrial concentrated along the I-215 and rail corridors.



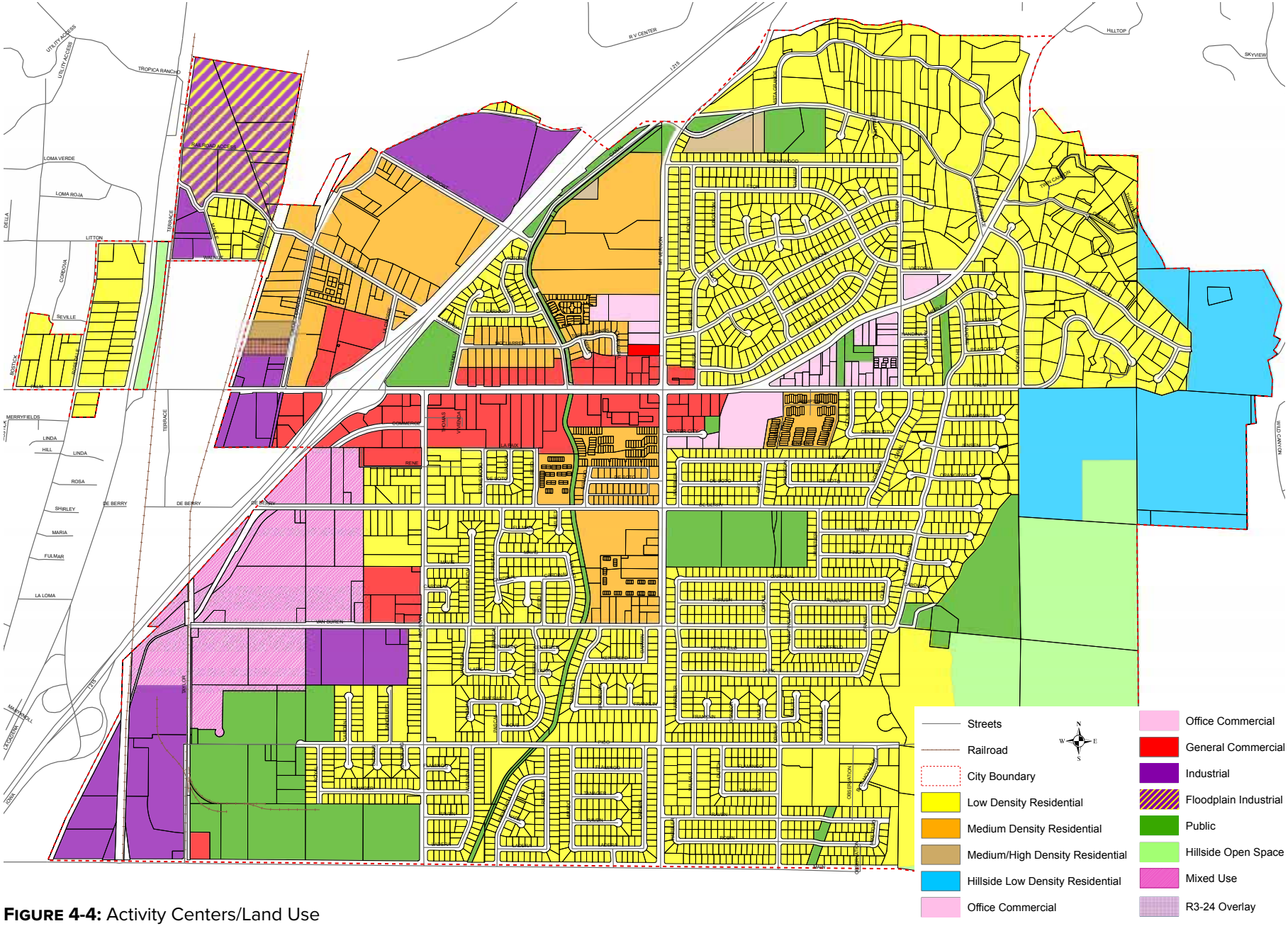
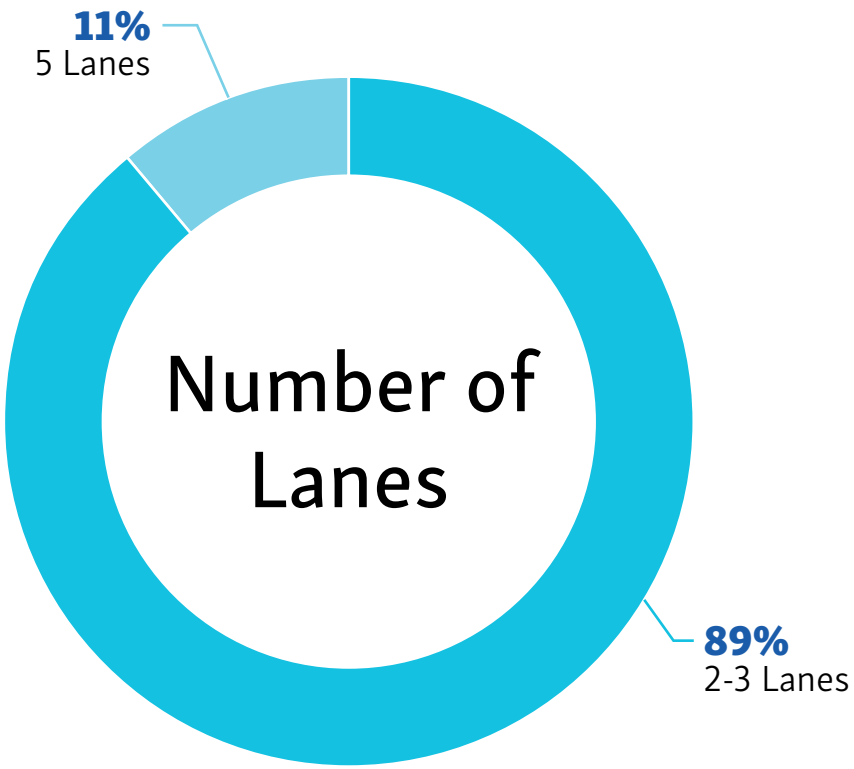


Figure 4-4: Activity Centers/Land Use

Number of Lanes

The road network in Grand Terrace is made up of predominantly two to three lane roads; making up almost 89% of the total network. Only 11% of the roadways are classified at five lanes and less than 1% are classified as six lanes. This trend underscores the need for facilities along the roadways with higher lane counts as they typically experience higher traffic volumes. It also identifies connector streets that may be good alternatives for bicycle facilities given their low lane count; including Michigan Street, DeBerry Street, Van Buren Street, and Pico Street. The roadways will be analyzed further to determine suitability.



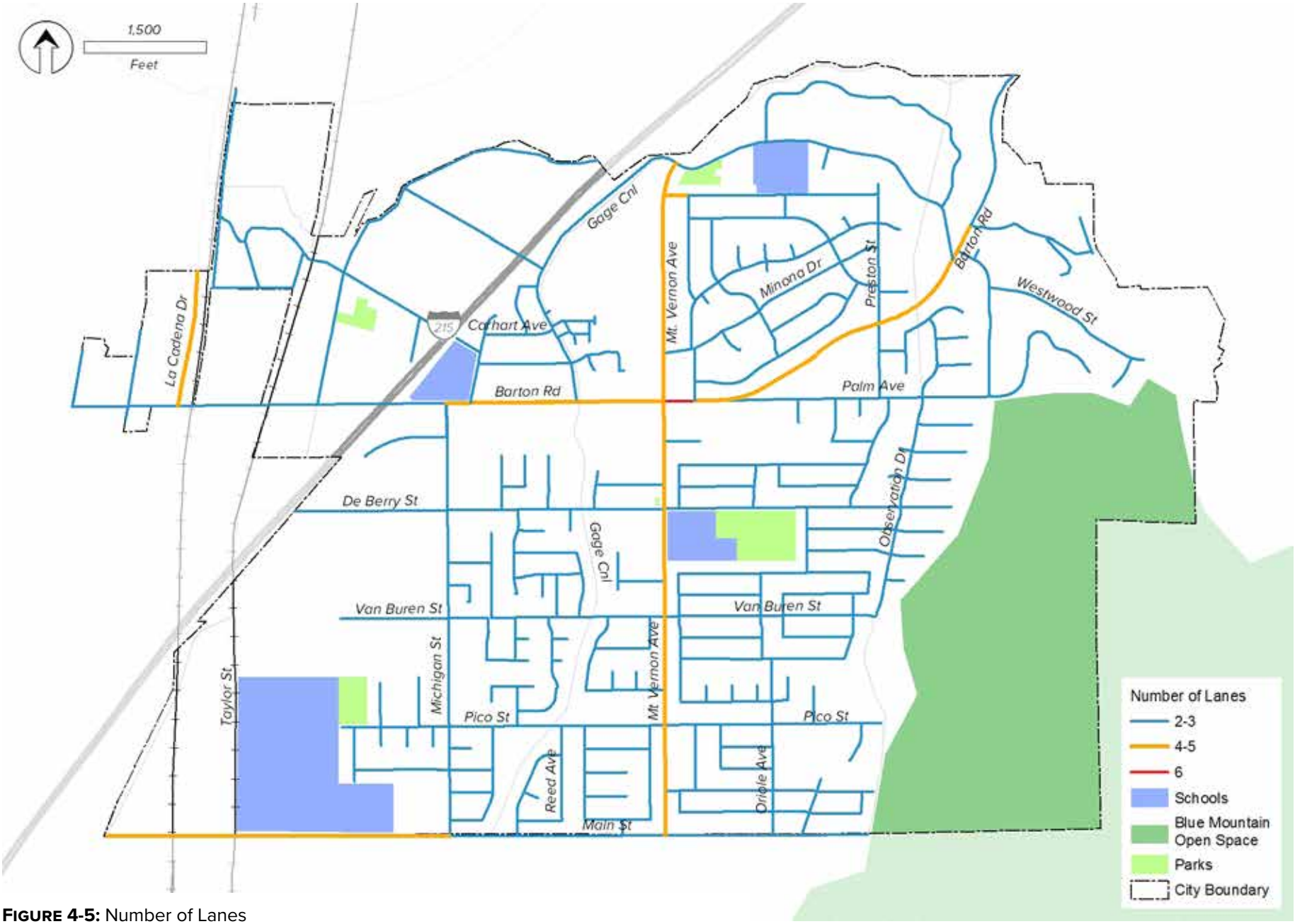
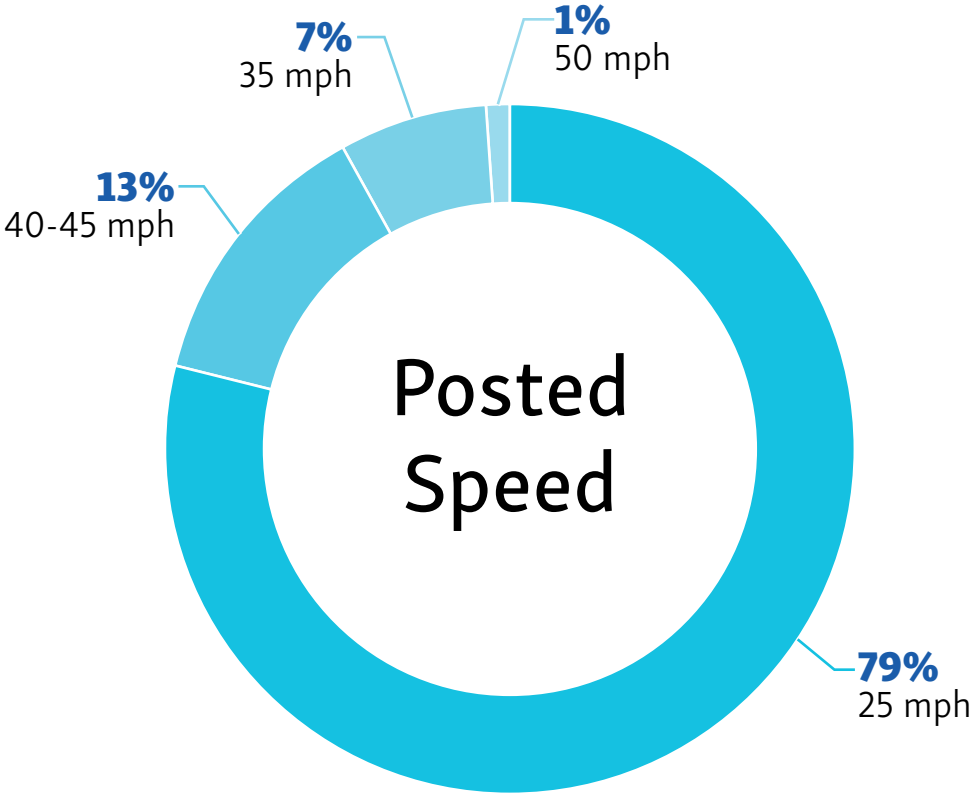


Figure 4-5: Number of Lanes

Posted Speed

A majority of Grand Terrace's streets (79%) have posted speed limits of 25 miles per hour (mph). These streets are followed in quantity by streets with posted speed limits of 40-45 mph (13%), and those with posted speeds of 35 mph (7%). Less than 1% of the network has a speed limit of 50 mph, La Cadena Drive, and is used mostly to travel out of the city rather than for intracity travel.



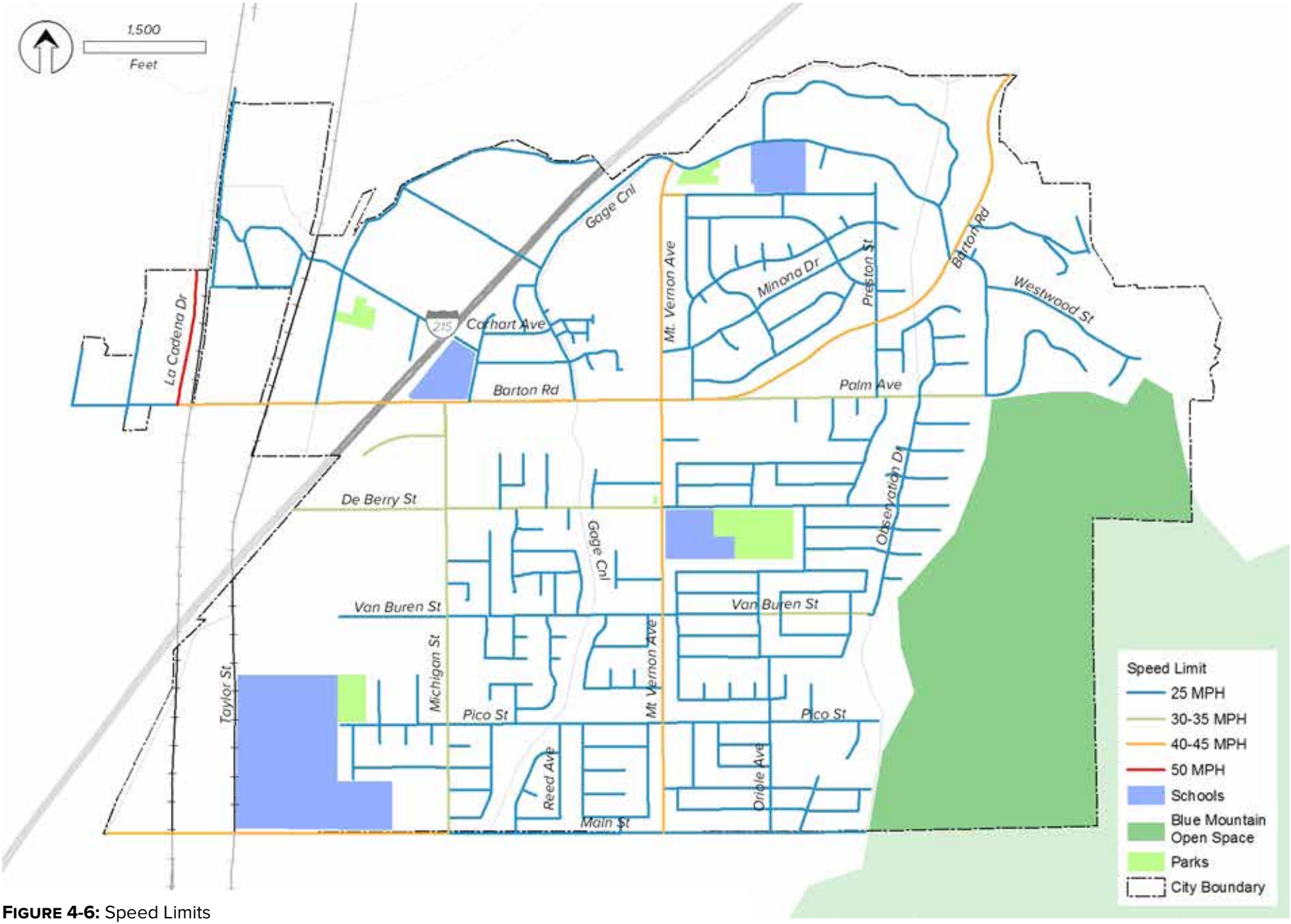


Figure 4-6: Speed Limits

Transit Routes

Grand Terrace is served by Omnitrans daily with 70-minute frequency stops at popular destinations such as the Highgrove Library (just south of Grand Terrace), Grand Terrace City Hall, The Highlands Apartments, and the Grand Terrace Senior Center. The Metrolink 91/Perris Valley Line also serves the area via the Riverside-Hunter Park/UCR station located roughly one mile south of Grand Terrace city limits.

Omnitrans Route

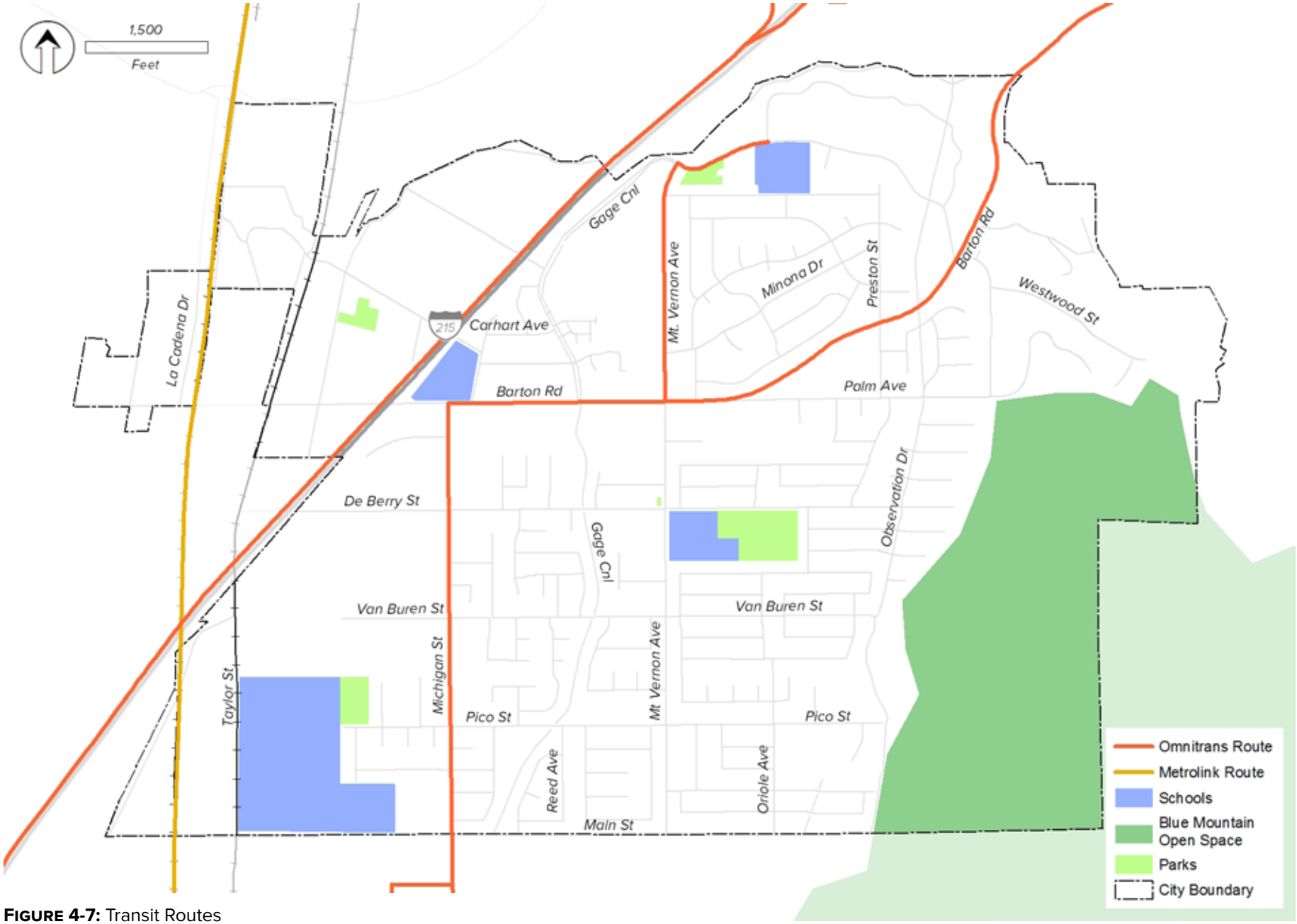


Figure 4-7: Transit Routes

Safety Analysis

Bicycle and pedestrian collision data were obtained from the Statewide Integrated Traffic Records System (SWITRS) collision data set managed by the California Highway Patrol (CHP). This dataset captures all reported bicycle-vehicle, pedestrian-vehicle and bicycle-pedestrian collisions that resulted in injury or property damage in Grand Terrace in the ten-year period of 2007 through 2016. Collisions on off-street paths are not reported in the data. It is important to note that collisions involving bicyclists are known to be under-reported, and therefore bicycle collisions are likely under-represented.

During this time, there were six pedestrian-related collisions and three bicycle-related collisions, resulting in a total of nine injuries reported. All bicycle and nearly all pedestrian-related collisions occurred in daylight conditions. Primary roadways that saw multiple collisions during this time included Barton Road, Interstate 215, and Mount Vernon Avenue; while Grand Terrace Road, Lawton Avenue, and Van Buren Street sustained single collisions.

Barton Road

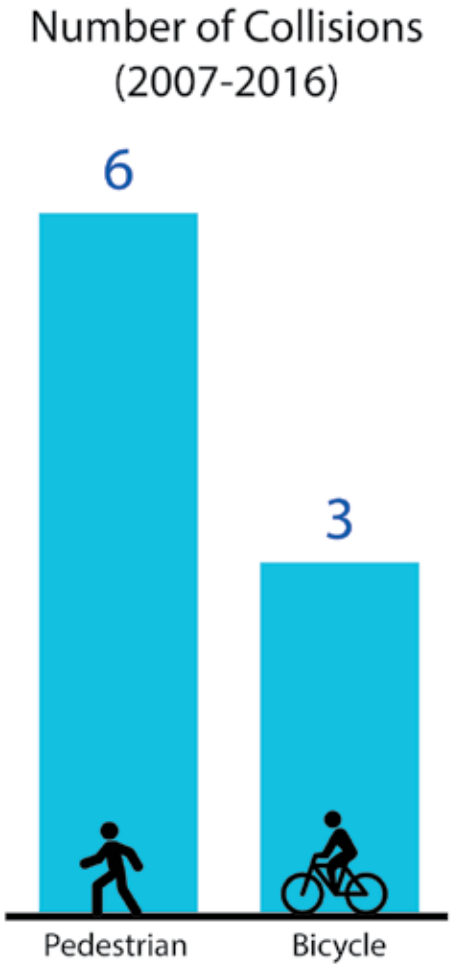


Figure 4-8: Collisions

Bicycle and Pedestrian Priority Model

To help define study focus areas, a Geographic Information Systems (GIS) model was created to reveal relationships between the many factors analyzed. A Bicycle-Pedestrian Priority Model (BPPM) was developed, considering all of the previously discussed analysis inputs, to establish where bicyclists and pedestrians are most likely to be, either currently or if improvements were to be made. The BPPM is comprised of three submodels: Attractor, Generator and Barrier Models. These three sub-models are then combined to create the composite Bicycle-Pedestrian Priority Model.

Attractors are essentially activity centers known to attract bicyclists and pedestrians. Examples are schools, transit stops and shopping centers. Generators are developed from demographic data and address potential pedestrian and bicyclist volume based on how many people live and work within the study area. Examples of generators are population density, employment density, primary mode of transportation to work and vehicle ownership. Barriers are features likely to discourage or detract people from bicycling or walking. These are generally physical limitations, such as areas with high numbers of bicycle-related collisions, high vehicle volumes and speeds, and missing sidewalks.

The resulting map was employed to aid in developing general recommendations and to help select priority projects described in the following chapter. When comparing the input from public workshops, stakeholders, and project surveys, there was correlation between the high propensity areas for bicycling and walking with input provided.

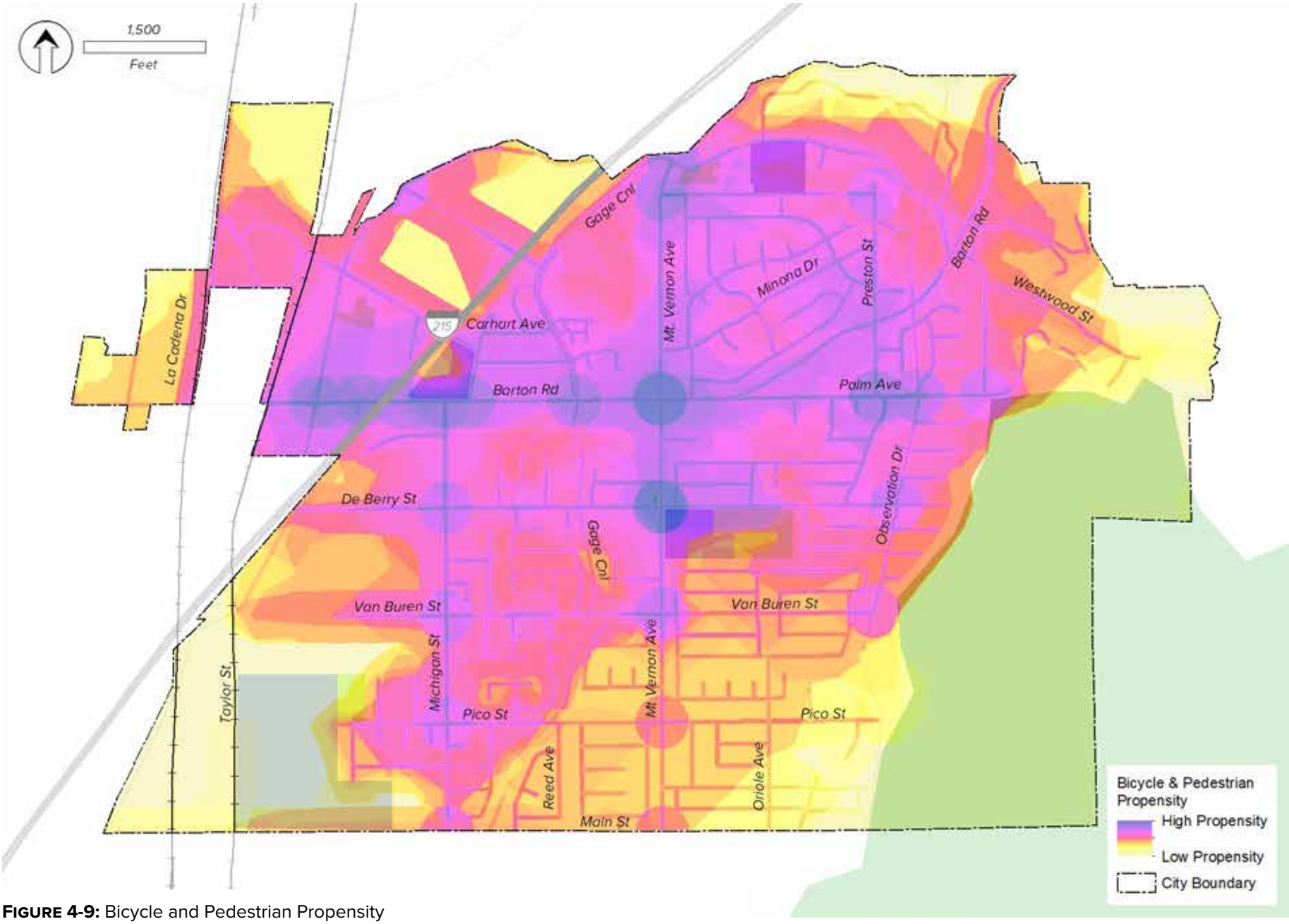


Figure 4-9: Bicycle and Pedestrian Propensity

Bicycle Level of Comfort

To help identify ideal corridors for bicycle improvements, an existing Bicycle Level of Comfort analysis was performed. The inputs for this analysis included roadway speed, number of lanes, and presence of bike lanes for each roadway segment throughout the city. This analysis approach was originally developed by the Mineta Transportation Institute in 2012 and has since been modified by KTUA to apply to a variety of municipalities. The scoring matrix used to classify each segment is displayed below in Table 4-1 through Table 4-3.

The resulting categories have the following definitions:

- BLOC 1, suitable for almost all cyclists, including children trained to safely cross intersections
- BLOC 2, suitable to most adult cyclists but demanding more attention than might be expected from children
- BLOC 3, suitable to many people currently riding bikes in American cities
- BLOC 4, suitable to very few people, the "strong and fearless" cyclists who will ride in nearly any setting

The resulting map indicates that extremely stressful bicycling conditions exist along the major roadways on portions of Barton Road, Palm Avenue, Michigan Street, De Berry Street, and a small segment of Mount Vernon Avenue with a rating of BLOC 4. Following those segments in stress level, is La Cadena Drive, a segment of Main Street near the High School, and the remainder of Barton Road and Mount Vernon Avenue with a rating of BLOC 3. The majority of remaining roadways are classified as BLOC 1, indicating very low stress levels for cyclists.

Table 4-1: Muti-Use Paths

Separate Facility	1

Table 4-2: Shared Roadways

SPEED LIMIT	NUMBER OF LANES			
	2	3 (2+1)	4-5 (4+1)	6+
< 25	1	2	3	4
30	2	3	4	4
> 35	4	4	4	4

Table 4-3: Bike Lanes

SPEED LIMIT	NUMBER OF LANES		
	2	3	4+
< 25	1	1	1
30	1	2	1
35	2	3	2

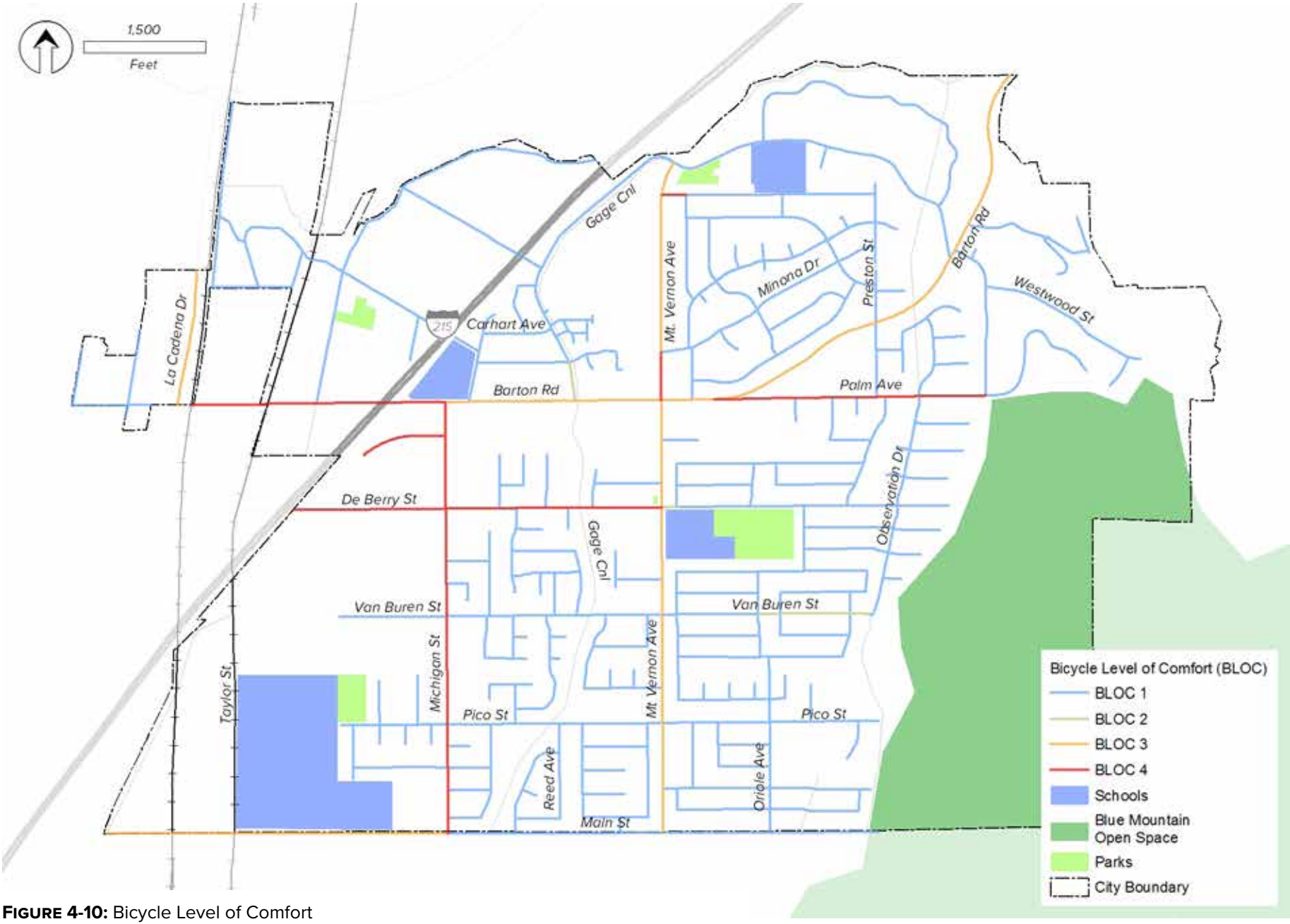


Figure 4-10: Bicycle Level of Comfort

Pedestrian Level of Comfort

To help identify ideal corridors for pedestrian improvements, an existing Pedestrian Level of Comfort analysis was performed. The inputs for this analysis included sidewalk presence, roadway speed, number of lanes, presence of bike lanes, presence of parking, and presence of a planting buffer for each roadway segment throughout the city. Intersections were classified by their crossing type (signalized, marked, unmarked) as well as the number of lanes and speed of the intersecting roadways. This analysis approach was developed by KTUA based off the Mineta Transportation Institute's 2012 work on Bicycle Level of Traffic Stress. The scoring matrix used to classify each segment and intersection is displayed below in tables 4-5 through 4-11.

The resulting categories have the following definitions;

- PLOC 1, suitable for almost all pedestrians, including children trained to safely cross intersections
- PLOC 2,suitable to most adult pedestrians but demanding more attention than might be expected from children
- PLOC 3, suitable for most older children with little or no parental supervision
- PLOC 4, mostly suitable for adults and children with parental supervision

The resulting map indicates similar patterns as observed in the Bicycle analysis along the major roadways on portions of Barton Road, Palm Avenue, Michigan Street, De Berry Street, and a portion of Mount Vernon Avenue with a rating of PLOC 4. Following those segments in stress level is Main Street near the High School, and the remainder of Barton Road and Mount Vernon Avenue with a rating of PLOC 3. The majority of remaining roadways are classified as PLOC 1, but have intersections rated as PLOC 2 given their unmarked nature.

Table 4-4: Missing Sidewalks

SPEED LIMIT	NUMBER OF LANES			
	2	3 (2+1)	4-5 (4+1)	6+
< 25	2	2	3	4
30	2	3	4	4
> 35	4	4	4	4

Table 4-5: Sidewalks Without Road Separation

SPEED LIMIT	NUMBER OF LANES		
	2	3	4+
< 25	1	1	2
30	1	2	2
35	2	3	3
> 40	3	3	4

Table 4-6: Sidewalks with One Separation

SPEED LIMIT	NUMBER OF LANES	
	2	3+
< 25	1	2
30	1	2
35	2	3
> 40	3	3

Table 4-7: Sidewalks with Multiple Separations

SPEED LIMIT	NUMBER OF LANES	
	2	3+
< 25	1	2
30	1	2
35	2	3
> 40	3	3

Table 4-8: Unmarked Crossing

SPEED LIMIT	NUMBER OF LANES			
	2	3 (2+1)	4-5 (4+1)	6+
< 25	2	2	3	4
30	2	3	4	4
> 35	4	4	4	4

Table 4-9: Marked Crossing

SPEED LIMIT	NUMBER OF LANES			
	2	3 (2+1)	4-5 (4+1)	6+
< 25	1	1	2	3
30	1	2	3	4
> 35	3	3	4	4

Table 4-10: Signalized Crossing

SPEED LIMIT	NUMBER OF LANES			
	2	3 (2+1)	4-5 (4+1)	6+
< 25	1	1	1	2
30	1	1	2	3
> 35	2	2	3	3

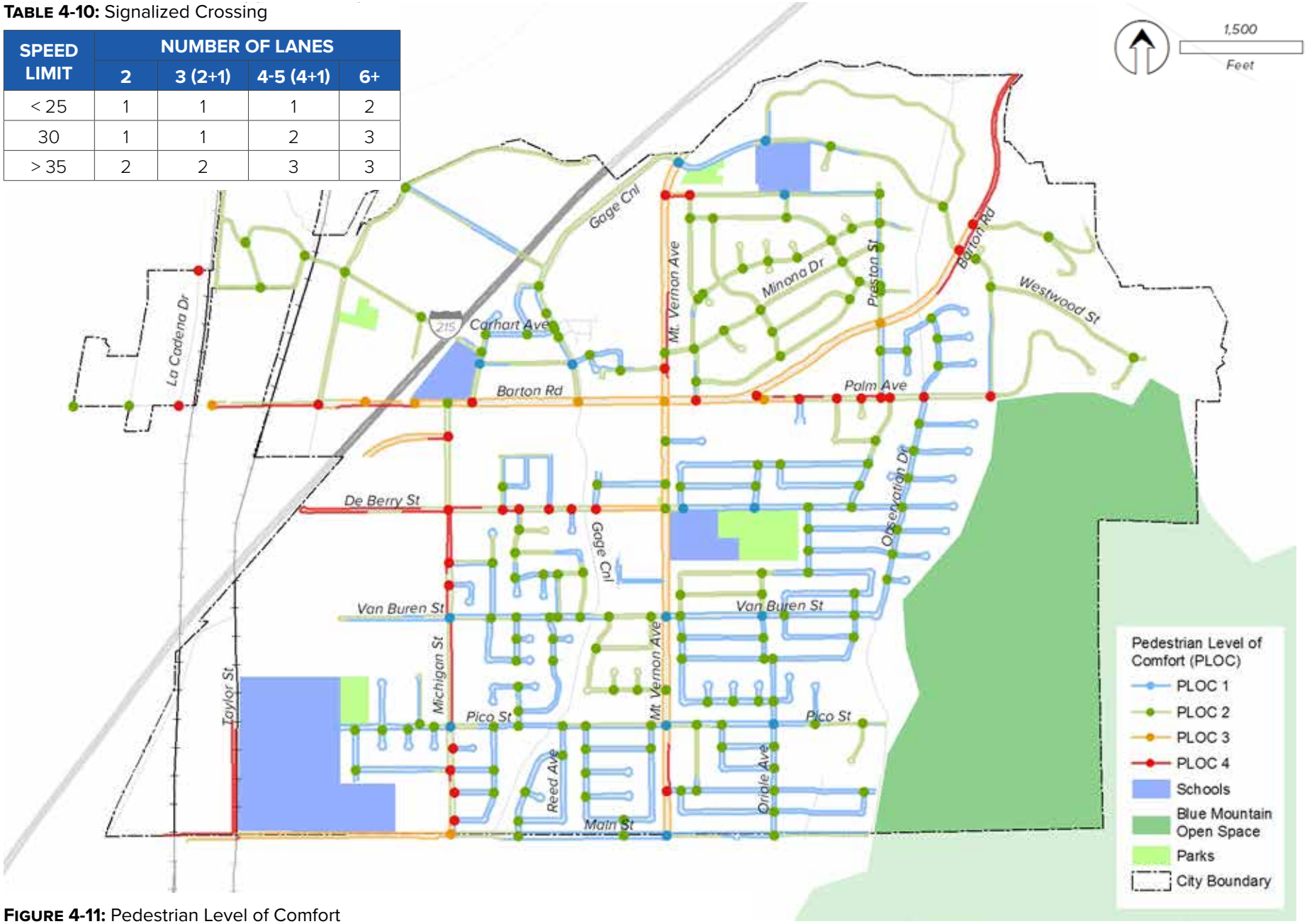


Figure 4-11: Pedestrian Level of Comfort

Chapter 5

Implementation Plan

The Active Transportation Plan aims to improve connectivity, access, comfort, and safety for all users. This chapter identifies projects that include both new corridors and improvements to existing bicycle and pedestrian facilities. The proposed projects would significantly improve the City's non-motorized transportation network by closing major bicycle and pedestrian gaps, providing continuous protected facilities along major thoroughfares, and improving connections to important destinations such as schools, parks, downtown, employment and retail centers.

The City recognizes that improving bicycling and walking facilities will require a multi-faceted approach consisting of a complimentary menu of recommended bicycle projects, programs, changes to existing standards, codes and policies. This chapter also outlines several federal, state, and local programs that can be adopted by the City to improve non-motorized transportation.

Recommended Bicycle and Pedestrian Projects - Criteria Analysis

The proposed projects in this chapter are a combination of previously planned (but not yet implemented) from the Grand Terrace General Plan Circulation Element and San Bernardino County Non-Motorized Transportation Plan and newly recommended bicycle and pedestrian facilities, all subjected to the same ranking criteria. Particular consideration was given to land uses that would be better served with improved bicycle and pedestrian attractions. Previous planning efforts, public events, two workshops, two walk audits, surveys, and stakeholder meetings helped identify new projects or improvements to existing facilities.

The proposed projects form a comprehensive, low-stress network, including bicycle facilities on every major (arterial) street and several smaller (local) streets. The Plan recommends a total of 18 bike projects that equate to 19 miles of new bikeways. Of these, 23 percent are multi-use paths, 12 percent are standard bike lanes, 29 percent are buffered or green bike lanes, 5 percent are marked bike routes, and 31 percent are bike routes with sharrows. A new Class I route is planned along the Gage Canal to provide better connections and also to provide recreational opportunities in a safe, off-street environment.

All projects were ranked according to cumulative scores derived from the following criteria that address both geographic and demographic characteristics:

Geographic Characteristics

Attractors/Activity Centers

This criterion addresses points of interest and destinations that people would be likely to visit, or also called attractions. The number of parks, public facilities, bus stops and retail facilities within 500 feet (or average block length) of the identified project alignment are totalled and those with a higher point value receive a higher overall score. (Data Source: SBCTA)

Schools

This criterion addresses schools along the project corridor. Schools within quarter-mile of the identified project alignment are counted, then totalled and those with a higher point value receive a higher overall score. (Data Source: SBCTA)

Reported Collisions

This criterion addressed safety through five years of collision data, normalized by collisions per mile of recommended facility. Dataset was derived from the California Highway Patrol's Statewide Integrated Traffic Records System (SWITRS).

Freeway Crossings

This criterion addresses freeway crossings along the project corridor. Crossings within 500 feet of the identified project alignment are totalled and the segments with a higher number of crossings receive a higher weight as major crossings are a hindrance to a safe and viable pedestrian route and therefore need facilities to help keep pedestrians safe. (Data Source: KTUA)

Gap Closure

This criterion addressed potential sidewalk and bicycle network connectivity improvements by evaluating each recommended facility's overall contribution to system completeness. (Data Source: KTUA)

- Closes gap in an existing bicycle or sidewalk facility, or connects to regional facilities = 3
- Upgrades facility to wider sidewalks, with parkway strips, or enhanced bike facility = 2
- New sidewalk or crosswalk connecting existing and proposed bicycle and sidewalk facilities = 1

Level of Bicycle Comfort

This criterion addresses the bicycle level of stress analysis. Lower levels of bicycle comforts (3 and 4) receive higher scores to improve corridors where bicycling comfort is poor. (Data Source: KTUA)

- BLOC 1, suitable for almost all cyclists, including children trained to safely cross intersections = 1
- BLOC 2, suitable to most adult cyclists but demanding more attention than might be expected from children = 2
- BLOC 3, suitable to many people currently riding bikes in American cities = 3
- BLOC 4, suitable to very few people, the "strong and fearless" cyclists who will ride in nearly any setting = 4

Level of Pedestrian Comfort

This criterion addresses the pedestrian level of comfort analysis. Lower levels of pedestrian comforts (3 and 4) receive higher scores to improve corridors where walking comfort is poor. (Data Source: KTUA)

- PLOC 1, suitable for almost all pedestrians, including children trained to safely cross intersections = 1
- PLOC 2, suitable to most adult pedestrians but demanding more attention than might be expected from children = 2
- PLOC 3, suitable for most older children with little or no parental supervision = 3
- PLOC 4, mostly suitable for adults and children with parental supervision = 4

Bicycle and Pedestrian Priority Model Results

The Bicycle and Pedestrian Priority Model acquires the routes total model score and is then divided by the length of that project. The average score per square feet is then calculated to normalize the score for all facilities. This allows projects with smaller footprints to have the same scoring parameters as larger projects. (Data Source: KTUA)

Consistent with Previous Planning Efforts

This criterion highlights corridors that are part of existing local and regional active transportation planning efforts. (Data Source: SBCTA, City of Grand Terrace)

- Corridor identified in the SANBAG Non-Motorized Transportation Plan or in Local Grants = 3
- Corridor identified in the City's General Plan and existing CIP Projects = 2

Demographics

The following demographic criteria takes the total number of the specific population (number of people that walk to work, take transit work, etc) and divides it by the area generated by either the quarter-mile or average block length buffer. This is done to limit large pedestrian projects to score higher due to the larger area they may influence.

Public Transportation to Work

This criterion looks at the number of people who use public transit to get to work. By improving access to transit, projects may solve the first and last mile issues that may hinder increased transit use. (Data Source: US Census Bureau, American Community Survey)

Under 14 Years of Age

This criterion looks at the number of children under the age of 14. To encourage children to walk to school good facilities need to be put in use by knowing where large population of children live is important in this prioritization. (Data Source: US Census Bureau, American Community Survey)

Walk to Work

This criterion looks at the number of people who walk to work. Neighborhoods with higher populations of people that walk to work, or walk to transit, should get higher priority for improvement, especially if they lack the necessary facilities. It can also be said, that neighborhoods that have very little walking activity can be prioritized to increase pedestrian activity. (Data Source: US Census Bureau, American Community Survey)

Bike to Work

This criterion looks at the number of people who bike to work. Neighborhoods with higher populations of people that bike to work, or bike to transit, should get higher priority for improvement, especially if they lack the necessary facilities. It can also be said, that

neighborhoods that have very little biking activity can be prioritized to increase cycling activity. (Data Source: US Census Bureau, American Community Survey)

Household with No Vehicles

This criterion looks at the number of households with no vehicles. To people who have no car and rely on public transportation, bicycles or walking to get to work and other destinations it is important and to provide safe means of using these alternate transportations types. (Data Source: US Census Bureau, American Community Survey)

Population Density

This criterion looks at the population density around project corridors. Bicycle and pedestrian facilities are more efficient and work best in highly populated areas where there are people to use the facilities. (Data Source: US Census Bureau, American Community Survey)

Employment Density

This criterion looks at the employment density around project corridors. Pedestrian facilities are more efficient when they help transport people to work either directly or through other means of transportation such as transit. (Data Source: US Census Bureau, American Community Survey)

Other

City Priority

This criterion assigns weight based on city staff's scoring of the project.

- Ranked as High Priority by City Staff = 3
- Ranked as Moderate Priority by City Staff = 2
- Ranked as Low Priority by City Staff = 1

Recommended Bicycle and Pedestrian Projects

Table: 5-1 lists the proposed bicycle projects with helpful information such as location, facility type, length, extent, and ranking. Figure 5-1 through Figure 5-5 are maps depicting the proposed projects and their relationship to adjacent jurisdictions.

The numbering used to identify projects in the following section does not necessarily imply that the facility should be built first. Bicycle facility implementation has no specific time line, since the availability of funds for implementation is variable and tied to the priorities of the City's capital projects.

This section's list of recommended projects and the associated figures identify their locations and project ranking. If there is desire, recommended projects can be implemented at whatever interval best fits funding cycles or to take into consideration the availability of new information, new funding sources, updated crash statistics, updated CIP lists, etc. The prioritization of these projects combined the use of data driven analysis with City and stakeholder input. A few projects that may have scored low, were moved up due to knowledge of deficiency and need based on community feedback. Bikeway facility prioritization and implementation should be fine-tuned and adjusted accordingly based on future circumstances.

Project Feasibility & Prioritization

The recommended bicycle projects are a combination of previously planned (but not yet implemented) and newly recommended bicycle facilities, all subjected to the same evaluation criteria.

The resulting map of recommended bicycle projects is presented in Figure 5-2 with supplemental information provided in Table 5-1. Items included in the table include project rank (1 is the highest priority), project length, project extent, feasibility values, and additional notes (constraints, best practices and the need for inter-agency coordination). The feasibility and ranking categories are the most useful for implementation purposes.

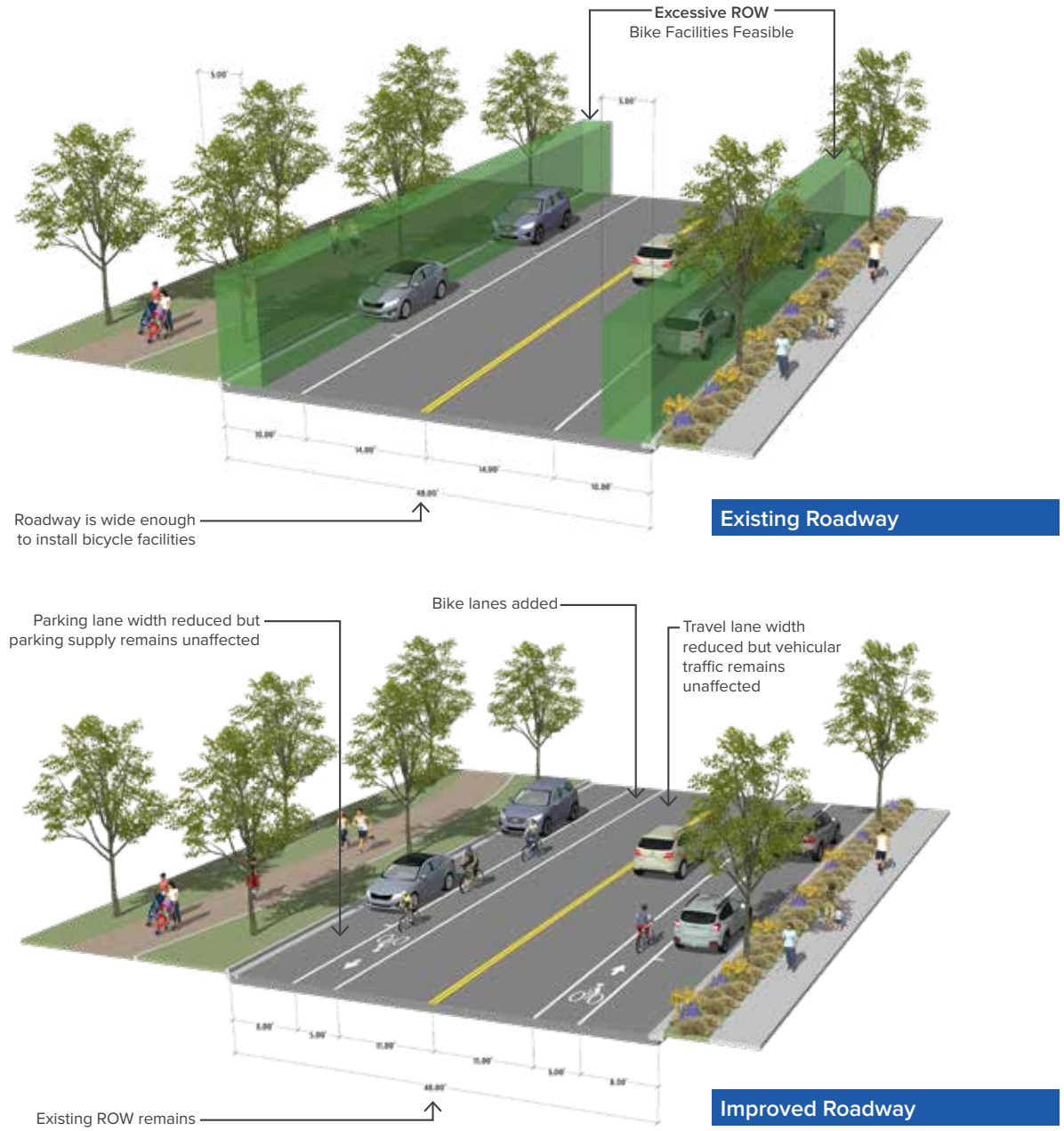
Feasibility

Each of the recommended bike routes were assessed for feasibility and divided into one of three categories:

6	Feasible to Implement with Existing ROW (≥0)
-3	Infeasible to Implement with Existing ROW (≤-1)
-1	Potentially Feasible (Within Four Feet of Necessary Minimum ROW) (-2 to -1)

The "Delta" values shown above provide an indication of available right-of-way (ROW) to install a given facility type while preserving vehicle travel lanes, turn lanes, medians and parking. A positive Delta value, color-coded green, indicates a ROW surplus, as shown in Figure 5-1. A negative Delta value, color-coded red, indicates a ROW deficit, which means that a road or lane diet may be necessary in order to fit bicycle facilities. A neutral Delta value, color-coded blue, indicates sufficient ROW. This value helps to determine the appropriate bicycle facility for each street.

Figure 5-1: Project Feasibility



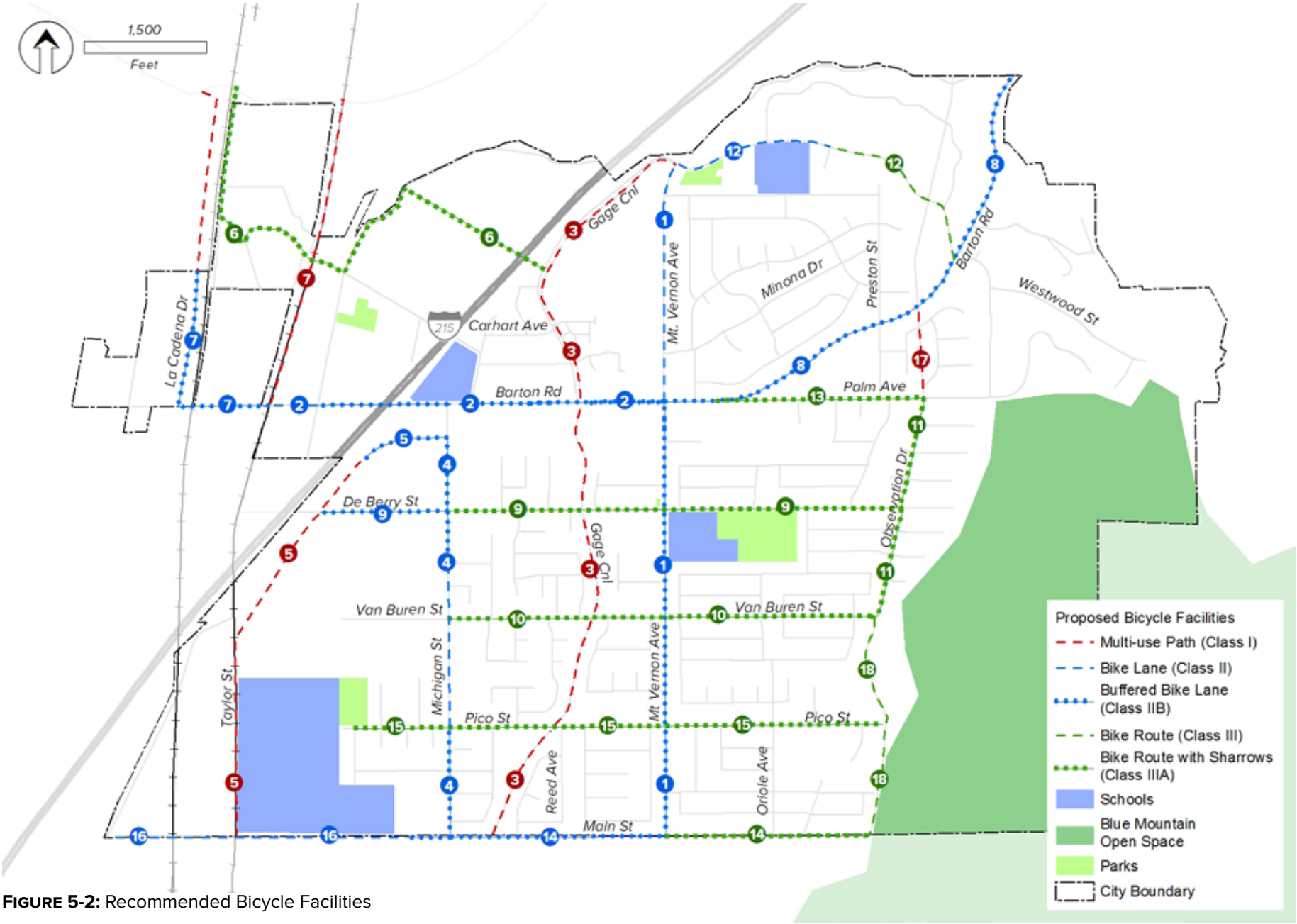


Figure 5-2: Recommended Bicycle Facilities

Table 5-1: Recommended Bicycle Facilities

PROJECT NUMBER	LENGTH	STREET NAME	PROPOSED FACILITY	FROM (N/W)	TO (S/E)	DELTA (PROTECTED)	DELTA (CLASS II)	NOTES
1	2.56	Mount Vernon Avenue	Class II/IIB	Grand Terrace Rd	Brentwood St	-25	-9	Designate a bike route with a combination of Sharrows and bike lanes. See Priority Project section in Chapter 6.
				Brentwood St	Minona Dr	-13	-7	
				Minona Dr	Barton Rd	-11	-5	
				Barton Rd	Pico St	5	11	Buffered bike lane. Enhanced crosswalks on all four legs at Van Buren Ave and De Berry St
				Pico St	Raven Way	-5	1	
				Raven Way	Main St	5	11	Buffered bike lane
2	1.17	Barton Road - West	Class II/IIB	Railroad Tracks	Grand Terrace Rd	-8	-2	Bike lane
				Grand Terrace Rd	La Crosse Ave	4	10	Buffered bike lane. Repair unpaved shoulder
				La Crosse Ave	Fwy215	-8	-2	Bike lane
				Fwy 215	Michigan St	-3	3	Bike lane. Install bike detector at Michigan St
				Michigan St	Vivienda Ave	-7	-1	Bike lane
				Vivienda Ave	Gage Canal	-2	4	Buffered bike lane
				Gage Canal	Mt Vernon Ave	-1	5	Buffered bike lane. Install bike detector at Mt Vernon Ave
3	1.74	Gage Canal - North to South Corridor	Class I	Mt Vernon Ave	Highlands Apartments	14	20	Refer to site plan
				Highlands Apartments	Highlands Apartments South	20	26	
				Highlands Apartments South	Canal Circle	24	30	
				Canal Circle	Canal Circle South	20	26	
				Canal Circle South	Terrace Pines Dr	-4	2	
				Terrace Pines Dr	Barton Rd	6	12	
				Barton Rd	De Berry St	11	17	
				De Berry St	Van Buren St	8.6	14.6	
				Van Buren St	Main St	10	16	

Table 5-1: Recommended Bicycle Facilities (Cont.)

PROJECT NUMBER	LENGTH	STREET NAME	PROPOSED FACILITY	FROM (N/W)	TO (S/E)	DELTA (PROTECTED)	DELTA (CLASS II)	NOTES
4	1.03	Michigan Street	Class II/IIB	Barton Rd	Commercial Dr	-6	0	Bike lane
				Commercial Dr	De Berry St	-2	4	Buffered bike lane
				De Berry St	Mavis St	-18	-12	
				Mavis St	Cardinal Ct	-4	2	Bike lane
				Cardinal Ct	Van Buren St	-8	-2	
				Van Buren St	Pico St	-10	-4	Bike lane. Repair unpaved shoulder
				Pico St	Tanager St	-2	4	Buffered bike lane
				Tanager St	Raven Way	-6	0	
				Raven Way	Ladera St	6	12	
				Ladera St	Main St	4	10	
5	1.17	Commercial Dr	Class IIB	Michigan St	Class I	4	10	Buffered bike lane
		Class I		Class I	Taylor St	8	14	Class I
		Taylor St		Class I	Main St	-8	-2	Use abandoned railroad roadway
6	1.30	Terrace Ave	Class IIIA	North End	Vivienda Ave	-17	-11	Bike route with Sharrows. Wayfinding needed.
		Vivienda Ave		Terrace Ave	Maple Ave	-13	-7	
				Maple Ave	Burns Ave	-16	-10	
				Burns Ave	Railroad Tracks	-8	-2	
				Railroad Tracks	Grand Terrace Rd	-14	-8	
		Grand Ave		Newport Ave	Vivienda Ave	-12	-6	
		Newport Ave		Grand Ave	Gage Canal	-19	-13	
7	2.09	Barton Rd	Class IIB	La Cadena Dr	Railroad Tracks	-3	3	
		La Cadena Dr		Barton Rd	W Litton Ave	2	8	Buffered bike lane
		Class I		Class I Greenway Connector	Railroad Tracks	-2	4	
		Railroad Tracks		Class I	Barton Rd	29	35	Class I

Table 5-1: Recommended Bicycle Facilities (Cont.)

PROJECT NUMBER	LENGTH	STREET NAME	PROPOSED FACILITY	FROM (N/W)	TO (S/E)	DELTA (PROTECTED)	DELTA (CLASS II)	NOTES
8	1.25	Barton Rd	Class IIB	E Hilltop Dr	Glendora Dr	0	6	Buffered bike lane
				Glendora Dr	Honey Hill Dr	0	6	
				Honey Hill Dr	Grand Terrace Rd	2	8	Buffered bike lane. Install bike detector at Honey Hill Dr
				Grand Terrace Rd	Arliss Dr	0	6	Buffered bike lane
				Arliss Dr	Mt Vernon Ave	-8	-2	Buffered bike lane. Install bike detector at Mt Vernon Ave
9	1.35	De Berry St	Class IIB	West End	Michigan St	-11	-5	Bike route with Sharrows
				Class IIIA	Mirado Ave	-11	-5	
				Mirado Ave	Mt Vernon Ave	-5	1	Bike route with Sharrows. Install bike detector at Mt Vernon Ave
				Mt Vernon Ave	Warbler Ave	-6	0	Bike route with Sharrows
				Warbler Ave	Observation Dr	-12	-6	
10	0.97	Van Buren St	Class IIIA	Michigan St	Vivienda Ave	-16	-10	Bike route with Sharrows
				Vivienda Ave	Pascal Ave	-14	-8	
				Pascal Ave	Reed Ave	-11	-5	
				Reed Ave	Reed Ave North	5	11	
				Reed Ave North	Willet Ave	-16	-10	
				Willet Ave	Mirado Ave	-17	-11	
				Mirado Ave	Kentfield St	-16	-10	
				Kentfield St	Mt Vernon Ave	-14	-8	Bike route with Sharrows. Install bike detector at Mt Vernon Ave
				Mt Vernon Ave	Warbler Ave	-11	-5	Bike route with Sharrows
				Warbler Ave	Observation Dr	-11	-5	
11	0.53	Observation Dr	Class IIIA	Van Buren St	Cardinal St	-11	-5	Bike route with Sharrows
				Cardinal St	Palm Ave	-11	-5	
12	1.12	Grand Terrace Rd	Class II	Vista Grande Way	Mt Vernon Ave	-4	2	Bike lane
				Grand Terrace Ct	Vista Grande Way	-16	-10	Bike lane. On-street parking verification needed
				Class IIIA	Grand Terrace Ct	-12	-6	Bike route with Sharrows. Repair unpaved shoulder
				Barton Rd	Vista Grande Way E	-14	-8	
				Vista Grande Way E	Barton Rd	-13	-7	

Table 5-1: Recommended Bicycle Facilities (Cont.)

PROJECT NUMBER	LENGTH	STREET NAME	PROPOSED FACILITY	FROM (N/W)	TO (S/E)	DELTA (PROTECTED)	DELTA (CLASS II)	NOTES
13	0.48	Palm Ave	Class IIIA	Barton Rd	Kingston St	4	10	Bike route with Sharrows
				Kingston St	Country Club Ln	-12	-6	
				Country Club Ln	Palm Ct	-12	-6	
				Palm Ct	Preston St	-12	-6	
				Preston St	Dos Rios Ave	-12	-6	
				Dos Rios Ave	Observation Dr	-12	-6	
14	0.97	Main St	Class IIB	Michigan St	Fremontia Ave	5	11	Buffered bike lane
				Fremontia Ave	Browning St	24	30	
				Browning St	Mt Vernon Ave	24	30	
				Class IIIA	Oriole Ave	-16	-10	Bike route with Sharrows
				Oriole Ave	Access Road	-24	-18	
15	1.22	Pico St	Class IIIA	Royal Ave	Garden Ave	-14	-8	Bike route with Sharrows
				Garden Ave	Dickens Ct	-11	-5	
				Dickens Ct	Sanburg Way	-11	-5	
				Sanburg Way	Sanburg Way South	-14	-8	
				Sanburg Way South	Michigan St	-11	-5	
				Michigan St	Vivienda Ave	-11	-5	
				Vivienda Ave	Darwin Ave	-14	-8	
				Darwin Ave	Mt Vernon Ave	-19	-13	
				Mt Vernon Ave	Kingfisher Rd	-12	-6	
				Kingfisher Rd	Blue Mountain Ct	-12	-6	
				Blue Mountain Ct	Access Road	-7	-1	
16	0.80	Main St	Class II/IIB	Michigan St	Parking lot Driveway	4	10	Buffered bike lane
				Parking lot Driveway	Riverside Canal	-3	3	Bike Lane
17	0.21	California Aqueduct	Class I	Merle Ct	Barton Rd	94	100	Class I Multi-use path
				Palm Ave	Merle Ct	80	86	
18	0.53	Access Road	Class III	Main St	Observation Dr	-6	0	Bike route

Cost Estimates

Class 1 Multi-use Path Costs

Unlike Class 2 and 3 facilities, Class 1 paths are separate from roadways, meaning that planning level cost estimation requires an average per-mile cost to be applied based on local conditions. Actual cost for a facility should be determined as part of project implementation. Depending on several factors, Class 1 path costs in the last few years have ranged between $750,000 and $2,800,000 per mile. For this plan, an average per-mile cost of $1,600,000 was used. Since Gage Canal went into further design for a Caltrans Active Transportation Program Cycle 4 grant, detailed cost estimates were developed as part of that process.

Class 2 Bicycle Lane Costs

Class 2 bicycle lane cost can fall within a range of potential conditions. At the low end, it assumes that adequate space exists within the roadway to simply add bicycle lane striping and markings without modifying the roadway further that the roadway is in good condition and does not require maintenance or rehabilitation as part of the striping project, and no modifications to intersection signal equipment are assumed.

The high end in terms of cost occurs where the curb-to-curb width is not sufficient to install bicycle lanes and the roadway would need to be widened by at least 10 feet to accommodate them. This could therefore include widened pavement sections, new curb, gutter and sidewalk, and street light relocation. Intersections may also need to be modified to move signal equipment and install new curb returns. Proposed bicycle lanes were assigned an average per-mile cost of $61,000. This estimate also includes permitting, management, engineering and contingencies. The Mt Vernon Avenue and West Barton Road projects went into went into further design for a Caltrans Active Transportation Program Cycle 4 grant. Detailed cost estimates, which included pedestrian and transit improvements were developed as part of that process and will have costs that are higher than planning-level cost estimates.

Class 3 Bicycle Route Costs

This category assumes signage and shared-use pavement markings (“Sharrows”) only along the length of the route at intervals of 500 feet in each direction and at intersections, and that the roadway does not require rehabilitation or pre-construction maintenance. Class 3 bicycle routes were assigned an average per-mile cost of $47,000. This estimate also includes permitting, management, engineering and contingencies.

Cycle Tracks/Protected Bike Lane Costs

Cycle tracks can vary in costs due to the various segment and intersection treatments associated with them. Segment protection can range from raised curbs to simple treatments such as striping with on-street parking or reflective bollards. If curbs are built, stormwater utilities would also need to be considered.

At intersections, additional striping, paint and in some cases, dedicated bicycle signals are needed. For planning costs, the assigned per-mile cost for cycle tracks use is $520,000.

Bicycle Boulevard Costs

Bicycle boulevards are essentially Class 3 route facilities that may feature physical roadway modifications such as traffic calming measures or changes in intersection priority or access. Bicycle boulevard projects can therefore vary widely in cost, primarily due to the level of physical construction designed into them.

Because bicycle boulevards need to be evaluated in more detail to determine the extent of desired modification, this plan assumes that their costs are equivalent to those of typical Class 3 facilities employing signage and pavement markings only, to be revised as needed in final design prior to implementation.

Table 5-2: Bicycle Project Cost Estimates

RANK	DESCRIPTION	FACILITY TYPE	COSTS
1	Mount Vernon Avenue	Bike Lanes / Buffered Bike Lanes	$1,551,853*
2	West Barton Road	Bike Lanes / Buffered Bike Lanes	$728,968*
3	Gage Canal	Multi-Use Path	$2,910,713*
4	Michigan Street	Bike Lanes / Buffered Bike Lanes	$62,817
5	Taylor Street/Commerce Way (Construction-dependant)	Buffered Bike Lanes	$71,611
6	Terrace Avenue/Vivienda Ave/Grand Terrace Road/Newport Avenue	Bike Route / Bike Boulevard	$61,148
7	Greenway Connector	Buffered Bike Lanes	$2,544,537
8	Barton Road - East	Buffered Bike Lanes	$75,964
9	De Berry Street	Buffered Bike Lanes	$82,269
10	Van Buren Street	Bike Route / Bike Boulevard	$45,590
11	Observation Street	Bike Route / Bike Boulevard	$24,910
12	Grand Terrace Road	Bike Lanes	$68,320
13	Palm Avenue	Bike Route / Bike Boulevard	$22,491
14	Main Street - East	Buffered Bike Lanes	$59,143
15	Pico Street	Bike Route / Bike Boulevard	$57,520
16	Main Street - West	Bike Lanes / Buffered Bike Lanes	$48,509
17	CA Aqueduct Bike Path - North to South Corridor	Multi-Use Path	$342,412
18	Blue Mountain Trail Connection	Bike Route	$24,685
		Total	**$8,783,460**

** Detailed cost estimates from 2018 Caltrans ATP Cycle 4 Grant Application*

The following tables provide estimates of existing and future bicycle ridership based on national research and case studies. These tables are meant to provide a potential view of increases in bicycle ridership, and improved air quality, reduction of greenhouse gas emissions and vehicle miles travelled based on available census data and case studies estimates.

Table 5-3: Current Bicycle Commuting Estimates

CURRENT COMMUTING STATISTICS	SOURCE/CALCULATION	
Grand Terrace Population	12,393	*Census Data*
Number of Employed Persons	5,759	*Census Data*
Number that Drive Alone	4,836	*Census Data*
Bicycle-to-Work Mode Share	2%	*Census Data*
Number of Bicycle Commuters	5	*Employed persons x bike-to-work mode share*
Number of Persons Working at Home	177	*Census Data*
Estimated Work-at-Home Bicycle "Commuters"	88.5	*Assumes 50% of population working at home makes at least one bike trip per day*
Number of Transit Users	44	*Census Data*
Transit to Work Mode Share	1.4%	*"Bike-n-Ride Survey" by City of Denver's Regional Transportation District, 1999*
Estimated Transit Bicycle Commuters	11	*Census Data*
School Children (Grades K-8)	1,603	*Census Data*
Estimated Bicycle Mode Share for School Children	2%	*National Safe Routes to School Survey, 2010*
Estimated School Bicycle Commuters	32	*Calculated from above*
Number of College Students in the Region	1,933	*Census Data*
Estimated Bicycle Mode Share for College Students	10%	*FHWA Study 1995*
Estimated College Bicycle Commuters	193	*Calculated from above*

Table 5-4: Adjusted Current Bicycle Commuting Estimates

ADJUSTED CURRENT COMMUTING STATISTICS	SOURCE/CALCULATION	
Adjusted Current Estimated Mode Share	4%	*Mode share, including bike-to-work, school and college*
Adjusted Current Estimated Total Number of Daily Bicycle Commuters	330	*Sum of all estimated bicycle commuters*
Adjusted Curent Estimated Total Daily Bicycle Trips	660	*Total Bicycle Commuters x2 (for round trips)*
Reduced Vehicle Miles per Weekday	5,278	*Assumes average round trip travel length of 8 miles for adults/college students and 1 mile for school children*
Reduced Vehicle Miles per Year	1,319,440	*Calculated from above (250 weekdays per year)*

Table 5-5: Future Bicycle Commuting Estimates

ESTIMATED FUTURE BICYCLE COMMUTING STATISTICS	SOURCE/CALCULATION	
Grand Terrace Future Population	14,200	*City Population Forecast (2040)*
Future Employed Population Estimate	4,118	*Employment Population Forecast (29% of population based on existing estimates)*
Adjusted Future Estimated Mode Share	7%	*Estimate of the potential modeshare based on other jurisdiction experiences with system development*
Future Total Number of Bicycle Commuters	288	*Existing employment x 7%. Case studies in Portland, San Francisco and Seattle*
Future Total Daily Bicycle Trips	577	*Future daily bicycle commuters x 2*
Future Reduced Vehicle Miles per Weekday	2,883	*Assumes average round trip travel length of 5 miles for adults/college students and 1 mile for school children*
Future Reduced Vehicle Miles Per Year	720,650	*Calculated from above*

Table 5-6: Current Air Quality Benefits

CURRENT AIR QUALITY BENEFITS	SOURCE/CALCULATION	
Reduced CO2 (pounds/year)	1,195,532	*Based on an average 411 grams per reduced mile (Emissions rates from EPA report 420-F-14-040)*
Reduced CO (pounds/year)	36,070	*12.4 grams per reduced mile (EPA report 420-F-05-022, 2005)62771*
Reduced Particle Matter 10 (pounds/year)	15	*0.0052 grams per reduced mile (EPA report 420-F-05-022, 2005)*
Reduced Particle Matter 2.5 (pounds/year)	14	*0.0049 grams per reduced mile (EPA report 420-F-05-022, 2005)*
Reduced NOX (pounds/year)	2,763	*0.95 grams per reduced mile (EPA report 420-F-05-022, 2005)*
Reduced Hydrocarbons (pounds/year)	3,956	*1.36 grams per reduced mile (EPA report 420-F-05-022, 2005)*
Total Reduced Global Warming Potential (pounds/year)	1,238,351	*Based on the sum of the above (Emissions rates from EPA report 420-F-11-041)*

Table 5-7: Future Air Quality Benefits

CURRENT AIR QUALITY BENEFITS	SOURCE/CALCULATION	
Reduced CO2 (pounds/year)	652,974	*Based on an average 411 grams per reduced mile (Emissions rates from EPA report 420-F-11-041)*
Reduced CO (pounds/year)	19,700	*12.4 grams per reduced mile (EPA report 420-F-05-022, 2005)62771*
Reduced Particle Matter 10 (pounds/year)	8	*0.0052 grams per reduced mile (EPA report 420-F-05-022, 2005)*
Reduced Particle Matter 2.5 (pounds/year)	8	*0.0049 grams per reduced mile (EPA report 420-F-05-022, 2005)*
Reduced NOX (pounds/year)	1,509	*0.95 grams per reduced mile (EPA report 420-F-05-022, 2005)*
Reduced Hydrocarbons (pounds/year)	2,161	*1.36 grams per reduced mile (EPA report 420-F-05-022, 2005)*
Total Reduced Global Warming Potential	676,361	*Based on the sum of the above (Emissions rates from EPA report 420-F-11-041)*

SRTS Recommendations Overview

Safe Routes to School is one of the primary principles used for pedestrian and bicycle improvements in this plan. As described in the previous chapters, an in-depth GIS analysis of the existing conditions and a robust public outreach were used to determine existing concerns and issues regarding the safety and comfort of walking and bicycling in the City. In turn, the recommendations in this chapter use those results, as well as professional judgement and feedback from the City.

A GIS-based methodology was used to define Safe Routes to School (SRTS) Zones, quarter-mile walkable zones (walksheds) based on the schools' entrances and the street network, where walking and biking improvements can be prioritized. The zones were used to ensure that recommendations of the highest level for safety and comfort (lowest stress) were made where they would provide the most benefit.

The following pages contain the recommendations for each of the schools identified in this plan. Each school is supported by a summary of the recommendations, both unique to each school and in general for the zone, as well as a detailed map with the locations of the proposed recommendations. Please note that several maps include more than one school due to their proximity to one another.

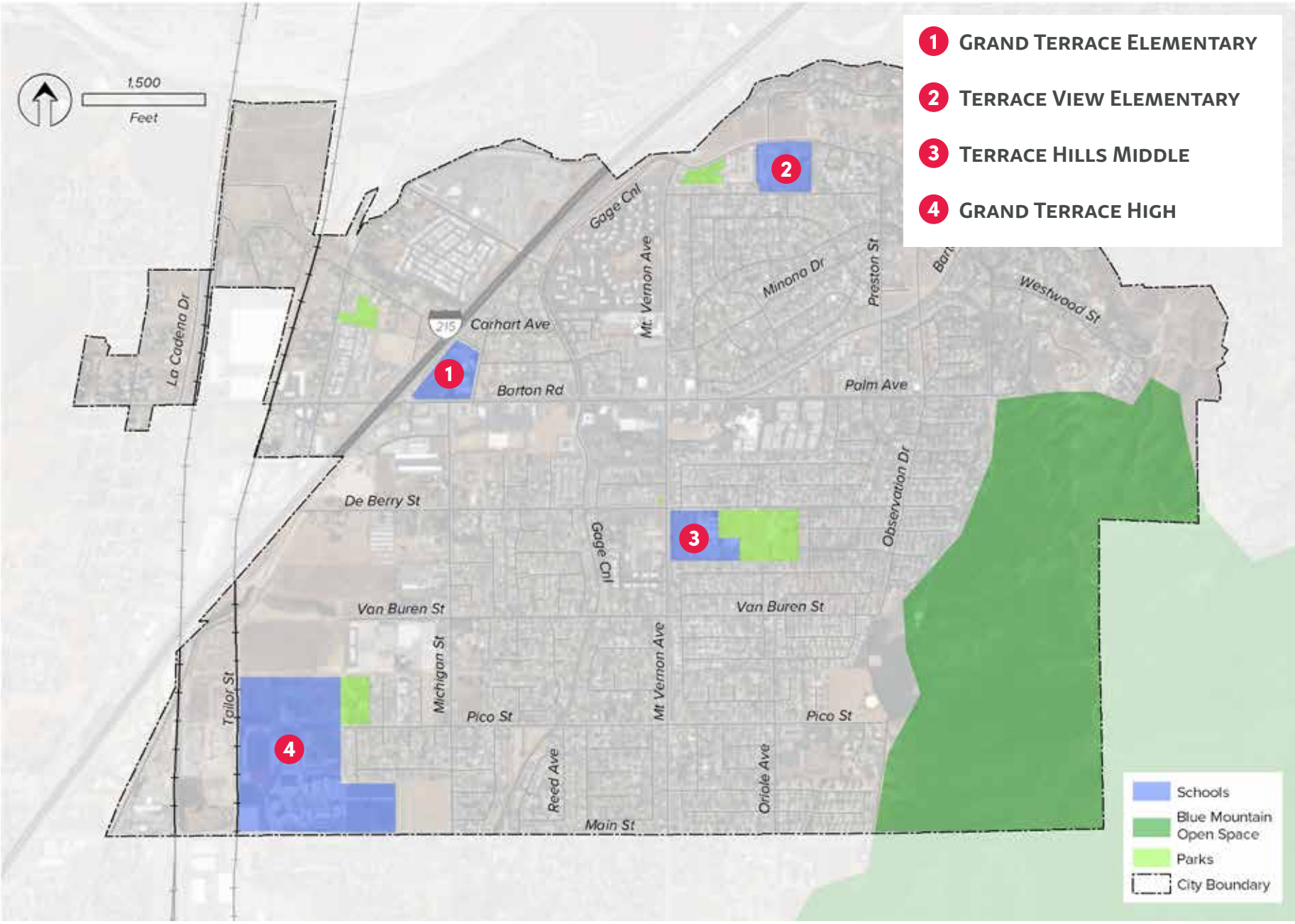


Figure 5-3: School Locations

Grand Terrace Elementary

Grand Terrace Elementary is located in eastern Grand Terrace in a mixed-use neighborhood. The school is bounded by Interstate 215 to the west and it is surrounded by low and medium density residential uses to the west and north, while commercial uses can be found to the south. Grand Terrace Elementary is located on Barton Road, a major east-west arterial thoroughfare with high vehicular and traffic speeds. Pedestrians collisions have been registered at the intersection of Barton Road and Michigan Street. This provides opportunities for traffic calming, increased safety, and pedestrian and bicycle infrastructure improvements.

Recommendations

1. Install buffered bike lanes along Barton Road and Cul de Sac
2. Install stop signs with high-visibility crosswalks at key intersections
3. Install high-visibility crosswalks at all controlled intersections
4. Install missing curb ramps and repair/update curb ramps
5. Install missing sidewalks
6. Repair broken/uneven sidewalks

Table 5-8: Grand Terrace Elementary Cost Estimates

ITEM	UNIT COST	UNIT	QTY	COST
Sidewalk	$12.00	SF	24,017	$288,204
Curb Ramp	$5,000.00	EA	10	$50,000
Truncated Domes	$500.00	EA	16	$8,000
High Visibility Crosswalks	$2,000.00	EA	7	$14,000
			Total	**$360,204**
			Design / Permitting / Management / Engineering (25%):	$90,051
			Contingency (25%):	$112,564
			Grand Total:	**$562,819**

4,803
linear feet of missing sidewalk

0.9
miles of missing sidewalk

26
curb ramps needing tactile domes

13
missing curb ramps

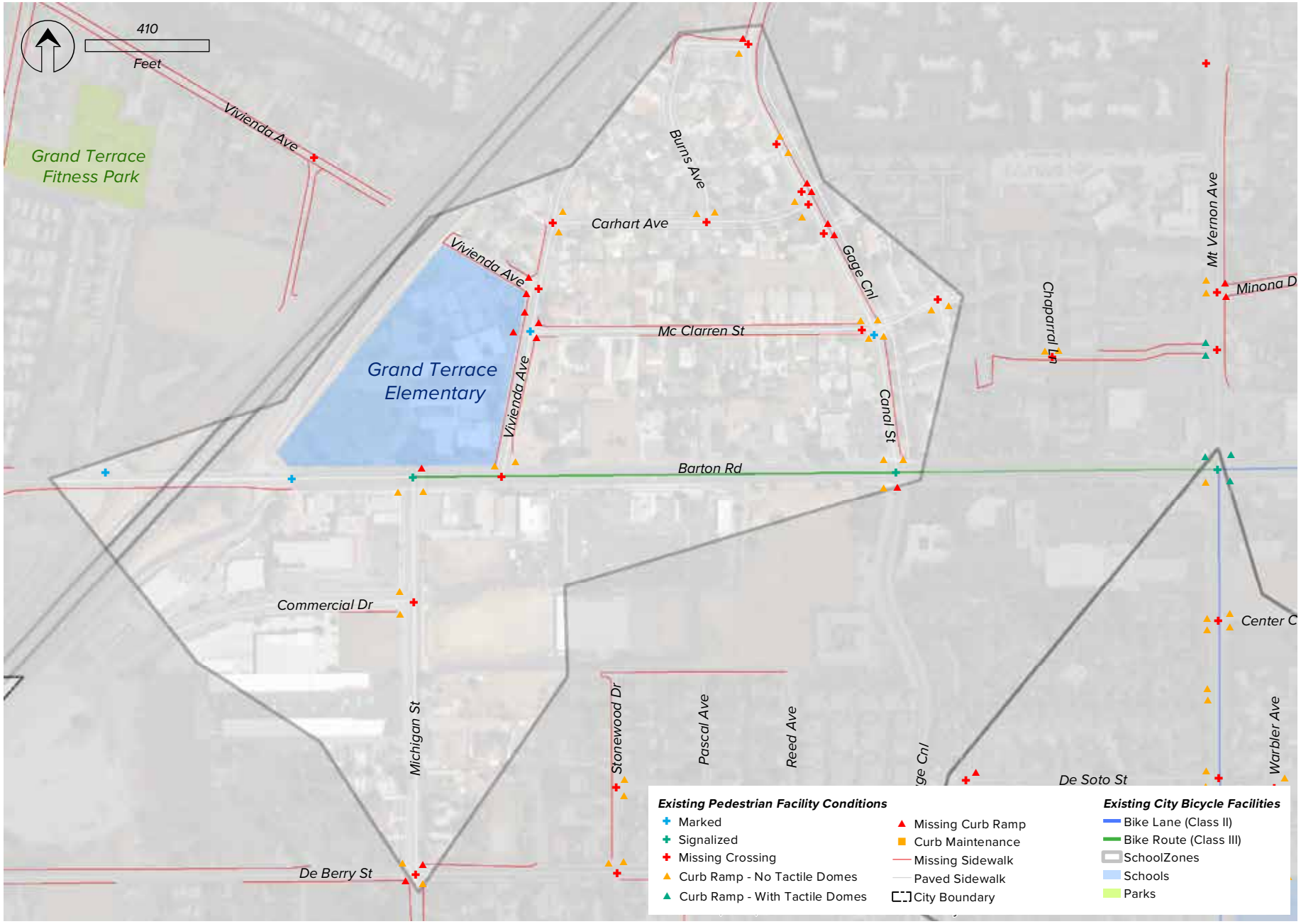


Figure 5-4: Grand Terrace Elementary Existing Conditions

Terrace View Elementary

Terrace View Elementary is located in north Grand Terrace in a residential neighborhood. The school is close to Susan Petta Park, a park meant for passive recreation that includes a community garden. This creates an opportunity to connect the school with the park, which would benefit both students and visitors.

Recommendations

1. Install bike lanes and bike route along Grand Terrace Road
2. Install stop signs with high-visibility crosswalks at key intersections
3. Install high-visibility crosswalks at all controlled intersections
4. Install missing curb ramps and repair/update curb ramps
5. Install missing sidewalks
6. Repair broken/uneven sidewalks

17,267
linear feet of missing sidewalk

3.3
miles of missing sidewalk

4
curb ramps needing tactile domes

23
missing curb ramps

Table 5-9: Terrace View Elementary Cost Estimates

ITEM	UNIT COST	UNIT	QTY	COST
Sidewalk	$12.00	SF	68,220	$818,640
Curb Ramp	$5,000.00	EA	23	$115,000
Truncated Domes	$500.00	EA	4	$2,000
High Visibility Crosswalks	$2,000.00	EA	8	$16,000
			Total	**$951,640**
			Design / Permitting / Management / Engineering (25%):	$237,910
			Contingency (25%):	$297,388
			Grand Total:	**$1,486,938**

Figure 5-5: Terrace View Elementary Existing Conditions

Terrace Hills Middle School

Terrace Hills Middle is located in central Grand Terrace and it is surrounded by low and medium density residential uses. The school is located on Mount Vernon Avenue, a major north-south arterial, which provides opportunity for traffic calming, increased safety, and pedestrian and bicycle infrastructure improvements.

Recommendations

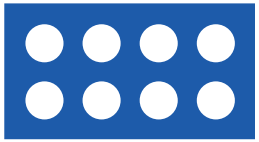
1. Install buffered bike lanes along Mount Vernon Avenue
2. Install bike route with sharrows along De Berry Street
3. Install stop signs with high-visibility crosswalks at key intersections
4. Install high-visibility crosswalks at all controlled intersections
5. Install missing curb ramps and repair/update curb ramps
6. Install missing sidewalks
7. Repair broken/uneven sidewalks

0

linear feet of missing sidewalk

0.0

miles of missing sidewalk



30

curb ramps needing tactile domes

1

missing curb ramps

Table 5-10: Terrace Hills Middle School Cost Estimates

ITEM	UNIT COST	UNIT	QTY	COST
Curb Ramp	$5,000.00	EA	1	$5,000
Truncated Domes	$500.00	EA	30	$15,000
High Visibility Crosswalks	$2,000.00	EA	8	$16,000
			Total	**$36,000**
			Design / Permitting / Management / Engineering (25%):	$9,000
			Contingency (25%):	$11,250
			Grand Total:	**$56,250**

Figure 5-6: Terrace Hills Middle Existing Conditions

Grand Terrace High School

Grand Terrace High is located in the southwestern corner of Grand Terrace, immediately north of city limits. The high school is surrounded by low density residential uses to the east, mixed use to the north, and industrial uses to the west. An old railroad lies west of the school property, which creates a unique opportunity to connect the high school with the railroad roadway along Commerce Way. Grand Terrace High is located on Main Street, and east-west arterial road that is conducive for traffic calming and improvements to bicycle and pedestrian infrastructure.

Recommendations

1. Install buffered bike lanes along Main Street
2. Install bike route with sharrows along Pico Street
3. Install stop signs with high-visibility crosswalks at key intersections
4. Install high-visibility crosswalks at all controlled intersections
5. Install missing curb ramps and repair/update curb ramps
6. Install missing sidewalks
7. Repair broken/uneven sidewalks

Table 5-11: Grand Terrace High School Cost Estimates

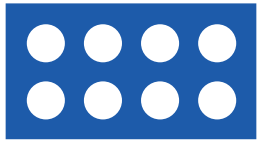
ITEM	UNIT COST	UNIT	QTY	COST
Sidewalk	$12.00	SF	6,753	$81,036
Curb Ramp	$5,000.00	EA	3	$15,000
Truncated Domes	$500.00	EA	16	$8,000
High Visibility Crosswalks	$2,000.00	EA	6	$12,000
			Total	**$116,036**
			Design / Permitting / Management / Engineering (25%):	$29,009
			Contingency (25%):	$36,261
			Grand Total:	**$181,306**

1,351

linear feet of missing sidewalk

0.3

miles of missing sidewalk



16

curb ramps needing tactile domes

3

missing curb ramps

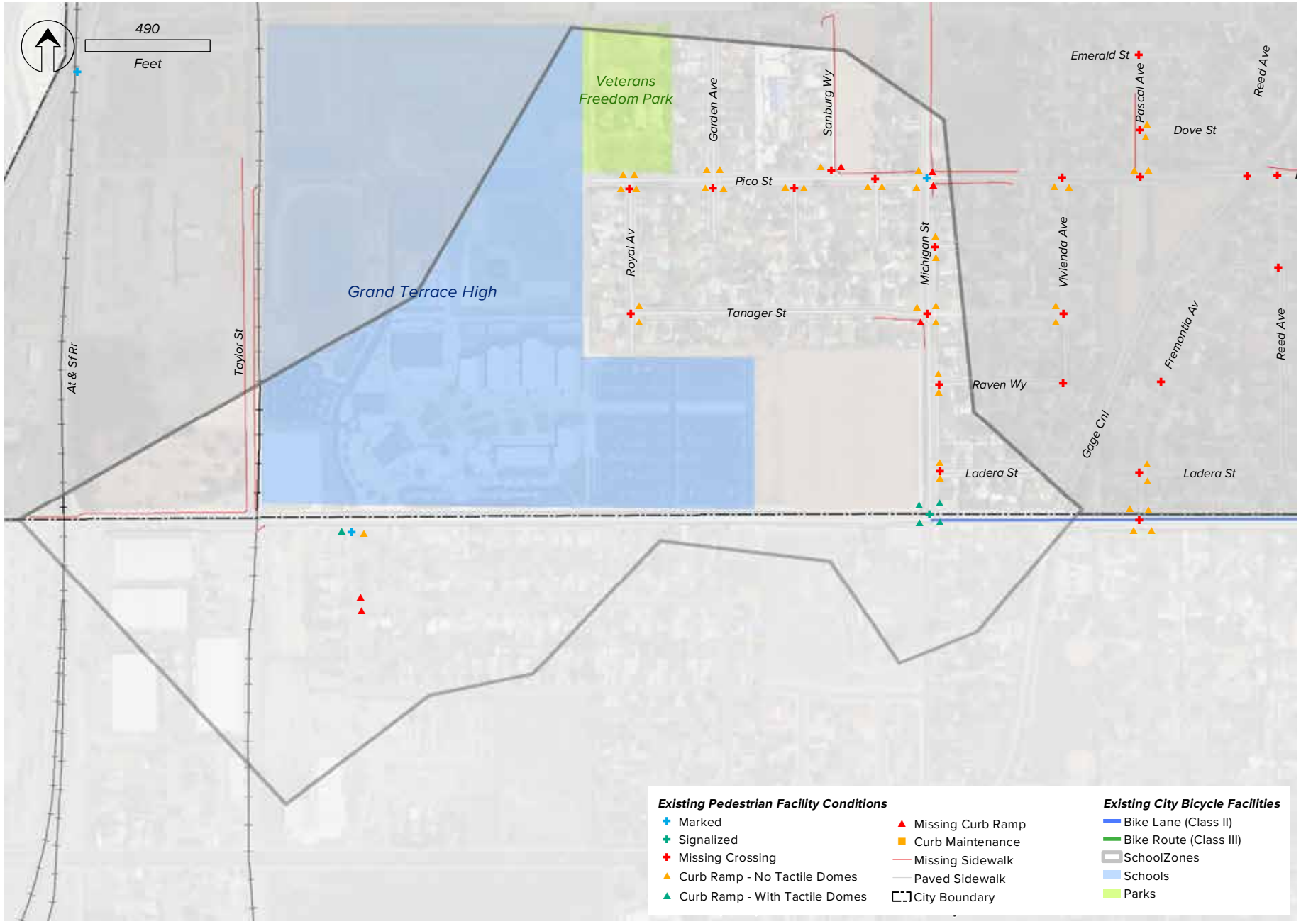


Figure 5-7: Grand Terrace High Existing Conditions

Programs

This section comprises a diverse menu of programs intended to support the bicycle and pedestrian projects recommended in this plan. Due to a long history of routine accommodation for pedestrians (i.e. sidewalks, crosswalks, dedicated signals, etc.), programs targeting walking are relatively uncommon. Conversely, the historic lack of routine accommodation for cyclists has fostered confusion about the role of bicycles in the overall transportation system and has necessitated an impressive diversity and breadth of bicycle-related programs. Despite a likely emphasis on programming and less on projects, bicycle programs remain an important element of a successful bicycle plan. The following sections offer some background on the changing "state of practice" in bicycle programming, namely the increased integration of programs and projects, culminating in a comprehensive menu of bicycle and pedestrian programs.

Evolving State of Practice in Bicycle Programs

There has been a shift away from the traditional, compartmentalized "Five Es" approach developed by the League of American Bicyclists (Engineering, Education, Encouragement, Enforcement and Evaluation and Planning) and toward a fully integrated and complementary menu of initiatives. By offering a menu of initiatives, rather than a prescriptive list, active transportation programming can more accurately address the existing conditions and desired outcomes of a given context.

In addition to changes in the content and organization of active transportation programs, there has also been a shift in implementation strategies. Programs are increasingly targeted at specific project areas, in conjunction with the construction of bicycle and pedestrian facility projects. The implementation of a capital project represents a unique opportunity to promote a city's active transportation system and cycling and walking as attractive transportation options. Projects or "Engineering" represent the most visible and perhaps most tangible evidence of a great place for bicycling. The same can be said for walking. A new bicycle facility attracts attention of cyclists and non-cyclists alike. As such, it represents a great opportunity to reach out to the "interested, but concerned" within the neighborhood. Impact to this target group will be strongest by directly linking facility improvements and supportive programs. In this way, bundling bicycle programs with projects represents a much higher return on investment for both.

The programs recommended for the City of Grand Terrace are organized as a menu of initiatives, each listed under a broad category:

- Education/Encouragement/Marketing
- Education/Enforcement
- Monitoring and Evaluation

These categories are not definitive. They are merely intended to offer some level of organization to the many program initiatives, the majority of which fall into at least one category.

Education/Encouragement/Marketing

Community Bicycle Programs

Community bicycle programs, also known as Bike Kitchens, are commonly formed as grass roots initiatives by community members within low income and underserved communities to provide bicycles, helmets, maintenance and safety instruction to people as a means of expanding their transportation options and providing people better access to work and services.

The City of Grand Terrace could support the creation of a Bike Kitchen and leverage its resources in coordination with the bicycle facilities prioritized in the bicycle and pedestrian master plan. This combination will help to encourage an increase in cycling mode share, serve as a missing link in the public transit system, reduce GHG emissions and provide additional "green" jobs related to system management and maintenance.

Street Smarts Classes and Bicycle Ambassadors

This initiative promotes safe bicycling through community-based outreach, which helps bridge the gap between people who want to start riding and the availability of opportunities to help people learn to bicycle safely. A Bicycle Ambassador program has recently been initiated by the Inland Empire Biking Alliance. The City could support this program through funding or, at least, in-kind

contributions. The Bicycle Ambassadors may concentrate their efforts along corridors of existing and/or planned cycling facilities. Bicycle Ambassadors could also offer great value in areas and among populations with a high latent demand for cycling and in areas with high collision rates.

Participate in Walk and Bike to School Day

This one-day October event in more than 40 countries celebrates the many benefits of safely walking and cycling to school. Walking and rolling to school embodies the two main goals of First Lady Michelle Obama's Let's Move! Campaign: to increase children's physical activity and to empower parents to make these kinds of healthy choices. The National Center for Safe Routes to School, which serves as the clearinghouse for the federal Safe Routes to School (SRTS) program, coordinates online registration efforts and provides technical support and resources for Walk to School Day. For more information, go to www.walktoschool.org.

Participate in National Bike Month

Since 1956, communities from all over the country have celebrated National Bike Month as a chance to showcase the many benefits of bicycling as well as to encourage people of all ages and backgrounds to bike more often. The biggest event that takes place during Bike month is Bike to Work day. Local business, non-profits, and entire city agencies participate by either hosting pit stops where bicyclists can stop to gather healthy food and drinks, or by simply bicycling to work.

Host a Ciclovia, Open Streets or Other Signature Event

A Ciclovía (also ciclovia or cyclovia in English) is a Spanish word that translates into "bicycle path" and is used to describe either a permanently designated bicycle route or a temporary event where the street is closed to vehicles for use by people and non-motorized transportation. More recently in southern California, Ciclovias have been termed "Open Streets". Ciclovia/Open Street events are celebrations of liveable streets and communities, encouraging citizens and businesses to get out in the street and enjoy their city through active participation. While Bogotá, Colombia is often credited with starting ciclovias, they have gained considerable popularity in the United States in the past five years.

While all Ciclovia events are alike in their creation of a people-oriented, car-free space, they are otherwise unique. In some cities, the event occurs once or twice a year, while in others it occurs every Saturday or Sunday for an entire season. Some routes are circuitous, while others are linear. Most include parks or other open public spaces. Most events include music, performance, games and other activities, some of which is scripted and some spontaneous. Ciclovias often have a theme of

health, exercise and active transportation and include groups promoting free, healthy activities stationed along the route. Ciclovia routes can incorporate and highlight new bikeways and preferred routes, encouraging their use and maximizing investment.

The Southern California Association of Governments (SCAG) has recently developed an Open Streets program to assist cities in conducting these events. The City should coordinate with SCAG for implementing one of these events.

Education/Enforcement

Educate All Police Department Staff Regarding Bicycle and Pedestrian Issues and Concerns

If the ultimate aim is to promote cycling as a legitimate form of transportation, all officers should receive some form of bicycle training and should be offered LCI training, if possible. Appropriate training regarding pedestrian issues and solutions should be provided as well.

Designate a Law Enforcement Liaison Responsible for Cycling Issues and Concerns

This liaison would be the main contact for Grand Terrace residents concerning bicycle and pedestrian related incidents. This liaison would perform the important function of communication between the law enforcement agency and cyclists and pedestrians. The liaison would be in charge of the supplemental education of fellow officers regarding bicycle and pedestrian rules, etiquette and behavior. The liaison could be the same person as the referee for the Traffic Garden and should be LCI certified, as well as ride a bicycle while on duty, as appropriate. Allocate funding for the training and support of this duty, as well as for necessary bicycle equipment.

Targeted Enforcement

Many law enforcement departments employ targeted enforcement to educate drivers, cyclists and pedestrians about applicable traffic laws and the need to share the road. These efforts are an effective way to expand mobility education. Targeted enforcement should be expanded to warn and educate drivers, cyclists and pedestrians about laws, rules of the road and safe procedures. This could be in the form of a brochure or tip card explaining each user's rights and responsibilities. Targeted enforcement may help mitigate the following traffic safety problems:

- Speeding in school zones
- Illegal passing of school buses
- Parking violations – bus zone, crosswalks, residential driveways, time zones
- Risks to cyclists during drop-off and pick-up times
- Lack of safety patrol/crossing guard operations
- Unsafe cycling and pedestrian practices
- Other school zone traffic law violations

Fun with Enforcement

The Riverside County Sheriff's Department garnered national attention with its "Gingerbread Man" crossing enforcement sting program. Its purpose is to educate drivers about the crosswalk laws and to make them more aware of the dangers of speeding and inattention, especially near schools.

Use the following link to learn more.

https://www.pe.com/2013/09/26/moreno-valley-gingerbread-man-helps-nab-crosswalk-violators/

This approach has been successful in Los Angeles where four officers, one for each Police Department Traffic Division, have been dedicated solely to bicycle safety and outreach.

Implement a Bicycle Diversion Program

A Bicycle Diversion Program allows for adult cyclists who commit traffic violations to receive reduced fines in exchange for taking a bicycle education class. On September 21, 2015, California's Governor Jerry Brown signed Assembly Bill 902 to create such a program. This legislation has been touted as a boost for both equity and encouragement in cycling. It is expected to promote equity because, in reducing fines, it effectively makes cycling more affordable. It is expected to encourage cycling by treating violations as opportunities to educate people and impart confidence and skills. AB 902 went into effect on January 1, 2016, but it will be up to each city and its law enforcement department to adopt diversion programs

Distribute Lights and Helmets to Cyclists

If law enforcement officers observe a cyclist riding at night without the proper reflectors or lights, they may give the cyclist a light along with a note or friendly reminder about the light requirement and its importance. This provides a positive and educational interaction rather than a punitive one. This program could be funded through a safety-oriented grant. Many cities have targeted the end of daylight savings as an ideal time to perform this function.

Helmet giveaway programs are another opportunity for positive education and interaction. Law enforcement departments have conducted public events to hand out helmets, as well as distributing them in the community during the course of patrol when an officer sees a child riding helmetless.

Law Enforcement Referral Process

Design a communication process that encourages students and parents to notify the school and police of the occurrence of a crash or near-miss during school commute trips involving auto, bus, pedestrian or bicycle transportation. Include not only the Police Department, but also the Planning Department and SRTS stakeholders in this reporting system to help better use data generated. Enlist the help of law enforcement with a number of traffic safety duties:

- Enforcement of traffic and parking laws through citations and warnings.
- Targeted enforcement of problem areas – an intensive, focused effort during the first two weeks of school, as well as a strategy for the rest of the year.
- Participation in traffic safety programs: Traffic Garden, SRTS Task Force, etc.

Los Angeles has a successful program called the LA Bike Map that allows cyclists to submit incidents, see them displayed instantly, and study the overall pattern, dynamically, in one place.

Bicycle Safety Class

Helmet Giveaway

Police Bicycle Patrol in Torrence, CA

Monitoring and Evaluation

Create City Staff Bicycle Coordinator Position

The creation of an Active Transportation Coordinator position would demonstrate the City's commitment to cycling, walking and creating more "complete streets." A bicycle coordinator or program manager can help coordinate between City departments to ensure projects planning consistency and cooperation. An Active Transportation Coordinator would manage programs and implement projects listed in the bicycle master plan, and would be responsible for updating the plan in a timely manner. This includes maintaining a prioritized list of improvements, updating cost estimates and identifying appropriate funding sources. This investment in staff is often returned since this position usually is responsible for securing State and federal funding for bicycle projects.

Bicycle Pedestrian Advisory Committee

A Bicycle Pedestrian Advisory Committee (BPAC) assists the City with implementation of plan projects, policies and programs. The BPAC allows City staff, volunteers and advocates to continue efforts to improve cycling throughout the City. This group acts as a community liaison and addresses issues concerning local cycling and walking. The BPAC can review the implementation and regularly evaluate the progress of improvements in the Bicycle and Pedestrian Master Plan. City support is imperative for creating the committee, budgeting time and resources for City staff and elected officials to attend and to support these meetings. Some cities have developed bicycle and pedestrian or active transportation advisory committees.

Conduct Bicycle and Pedestrian Counts and Review Collision Data

Conduct regular cyclist and pedestrian counts throughout the city to determine baseline mode share and subsequent changes. Conducting counts would allow the City to collect information on where the most cycling and walking occur. This assists in prioritizing and justifying projects when funding is solicited and received. Counts can also be used to study cycling and walking trends throughout the City. Analysis that could be conducted includes:

- Changes in volumes before and after projects have been implemented
- Prioritization of local and regional projects
- Research on clean air change with increased bicycle use

Counts should be conducted at the same locations and at the same times every year. Conducting counts during different seasons within the year may be beneficial to understanding the differences in bicycle and pedestrian traffic volumes based on weather. In addition, bicycle and pedestrian counts should be collected as part of any existing traffic counts. Results should be regularly recorded for inclusion in the bicycle and pedestrian report card.

The Grand Terrace Police Department should collect and track collision data. Regular reports of traffic collisions should be presented at the Bicycle Pedestrian Advisory Committee. Traffic collisions involving cyclists and pedestrians should be reviewed and analyzed regularly to develop plans to reduce their frequency and severity. Any such plans should include Police Department involvement and should be monitored to determine their effectiveness. Results of the number of collisions should be recorded in the bicycle and pedestrian report card.

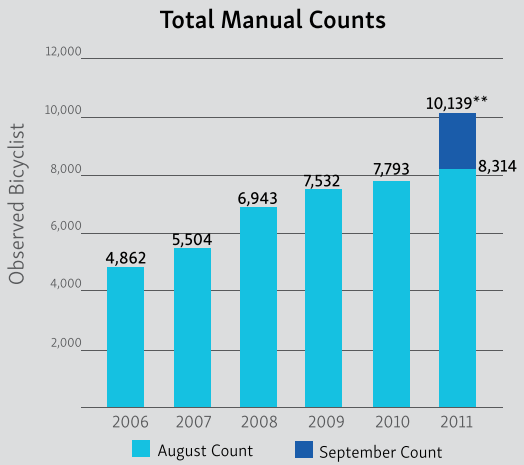
Develop a Bicycle Report Card

The City could develop a bicycle and pedestrian report card, a checklist used to measure the success of plan implementation, as well as effort made, within the City. The report card could be used to identify the magnitude of accomplishments in the previous year and general trends. The report card could include, but not be limited to, keeping track of system completion, travel by bicycle or on foot (counts) and safety.

The City can use the report card to track trends, placing more value on relative than absolute gains (in system completion, mode share and safety). For example, an upward trend in travel by bicycle or on foot would be viewed as a success, regardless of the specific increase in the number of cyclists or walkers. Safety should be considered relative to the increase in cyclists and walkers. Sometimes crash numbers go up simply because cycling and walking increases, at least initially. Instead, measure crashes as a percentage of an estimated overall mode share count.

Key Findings in San Francisco Bicycling for 2011

- Since 2006, counts have increased an impressive 71% and are up 7% since 2014.
- A sample of 10,139 riders (September) were manually counted in the peak 90 minutes; approximately 75,000 bike trips occur each day out of 2.2 million total trips across all modes
- SFMTA survey data in 2011 indicate that 3.5% of all trips in San Francisco are made by bicycle, a 75% increase in share mode since 2000 when bicycling was 2% of daily trips
- Late September has 18% more riders than early August
- 94% of riders use bicycle facilities as designated



Since 2006, counts have increased an impressive 71% and are up 7% since 2014.

The count trend since 2006 during the 5:00 p.m. – 6:30 p.m. peak continues to rise.

*These counts represent a sample, not total, of daily ridership

**Approximately 18% of the 2011 increase (shown in red) is attributed to shifting the count from early August to late September

A major portion of the report card would be an evaluation of system completion. An upward trend would indicate that the City is progressing in its efforts to complete the bicycle and pedestrian network identified in this document. The report card could be developed to utilize information collected as part of annual and on-going evaluations, as discussed in the previous sections. The report card is not intended to be an additional task for City staff, but rather a means of documenting and publicizing the City's efforts related to bicycle and pedestrian planning. If the Parks and Recreation Committee can be appointed, it can be a task of the committee to review the report cards and adjust future plans and goals accordingly.

In addition to quantifying accomplishments related to the bicycle plan, the City should strive to quantify its efforts. These may be quantified as money spent, staff hours devoted or other in-kind contributions. The quantified effort should be submitted as a component of the bicycle and pedestrian report card. Some cities publish their report cards online.

Apply for Bicycle Friendly Community/Neighborhood Designation

Bicycle Friendly Community/Neighborhood Designation is part of an official program offered by the League of American Bicyclists intended to provide communities with guidance on becoming more bicycle friendly and to offer recognition for their achievements. Like the report card described above, applying for Bicycle Friendly Community/Neighborhood Designation provides a standard by which the City of Grand Terrace can measure its progress.

Bicycle Parking

In order for bicyclists to feel comfortable using their bicycles as a mode of transportation to run errands, go to school, work or recreate, there needs to be safe and "end-of-trip" bike parking. When secure and convenient bike parking is not available, it's a deterrent for bicycle use. Bike parking should be installed at points of interest and destinations such as schools, retail centers, trail heads, park and rides and parks. It's also important to provide safe bicycle parking for commuters using other modes of transportation, such as transit. Bike racks can vary between long term and short term storage.

Policy 3.4.6 from the City's General Plan states: The City shall require the provision of bike racks at all new commercial and industrial developments. Below are examples of short term and long term storage options for future installations to meet this policy.

"Inverted-U" and similar type racks are most recommended because each element can support two bicycles. Commonly used "wave" type racks are not recommended because they support the bicycle at only one point. Also, cyclists often park their bikes parallel with such racks, instead of perpendicular as intended, which effectively reduces the rack capacity by half.

Recommended locations: Shopping centers, schools and parks.

Rack area location in relationship to the building it serves is very important. The best location is immediately adjacent to the entrance it serves, but racks should not be placed where they can block the entrance or inhibit pedestrian flow. In some cases, an appropriate location may be within the adjacent right-of-way as a bicycle corral as shown above.

Recommended locations: Shopping centers and business and commercial districts

Bicycle parking facilities intended for long-term parking must protect against theft of the entire bicycle and its components and accessories. Perhaps the easiest retrofit is the bicycle locker. Weather protection is another benefit. Bicycle lockers tend to be used most for long-term bicycle commuter parking in areas without continuous oversight.

Recommended locations: Business parks and transit centers

Signage and Wayfinding

Wayfinding is a fundamental part of a functional and comprehensive active transportation network. Effective wayfinding systems create well-structured pathways that help travelers to:

- Identify their location
- Assure that they are traveling in the desired direction
- Navigate junctions and other decision-making points
- Identify their destination upon arrival

The following guidelines closely follows national best practices and are intended primarily for bicycle wayfinding, the principles discussed can be applied to create a successful wayfinding signage program for both pedestrians and bicyclists.

These guidelines address routes and how wayfinding signage can improve the experience for people already riding and walking, as well as to help encourage people to begin bicycling and walking altogether. Wayfinding signage design is intended to readily orient users to their location within the overall system by employing system-wide key maps on all backbone trail signs. Wayfinding signage would occur along the City's existing and proposed routes.

Destination Driven

Wayfinding guides users through the destinations along a route. Destinations noted on wayfinding signage should be immediately recognizable and meaningful to most users. As user's approach a given sign, it presents a set of destinations accessible from that point. A user may be attempting to reach one of the destinations shown on the signage and should direct the person directly to their destination. However, destinations also serve a broader role by painting a general picture of the route, the areas it serves and the terminus. The sign provides useful orientation information even for people who are not going to the destination. Users can use the signage to approximate their route to their own destination. This is supported by the recommended system-wide key maps on all backbone trail wayfinding signs.

Destination Hierarchy

Destinations should be assigned a hierarchical level based on their regional significance. Major destinations such as cities should be listed in the highest level while local destinations, such as parks and community centers, should be in the lowest levels.

Tier I: Up to five miles

- Cities

Tier II: Up to two miles

- Airports, colleges, neighborhoods/ districts, transit centers, regional landmarks, etc.

Tier III: Up to one mile

- Major bikeways, high schools, regional parks, hospitals, etc.

Tier IV: Up to one-half mile

- Community centers, elementary/middle schools, local parks, public facilities, etc.

Naming Routes

Naming routes simplifies navigation and can provide a sense of place. Routes such as bikeways that follow only one street can be named after the street, but corridors with many turns often require a broader name. One approach is to name routes based on key attributes such as level of difficulty or destination.

Information Hierarchy

Because eyes tend to scan information from top to bottom and left to right, wayfinding signs should be arranged as a hierarchical information flow that takes this into account. Meaning that the most important information should be near the top and left and displayed in the largest size. Information of lesser importance is placed below that and in smaller sizes, located toward the right and bottom portions of the sign.

The Four D's

In the context of a route wayfinding signage system, fundamental information is designation, destination, direction and duration. Each individual sign should first designate itself as a piece of route wayfinding information, typically with a recurring and prominent icon or

text, such as the Grand Terrace city logo or major destinations such as Blue Mountain or the Santa Ana River Trail. This information is displayed prominently at the top of the sign. The sign should indicate the route name, color or logo.

People using a sign first need to identify the destination most relevant to them before they proceed to direction or distance information. Destination information is generally presented along the left side of the sign. Direction and distance information are shown on the same line as the destination. Directional arrows should be prominent.

Sign Types

There are four basic route wayfinding sign types: confirmation, decision, turn and off-route. Each type has a unique purpose, location and message. The first three sign types move users along a designated route network. The fourth sign type, off-route, directs them onto the route network from adjacent streets.

Confirmation:

1. Indicate to trail users which designated trail they are on. This may include the City's existing signage due to limited space
2. Include destinations and distance/time, without arrows
3. May be stand-alone or be combined with decision signs

Decision:

1. Marks junctions of three or more trails
2. Inform trail users of designated route to access desired destinations
3. Display both destinations and arrows
4. Intended to be used in sets or combined with confirmation signs

When combined, confirmation signs should be mounted above decision signs. Decision signs should be mounted in order of distance from destinations listed, with the closest first.

Turn:

1. Indicates where a route turns, either from one street onto another street or through a difficult or confusing area.

   This may include the existing trail markers

Off-route:

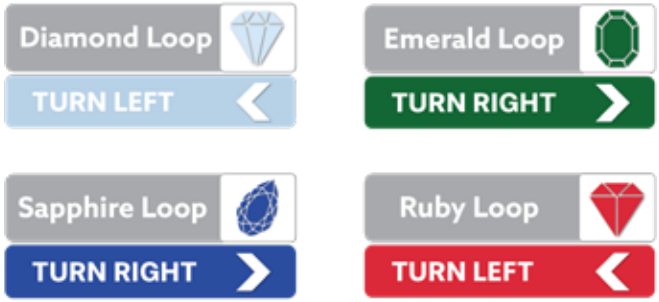
1. Inform users that are currently not on a designated trail that one exists nearby

A large key map that displays all routes in the network can also be implemented. The map can be combined with "You Are Here" labels to help users orient themselves or help them decide on a new destination. These maps can be located at major intersections, where two or more trails meet, or at popular local destinations such as community centers and parks.

Even on a street, wayfinding signs are placed in both directions since pedestrians may be walking the opposite direction than the flow of traffic. Typically, a mile of route will include four to five wayfinding signs in each direction.

Decision Signage Examples

Turn Signage Examples



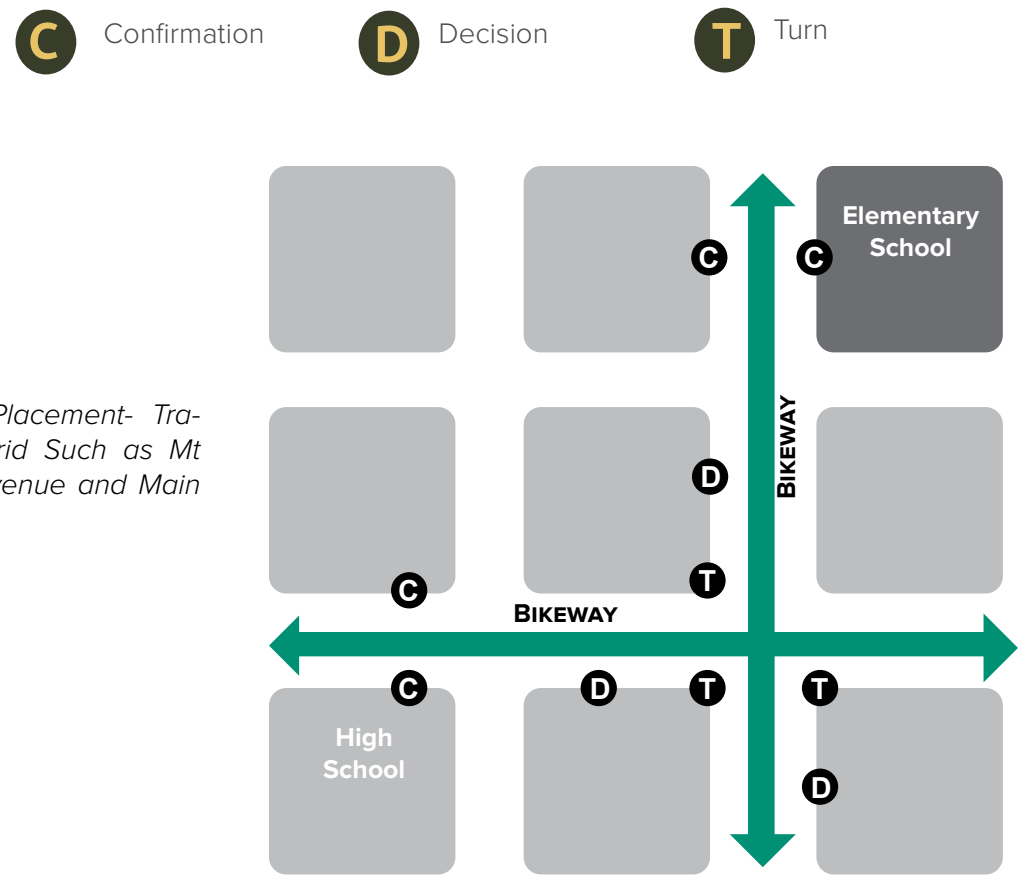
Predictability and Redundancy

Users should become familiar with the signs' position, shape, color and font. Consistently repeating these features helps users anticipate where signs will be placed and the messages the signs will convey. The city logo and colors could consistently be applied across the trail network's signage system.

Sign Mounting and Placement

As a rule, signs should be mounted in consistent, conspicuous locations. Clear sightlines, free of vegetation and other obstructions, need to be maintained between the path of travel and the signs. Along roadways, best practice is to mount wayfinding signs on their own poles. It is recommended that there be a minimum seven-foot clearance between the ground and the bottom of the sign. Signs should not be mounted to traffic signals, lighting, utility or transit stop poles.

Manual on Uniform Traffic Control Devices (MUTCD) Chapter 9B should be consulted for shared-use path signage placement guidance. For consistency, signage on other facilities, such as natural surface trails, should also generally follow these guidelines.



Signage Placement- Traditional Grid Such as Mt Vernon Avenue and Main Street

Designing for Human Scale

Signs need to be designed for immediate legibility from the perspective of a person riding a bicycle or walking. Factors like a bicyclist's intended lane position or height can inform sign design. However, the main design consideration is speed. Based on guidance from Portland, Oregon, people riding bicycles should be able to see an upcoming sign from about 100 feet away. Bicyclists should not have to stop to read a sign, so signs must clearly convey their message, ideally within a seven second envelope. The following principles help to achieve this goal:

Text

- Signs should be visible from roughly 100 feet away, so capital letters should be 2 to 2.5 inches tall.
- Signs should be mixed-case rather than all upper case.
- Minimize the number of lines of text (five maximum recommended).

Contrast and Proximity

- There should be high contrast between text and background colors.
- Related pieces of information should be grouped and assigned similar sizes and shapes.

Consistency and Repetition

- Maintain a consistent color, font and iconographic scheme.
- Strive to position signs at consistent heights and locations on standard mounting devices.

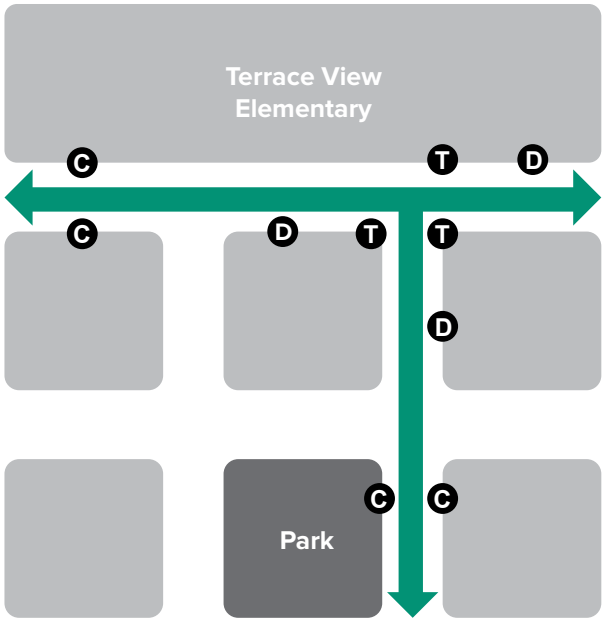
Simplicity and Legibility

- Use the shortest, most concise phrasing whenever possible.
- Consider using icons to supplement text for people not fluent in English.

Distance Measurements

- Confirmation, decision and off-bike route signs should convey distances measured spatially (miles) or temporally (minutes), or both.

Signage Placement- "T" Intersection Such as Vista Grande Way and Grand Terrace Road



Sign Implementation

1. Define the route network to be signed, including trunk and connecting routes, as well as route names (if desired).

2. Establish a master list of destinations and assign each to a hierarchical level, if needed.

3. Establish signage design and placement guidelines.

4. Display destinations and route network together on maps.

5. Divide the routes into segments bookended by major destinations. These destinations will be used as control locations (termini) when creating signs.

6. Identify junctions, turns and other decision points where turn or decision signs will be necessary.

7. Prepare signage plan, including placement and content of individual signs. Ideally, create a GIS database to manage content and location details for each sign, and to support future system management.

8. Prioritize implementation.

9. Implement signs.

Chapter 6

Priority Projects

The three projects in this chapter highlight a cross-section of community connections and improvement opportunities. Each of these projects incorporates information gathered through previous planning efforts, field observations, and community input. Although specific projects have been identified, the priority projects are intended to demonstrate how the complete streets and placemaking elements discussed in previous chapters can be implemented within Grand Terrace. Specific approaches shown in these priority projects are for demonstration purposes and may need to be updated during the actual design process. However, the final design should maintain the goals of the original concept plans.

Since the City of Grand Terrace has limited capital improvement funds, it is important to seek grant funds to facilitate the construction of these projects. Cost estimates are provided for each pilot project to facilitate the grant writing process. For more detail on the corridor designs and cost estimates, please see Appendix D.

Priority Projects

1. Mt. Vernon Avenue Bicycle and Pedestrian Improvements
2. West Barton Road Complete Street
3. Gage Canal Multi-Use Trail

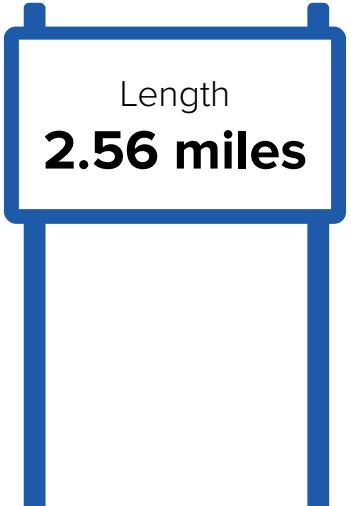
Figure 6-1: Priority Projects

Mt. Vernon Avenue Bicycle and Pedestrian Improvements

Existing Conditions

Mt. Vernon Avenue is a major north-south corridor that is fronted primarily by commercial, office, and low and medium residential land uses. This arterial connects the residential neighborhoods to the north and south with the commercial and office areas along Barton Road in central Grand Terrace.

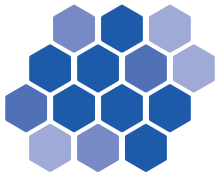
Sidewalks are present on both sides of the street through most of the corridor, with the exception of a small section north of Barton Road that is adjacent to the northbound lanes. Curb ramps have been installed at major crossing and intersections. Existing bicycle infrastructure includes Class II bike lanes that go from Barton Road to Main Street. As in other similar streets, speeding is a major concern. From 2007 to 2016, one pedestrian collision and bicycle collision were recorded at the intersections of Barton Road and De Berry Street respectively.



1
Schools

1
Parks

1
Bus Stops



86-90%
CalEnviroScreen

887
Kids (<14 yrs.)

787
Seniors (>65 yrs.)

2
Ped Collisions

0
Bike Collisions

Existing bike lane and signage

School crossings without enhanced crosswalks

Inadequate bike lanes

Sidewalks in poor condition

Cost Estimate

$1,551,853

Recommendations

The Mt. Vernon Avenue Bicycle and Pedestrian Improvements project consist of a series of improvements, from Main Street to Canal Street, meant to increase safety and enhance pedestrian and bicycle accessibility. Pedestrian improvements include installing curb ramps with truncated domes, completing the sidewalk network, installing enhanced continental crosswalks at all major intersections and crossings, and building curb extensions along some of the residential side streets. Bicycle improvements include upgrading the existing bike lanes that run from Main Street to Barton Road to Class II bike lanes with 3-foot buffers for additional separation from motor vehicles. Additionally, a Class III bike route with sharrows will be installed from Barton Road to Canal Street, with a small Class II buffered bike lane section that runs along the southbound lanes.

The expected benefits will provide better pedestrian and bicycle connections along Mt. Vernon Avenue, while promoting the use of alternate modes of transportation.

Figure 6-2: Mt Vernon Bicycle and Pedestrian Improvements

Figure 6-2: Mt Vernon Bicycle and Pedestrian Improvements (cont.)

Figure 6-2: Mt Vernon Bicycle and Pedestrian Improvements (cont.)

Figure 6-2: Mt Vernon Bicycle and Pedestrian Improvements (cont.)

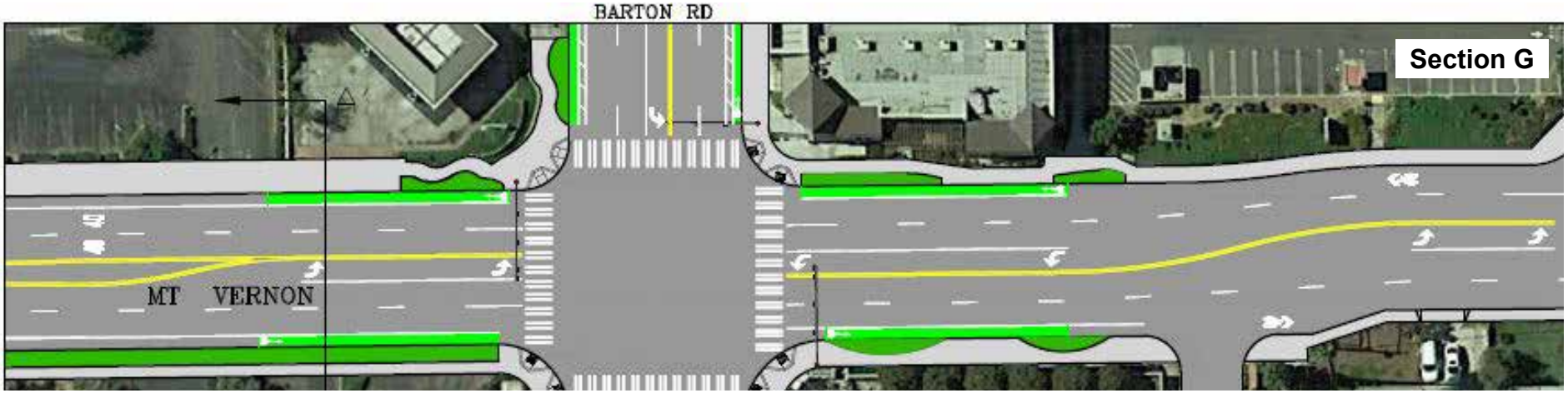


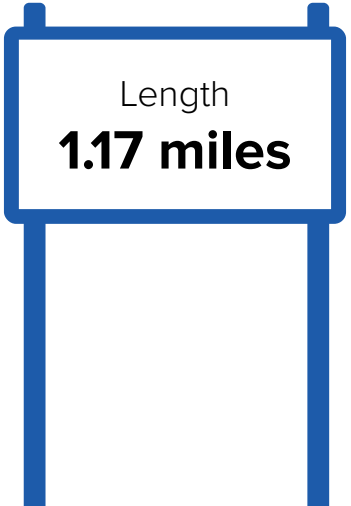
Figure 6-2: Mt Vernon Bicycle and Pedestrian Improvements (cont.)

West Barton Road Complete Street

Existing Conditions

Barton Road is a high-volume east-west arterial that is fronted primarily by commercial, office, and residential land uses. This major thoroughfare, which experiences heavy traffic use, connects the eastern residential neighborhoods to the commercial and industrial areas to the west. In addition to this, Barton Road is also an access point for Interstate 215 that links the City of Grand Terrace with Riverside, San Bernardino, and beyond.

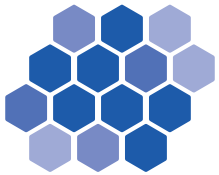
The existing pedestrian and bicycle infrastructure along the Barton Road study area is consistent. Sidewalks are present on both sides of the road for the entire corridor, along with curb ramps at major intersections and crossings. Existing bicycle infrastructure includes a Class II bike lane that runs along the eastbound lanes, which extends from Michigan Avenue to Mount Vernon Avenue. A Class III bike route with signage is located on the outermost westbound lane because of existing on-street parking. Despite this, residents have expressed their concerns about speeding that regularly occurs along this corridor. From 2007 to 2016, two pedestrian collisions were recorded on Barton Road at the intersections of Mt. Vernon Avenue and Michigan Street.



2
Schools

2
Parks

2
Bus Stops



86-90%
CalEnviroScreen

317
Kids (<14 yrs.)

355
Seniors (>65 yrs.)

1
Ped Collisions

0
Bike Collisions

Pedestrian crossing without enhanced crosswalks

Existing bus stop with shelter

Existing enhanced pedestrian crosswalk

Lack of bike lanes on north side of Barton Road

Cost Estimate

$728,968

Recommendations

The West Barton Road Bicycle and Pedestrian Improvement project will implement a series of infrastructure enhancements that will improve safety and connectivity for pedestrian, bicyclists, drivers, and transit users from Commerce Way/Vivienda Avenue to Mt. Vernon Avenue. Pedestrian improvements include replacing curb ramps with ADA compliant curb ramps with truncated domes, installing enhanced continental crosswalks at all crossings, and creating continuous sidewalks. Bicycle improvements include upgrading the existing bike lane and bike route to Class II bike lanes with 3-foot buffers and enhanced green pavement striping at transition areas. Additionally, four bus bay refuges will be built to prevent vehicular stacking in the travel lane, while one curbside bus stop will be installed to improve transit service along the corridor.

The expected benefits will provide better and safer pedestrian and bicycle facilities along west Barton Road. These improvements will better connect the existing neighborhoods and promote the use of alternate modes of transportation.

Figure 6-3: West Barton Road Bicycle and Pedestrian Improvements

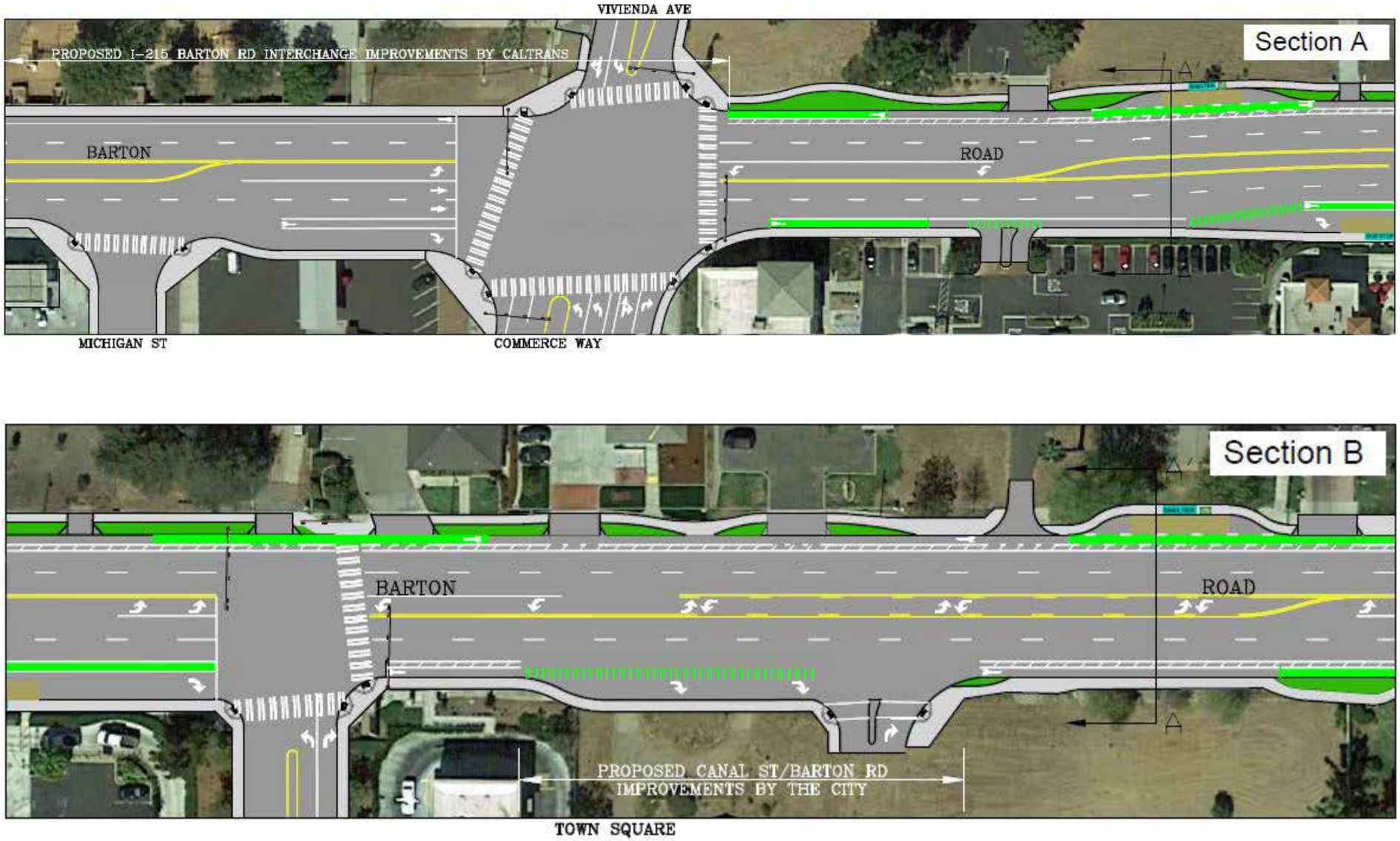


Figure 6-3: West Barton Road Bicycle and Pedestrian Improvements (cont.)

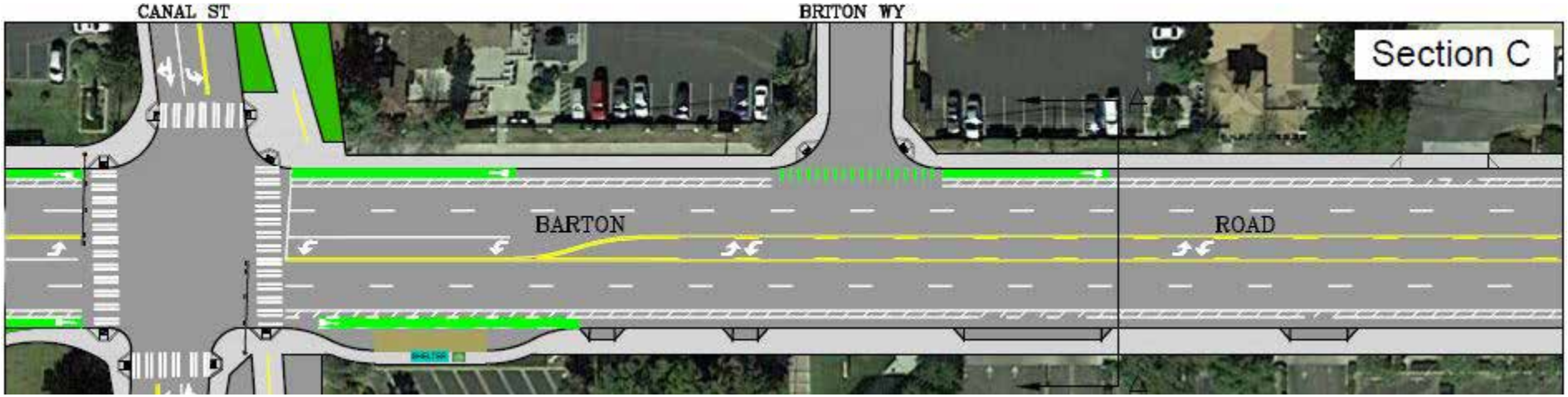
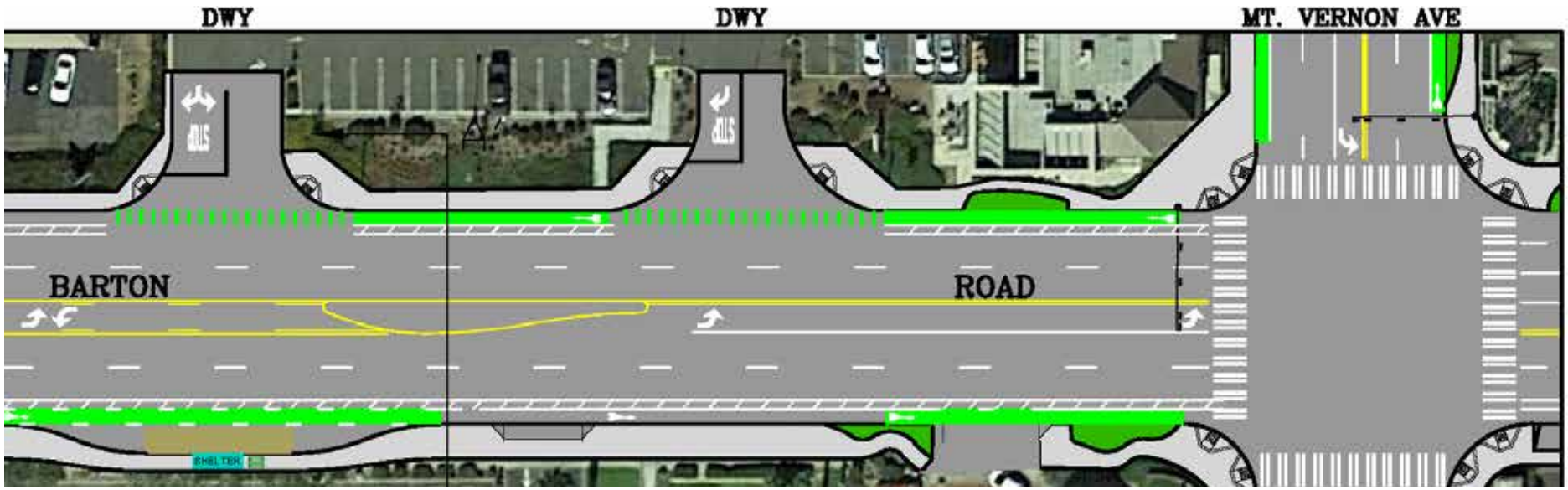


Figure 6-3: West Barton Road Bicycle and Pedestrian Improvements (cont.)



Gage Canal Multi-Use Trail

Existing Conditions

The 22-mile long Gage Canal was originally built between 1885 and 1889 to bring water from the Santa Ana River marshlands to the Riverside community and it remains a key source of water for citrus farmers in the area. Currently, large sections of the canal are now underground, leaving large areas of underutilized and vacant land that represent potential opportunities for open spaces and other recreational areas.

Length
1.74 miles

0
Schools

0
Parks

2
Bus Stops

86-90%
CalEnviroScreen

885
Kids (<14 yrs.)

736
Seniors (>65 yrs.)

4
Ped Collisions

0
Bike Collisions

Existing Gage Canal

Existing Gage Canal entrance at Van Buren Street

Developed section of Gage Canal

Existing entrance sign at the corner of Van Buren Street and Canal Street

Cost Estimate
$2,910,713

Recommendations

The Gage Canal Trail project consists of a 1.7-mile long multi-purpose trail that spans between Main Street and the intersection of Mt. Vernon Avenue and Canal Street. The trail will be situated along the existing Gage Canal that crosses through the heart of Grand Terrace. This multi-use trail will connect the centrally-located commercial areas and schools, to the existing residential neighborhoods found to the north and south of Grand Terrace. The multi-use trail will be paved the entire route and it will be open for non-motorized uses, such as walking, jogging, and biking.

The Gage Canal Trail will have a decompose granite surface in those areas where little to no development has occurred, including the southernmost section that goes from Main Street to Barton Road, as well as the north end of the trail, which goes from Newport Avenue to Mt. Vernon Avenue. Because of the existing residential development between Barton Road and Newport Avenue, landscaping and trees have been added to this section of the Canal. In order to be consistent with the residential character of this area, this part of the trail will be paved with asphalt and the existing vegetation will remain in place.

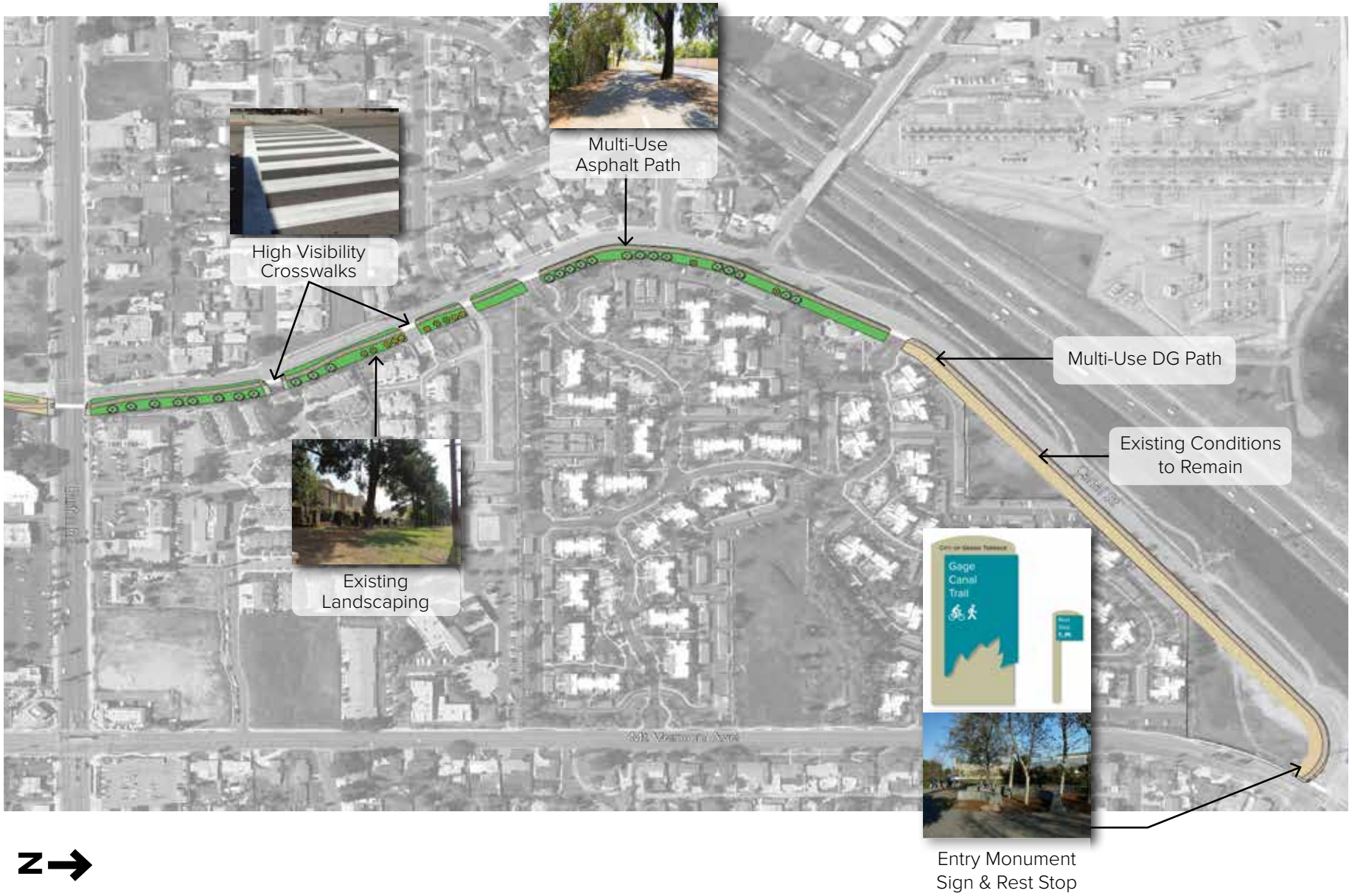
With the intention of enhancing the safety of pedestrians and bicyclists, a total of seven high visibility crosswalks will be installed along the trail, including the crossings at Pico Street, Barton Road, Terrace Pines Drive and Canal Circle, as well as three additional residential driveways. Also, a total of 20 curb ramps will be built at these crossings to ensure adequate ADA access. Additionally, two rectangular rapid flashing beacon (RRFB) signals will be installed at De Berry Street and Van Buren Street, where high vehicular speeds are an existing issue.

Other amenities that will be found along the Gage Canal Trail include outdoor exercise equipment, playgrounds, seating areas, educational signage, wayfinding, and xeriscaping. Thematic gateways and bike rest stops will be installed at the trail's main entrances, including Mt. Vernon Avenue, Barton Road, and Main Street. This trail will provide a recreational opportunity for the residents and it will promote the use of alternate modes of transportation, especially for children to walk and bike to school.

Figure 6-4: Gage Canal Multi-Use Trail Improvements

Figure 6-4: Gage Canal Multi-Use Trail Improvements (Cont.)

Figure 6-4: Gage Canal Multi-Use Trail Improvements (Cont.)



Chapter 7

ADA Infrastructure

Summary of Regional ADA Plans

To help establish the ADA Infrastructure needs of the City of Grand Terrace, the ADA Transition Plans of neighboring jurisdictions were reviewed to get a sense of current ADA issues in the region. Additionally, ADA-specific Capital Improvement Projects and Community Development Block Grant Funded Projects were also reviewed to assess regional progress toward ADA compliance. Recurring themes observed in these plans and projects are listed below:

- Focus on improving curb access ramps, sidewalks, traffic signal timing and removing any barriers that deny or limit access to programs, services or activities
- Develop procedures or policies to maintain accessible features that require general maintenance.
- Appoint an ADA coordinator and develop a system for receiving complaints/grievances from community members

- Perform a self-evaluation of city facilities and public right-of-way and develop a tracking system for improvements
- Prioritize needed improvements for funding by ranking those specifically requested by persons with disabilities as highest priority, then rank citywide sidewalk, curb ramp, and crossing issues by location tiers (varied between transit, public facilities, commercial, residential)

Contents and Summary Matrix

Plans and relevant ADA projects reviewed in support of this analysis are summarized in Table 7-1.

Table 7-1: ADA Project Summary Matrix

COUNTY	CITY NAME	ADA TRANSITION PLAN	OTHER PLANNED ADA IMPROVEMENTS	PEDESTRIAN-RELATED THEMES			ADA TRANSITION PLAN
				CONSTRUCT/REPAIR/ ENHANCE SIDEWALKS	CONSTRUCT/REPAIR CURB RAMPS	INTERSECTION/CROSSING IMPROVEMENTS	
San Bernardino	Big Bear Lake						Updating plan - has not been adopted
San Bernardino	Chino Hills		●	●	●		ADA Infrastructure projects
San Bernardino	Fontana	●					Have ADA Plan - not available online
San Bernardino	Hesperia	Received funding					Received funding to self-evaluate and create a transition plan (SBCOG/SBCTA)
San Bernardino	Montclair	Received funding					Development of ADA Transition Plan in June 2017 City Council minutes
San Bernardino	Rancho Cucamonga	No plan	●				Received funding for ADA Corrective Measures-City Wide (SBCOG/SBCTA)
San Bernardino	Redlands	No plan	●	●	●	●	Downtown Reinvestment Program includes ADA upgrades
San Bernardino	San Bernardino	●					Have ADA Plan from 1992, not available online. Curb ramp policy:
San Bernardino	Twentynine Palms	No plan	●	●		●	Downtown Economic Revitalization Specific Plan includes ADA treatments - No plan, they use the CA ADA Handbook
San Bernardino	Victorville	●		●	●	●	*No specific projects listed in plan but all of these facility types were inventoried using DACTrak software program. Software will be used to manage and schedule barrier removal.
San Bernardino	Yucaipa	●					Have ADA Plan - not available online
San Bernardino	Yucca Valley	●					2009 ADA Transition plan - not available online
Riverside	County of Riverside	●		●	●	●	*No specific projects listed in plan, County assumes $700K per year for ADA compliance. 2013 Plan
Riverside	UCR	●		●	●	●	Focuses more on facilities and generic barriers. Does not explicitly mention pedestrian facilities. 2013 Plan Update
Riverside	Moreno Valley	●					2010 Plan
Riverside	Multiple Cities		●	●	●	●	HUD Community Development Block Grant Funds (CDBG) funding for various street improvements, sidewalk construction, and ADA accessibility. Projects in Beaumont, Banning, Eastvale, Indian Wells, Jurupa Valley (citywide), Lake Elsinore, La Quinta, Murrieta, Norco

ADA Infrastructure Priority Model

Purpose of Model

To establish priority areas for ADA improvements, the Bicycle-Pedestrian Priority Model was modified to better reflect the attractors, generators and barriers relating to those with limited mobility. The model was modified to increase the weighing for public destinations and trip generators where either young families live or where aging populations may be located. The two ends of the human spectrum are where limited mobility, skills and agility are found. The model provides the City with a tool to prioritize specific ADA improvements when funding becomes available.

Components of Model

Specific components included in the model are displayed in Table 7-2 through Table 7-4. In addition to adjustments to the weighting of inputs from the preliminary Bicycle-Pedestrian Priority Model, disability status was also incorporated to better capture high need areas. Several bicycle-related inputs were also removed to help shift the focus to the pedestrian environment. Model results were classified into three tiers based on the range of values. Tier 1 represents areas with a very high priority for ADA improvements; capturing the areas of the City with the highest walking rates. Tier 2 represents areas with a high priority for ADA improvements; capturing residential areas throughout the City. Lastly, Tier 3 represents areas with a moderate priority for ADA improvements; capturing primarily industrial land uses within the City.

Table 7-2: Attractors

ATTRACTORS	WEIGHTING POINTS	SCORING MULTIPLIER	FINAL SCORE*
1/4-Mile Service Area around Attractors			
OmniTrans Bus Stops	4	4	16
Public Services (City Hall, Library, Parks)	4	4	16
Preschool/Elementary Schools	4	4	16
Shopping Centers & Commercial Land Uses	3	3	9
Middle/High School	3	3	9
Blue Mountain Trail Access	2	3	6

*Used additive methodology - locations get points for multiple location types

Table 7-3: Barriers

BARRIERS	WEIGHTING POINTS	SCORING MULTIPLIER	FINAL SCORE
Pavement Condition Index (per the Pavement Management Report, 2016)			
V (Very Poor/Failed)	4	2	8
IV (Poor)	3		6
II/III (Fair/At Risk)	2		4
I (Excellent)	1		2
Pedestrian Level of Comfort Results (PLOC)			
PLOC 4	4	2	8
PLOC 3	3		6
PLOC 2	2		4
PLOC 1	1		2

Table 7-4: Generators

GENERATORS	WEIGHTING POINTS	SCORING MULTIPLIER	FINAL SCORE
Disability Status: % of residents living with one or more disability			
> 10%	3	6	18
5% - 10%	2		12
< 5%	1		6
Non-Vehicular Transportation: % of residents that take public transportation to work			
> 2%	2	2	4
0% - 2%	1		2
Walking Mobility: % of residents that walk to work			
> 3%	2	2	4
0% - 3%	1		2
Vehicle Ownership: % of residents without access to a vehicle			
> 5%	2	2	4
0% - 5%	1		2
Household Income			
$22K - $35K	2	2	4
> $35K	1		2
Age Density: Child resident density (Ages 0-14)			
> 30%	3	6	18
20% - 30%	2		12
< 20%	1		6
Age Density: Senior resident density (Ages 65+)			
> 15%	3	6	18
5% - 15%	2		12
< 5%	1		6
Current Employment: Employed resident density			
> 50%	2	2	4
40% - 50%	1		2
Total Population: Residents per Acre			
3 +	2	2	4
< 3	1		2

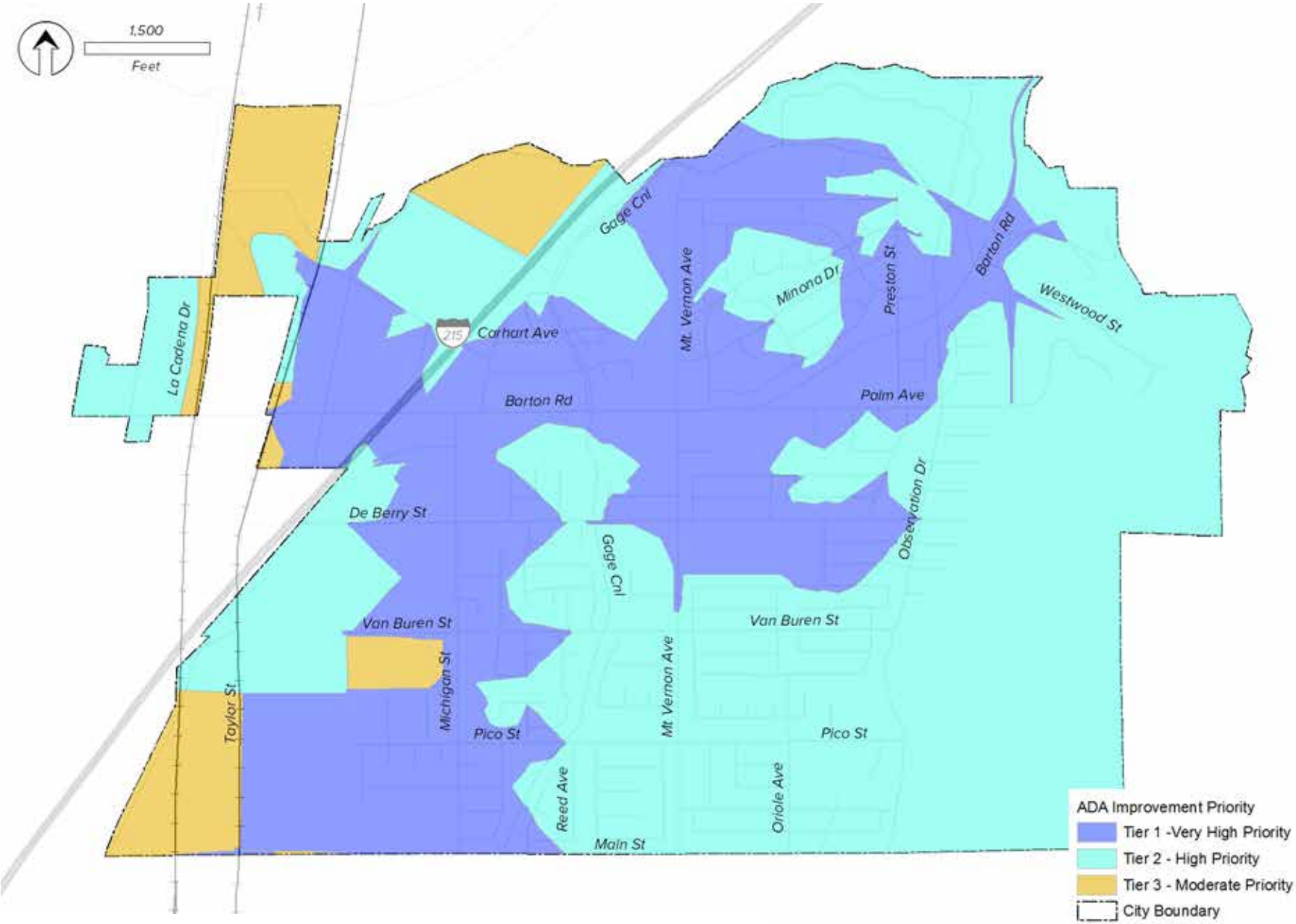


Figure 7-1: ADA Improvement Priorities

Methodology for Assessing and Improving ADA Infrastructure

As addressed in neighboring jurisdiction plans, the most valuable source of ADA infrastructure needs is from individuals with disabilities that live, work, or go to school in the community. Grand Terrace currently obtains public infrastructure requests through the SeeClickFix portal but may want to consider rebranding the tool to specifically solicit ADA issues or develop an independent ADA complaint tracking system.

The city should consider performing a comprehensive self-evaluation of all applicable facilities and catalog observed issues. As part of this project, a preliminary database was developed that consists of missing sidewalks, missing curb ramps, and curb ramps in need of rehabilitation, however issues such as city facility access ramps, ADA-compliant crossing, signal timing, and signal lighting should also be assessed. The latter was not included in the scope of this assessment.

Once a comprehensive database has been developed, the City can used the methods described here to prioritize all infrastructure needs and begin the process of procuring funding for improvements.

GRAND TERRACE
COUNTRY FAIR
MT. VERNON AVE
DE BERRY STREET

Chapter

8

ATP Related Project Funding Sources

Potential Infrastructure Funding Sources

Federal, state and local government agencies invest billions of dollars every year in the nation's transportation system. Only a fraction of that funding is used to develop policies, plans and projects to improve conditions for bicyclists and pedestrians. Even though appropriate funds are available, they are limited and often hard to find. Desirable projects sometimes go unfunded because communities may be unaware of a fund's existence or may apply for the wrong type of grant. In addition, there is competition between municipalities for the limited available funds.

Whenever federal funds are used for bicycle and pedestrian projects, a certain level of state and/or local matching funding is generally required. State funds are often available to local governments on similar terms. Almost every implemented active transportation or complete street program and facility in the United States has had more than one funding source and it often takes a good deal of coordination to pull the various sources together.

According to the publication by the Federal Highway Administration (FHWA), *An Analysis of Current Funding Mechanisms for Bicycle and Pedestrian Programs at the Federal, State and Local Levels*, where successful local bicycle facility programs exist, there is usually an active transportation coordinator with extensive understanding of funding sources. Cities such as Seattle, Portland, and Tucson are prime examples. City staff are often in a position to develop a competitive project and detailed proposal that can be used to improve conditions for cyclists within their jurisdictions. Some of the following information on federal and state funding sources was derived from the previously mentioned FHWA publication.

Table 8-1 identifies potential funding opportunities that may be used from design to maintenance phases of projects. Due to trends in Low Impact Development (LID) and stormwater retention street designs, funding sources for these improvements not only increase the chances for first and last mile improvements, but can also be incorporated into streetscape and development projects. The sources are arranged by federal, state, local, and private, and the uses that the funds may address.

Table 8-1: Funding Sources

FINDING, FRAMING AND FUNDING A PROJECT		FUNDING USES							
		TYPICAL APPROACHES				ATYPICAL APPROACHES			
FUNDING SOURCE	FUNDING ORIGIN	CIP DEVELOPMENT	MAINTENANCE AND OPERATIONS	IMPLEMENTATION	FIRST AND LAST MILE	URBAN FORESTY	BACK TO NATURE	LOW IMPACT DEVELOPMENT	CULTURE AND HISTORY
Federal Funding Sources									
Land and Water Conservation Fund (LCWF)	U.S. National Park Service/California Department of Parks and Recreation	●					●	●	
Urban Community Forestry Program	U.S. National Park Service	●				●			
Surface Transportation Program (STP)	Federal Highway Administration (FHWA)/ Caltrans	●		●	●			●	
Highway Safety Improvement Program (HSIP)		●		●	●			●	
Transportation Alternative Program (TAP)	Federal Highway Administration (FHWA)	●		●	●			●	
Recreational Trails Program	Federal Highway Administration (FHWA)/ Regional agency may also contribute	●		●	●		●	●	
EPA Brownfields Clean Up and Assessments	U.S. Environmental Protection Agency	●		●	●			●	
Sustainable Communities Planning Grant and Incentive Program	U.S. Dept. of Housing and Urban Development (HUD)				●				
Urban Revitalization and Livable Communities Act				●	●				
Community Development Block Grants		●			●		●		●
ACHIEVE, Communities Putting Prevention to Work, Pioneering Communities	Center for Disease Control and Prevention				●		●		
Urban and Community Forest Program	Department of Agriculture, Forest Service	●		●		●	●	●	

Table 8-1: Funding Sources (Cont.)

FINDING, FRAMING AND FUNDING A PROJECT		FUNDING USES							
		TYPICAL APPROACHES				ATYPICAL APPROACHES			
FUNDING SOURCE	FUNDING ORIGIN	CIP DEVELOPMENT	MAINTENANCE AND OPERATIONS	IMPLEMENTATION	FIRST AND LAST MILE	URBAN FORESTY	BACK TO NATURE	LOW IMPACT DEVELOPMENT	CULTURE AND HISTORY
Community Forest and Open Space Conservation	Department of Agriculture, Forest Service	●		●		●	●	●	
Choice Neighborhoods Implementation Grants	Department of Housing and Urban Development, Office of Public and Indian Housing	●		●	●		●	●	
Safe Routes to School, Mini-grants	National Center for Safe Routes to School and Caltrans	●		●	●				
Metropolitan and Statewide and Nonmetropolitan Transportation Planning	Federal Transit Administration (FTA)	●		●	●			●	
Urbanized Area Formula Grants		●	●		●			●	
Bus and Bus Facilities Formula Grants		●			●				
Enhanced Mobility of Seniors and Individuals with Disabilities		●	●		●				
Formula Grants for Rural Areas		●	●		●				
TOD Planning Pilot Grants		●	●		●			●	
State Funding Sources									
Land and Water Conservation Fund (LCWF)	California Department of Parks and Recreation (DPR)	●			●		●	●	
Statewide Park Program Prop 84 Round 2		●		●	●				
Recreational Trails Program	California Department of Parks and Recreation (DPR)	●	●	●	●		●	●	

Table 8-1: Funding Sources (Cont.)

FINDING, FRAMING AND FUNDING A PROJECT		FUNDING USES							
		TYPICAL APPROACHES				ATYPICAL APPROACHES			
FUNDING SOURCE	FUNDING ORIGIN	CIP DEVELOPMENT	MAINTENANCE AND OPERATIONS	IMPLEMENTATION	FIRST AND LAST MILE	URBAN FORESTY	BACK TO NATURE	LOW IMPACT DEVELOPMENT	CULTURE AND HISTORY
Proposition 117 - Habitat Conservation	California Department of Parks and Recreation (DPR)	●		●		●	●	●	
Nature Education Facilities		●	●				●		●
Watershed Program		●		●			●	●	
Stormwater Flood Management Prop. 1E		●		●	●	●	●	●	
Roberti-Z'Berg-Harris (RZH) Grant Program - Prop 40		●	●		●	●	●	●	
Aquatic Center Grants	Department of Boating and Waterways	●							
Community Based Transportation Planning, Environmental Justice and Transit Planning	California Department of Transportation (Caltrans)	●			●			●	
Active Transportation Planning Grants (ATP)		●		●	●			●	
Regional Improvement Program		●			●			●	
Safe Routes to School Programs(SR2S)		●			●			●	
Traffic Safety Grants	California Office of Traffic Safety	●		●	●				
Local Partnership Program - Competitive and Formulaic	California Transportation Commission (SB 1 funds)		●	●				●	
Coastal Conservancy Grants	California Coastal Conservancy	●			●	●	●	●	●

Table 8-1: Funding Sources (Cont.)

FINDING, FRAMING AND FUNDING A PROJECT		FUNDING USES							
		TYPICAL APPROACHES				ATYPICAL APPROACHES			
FUNDING SOURCE	FUNDING ORIGIN	CIP DEVELOPMENT	MAINTENANCE AND OPERATIONS	IMPLEMENTATION	FIRST AND LAST MILE	URBAN FORESTY	BACK TO NATURE	LOW IMPACT DEVELOPMENT	CULTURE AND HISTORY
Non-point Source Pollution, Watershed Plans, Water Conservation (Props 13, 40, 50 and 84)	State Water Resources Control Board	●	●			●		●	
Sustainable Communities Planning, Regional SB 375	Strategic Growth Council/Dept of Conservation	●			●	●	●	●	●
Environmental Enhancement and Mitigation (EEMP)	California Natural Resources Agency and Caltrans	●					●	●	
California River Parkways and Urban Streams Restoration Grant	California Natural Resources Agency/ Department of Water Resources	●	●		●		●	●	
Strategic Growth Council Urban Greening Program	California Natural Resources Agency	●		●		●	●	●	
California Cap and Trade Program	Cal EPA, Air Resources Board	●		●	●	●	●		
Urban Forestry Program (Leafing Out, Leading Edge and Green Trees Grants)	California Department of Forestry and Fire Protection (CAL FIRE)	●		●		●			
Local Funding Sources									
Special Habitat Conservation Programs	Regional MPOs/Local Cities			●		●	●	●	
Special Parks and Recreation Bond Revenues		●	●	●	●	●	●	●	●
Special Transportation Bonds and Sales Ta• Initiatives		●	●	●	●	●	●	●	●
Advertising Sales/Naming Rights	Local Jurisdictions	●	●		●	●			●
Community Facilities District (CFD)		●	●	●	●	●	●	●	●

Table 8-1: Funding Sources (Cont.)

FINDING, FRAMING AND FUNDING A PROJECT		FUNDING USES							
		TYPICAL APPROACHES				ATYPICAL APPROACHES			
FUNDING SOURCE	FUNDING ORIGIN	CIP DEVELOPMENT	MAINTENANCE AND OPERATIONS	IMPLEMENTATION	FIRST AND LAST MILE	URBAN FORESTY	BACK TO NATURE	LOW IMPACT DEVELOPMENT	CULTURE AND HISTORY
Infrastructure Financing District (IFD)	Local Jurisdictions			●					
Facilities Benefit Assessment District (BFA)				●					
Easement Agreements/Revenues		●	●	●		●			
Equipment Rental Fees		●	●		●		●		●
Facility Use Permits Fees		●	●		●		●		●
Fees and Charges/Recreation Service Fees		●	●		●		●		●
Food and Beverages		●	●		●		●		●
General Fund		●	●	●	●	●	●	●	●
General Obligation Bonds		●	●	●	●	●	●	●	●
Intergovernmental Agreements		●	●	●	●	●	●	●	●
Lease Revenues		●	●		●	●	●	●	●
Mello Roos Districts		●	●	●	●	●	●	●	●
Residential Park Improvement Fees		●		●	●	●	●	●	●

Table 8-1: Funding Sources (Cont.)

FINDING, FRAMING AND FUNDING A PROJECT		FUNDING USES							
		TYPICAL APPROACHES				ATYPICAL APPROACHES			
FUNDING SOURCE	FUNDING ORIGIN	CIP DEVELOPMENT	MAINTENANCE AND OPERATIONS	IMPLEMENTATION	FIRST AND LAST MILE	URBAN FORESTY	BACK TO NATURE	LOW IMPACT DEVELOPMENT	CULTURE AND HISTORY
Park Impact Fees	Local Jurisdictions	●		●	●	●	●	●	●
Traffic Impact Fees		●	●	●	●	●	●	●	●
In-Lieu Fees		●		●	●	●	●	●	●
Pouring Rights Agreements		●			●	●	●	●	●
Private Development Agreements		●	●	●	●	●	●	●	●
Surplus Real Estate Sale Revenues		●			●	●	●	●	●
Revenue Bond Revenues		●	●		●	●	●	●	●
Sales Tax Revenues		●	●	●	●	●	●	●	●
Transient Occupancy Ta• Revenues		●	●	●	●	●	●	●	●
Wastewater Fund Reserves			●		●	●		●	
Utility Taxes		●	●		●	●	●	●	●
Sustainability Planning Grant	SCAG	●	●	●	●	●	●	●	
SCAG Active Transportation		●	●	●	●	●	●	●	

Table 8-1: Funding Sources (Cont.)

FINDING, FRAMING AND FUNDING A PROJECT		FUNDING USES							
		TYPICAL APPROACHES				ATYPICAL APPROACHES			
FUNDING SOURCE	FUNDING ORIGIN	CIP DEVELOPMENT	MAINTENANCE AND OPERATIONS	IMPLEMENTATION	FIRST AND LAST MILE	URBAN FORESTY	BACK TO NATURE	LOW IMPACT DEVELOPMENT	CULTURE AND HISTORY
Business Improvement Districts (BID)	Non-profits, Business Organizations or City			●	●	●		●	●
Maintenance Assessment Districts (MAD)			●	●					
Property Based Improvement Districts (PBID) Landscape Maintenance District (LMD)				●					
Various Sports Field Grants	Various Agencies, Foundations and Corporations	●	●	●	●				
Community Health Initiatives	Kaiser Permanente	●		●	●			●	
America's Historical Planning Grants	National Endowment for the Humanities	●		●					●
Corporate Sponsorships	Private Corporations	●	●	●	●	●	●	●	●
Private Sector Partnerships		●	●	●	●	●	●	●	●
Non-Profit Partnerships	Non-Profit Corporations	●	●	●	●	●	●	●	●
Foundation Grants	Private Foundations	●	●	●	●	●	●	●	●
Private Donations	Private Individuals	●	●	●	●	●	●	●	●
Irrevocable Remainder Trusts		●	●	●				●	●
Targeted Fund-raising Activities	Local Jurisdictions	●	●	●	●	●	●	●	●

Bicycle and Pedestrian Facility Maintenance

Implementation Guide

The Grand Terrace Active Transportation Plan presents strategies and recommendations advocated for by the community. The ability to implement the proposed projects was a widespread and persistent concern among the community. This section identifies a range of options to facilitate the implementation of the Grand Terrace Urban Trails Plan and its recommended projects. Table 8-2 identify steps the City can take to implement projects.

Funding Street Maintenance and Improvement Projects

Project Funding

Like most cities faced with budget challenges, the City of Grand Terrace has had to find creative ways to fund improvement projects. The Mt Vernon Road Safety Improvements is one such example. This project uses funds from the State's Highway Safety Improvement Program (HSIP) to install radar feedback signs, crosswalk pavement markings and striping, new street lights and flashing STOP signs and beacons.

New funding sources can also combine locally-derived assessments with corporate and philanthropic donations to increase community benefits and reduce the burden of annual assessments to residents and property owners. Establishing partnerships between sectors (government, business, non-profit) and community organizations could enhance the opportunities for identify various ways to fund projects.

Maintenance Funding

Although capital funding may be present, the on-going maintenance of new features presents a challenge for cities.

The maintenance of the public right-of-way outside of the travel lanes is typically the responsibility of the adjacent landowner. In some cases, the developer has provided the capital investment as part of a Development Agreement. Older, built out areas have few choices for additional revenue sources and are limited to private or philanthropic investments or self-assessment. In cases where an assessment district is established, property owners are assessed annually through property tax payments for specified improvements. While property owners may be concerned about additional assessments for maintenance, a nexus can be established to effectively demonstrate direct benefits to those assessed and indirect benefits to the broader community.

Improving an urban community requires plant material that needs watering, pruning, and other forms of maintenance. Sidewalk repairs, and crosswalk and bike lane re-striping also place a burden on maintenance costs. Similarly, most storm water facilities require some level of maintenance. With recent droughts, voluntary and mandatory water use reductions also place a stress on the City's existing landscaped features.

Maintenance Steps

Step 1: Form an Approach Involving Partnerships for Maintenance

There are several different ways in which the City of Grand Terrace could develop partnerships to facilitate the implementation of this plan and other active transportation projects. The options below could be considered as part of the implementation package. However, with changing decisions, priorities and opportunities that may vary over time, partnership approaches should be strategically reviewed. For example, local landscape companies may provide reduced fees if contracted to have a certain amount of work per year or geographic area.

Partnership Type 1: Partnerships with State and Regional Agencies

The City and the community should continue to pursue state level grant programs such as Caltrans' Active Transportation Planning (ATP) and Sustainable Transportation Planning grants, the Strategic Growth Council's Sustainable Community Planning Grants,

Urban Greening Grants and the California Air Resources Board Cap and Trade program. Projects that are not awarded funding through the Caltrans ATP cycles are sent to the local MPOs for consideration for funding through their programs. Other regional programs, such as Smart Growth Incentive Program planning and construction grants, should also be considered. While these programs support the implementation of capital projects, they do not cover maintenance costs; maintenance costs must be assumed by local organizations.

Partnership Type 2: Volunteer Organizations and Community/ Neighborhood Associations

Through coordination between one or more community service organizations, the City may procure a great deal of local volunteer support. The same is possible with local neighborhood groups or private individuals interested in helping their community. Tree plantings, parkway improvements and horticultural maintenance does not require high levels of training, and with brief instruction, volunteers can be quickly trained for special work parties and community efforts.

Step 2: Coordinate Community Improvements with Other Construction Efforts

Opportunity 1: City of Grand Terrace Capital Improvement Program (CIP)

Nearly all of the recommended projects in this Active Transportation Plan, as well as many of the other intended street improvements, can be implemented as part of larger street improvement plans. Any proposed CIP related to roadway alignment, lane configurations or upgrades of damaged or missing walkways may potentially be combined with the recommendations of this plan. The Capital Improvement Program within the Public Works Division could incorporate the Plan's recommendations into future CIP projects. The Capital Improvement Program is an ongoing process which attempts to match available funds with community plans and needs to maintain and improve facilities and infrastructure in Grand Terrace.

The CIP conducts an inventory of the City's existing infrastructure and facilities and then develops a prioritized project list, consistent with community goals. The program is designed to optimize the use of taxpayer dollars and to make sound budgetary decisions.

Opportunity 2: Utility Undergrounding Program

Utility undergrounding is a huge effort, not just in Grand Terrace, but throughout the nation. In most cities, there is an opportunity to leverage this effort for coordinated street improvements. The City could negotiate and partner with Riverside Public Utilities to improve Grand Terrace's streets and recommended utility easements for trail access.

Opportunity 3: Water Quality Management

Any project requiring Low Impact Development or any other stormwater permit is required to install, register and maintain these facilities in perpetuity. The new permit structure also allows for off-site mitigation banking of stormwater runoff improvements. The Gage Canal, water courses and lack of stormwater conveyance systems makes it valuable for Grand Terrace to bank these opportunities.

Step 3: Assist in the Formation of Special Funding Districts

The City of Grand Terrace may consider forming special funding districts to help finance the implementation of this plan. Examples of special funding districts include Infrastructure Financing Districts, Maintenance/ Landscape Assessment Districts and Business Improvement Districts, all of which are discussed briefly below.

Enhanced Infrastructure Financing Districts (EIFDs)

Infrastructure financing districts are funded through tax-increment financing. However, there have been numerous barriers to the advancement of these EIFDs, namely a requirement of a vote of approval by 55% of those in the District to issue bonds. The EIFDs would be able to fund a variety of improvements that could include street improvement and urban forestry. In 2014, SB 628 was signed to authorize the creation of these districts and outlines how they can be created and for what purpose. In 2015, AB 313 updated the law.

Maintenance Assessment Districts (MADs) and Landscape Maintenance Districts (LMDs)

A Maintenance Assessment District is a legal mechanism that property owners can vote on to assess themselves to receive services above and beyond what the City of Grand Terrace normally provides. The purpose of a MAD is to finance special benefit services, including installation or maintenance of open space, street medians, rights-of-way, mini-parks, street lighting, security, flood control and/or drainage. These special benefit services are provided at a level over and above the standard City general benefit level. MADs are also known as Landscape Maintenance Districts (LMDs) or Lighting and Landscape Maintenance Districts (LLMDS).

Business Improvement Districts (BIDs)

A business improvement district would be a geographically defined area within the City of Grand Terrace, in which services, activities and programs are paid for through a special assessment charged to all members within the district. This assessment provides the agreed-upon services, activities and programs through an equal distribution of benefits received and the costs incurred. The assessment money is collected by the City through a special contractual arrangement with members of the district. Because the assessment funds collected in a given district cannot legally be spent outside of that BID, the City creates a trust fund for each BID, with funds periodically released to support operations.

Step 4: Encourage Private Development to Include Plan Recommendations

The City of Grand Terrace has several different streams of development-related resources that could be leveraged to facilitate the implementation of this plan. Among these resources are Development Projects themselves, as well as related Impact Fees and In-Lieu Fees, all of which are discussed briefly below.

Development Projects

When a future development plan is prepared, the recommendations of the urban trails plan could be incorporated. This integration will allow staff and community members to review a project for conformance with the adopted plan's goals and policies. Developers could integrate relevant recommendations into their proposals to provide community benefit. Future changes to applicable ordinances should consider incorporating the plan recommendations and guidelines where appropriate.

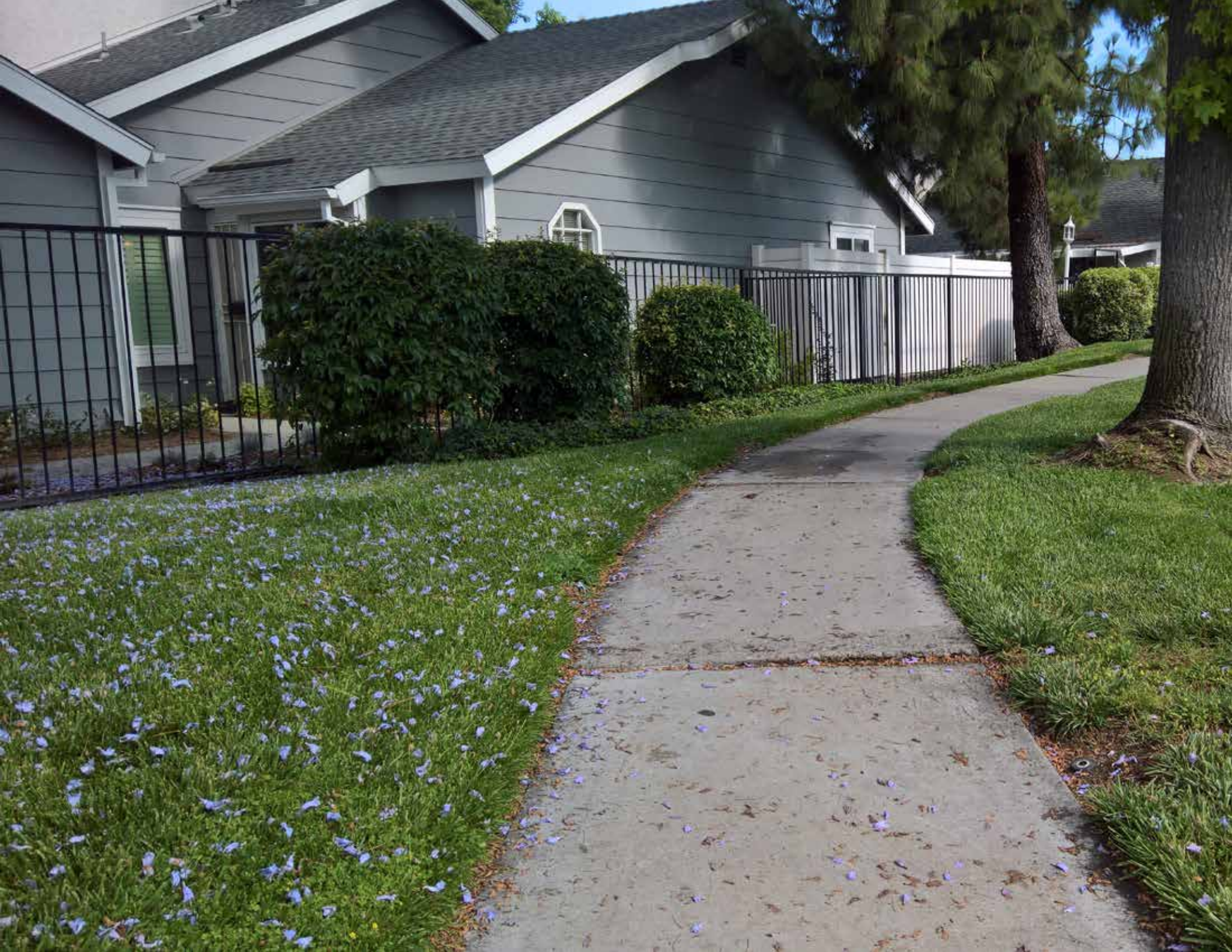
Impact Fees

Impact fees are a commonly-used and well-accepted means of mitigating the impacts created by future growth. Public agencies regularly levy impact fees on new development to fund a variety of public facilities, including roads, sewer and water facilities, libraries, parks and schools. For example, if a new retail development is being constructed, the developer must pay for the sidewalk or street improvements around their development to mitigate transportation or environmental impacts. The developers are conditioned to make these improvements prior to final approval. The City of Grand Terrace can leverage these fees to provide improvements to the sidewalk and bicycle network.

In-Lieu Fees

In-lieu fees allow developers to pay fees into a municipal parking or traffic mitigation fund in-lieu of providing the required parking on site. Common in-lieu fees, such as transportation and environmental fees, allow development projects to pay into a fund to offset environmental or parking requirements. Parking in-lieu fee programs give proposed projects or uses the option to pay a designated fee rather than provide some or all on-site parking spaces required by the zoning code.

In areas of more intense activity or where the community wants to promote density, requiring each use to provide separate parking facilities can degrade the pedestrian environment, limit density, and encourage drivers to drive from one site to the next rather than parking once and walking between destinations. At some point, the City might modify this in-lieu fee to provide centralized public parking. In some cases, the community may wish to establish the fund in such a way that it can also be used for transit, bicycle and pedestrian improvements to reduce parking demand. Fees can also improve the overall efficiency of parking provision by addressing the needs of the area as a whole rather than the needs of each individual site.

Table 8-2: Implementation Strategies

No.	Actions	Lead	Notes
1	Identify items on the city's CIP list that can incorporate recommended improvements and projects outlined in this Plan	City of Grand Terrace	Major projects are defined as a street reconfiguration of lanes, geometry, curbs, drainage systems or other major utility improvements requiring a substantial percentage of the pavement to be removed and/or replaced.
2	Integrate the recommendations and projects from this plan into all applicable grant applications	City of Grand Terrace	In some cases, grants could be pursued specifically for only projects identified in this plan, while in others, parts of this plan can be used to strengthen benefits for other projects.
3	Analyze if an environmental review is needed for each project to determine level of impact	City of Grand Terrace	Projects classified as maintenance or replacement can be considered categorical exemptions under CEQA. Major projects affecting traffic, natural areas or ROW acquisitions may require full environmental review. Projects in this plan are primarily retrofits to existing infrastructure and/or re-striping.
4	Develop design and engineering documents and obtain appropriate permits for each project	City of Grand Terrace and/or consultants	At this stage, wayfinding and signage can be incorporated into the designs to assure the fixtures needed are integrated into the project.
5	Identify sources of funding for ongoing maintenance of street enhancements	City of Grand Terrace	Ongoing maintenance responsibilities will likely need to be identified prior to implementation.
6	Identify alternate sources of funding, including assessment programs	City of Grand Terrace, community stakeholders	Consider additional assessment districts, including MADs, lighting districts, BIDs or other funding sources applied to those who will benefit from the improvements.
7	Develop a volunteer program focused on implementation and sustainment of this plan	City of Grand Terrace, community organizations	Utilize neighborhood residents, community leaders, and volunteers from schools, churches, community organizations and businesses.
8	Identify alternative funding sources and fund-raising opportunities	City of Grand Terrace, local planners and community activists	Examples include philanthropic offers, donations, endowment funds, corporate sponsorships, capital fundraising efforts, grants, and government sources. Highlight the economic, environmental, health, engagement, safety and connectivity improvements that these projects will bring.
9	Identify opportunities to incorporate Plan recommendations and projects into proposed redevelopment projects	City of Grand Terrace, and community advocates	For major projects, the improvements should go beyond the immediate project parcel boundaries.
10	Integrate this Plan with all applicable Development Service processes and projects	City of Grand Terrace	Consider requiring projects to implement portions of this plan where relevant.