

## Vision & Goals

### RIVERSIDE AT PLAN VISION

**STATEMENT:** RIVERSIDE WILL BE A MODEL COMMUNITY FOR MULTI-MODAL TRAVEL THAT PROVIDES SAFE AND COMFORTABLE CONNECTIONS TO COMMUNITY DESTINATIONS WHILE PROMOTING HEALTHY ACTIVE MOBILITY OPTIONS FOR ALL AGES AND ABILITIES.

The goals for the AT Plan were identified based on community input, the existing conditions analysis, and discussions with stakeholders and City staff. The goals are intertwined within each section of the AT Plan and drive all the recommendations.

- **Healthy** - Promote citywide and regional transportation goals through investments in active transportation that create a culture of walking and biking.
- **Economic Prosperity** - Create an interconnected recreation and transportation network linking on-street facilities with existing trails, employment and commercial centers.
- **Safety**- Improve safety, reduce collisions, and create comfortable corridors for walking and biking in Riverside.
- **Accessible** - Enhance access to community destinations (parks, schools, work, libraries, shopping areas and community centers) and transit (Metrolink stations).
- **Environmental Stewardship** - Reduce Vehicle Miles Traveled (VMT) by developing an active transportation network that is a viable alternative to vehicle travel.
- **Socially Responsible** - Promote equitable and socially responsible investment across Riverside that bolsters community resilience.



*Sustainable Riverside: triple bottom line approach to sustainability.*

## Context and History

The Riverside Active Transportation Plan builds upon the foundation of the City’s 2007 Bicycle Master Plan and 2012 Bicycle Master Plan Update: Addendum. In the past 10 years, new innovations in bicycle infrastructure design have been approved by the California Department of Transportation (Caltrans) and implemented throughout California. The Federal Highway Administration (FHWA) has developed new pedestrian measures tied to improving the safety of people walking and biking. Across the country, different campaigns and movements, such as Vision Zero, Complete Streets, and Safe Routes to School (SRTS) have gained momentum, focusing on implementing more safety improvements for all ages and abilities to bike and walk.

As part of the PACT planning process, a review of the policies, data, and recommendations for each of the following plans was performed to ensure foundational cohesiveness.

- City of Riverside General Plan (2007)
- City of Riverside Bicycle Master Plan (2007)
- University Neighborhood Plan (June 2008)
- Eastside Neighborhood Plan (June 2009)
- City of Riverside Bicycle Master Plan Update: Addendum (2012)



*City of Riverside Bicycle Master Plan (2007) and cover of City of Riverside Bicycle Master Plan Update (2012)*

- City of Riverside Restorative Growthprint - Climate Action Plan (RRG-CAP) (2014)
- Biking in Fresh Air: Consideration of Exposure to Traffic-Related Air Pollution in Bicycle Route Planning (2017)
- Riverside Transit Agency First and Last Mile Mobility Plan (2017)
- City of Riverside, California Downtown Specific Plan (Amended 2017)
- Western Riverside Council of Governments Active Transportation Plan (2018)
- Riverside County Comprehensive Trails Plan (2018)
- Marketplace District Plan (March 2019)
- City of Riverside traffic code, regulations, and policies (Version: Aug 1, 2019)
- Safe Routes to School Program

*See Appendix C: Plan Policy Review for additional information.*

## What Was Heard

Community and stakeholder participation played a central role in shaping this plan. Participation included three technical advisory committee (TAC) meetings, over 30 community-wide public events, an interactive web map, and a community survey.

See Community Engagement Section of the PACT for additional information. During this planning process, community members expressed support for the following efforts illustrated in Table 4-2.



Photo Caption: Community Walk Audit in Canyon Crest neighborhood.

**TABLE 4-2 PUBLIC INPUT GUIDING NETWORK RECOMMENDATIONS**

WHAT WAS HEARD	WHAT'S PROPOSED
Imbalance of infrastructure conditions between Riverside wards.	<b>Make it Equitable</b> Provide improved access, facilities, and amenities to under invested areas of the City.
Upgrade sidewalks, crossing facilities, and bikeways to improve the walking and biking experience in Riverside.	<b>Make it Connected</b> Develop a comprehensive network of on-street and off-street facilities and shared use paths throughout Riverside, including through open spaces/parks, will connect to destinations and existing trails.
Address conflict areas between vehicles and bicyclists/ pedestrians.	<b>Make it Safer</b> Improve safety by reducing bicycle and pedestrian collisions through safe and comfortable facilities.
Concerns that commuting routes often require utilizing high volume, high speed arterial roadways.	<b>Make it Sustainable</b> Increase and improve facilities to job centers, education, retail, parks and libraries, schools, recreational centers, transit, and other neighborhood destinations.

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## Section 4.3: Goals, Objectives, and Actions



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## Goals, Objectives, and Actions

The AT Plan’s goals reflect the priorities expressed by the community throughout the public outreach phase. Discussions with City departments, best practices across the nation, and input from community stakeholders have shaped the proposed strategies and policies intended to help the City achieve these goals.



*Photo Caption: Cyclist waiting to cross Arlington Ave.*

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## Goal 1: Economic Prosperity

**CREATE AN INTERCONNECTED RECREATION AND TRANSPORTATION NETWORK LINKING ON-STREET FACILITIES WITH EXISTING TRAILS, EMPLOYMENT AND COMMERCIAL CENTERS.**

**Objective 1: Design a connected and comfortable bicycle network that serves people of all ages and abilities.**

Action 1.1: Require review of the AT Plan as well as guidance from the National Association of City Transportation Officials (NACTO), Riverside Complete Streets Ordinance, and the most recent state and federal design guidelines when building on-street and off-street bicycle facilities.

Action 1.2: Build a connected network of bikeways for all ages and abilities, with a foundation of Class I to Class IV bicycle facilities.

Action 1.3: Continue to install bicycle detection markings, bicycle loop detection devices, or bicycle video detection devices at all intersections.

**Objective 2: Continually evaluate opportunities to reconfigure roadways with excess vehicular capacity to accommodate bicycle facilities.**

Action 2.1: Narrow lanes to meet the City's Complete Streets Ordinance of 11-foot and 10-foot lanes, in order to create or expand bicycle facilities.

Action 2.2: Configure roadways where bicycling and pedestrian barriers are removed, such as highways, with over-crossings to reduce out-of-way travel.



*Photo Caption: Residents walking from Mt. Rubidoux along Glenwood Dr.*

## Goal 2: Safety

**IMPROVE SAFETY, REDUCE COLLISIONS, AND CREATE COMFORTABLE CORRIDORS FOR WALKING AND BIKING IN RIVERSIDE.**

**Objective 1: Continue to improve pedestrian mobility and identify locations within the existing network to facilitate pedestrian travel.**

Action 1.1: Install best-practice intersection treatments, such as crosswalks and crossings, corner radii, and traffic signals to reduce automobile-pedestrian conflicts.

Action 1.2: Where public right-of-way is available, install sidewalks on retrofitted or repaved roads where sidewalks did not exist.

Action 1.3: Update the City's toolkit of available traffic calming measures to reflect best practices annually.

**Objective 2: Continue to identify intersections for improvements that facilitate pedestrian travel and meet Americans with Disabilities Act (ADA) requirements.**

Action 2.1: Implement best practice facilities, including flashing beacons, bulb-outs, pedestrian-scale DarkSky Friendly lighting, and protected intersections, at high collision intersection within the City.

Action 2.2: Update annually the City's tool kit of available traffic calming measures to reflect best practices.

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## Goal 3: Socially Responsible

### **PROMOTE SOCIALLY RESPONSIBLE AND EQUITABLE INVESTMENT BETWEEN ALL SEVEN WARDS IN RIVERSIDE WHILE FOCUSING ON DISADVANTAGED COMMUNITIES.**

#### **Objective 1: Implement pedestrian friendly designs and facilities.**

Action 1.1: Utilize Riverside CSO to provide pedestrian facilities such as street trees, benches, waste receptacles, and landscaping in the furniture zone where development occurs.

Action 1.2: Develop a strategy with Riverside Transit Authority (RTA) to provide more pedestrian amenities such as benches and covered waiting areas at transit stops with real-time transit information.

#### **Objective 2: Address barriers so that vulnerable populations can take part in the improvements.**

Action 2.1: Seek opportunities for acquisition of pedestrian and cyclist safety equipment (helmets, lights, bells etc.) for distribution at community and school events and presentations.

Action 2.2: Provide free basic bicycle maintenance training and bicycle tool lending at libraries to empower residents to fix bicycle issues for minimal cost.

Action 2.3: Provide bike parking, fix-it stations, and hydration stations at community destinations such as: transit centers, community centers, and parks.

Action 2.4: Utilizing the data methodology in the AT Plan, prioritize active transportation projects in disadvantaged communities and low-income neighborhoods to ensure that they consist of at least 20% of total projects by 2040.

#### **Objective 3: Promote education, encouragement, and outreach to further support safety.**

Action 3.1: Continue to develop effective safety programs for youths, adults, and seniors that educate pedestrians and drivers of their rights and responsibilities.

Action 3.2: Continue to promote the City's 311 services to encourage residents to report sidewalk and road hazards within the City.



## Goal 4: Health

### PROMOTE CITYWIDE AND REGIONAL TRANSPORTATION GOALS THROUGH INVESTMENTS IN ACTIVE TRANSPORTATION THAT CREATE A CULTURE OF WALKING AND BIKING.

#### **Objective 1: Leverage community resources to increase interest in bicycling and raise the bicycling mode share.**

Action 1.1: Continue to support and participate in Bike to Work, National Bicycle Safety Month and other bike promotion events.

Action 1.2: Integrate bicycling encouragement programs into existing municipal programs and events where possible.

Action 1.3: Encourage businesses to apply for Bicycle Friendly Business status with the League of American Bicyclists.

Action 1.4: Apply for and achieve League of American Bicyclists Bicycle Friendly Community Silver status after implementation of priority projects and programs recommended in this plan.

Action 1.5: Coordinate implementation of the AT Plan with implementation and creation of

a Safe Routes to School (SRTS) Plan so that children are encouraged to bike and walk to school.

#### **Objective 2: Promote an active lifestyle that includes biking and walking.**

Action 2.1: Fund programs that incorporate biking and walking into curriculum at district schools. Apply for an Office of Traffic Safety grant or other funding or resources for educational activities.

Action 2.2: Provide more opportunities for outdoor recreation via parks, “recreation-friendly streets,” and joint-use agreements with school facilities.

Action 2.3: Maintain and update the City’s bicycle map annually for public use.

Action 2.4: Establish a bicycle-friendly business program to encourage biking and walking by employees and customers.



*Photo Caption: Residents waiting for the bus along University Ave.*

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## Goal 5: Accessible

### ENHANCE ACCESS TO COMMUNITY DESTINATIONS (PARKS, SCHOOLS, WORK, LIBRARIES, SHOPPING AREAS, SENIOR CENTERS AND COMMUNITY CENTERS) AND TRANSIT.

**Objective 1: Increase access to jobs, retail, parks, libraries, schools, recreational centers, transit, and other neighborhood destinations.**



*Photo Caption: RTA bus stop at the Galleria at Tyler Mall.*

Action 1.1: Implement the recommended active transportation network to safely and comfortably connect residential neighborhoods with destinations like employment centers, grocery stores, community centers, schools, bus stops, and shopping areas.

Action 1.2: Increase bicycle parking at neighborhood destinations such as schools, medical centers, grocery stores, and government offices utilizing City and County General funds as well as Developer Impact Fees.

Action 1.3: Evaluate impacted streets during pavement resurfacing to determine if pedestrian or bicycle facilities can be provided (e.g. bike lanes, wider curb lanes or shoulders) on an ongoing basis.

Action 1.4: Follow CSO guidance for pedestrian/bike provision when developing priority lists for overlay and construction projects, maintenance, and traffic control plans.

Action 1.5: Install wayfinding signage at identified locations to help guide bicyclists and pedestrians to key City amenities.

Action 1.6: Allocate benches, shade, Dark Sky Friendly lighting, and hydration amenities in areas with high volumes of people walking and biking.

## Goal 6: Environmental Stewardship

### REDUCE VEHICLE MILES TRAVELED (VMT) BY DEVELOPING AN ACTIVE TRANSPORTATION NETWORK THAT IS A VIABLE ALTERNATIVE TO VEHICLE TRAVEL.

#### Objective 1: Reduce air pollution, asthma rates, and greenhouse gas emissions.

Action 1.1: Build an active transportation network that encourages residents to choose modes of transportation other than driving by providing safe and accessible bikeways, robust pedestrian networks, and first/last mile access to transit.

Action 1.2: Achieve a 5% reduction in vehicle miles traveled annually as residents, workers, and visitors meet daily transportation needs, and using transit in lieu of driving by building 10 miles of bike facilities.

Action 1.3: Require future land use plans to comply with the goals and recommendations identified in the Active Transportation Plan.

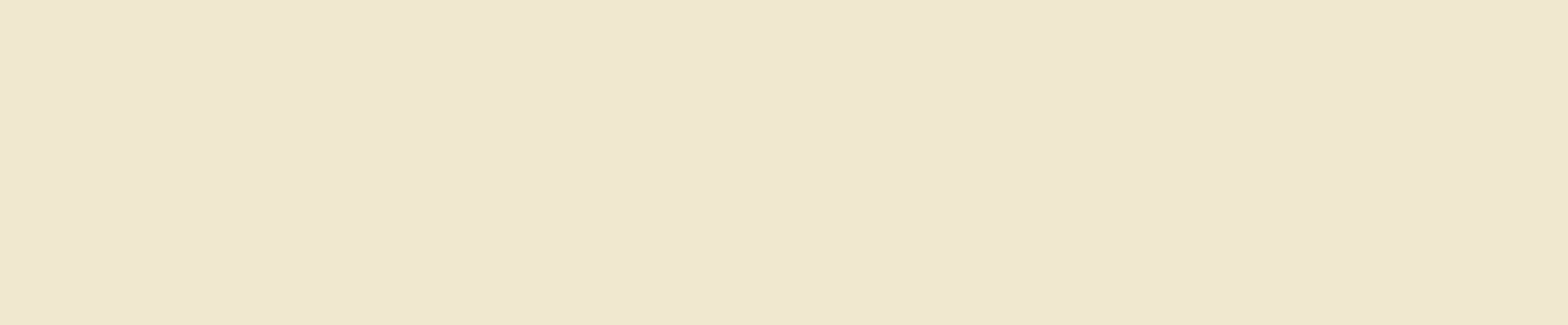


*Photo Caption: Bicyclist riding along Magnolia Ave with no bike lane.*

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**Section 4.4:**  
Facility Typologies



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## Types of Pedestrian Facilities

**THERE ARE MANY FEATURES THAT CONTRIBUTE TO A CONVENIENT AND COMFORTABLE WALKING ENVIRONMENT. SIGNIFICANT INVESTMENTS AND COMMITMENTS TO FUTURE IMPROVEMENTS HAVE BEEN MADE THAT CONTINUE TO ENHANCE THE PEDESTRIAN EXPERIENCE IN RIVERSIDE.**

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*Pedestrian support facilities improve the comfort of the walking environment.*

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### SIDEWALKS & PATHS

Sidewalks form the backbone of pedestrian transportation networks. Most streets in the community have sidewalks or pathways on at least one side of the street. Some parts of the City do not have a continuous network of sidewalks, particularly in segments of Wards 6 and 7. These include low-density developments or areas previously built out while under County jurisdiction and subsequently annexed into the City.



*Photo Caption: Typical sidewalk condition along Indiana Ave.*

## CROSSING FACILITIES

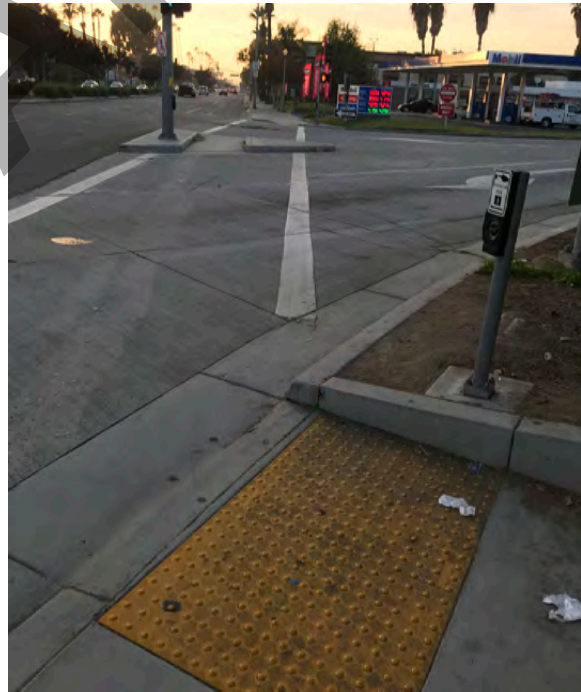
Crosswalks serve as an extension of the sidewalk and provide guidance for pedestrians who are crossing roadways by defining their path of travel. Crossings at intersections are not required to be marked, however, marked crosswalks are installed to channelize pedestrians and may help to enhance driver awareness of potential pedestrian activity and motorist yield compliance. Markings can be standard parallel lines or the “continental” high visibility pattern, which enhances visibility of the crossing and is considered best practice.



*Photo Caption: Marked crosswalk across Van Buren Blvd.*

## CURB TREATMENTS

Curb ramps assist people with making the transition from the street to the sidewalk or vice versa. A sidewalk without a curb ramp is an accessibility barrier to someone in a wheelchair or pushing a stroller, forcing them back to a driveway and out into the street for access. Many of the City’s older roadways have curb ramps; however, most feature the “diagonal” approach as opposed to the recommended “perpendicular” approach of placing curb ramps in both directions of travel.



*Photo Caption: Curb ramp with ADA truncated domes along University Ave.*

## BEACONS & SIGNALS

Pedestrian hybrid beacons sometimes known as a HAWK signal, are used to enforce motorists yielding to pedestrians at uncontrolled crosswalk locations. The beacon, when activated by a person wishing to cross, flashes yellow before displaying a solid red signal to motorists, requiring them to stop. The WALK symbol is then displayed signifying that the pedestrian may begin to cross the road. When the WALK phase is complete the beacon flashes yellow before returning to a dark inactive state. Riverside has installed HAWK signals at a number of high pedestrian activity uncontrolled crossings including at the corner of Market Street and 6th Street.



*Photo Caption: HAWK signal and crossing along Brockton Ave.*

Rectangular Rapid Flashing Beacons or RRFBs increase visibility of uncontrolled or mid block crosswalks with bright LED lights activated by a pedestrian push button.

## PEDESTRIAN SUPPORT FACILITIES

Pedestrian support facilities improve the comfort of the walking environment. Examples include pedestrian-scale lighting on sidewalks and paths, bus stop amenities (e.g., shade structures and benches), enclosure and landscaping (e.g., trees and planters), trash receptacles, and others. People are less likely to walk to destinations or use public transit without amenities that could provide needed comfort to the walking experience.



*Photo Caption: Pedestrian walking environment along Magnolia Ave.*



The quality of pedestrian facilities across the City varies greatly. Most of the City is equipped with sidewalks or side paths adjacent to streets, though there are some exceptions. The Public Works Department has compiled a list of missing sidewalks throughout the City and identified significant gaps in the “West End” and other gaps along Central Avenue and Washington Street. Existing sidewalk facilities in Wards 1, 2, and 4 are largely better quality in terms of connectivity than those in Wards 3, 6, and 7 which have tend to have a greater number of missing or disconnected sidewalks.



*Photo Caption: Missing sidewalks along Bushnell Ave.*



*Photo Caption: Missing sidewalks along Washington St.*

## TRAFFIC CALMING

Traffic calming measures such as traffic circles, curb extensions, chicanes, speed feedback signs encourage drivers to travel at a speed appropriate for the surrounding land uses and users. At various intersections and mid block locations, curb extensions would increase the visibility of pedestrians, shorten crossing distances, and reduce vehicle speeds. Further, at select major intersections in areas with high volumes of foot traffic, traffic circles may be considered to give people crossing the street priority and to reduce conflicts with turning vehicles.



*Photo Caption: Curb extension located in Santa Monica, CA.*

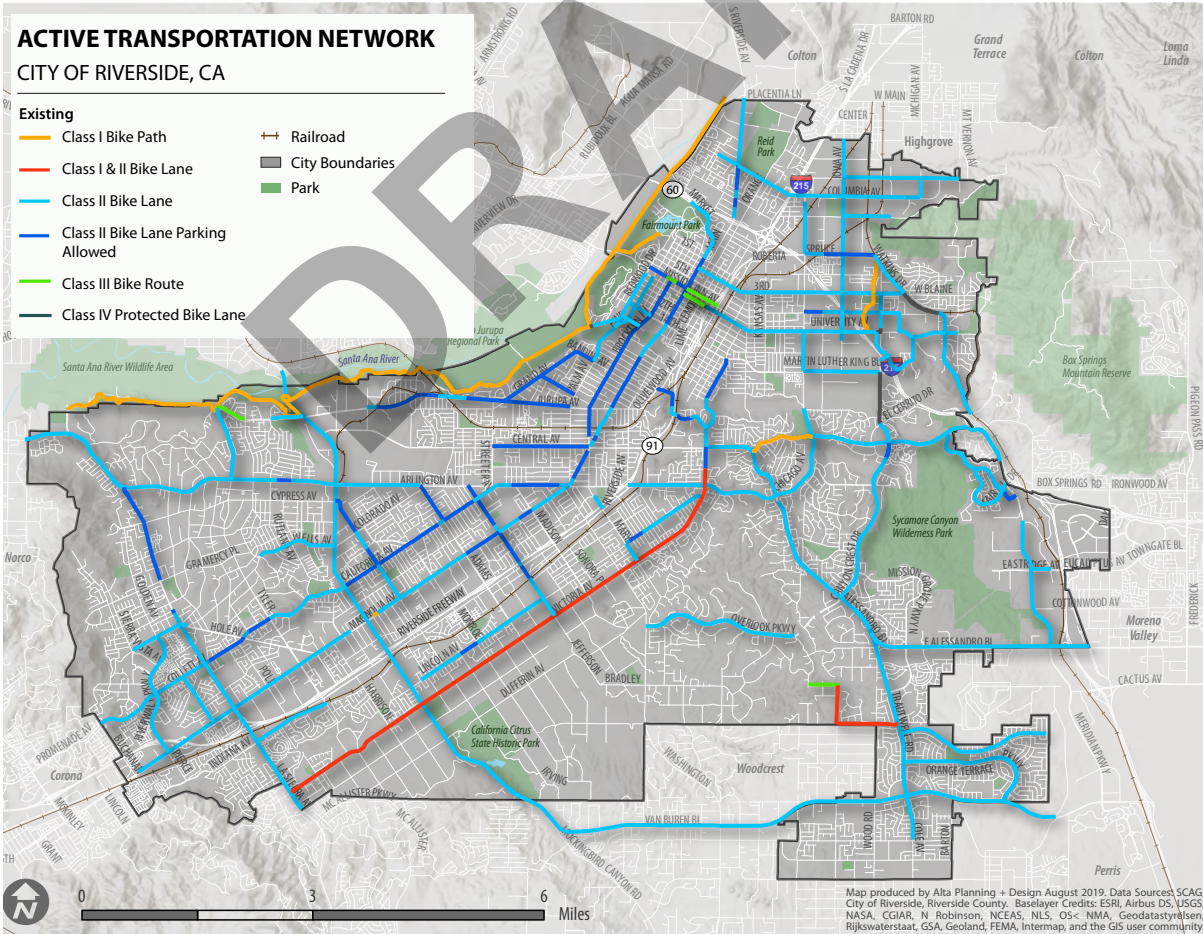


*Photo Caption: Chicanes located on residential roadway in Seattle, WA.*

# Types of Bicycle Facilities

AS OF 2020, THE CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS) DESIGNATES FOUR CLASSES OF BICYCLE FACILITIES: CLASS I SHARED USE PATHS, CLASS II BICYCLE LANES, CLASS III BICYCLE ROUTES, AND CLASS IV SEPARATED BIKEWAYS. THE CITY'S CURRENT BICYCLE NETWORK HAS APPROXIMATELY 156 MILES OF BIKEWAYS, AS SHOWN IN FIGURE 4-3. DESCRIPTIONS OF EACH BIKEWAY CLASSIFICATION ARE INCLUDED IN THE FOLLOWING SECTION.

FIGURE 4-3 EXISTING BIKEWAYS MAP



### **CLASS I SHARED USE PATHS**

Class I shared use paths are paved trails completely separated from the street. They allow two-way travel by people bicycling and walking and are often considered the most comfortable facilities for children and inexperienced riders as there are few potential conflicts between cyclists and motorists.

There are currently over 14 miles of Class I shared use paths in Riverside.



*Photo Caption: Santa Ana River Trail*

### **CLASS II BICYCLE LANES**

Class II bicycle lanes are striped preferential lanes on the roadway for one-way bicycle travel. Some bicycle lanes include a striped buffer on one or both sides to increase separation from the traffic lane or from parked cars where people may open doors into the bicycle lane (buffered bicycle lanes are referred to in this Plan as “Class IIB”).

There are currently 122 miles of Class II bicycle lanes and approximately 7 miles of buffered bicycle lanes in Riverside.



*Photo Caption: Class II Bicycle Lane located on Market St.*

### CLASS III BICYCLE ROUTES

Class III bicycle routes are signed routes where people bicycling share a travel lane with people driving. Because they are shared facilities, bicycle routes are primarily used on select low-speed streets. Some Class III bicycle routes include shared lane markings or “sharrows” that recommend proper bicycle positioning in the center of the travel lane and alert drivers that bicyclists may be present.

There are currently over 2 miles of Class III bicycle routes in the City.



*Photo Caption: Class III Bicycle Route on Mission Inn Ave*

### CLASS III BICYCLE BOULEVARD

Other bicycle routes include more robust traffic calming features to promote bicyclist comfort and are known as “bicycle boulevards” (referred to in this Plan as “Class IIIB”). The Riverside Fire Department will be included in discussions about new or altered features on bicycle boulevards to ensure that access for emergency responders is maintained.

There are currently no Class III bicycle boulevards in the City.



*Photo Caption: Class III Bicycle Boulevard with green Shared Lane Markings in Vancouver, BC.*



Photo Caption: Class IV Separated Bikeway along Canyon Crest Dr.



Photo Caption: Class IV Separated Bikeway in Seattle, WA.

### CLASS IV SEPARATED BIKEWAYS

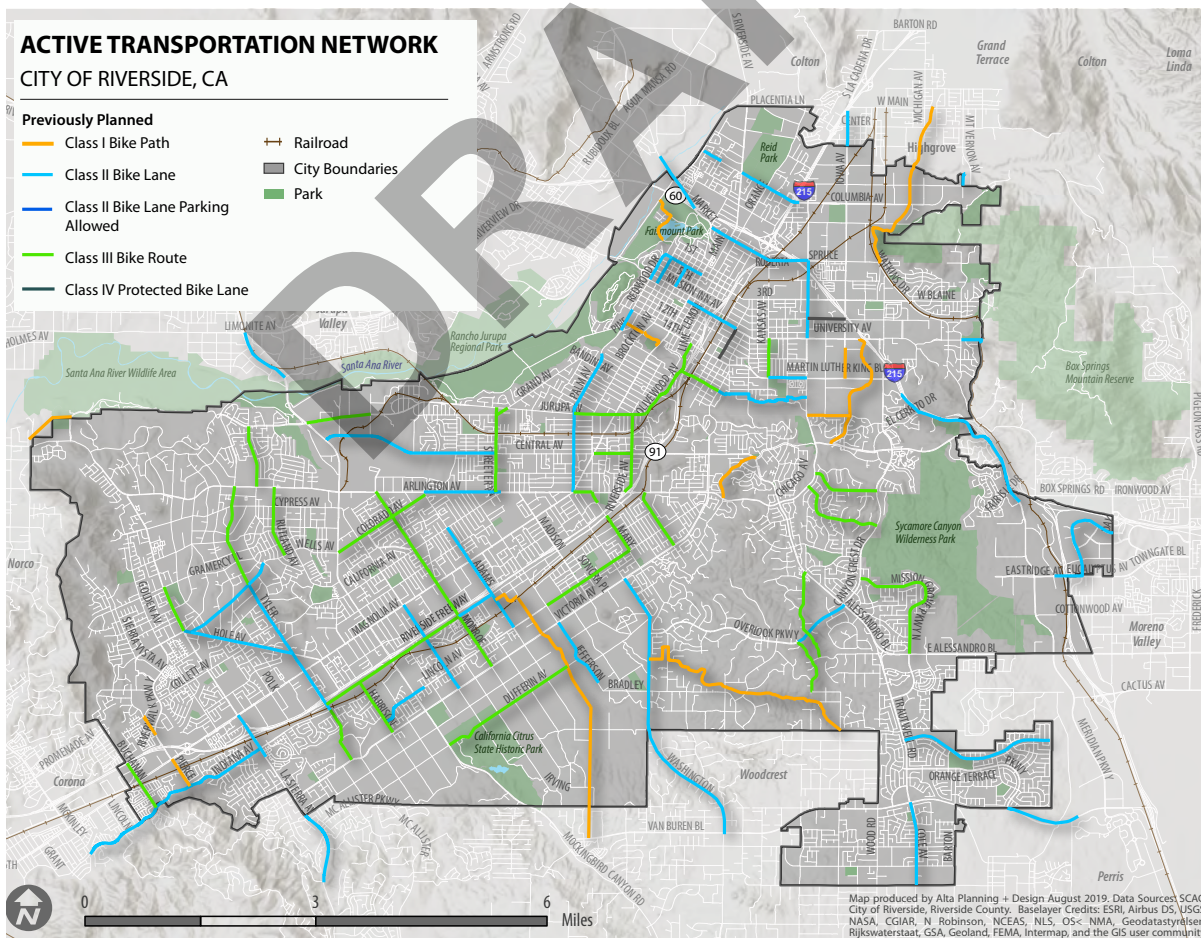
Class IV separated bikeways are on-street bicycle facilities that are physically separated from motor vehicle traffic by a vertical element or barrier, such as a curb, bollards, or vehicle parking aisle. They can allow for one- or two-way travel on one or both sides of the roadway.

Currently just over one mile of Class IV separated bikeway exists in Riverside.

### PREVIOUSLY PLANNED FACILITIES

While Riverside’s existing bikeway network covers over 150 miles, previous planning efforts have offered visions for a more comprehensive and connected network spanning more than an additional 105 total miles. Figure 4-4 shows the locations and types of bicycle facilities that have been recommended as part of the 2012 Bicycle Master Plan Addendum. This Plan builds on those recommendations and provides an updated vision of Riverside’s active transportation network.

**FIGURE 4-4 PREVIOUSLY PLANNED BIKEWAYS MAP**



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# Section 4.5: Needs Assessment



NO  
OUTLET

NO  
PARKING  
ENTIRE  
BLOCK

NO  
ACCESS  
MOUNT  
RUBIDOUX

4625 & 4630  
Glenwood Dr.  
Residents Only  
No Entry  
No Trail Access  
Beyond this  
Point

NO  
PARKING

NO  
TRAIL ACCESS



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## Active Transportation Needs Assessment

### THE ACTIVE TRANSPORTATION NEEDS ANALYZED IN THIS SECTION FOCUS ON FOUR MAJOR COMPONENTS:

- **HEALTH + EQUITY**
- **CONNECTIVITY**
- **SAFETY**
- **PUBLIC INPUT**

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*Riverside currently has several high CalEnviroScreen scores throughout each of the seven wards as well as areas of extremely low household income levels within each ward.*

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### HEALTH + EQUITY

The allocation of public resources for transportation infrastructure projects is important for all communities to provide safe, efficient and accessible modes of travel. In disadvantaged communities which may rely more heavily on walking, cycling, and public transportation, equitable allocation of resources is critical. Within Riverside, prioritizing walking and biking within disadvantaged communities acknowledges that active transportation options provide economic, social, and health benefits.



*Photo Caption: City employees walking along the Main St Pedestrian Mall in front of City Hall*

This analysis uses the California Communities Environmental Health Screening Tool (CalEnviroScreen) to identify California communities by census tract that are disproportionately burdened by, and vulnerable to, multiple sources of pollution. Communities that are most affected by many sources of pollution and that are often especially vulnerable to pollution's effects have a higher score (76%-100%) than communities that are less vulnerable.

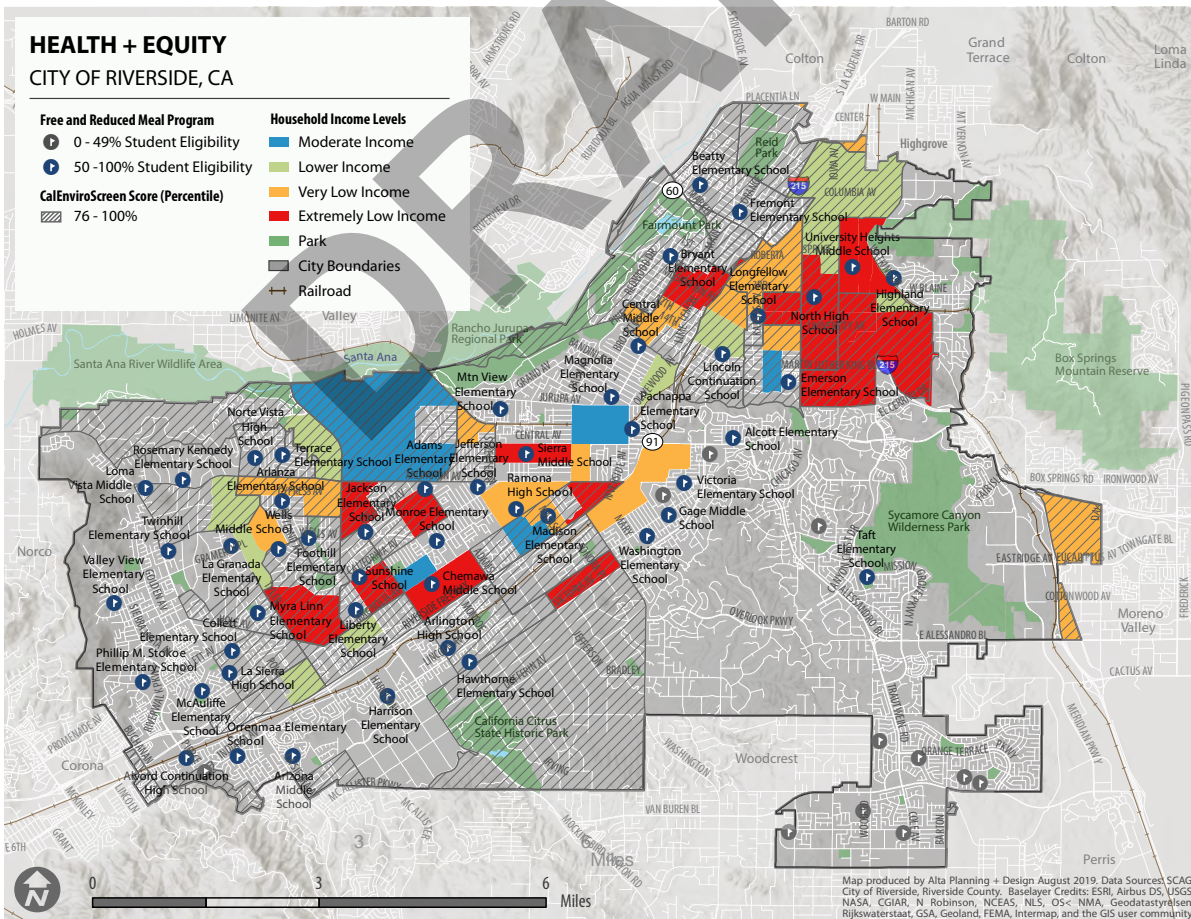
This analysis also uses the Department of Housing and Community Development

(HUD) criteria for Area Median Income limits by block group using moderate, lower, very low, and extremely low-income thresholds.

Lastly this analysis includes data on schools where students (over 50%) are eligible for Free and Reduced-Price Meals as well as schools that are currently participating in the meal program.

As shown in Figure 4-5, Riverside currently has several high CalEnviroScreen scores throughout each of the seven wards as well as areas of extremely low household income limits in all seven wards.

**FIGURE 4-5 HEALTH AND EQUITY MAP**

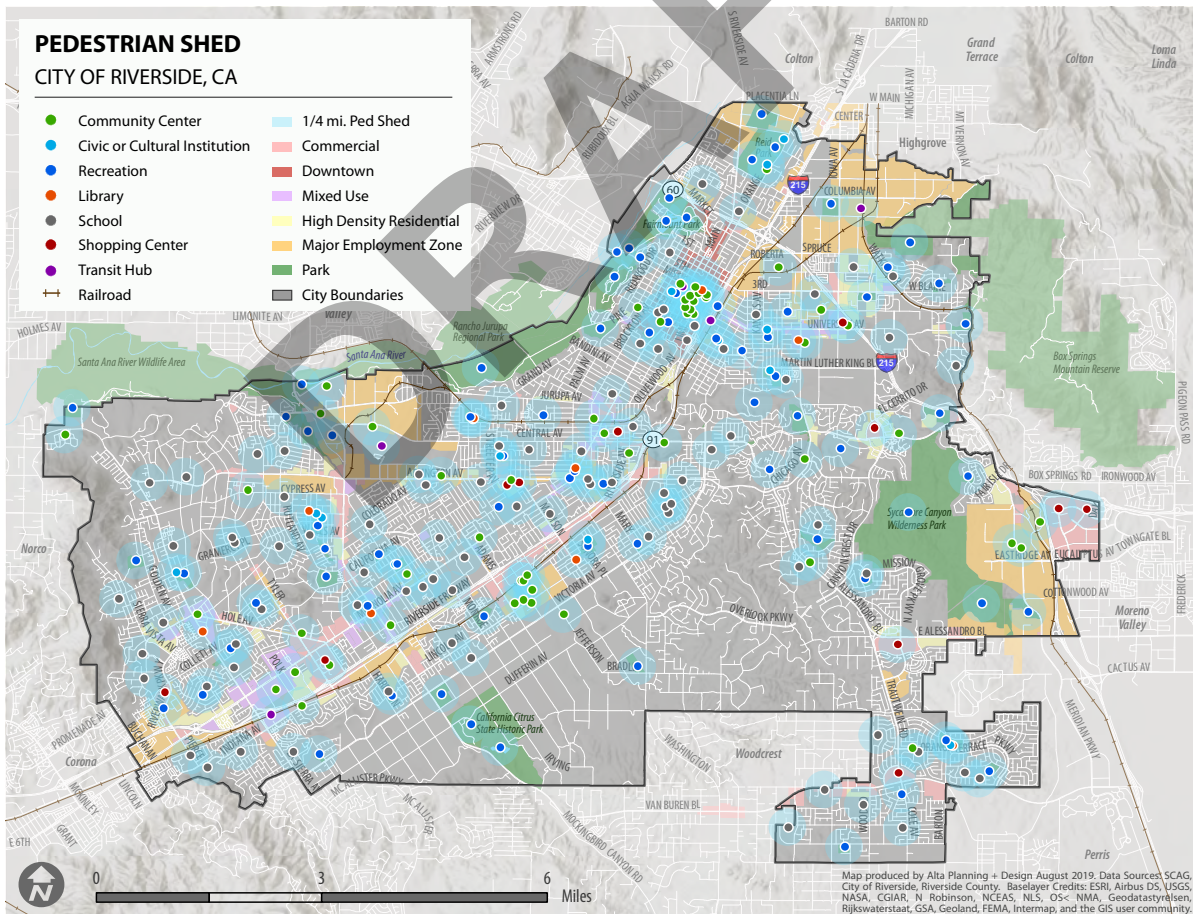


*A key strategy to creating a pedestrian and bicycle-friendly environment is designing streets that are safe and comfortable for people to use.*

**CONNECTIVITY**

Creating a connected and comfortable active transportation network helps people reach their walking destinations most efficiently and safely. This data set analyzed how to improve residents' walking and biking access to key neighborhood-serving destinations including schools, libraries, community centers, retail, public parks and transit connections.

**FIGURE 4-6 WALK SHED**

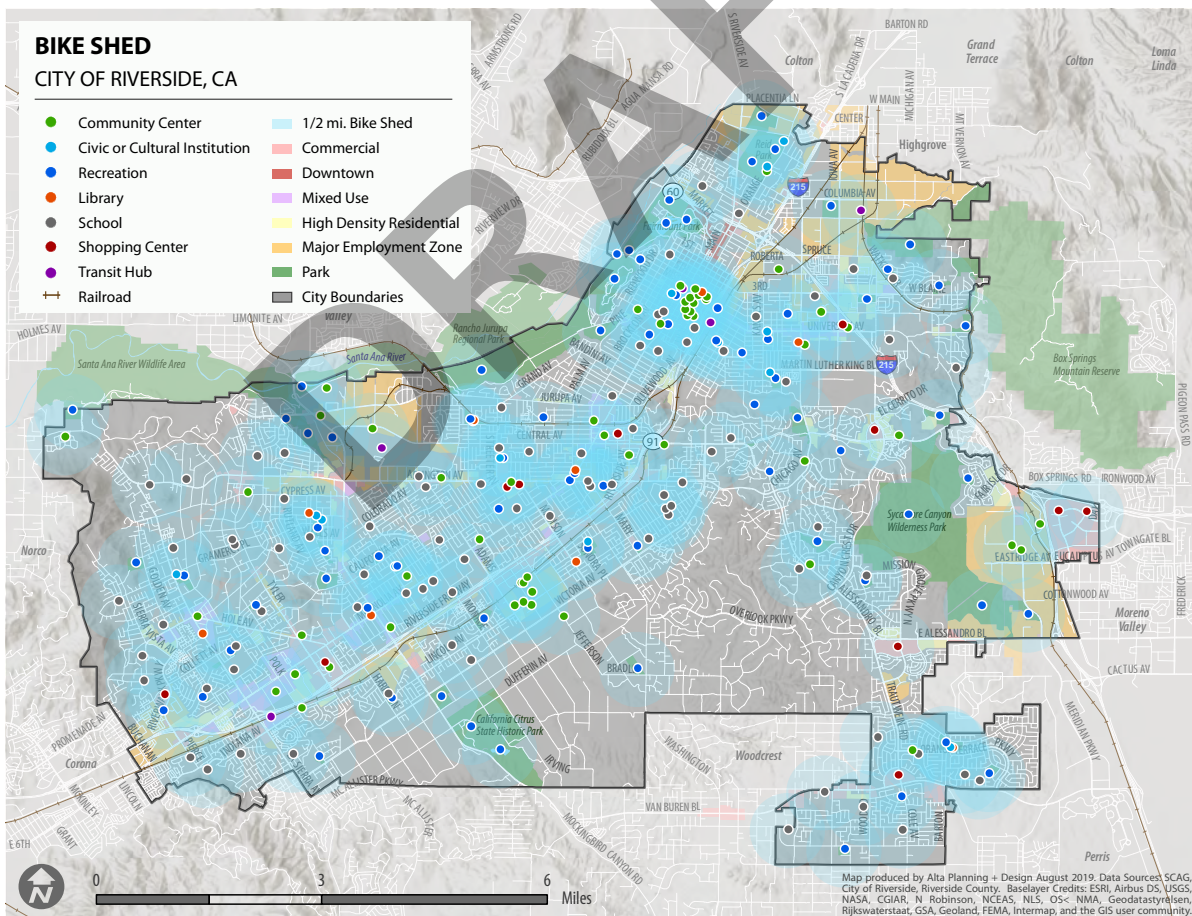


A pedestrian shed of a quarter mile (.25 mi) was developed by determining the distance that could be covered by someone walking for five minutes at a typical pace, and a bike shed of a half mile (.5mi) was developed by determining the distance that could be covered by someone biking for 10 minutes at typical pace, displayed by drawing a half-mile circle around a destination. A five-minute walk and a ten-minute bike ride are

considered to be a reasonable trip to reach a destination or to connect with other modes.

Figure 6 identifies the walk sheds for several community destinations and Figure 4-7 identifies the bicycle sheds for the same community destinations.

**FIGURE 4-7 BICYCLE RIDE SHED**



## SAFETY

A key strategy to creating a pedestrian and bicycle-friendly environment is designing streets that are safe and comfortable for people to use.

Historical bicycle and pedestrian collision data was collected from the Riverside Police Department between 2015 - 2019 and locations with more than one bike or pedestrian involved during that time frame were evaluated.

There were 101 intersections where two or more pedestrian collisions have occurred. More than 30 intersections identified had at least three pedestrian collisions. The three intersections with the highest number of collisions are Tyler St/Magnolia Ave, University Ave/Iowa Ave, and Blaine St and Iowa Ave each having had at least ten pedestrian collisions. Van Buren Blvd, La Sierra Ave, and University Ave are other streets with a high number of recorded pedestrian involved collisions. The top 40 intersections can be found in Appendix A.

There were 66 intersections where two or more bike collisions have occurred. More than 20 intersections identified had at least three bike collisions. The two intersections with the highest number of collisions are Arlington Ave/Van Buren Blvd and Van Buren Blvd/Magnolia Ave each having had five bike collisions. Main St, La Sierra Ave, and Arlington Ave are other streets with a

high number of recorded bicycle involved collisions. The top 40 intersections can be found in Appendix B.



*Photo Caption: Intersection of Tyler St and Magnolia Ave*



*Photo Caption: Intersection of La Sierra Ave and Hole Ave*

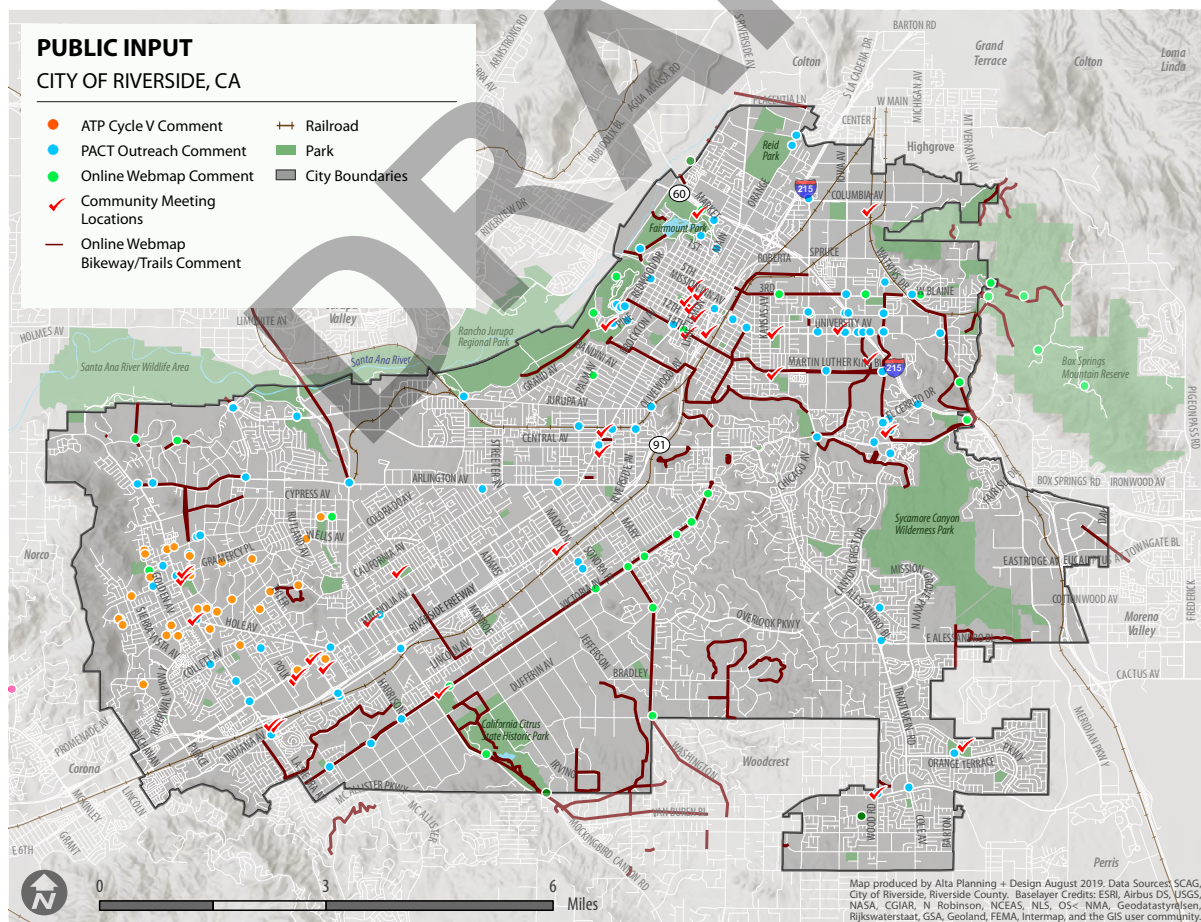
## PUBLIC INPUT

Riverside residents and visitors helped identify barriers to walking in their neighborhoods through survey results, Online mapping, walk audit comments, public meetings, and outreach events. See Community Engagement of the PACT for all community engagement that was conducted.

Residents identified walking and biking issues which included missing sidewalks, missing/challenging intersection crossings, parking in bike lanes, and lack of lighting.

Figure 4-8 highlights the areas where barriers for biking and walking were identified as well as the locations of each of the community meetings/events that were attended.

**FIGURE 4-8 PUBLIC INPUT MAP**



## **BICYCLE LEVEL OF TRAFFIC STRESS**

For cyclists, the Level of Traffic Stress (LTS) is the perceived sense of discomfort associated with riding in or next to high speed vehicular traffic. Studies have shown that traffic stress is one of the greatest deterrents to bicycling. The less stressful and therefore more comfortable a bicycle facility is, the wider its appeal to a broader segment of the population. A bicycle network will attract a large portion of the population if it is designed to reduce stress associated with potential motor vehicle conflicts and if it connects people bicycling with where they want to go.

Bikeways are considered low stress if they are on low volume roadways with slow speeds (e.g., a shared, low-traffic neighborhood street) or if greater degrees of physical separation are placed between the bikeway and traffic lane on roadways with higher traffic volumes and speeds (e.g., a separated bikeway on a major street).

A rating given to a road segment or crossing, the LTS indicates the amount of traffic stress use of a particular facility imposes on bicyclists. The analysis, based on methods developed by the Mineta Transportation Institute, considers posted speed, number of travel lanes, presence of a bicycle facility and land use context to calculate a bicyclist's comfort level.

The combination of these criteria creates four levels of traffic stress for the existing roadway network. However, this Plan introduced a fifth level (LTS 1.5) to differentiate between streets without specific bike improvements which nevertheless remain low-speed and low-stress for most people on bikes, versus streets with specific improvements and facilities to create a low-stress experience for riders (LTS 1). The principle of the scale remains the same: the lower the number, the lower the stress and the higher the level of comfort for people on bicycles. LTS 1 and 2 roads are typically the roadways that appeal to the “Interested, but Concerned” cyclists. For this analysis, levels of traffic stress range from 1 to 4:

- **LTS 1:** Most Comfortable: Strong separation from traffic and improvements for people on bikes. Simple crossings. Suitable for children.
- **LTS 1.5:** Streets with low speeds and low traffic volumes, but does not feature a bicycle facility.
- **LTS 2:** Physical separation from higher speed and multi-lane traffic. A level of traffic stress that most adults can tolerate, particularly those sometimes classified as “interested but concerned.”

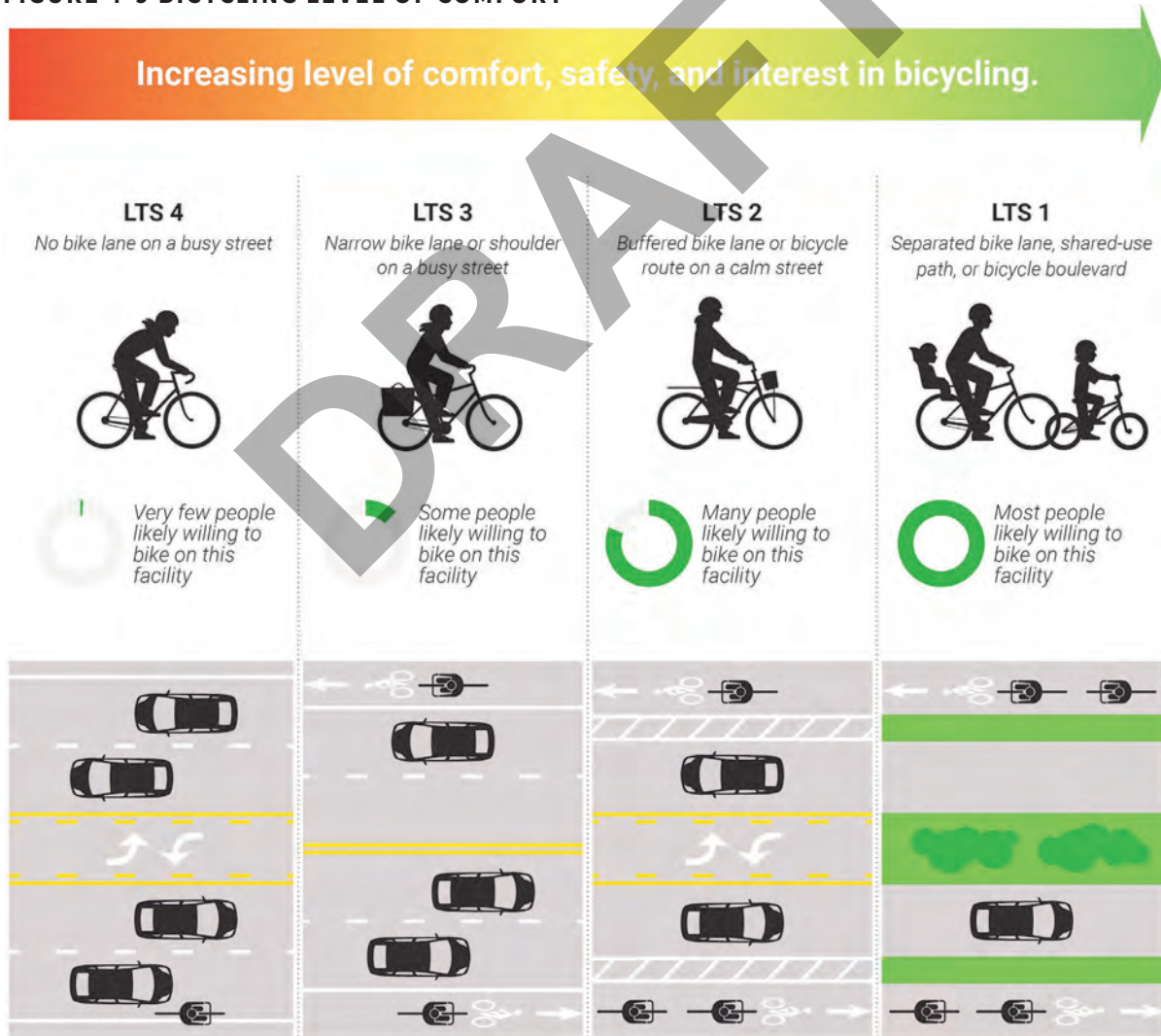


- **LTS 3:** Involves interaction with moderate speed or multi-lane traffic, or close proximity to higher speed traffic. A level of traffic stress acceptable to those classified as “enthused and confident.”
- **LTS 4:** Least Comfortable: Involves interaction with higher speed traffic or close proximity to high speed traffic. A level of stress acceptable only to those classified as “strong and fearless.”

**BICYCLING COMFORT LEVELS**

Research indicates that the majority of people in the United States would bicycle if dedicated bicycle facilities were provided. However, only a small percentage of Americans (1-3 percent) are willing to ride if no facilities are provided. This research into how people perceive bicycling as a transportation choice has indicated that most people fall into one of four categories, illustrated in Figure 4-9.

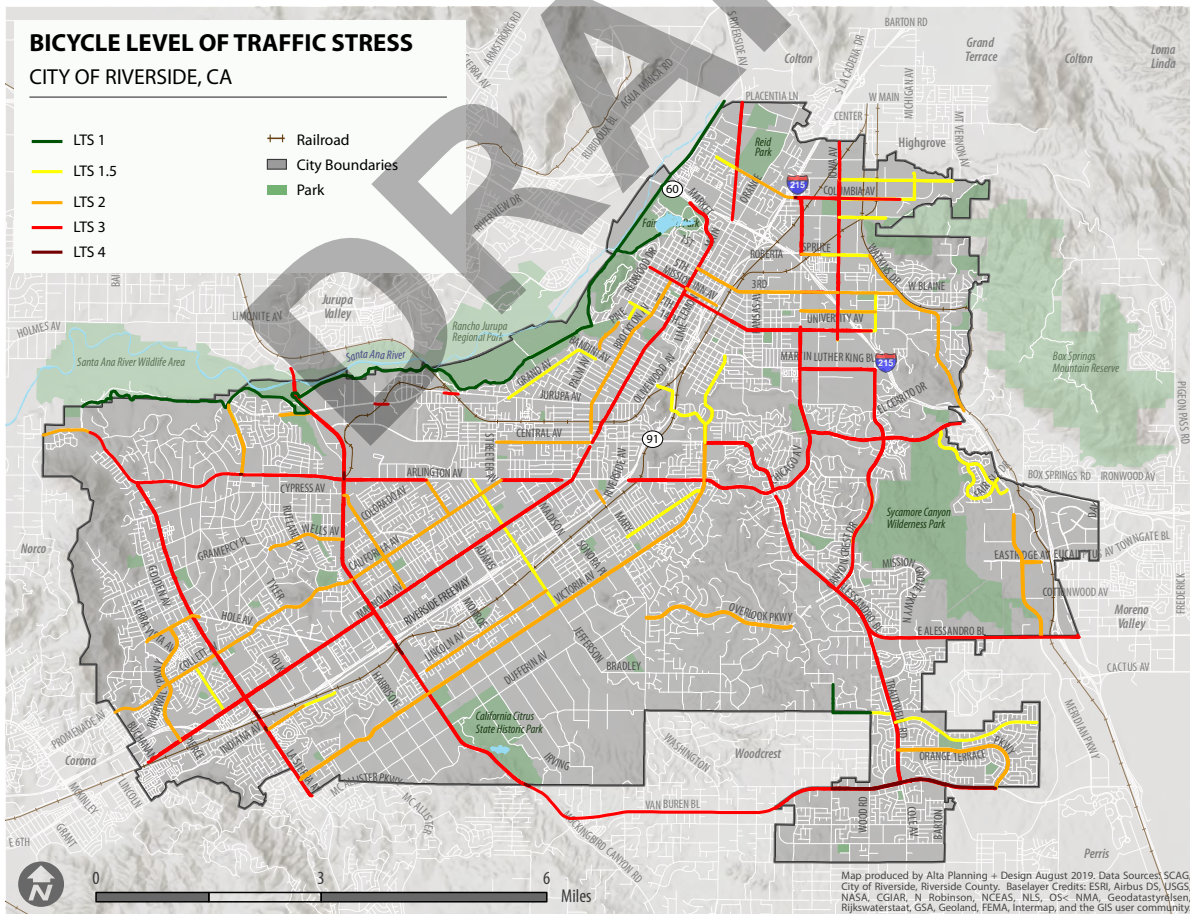
**FIGURE 4-9 BICYCLING LEVEL OF COMFORT**



For Riverside neighborhood streets that carry relatively little vehicular traffic and have slower vehicle speeds are considered LTS 1 and are considered suitable for people of all ages and abilities. Class I facilities, like the Santa Ana River Trail, are also considered LTS 1. Collector and arterial streets without separated bicycle facilities, such as Indiana Ave, are considered LTS 3 or 4, and are only suitable for somewhat confident or highly confident adult riders.

Figure 4-10 illustrates the Bicycle Level of Traffic Stress analysis for the City of Riverside.

**FIGURE 4-10 BICYCLE LEVEL OF TRAFFIC STRESS**



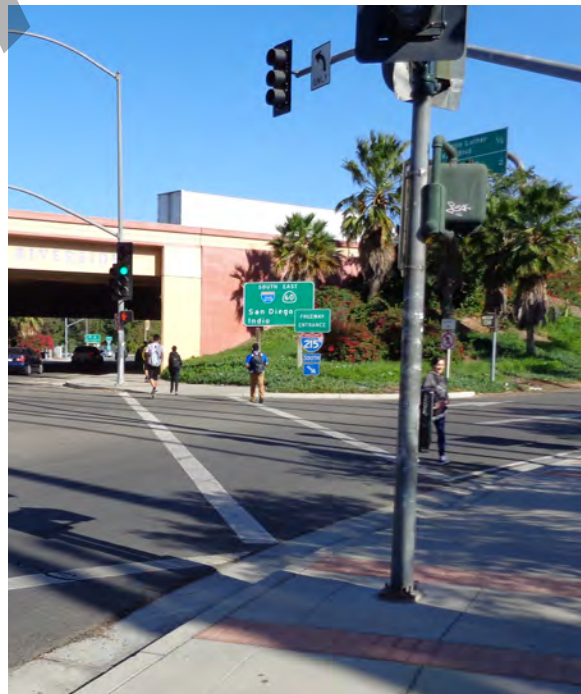
## ACTIVE TRANSPORTATION NETWORK PLANNING PROCESS

Developing the pedestrian and bicycle network recommendations was a multi-step approach emphasizing collaboration with stakeholders and community members. A combination of the existing conditions analysis, previously adopted plans, studies, community feedback, and active transportation best practices informed these recommendations, as shown in Figure 4-11.

Key themes from the public input guided our overall recommendations seen in Table 4-2. Throughout the development of the plan, various outlets allowed the public to voice their opinions about new or improved bicycle and pedestrian facilities. These outlets included: Walk Audit, the Online public input map, and the Virtual Workshop. Roadways and areas that were mentioned multiple times across different outreach methods were examined as high priority for inclusion in the recommended projects.

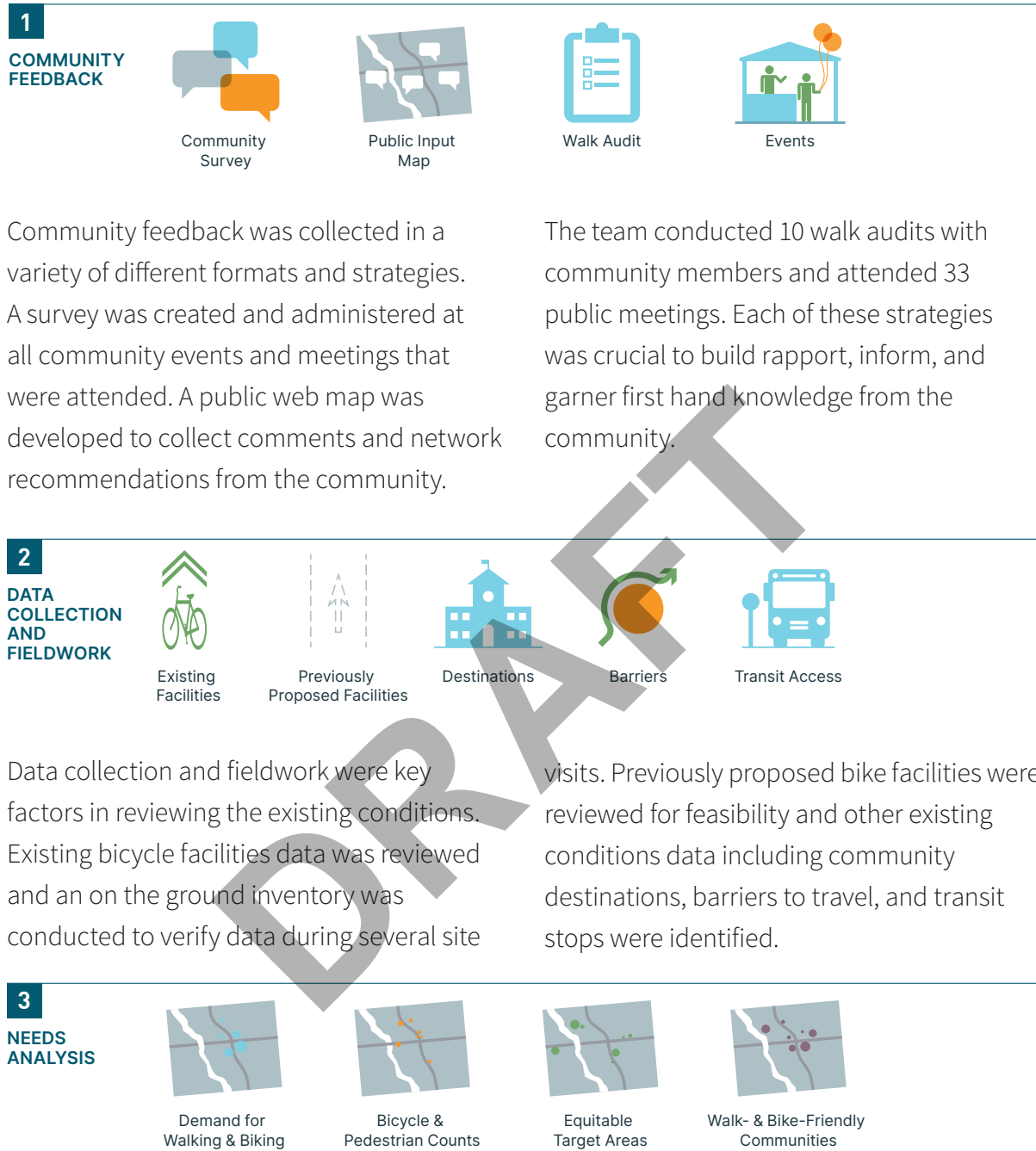


*Photo Caption: Walk audit conducted with residents near Mt. Rubidoux Park.*



*Photo Caption: UC Riverside students walking to and from campus.*

**FIGURE 4-11 NETWORK DEVELOPMENT PROCESS**



Community feedback was collected in a variety of different formats and strategies. A survey was created and administered at all community events and meetings that were attended. A public web map was developed to collect comments and network recommendations from the community.

The team conducted 10 walk audits with community members and attended 33 public meetings. Each of these strategies was crucial to build rapport, inform, and garner first hand knowledge from the community.

Data collection and fieldwork were key factors in reviewing the existing conditions. Existing bicycle facilities data was reviewed and an on the ground inventory was conducted to verify data during several site

visits. Previously proposed bike facilities were reviewed for feasibility and other existing conditions data including community destinations, barriers to travel, and transit stops were identified.

The needs analysis for Riverside included examining several data factors. The City’s equitable target areas were reviewed including areas designated as disadvantaged and low income. High vehicle pedestrian

and bike collision roadways were reviewed. A live work play analysis was conducted to highlight the areas of activity within the City. All of these factors helped identify roadways in the City that require improvements.

4

**SUPPLY ANALYSIS**

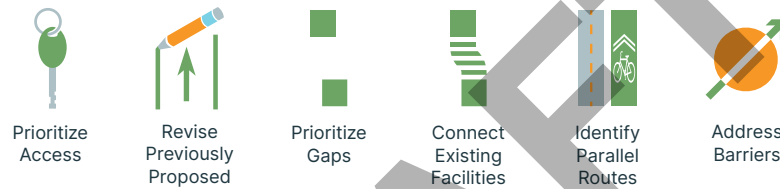


The supply analysis included reviewing: missing connections in the existing active transportation network, the level of traffic stress a bicyclist feels while riding on Riverside roadways, trip generator land uses

as well as new development projects, and any future capital improvement projects. These factors highlighted significant areas to consider when developing recommendations for the active transportation network.

5

**SYSTEM DEVELOPMENT**

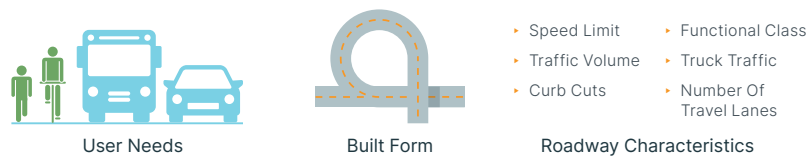


The development of the network recommendations involved a systematic multi-step approach. The first prioritizing element was improving access for neighborhoods and wards. The previously planned facilities were then reviewed for viability. Gaps in the active transportation

network were then identified and connecting new facilities to existing facilities was a key strategy during the process. Creating routes that overcome identified barriers was another priority when developing the network recommendations.

6

**DESIGN DEVELOPMENT**



Once the recommendations were developed, the physical design of each of the recommendations was reviewed. It is crucial that the proposed recommendations fit

the existing right-of way as well as roadway characteristics including traffic volume, number of lanes, and speed limit which are taken into consideration during design.

7

FEASIBILITY



Political Will



Funding



Health & Equity Impact



Feasibility

Each recommendation is then reviewed and analyzed regarding how and through which means it will be constructed. The proposed projects must not only add value to the community by addressing community needs but also be viable and deliverable from a

funding perspective. The combination of funding opportunities and impact to the community contribute to the feasibility of each recommended project.

8

PROPOSED PLAN



Short Term



Medium Term



Long Term

The recommendations that are proposed within the plan will not be built or funded all at one time thus developing a strategy for phasing projects becomes important. A three-phase approach will be utilized to categorize proposed projects, Phase 1 - Short Term (5 years), Phase 2 - Medium Term

(5-10 years), Phase 3 - Long Term (10+ years). Phase 1 - Short Term projects are ones that have political will, are fundable, require less inter-agency coordination, and are lower cost such as signing and striping projects. Phase 2 - Medium Term and Phase 3 - Long Term are extrapolated from there by complexity.

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**Section 4.6:**  
Network  
Recommendations





UC RIVERSIDE

UC RIVERSIDE

AMY S. HARRIS

RIVERSIDE

BASEBALL



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## Pedestrian Recommendations

**A NUMBER OF FACTORS ARE INVOLVED IN CREATING A MORE WALKABLE CITY, SUCH AS ADDRESSING COMFORT AND SAFETY OF STREETS AND CREATING A MORE VISUALLY APPEALING ENVIRONMENT. THE EXPERIENCE OF WALKING IS MUCH DIFFERENT THAN BIKING AND MORE GRANULAR. MISSING OR POORLY MAINTAINED SIDEWALKS AS WELL AS A DIFFICULT INTERSECTION CROSSING CAN GREATLY HAMPER THE WALKING EXPERIENCE.**

This section outlines a number of priority areas and intersections that will be the focus of the pedestrian improvements for the City of Riverside. The following sections present the toolbox of strategies for these priority areas and intersections as well as the methodology for intersection typology identification.

This Plan recommends improving 51 intersections for pedestrian crossing as well as creating over 25 miles of new and enhanced sidewalk. The recommendations

will improve the comfort of pedestrians and may create safer conditions for pedestrians along roadways and at intersections.

### **PEDESTRIAN SPOT IMPROVEMENTS**

Typically located at intersections, spot improvements include one or more pedestrian infrastructure enhancements that fall within the following categories:

- Crossing Improvement
- Signal Improvement
- Transit Stop Improvement
- Walking Environment Improvement
- Sidewalk Improvement
- Lighting Improvement

### **PEDESTRIAN CROSSING TYPOLOGIES**

In addition to the 51 locations mentioned, additional intersections were identified as proposed priority projects. To ensure equity among all wards, one priority project was identified per ward. Additionally, some improvement descriptions are more expansive than others as these were direct comments from the community. The following pages describe the variety of intersection types, common challenges, strategies for improvement, and examples of identified improvements.

Improvements at intersections of arterial roadways with cars moving at faster speeds differ from improvements on lower volume, local streets. These typologies are broken down by the characteristics of the intersection and include the appropriate infrastructure improvements for each. The typologies include:

- **Typology A:** Signalized intersection
- **Typology B:** Major street/minor street
- **Typology C:** Minor street/minor street
- **Typology D:** Trail Crossings/Mid block crossings
- **Typology E:** High-volume pedestrian areas
- **Typology F:** Highway interchanges and freeway crossings

The following pedestrian recommendation locations were identified through several data sets and analyses including, health and equity, connectivity, collision, and public input data points detailed in the Active Transportation Needs Analysis section on page 4-36. The data was reviewed as a collective with no single data set taking priority over another, with the objective of yielding an equitable distribution of recommendations amongst each ward within the City.



*Photo Caption: Spot improvement identified at the intersection of Wood Rd and Van Buren Blvd*



*Photo Caption: Spot improvement identified intersection of La Sierra Ave and Indiana Ave*



Photo Caption: Intersection of Brockton Ave, Magnolia Ave and Central Ave.

## TYPOLOGY A. SIGNALIZED INTERSECTION

### Common Challenges

- High vehicle speeds
- High vehicle volumes
- Free right-turn lanes
- Left-turn pedestrian conflicts
- Cars stop too close to the crosswalk
- Failure to yield to pedestrians

### Tools

- Curb extensions
- No right on red
- Crosswalks and curb ramps
- High visibility crosswalks
- Slip lane removal
- Leading pedestrian intervals
- Conflict markings
- Signage and lighting
- Traffic circles
- Pedestrian Scramble
- Roundabout
- Flashing yellow arrows
- Advance limit lines
- Diagonal crosswalks

### Identified Spot Improvements

- Blaine St and Iowa Ave
- Chicago Ave and University Ave
- Jurupa Ave and Magnolia Ave
- Iowa Ave and W Linden St
- Chicago Ave and Central Ave
- Madison St and Arlington Ave
- Central Ave and Magnolia Ave
- Wood Rd and Van Buren Blvd
- Indiana Ave and La Sierra Ave
- Van Buren Blvd and Arlington Ave
- Magnolia Ave and Van Buren Blvd
- Magnolia Ave and Tyler St



Photo Caption: Intersection of El Cerrito Blvd and Canyon Crest Dr.

## TYOLOGY B. MAJOR STREET/MINOR STREET

### Common Challenges

- Failure to yield to pedestrians
- Unmarked crosswalks
- Lighting
- High vehicle speeds
- High vehicle volumes
- Long blocks without controlled crossings
- Left-turn pedestrian conflicts
- Cars stop too close to the crosswalk

### Tools

- Curb extensions
- Signage and lighting
- Crosswalks and curb ramps
- Pedestrian crossing beacons at uncontrolled crossings
- Conflict markings and advance stop/yield pavement markings
- Traffic circles
- Flashing yellow arrows
- Advance limit lines
- Diagonal crosswalks

### Identified Spot

#### Improvements

- Rustin Ave and Blaine St
- 14th St and Victoria Ave
- Magnolia Ave and Elizabeth St

- Fairmount Blvd and Market St
- 14th and Olivewood Ave
- University Ave at entrance to University Village
- El Cerrito and Canyon Crest DR
- Rustin Ave and W Linden St
- La Sierra Ave and Collett Ave
- La Sierra Ave and Cochran
- Van Buren Blvd and Jackson St
- Campbell Ave and La Sierra Ave
- Grammercy Pl and La Sierra Ave
- La Sierra Ave and Minnier Ave
- Washington St and Victoria Ave



Photo Caption: Tequesquite Ave and Palm Ave

### TYPOLOGY C. MINOR STREET/MINOR STREET

#### Common Challenges

- Failure to yield to pedestrians
- Unmarked crosswalks
- Parking too close to the corner (visibility)
- Incomplete stops (rolling stops)

#### Tools

- Curb extensions
- Signage and lighting
- Crosswalks and curb ramps
- Pedestrian crossing beacons at uncontrolled crossings
- Conflict markings and advance stop/yield pavement markings
- Red curb
- Flashing yellow arrows
- Advance limit lines
- Diagonal crosswalks
- LED Flashing Stop Signs
- Speed Feedback Signs

#### Identified Spot Improvements

- Western Ave and Arlington Ave
- W Linden St and Canyon Crest Dr
- Third St and Vine St
- Palm Ave and 14th St
- Watkins Dr and W Big Springs Rd
- Palm Ave and Dewey Ave
- Madison St and Lincoln Ave
- Collett Ave and Newby Dr
- Cass St and Polk St
- Knoefler and Ambs Dr
- Gramercy Pl and Corwin
- Marguerita St and Mary St
- Madison St and Victoria Ave



Photo Caption: Jurupa Ave and Tyler St at trail head to Santa Ana River Trail.

## TYOLOGY D. TRAIL AND MIDBLOCK CROSSINGS

### Common challenges

- Uncontrolled crossings
- Vehicles have priority at unmarked crossings
- Lack of driver awareness
- Unmarked crosswalks

### Tools

- Curb extensions
- Signage and lighting
- Crosswalks and curb ramps
- Pedestrian crossing beacons
- Wayfinding signs

### Identified Spot Improvements

- Mt. Rubidoux Trail head and Glenwood Dr.
- Santa Ana River Trail Head - Tyler St. and Jurupa Ave.
- Reid Park Ruth H Lewis Center and Orange St.
- Magnolia Ave between Brockton Ave and Nelson St.
- Barton St and Orange Terrace Pkwy
- Trautwein Rd and Alessandro Blvd

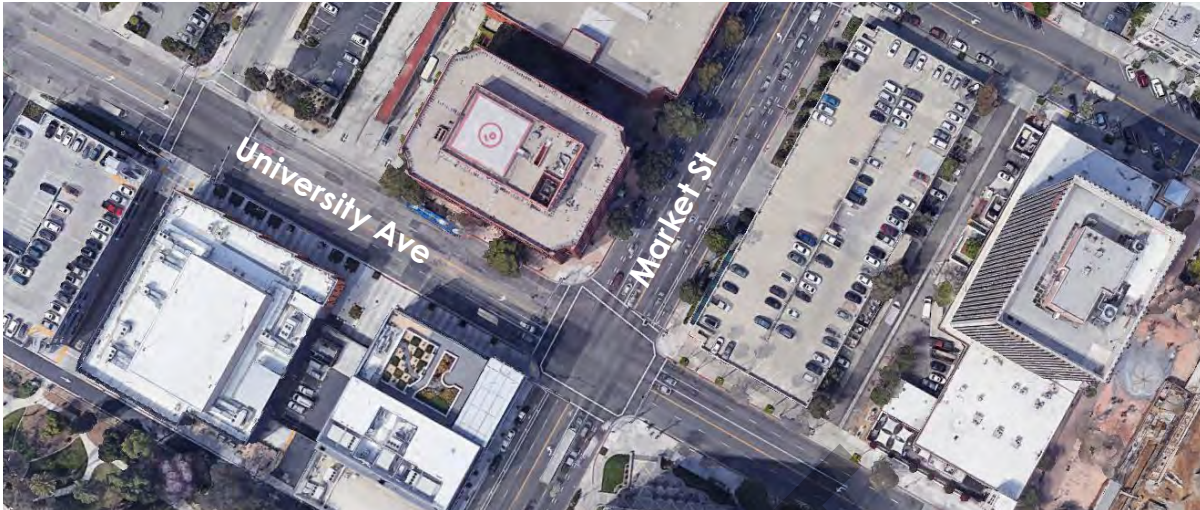


Photo Caption: Market St and University Ave.

## **TYOLOGY E. HIGH VOLUME PEDESTRIAN AREAS**

### **Common Challenges**

- Impatient, distracted and aggressive drivers
- Limited sidewalk space
- Competing curbside uses (loading zones, shared mobility, transit stops)
- Limited pedestrian queuing space

### **Tools**

- Curb extensions
- Crossing guards or traffic control
- High-visibility crosswalks
- Leading pedestrian intervals
- Pedestrian-only signal phase
- Extended crossing time
- Pedestrian Scramble

### **Identified Spot Improvements**

- University Ave and Market St



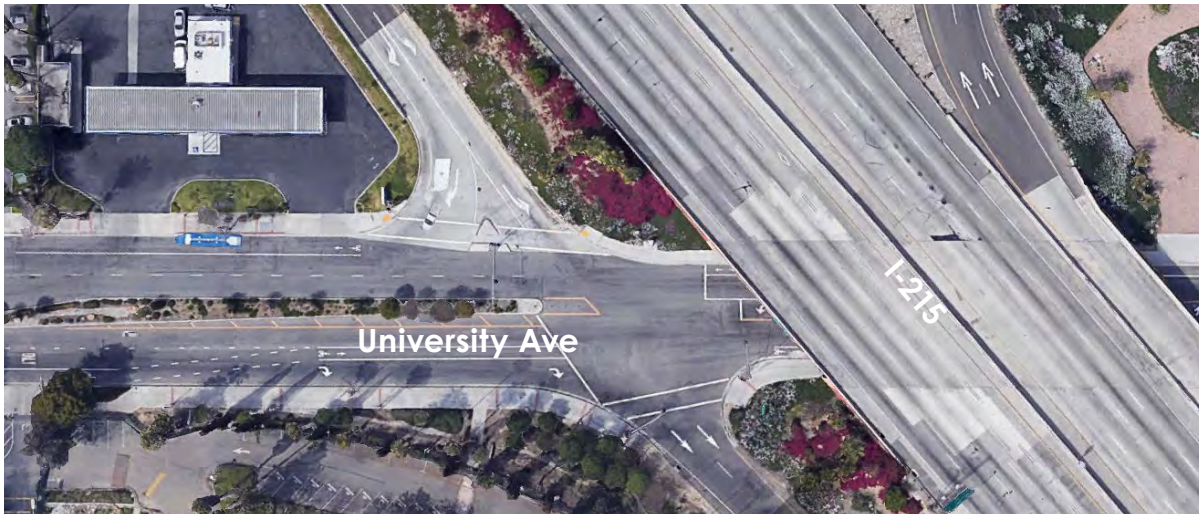


Photo Caption: University Ave and I-215.

## TYOLOGY F. FREEWAY INTERCHANGES

### Common Challenges

- High vehicle speeds
- High vehicle volumes
- Drivers not expecting pedestrians
- Missing sidewalks
- Unmarked crossings
- Lighting
- Limited alternative routes

### Tools

- Marked crosswalks
- Signs
- Pavement markings
- Sidewalks
- Lighting
- Slip lane removal
- On ramp lane removal

### Identified Spot Improvements

- University Ave and I-215 interchange
- Van Buren Blvd and Indiana Ave
- Central Ave and SR-91 interchange
- Tyler St and Indiana Ave - North
- Tyler St and Indiana Ave - South
- Third St. and I-215

## PEDESTRIAN CORRIDOR IMPROVEMENTS

A sidewalk network is critical to pedestrian accessibility and safety by allowing adequate space for pedestrian movement alongside roadways. In collaboration with the Technical Advisory Committee, resident input and City staff, Riverside wards were analyzed for their accessibility to nearby destinations, including schools, trails, parks, places of worship, and commercial centers.

Riverside has a robust system of well-maintained and consistent sidewalks.

However, there are a few areas within the City that lack sidewalks and good pedestrian connections and that could benefit from more frequent maintenance. These areas are predominantly located within wards 6 and 7 in the La Sierra and Arlington neighborhoods.

Recommended pedestrian projects Citywide are shown below in Figure 4-12. Recommended pedestrian projects at the ward level are shown on the following pages in Figures 4-13 to 4-19 and Tables 4-3 to 4-16.

**FIGURE 4-12 PEDESTRIAN RECOMMENDATIONS**

