APRIL 2020

Riverside PACT

TRAILS MASTER PLAN

DRAFT

CITY OF RIVERSIDE

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alta PLANNING + DESIGN

Acknowledgments

CITY OF RIVERSIDE

Adolfo Cruz, Director, Parks, Recreation and Community Services

Randy McDaniel, Deputy Director, Parks, Recreation and Community Services

Alisa Sramala, Parks, Recreation, and Community Services Department, Planning and Design Division

PROJECT CONSULTANTS

ALTA PLANNING+DESIGN

Greg Maher, PLA, Principal-in-Charge

James Powell, PLA, Project Manager

Tim Bevins, Planning Associate

Vesna Petrin, Planner

Daniel Scheir, Designer

TECHNICAL ADVISORY COMMITTEE

Nicolas Barth, Assistant Professor of Geology, UC Riverside

Jane Block, Trail Advocate

Patricia Lock Dawson, Riverside Unified School District

Darleen DeMason, Victoria Avenue Forever

Kimberlie Hall, Riverside Recreational Trails

Gurumantra Khalsa, Friends of Riverside's Hills, Eastside, University Neighborhood

Eric Lewis, Bicycle Advisory Committee

Marven Norman, Inland Empire Biking Alliance

Diana Ruiz, Riverside-Corona Resource Conservation District

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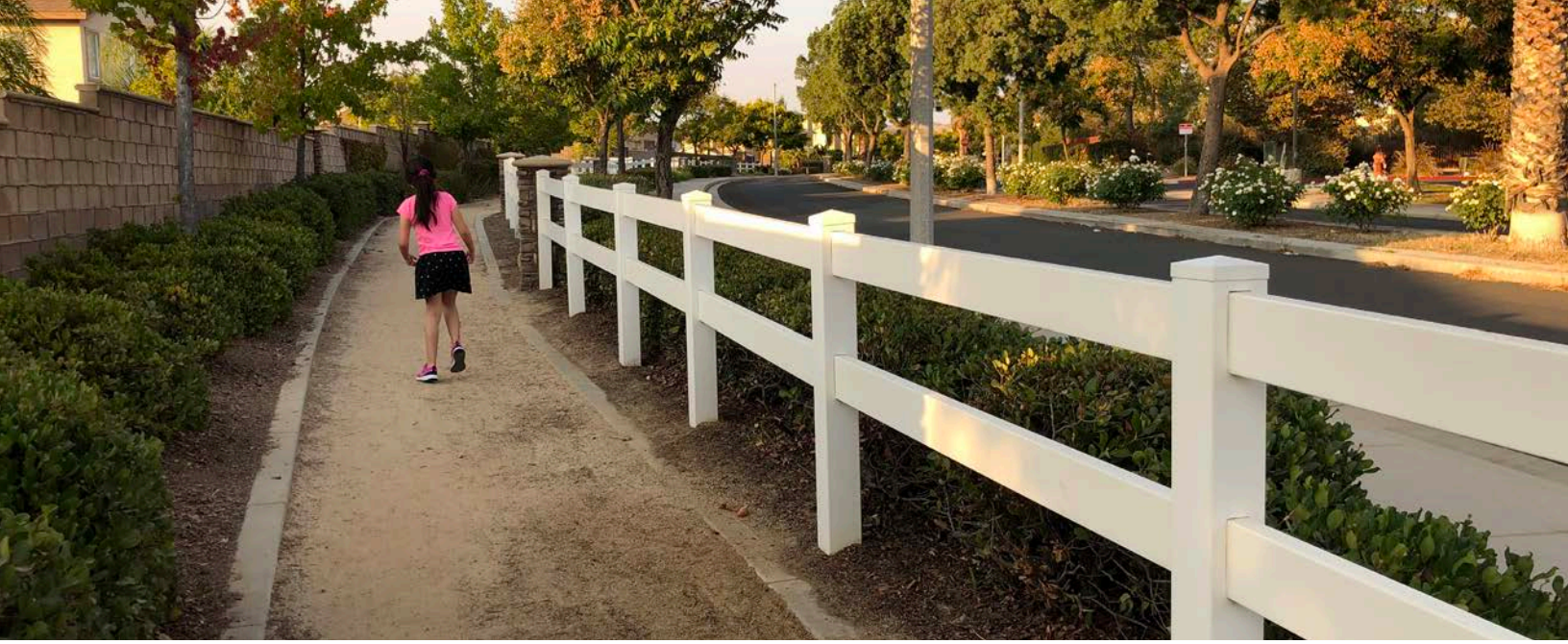
Section 1:
Executive Summary

Mt. Rubidoux, Glenwood Dr. Trailhead



Bountiful Street Roadside Trail

The City of Riverside boasts over 31 miles of multipurpose trails distributed throughout the community and available for all levels of ability. This trails network, managed by the City's Parks, Recreation and Community Services Department (PRCSD), features a variety of paved and unpaved offerings catering to the City's walking, hiking, biking, and equestrian communities.

Though traditionally understood as a network of facilities traversing scenic hillsides, many of Riverside's existing and planned multi-purpose trails are street-adjacent, contributing to the City's overall active transportation network. The City's trails system plays an important role in Riverside's identity, celebrating its abundant natural resources, providing easily accessible outdoor recreational opportunities to residents, connecting neighborhoods to parks and other community resources, and offering non-motorized commuters a network for getting to and from work, school, and daily errands.

Riverside's trails network is beloved by residents, and stakeholder interviews, public workshops, and surveys conducted in support of the 2019 Comprehensive Park, Recreation & Community Services Master Plan indicate that trails were the most requested amenity by stakeholders. The Plan places trails in the highest-tier of park needs and identifies them as capable of delivering the "maximum community impact". This support underscores the importance of providing more opportunities for trail use, improving the community's quality of life by providing health and wellness benefits as well as environmental benefits associated with reduced vehicular use.

Trails Master Plan

OVERVIEW

This Trails Master Plan (TMP) serves as an update to the Multi-Purpose Recreational Trails Master Plan and Trails Standards document adopted by Council in January 1996, with slight modifications and updates included in the 2003 Parks and Recreation Master Plan Update. In the intervening years since the publication of these documents, the City has grown by nearly 100,000 additional residents, accompanied by new residential buildings, warehouses, commercial developments and retail centers. This update contextualizes the spatial impacts and usage demands of growth throughout the City, creating a plan that meets current needs and goals so that residents and visitors alike can enjoy safe, enjoyable, and convenient access to trails.

Note that this plan only covers unpaved trails. Paved trails, such as Class I shared use paths, are covered under the Active Transportation Plan.

Additionally, internal park trails are not included in the Trails Master Plan. The City will continue to implement internal park trails on a case-by-case basis to add to the recreational opportunities in our parks, but they do not serve to connect to other points of interest or contribute to larger connectivity between open space and recreation opportunities in the city.

Developed in coordination with City staff, a Technical Advisory Committee (TAC) comprised of residents and stakeholders, and a focused public outreach and input process, this TMP update provides the City, residents, trails advocates, and developers with a single, comprehensive reference point representing the most current vision for Riverside's trail network, design, maintenance, and funding. In addition to updating trail design guidelines and standards, the TMP proposes and prioritizes new trails and gap closures, addresses integration of trail facilities with the City's on-street active transportation network, and identifies potential funding sources.

PLANNING PROCESS

This TMP was developed as part of the Riverside PACT (Pedestrian Target Safeguarding Plan, Active Transportation Plan, Complete Streets Ordinance, and Trail Master Plan) planning process, an integrated citywide planning effort addressing on-street and off-street active transportation

in a holistic manner, and informed by a robust public engagement process. Public outreach efforts undertaken as part of the PACT process in all 7 Wards included 25 in-person presentations with community groups, surveying the public on preferences and priorities at existing events, a virtual community workshop, and an interactive online public input map that enabled residents to draw-in proposed trails, identify gaps, and prioritize trail projects. The project team also reviewed previous planning documents such as the 2019 Comprehensive Park, Recreation & Community Services Master Plan, 2007 General Plan, Riverside County's 2018 Comprehensive Trails Plan, conducted interviews with City staff, analyzed and identified proposed trail alignments utilizing Geographic Information Systems (GIS), and field work.

NETWORK RECOMMENDATIONS SUMMARY

The network of proposed trails identified in this Plan were developed by evaluating opportunities and constraints at the network level. This included locating and closing gaps in the City's existing trails network, identifying key locations for trails such as underserved areas in the City, park space and residential neighborhoods, and connections to existing trails in neighboring jurisdictions. Trail planning was also informed by community ranking, TAC input, and the feasibility of implementation. In addition to proposing new trails, alignments of previously proposed trails were verified, and some have been re-aligned to better accommodate existing conditions and development patterns, while others have been removed from consideration.

As identified in the 1996 Trails Master Plan and reinforced in the 2003 Park and Recreation Master Plan Update, the City's previous trail planning approach focused on a network of primary trails encompassing Riverside, complemented by a secondary network of trails offering shorter-trip recreational opportunities and/or locations within the City, as opposed to its perimeter. Subsequent land development following the 1996 TMP's publication has resulted in the need to realign some previously proposed trail segments, obviated the need for others, and created new population centers in the City in need of trails. Previous trail planning documents also did not include a prioritized list of trails, further complicating construction of new facilities.

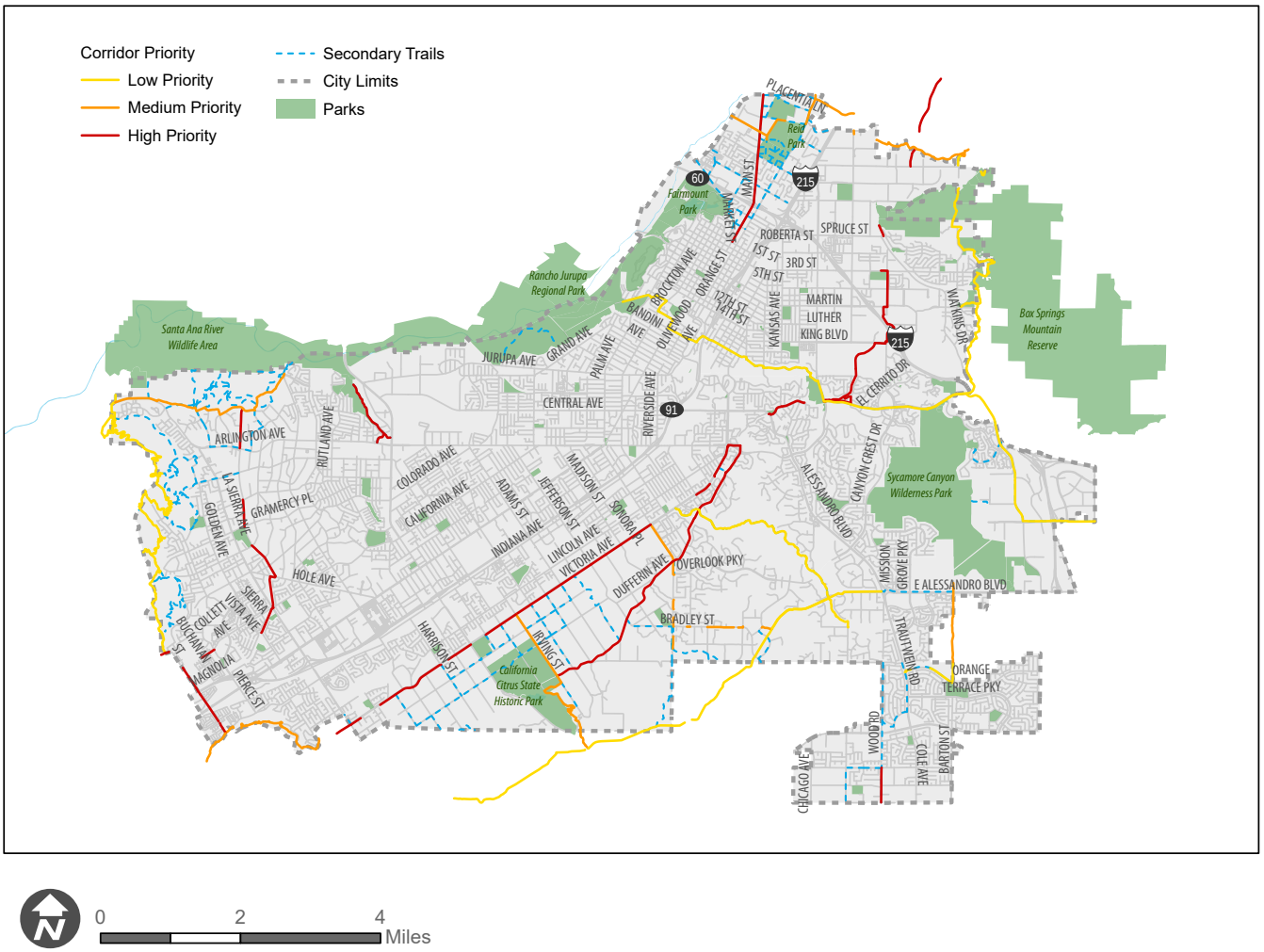
This TMP update addresses both of these concerns, providing an updated network of proposed trails comprised of a primary and secondary network, with the primary network prioritized by factors such as connectivity, equity, feasibility, and public support.

Table 1 and Figure 1 summarize the top-ranked proposed trails.

TABLE 1 : TOP-RANKED PROPOSED TRAILS

TRAIL CORRIDOR	RANK
Main Street	18
Hole Lake	9.50
Mitchell	9.00
Wood	8.00
Mitchell to Buchanan	8.00
Gage Canal	7.35
Victoria Ave	7.33
Buchanan	6.40

FIGURE 1 : TOP-RANKED PROPOSED TRAILS



DESIGN GUIDELINES SUMMARY

This TMP update includes cross section illustrations and updated trail design standards based upon national best practices for a variety of conditions, uses, and available easements encountered in Riverside. These design guidelines include considerations for trails that cross vehicular roadways, the needs of different types of trail users, and material selection. The TMP design guidelines cover mainly unpaved trails, whereas paved Class I bike paths are covered under the PACT in the Active Transportation Plan (ATP). This section also provides guidance on content, graphic design, and construction of a signage and wayfinding program for the trails network.

IMPLEMENTATION PLAN SUMMARY

This section presents a framework for implementation, including short- and long-term trail network goals, a prioritized project list, and an associated phasing strategy.

The prioritized project list was arrived at utilizing an evaluation matrix including a variety of considerations such as public support, feasibility, connectivity, and equitable distribution. Complementing this prioritization exercise, a project phrasing strategy was developed to address immediate needs or critical network gaps and develop a comprehensive strategy in light of limited trail-building funds.

This section also identifies standard operations and management considerations such as operating hours, public safety, and protocols for detours or closures. Both routine and remedial trail maintenance standards are provided for the breadth of trail types included in this Plan, and are accompanied by their approximate costs. Potential funding opportunities from state, federal, and private sources are also listed in this section, along with potentially fruitful partnerships such as adopt-a-trail programs. Finally, the implementation section describes land acquisition strategies such as easements and rights-of-first-refusal that the City may exercise in order to acquire underutilized land for trail development.

Wood Road Multipurpose Trail

Section 2: Introduction

Riverwalk Trail along Riverwalk Parkway

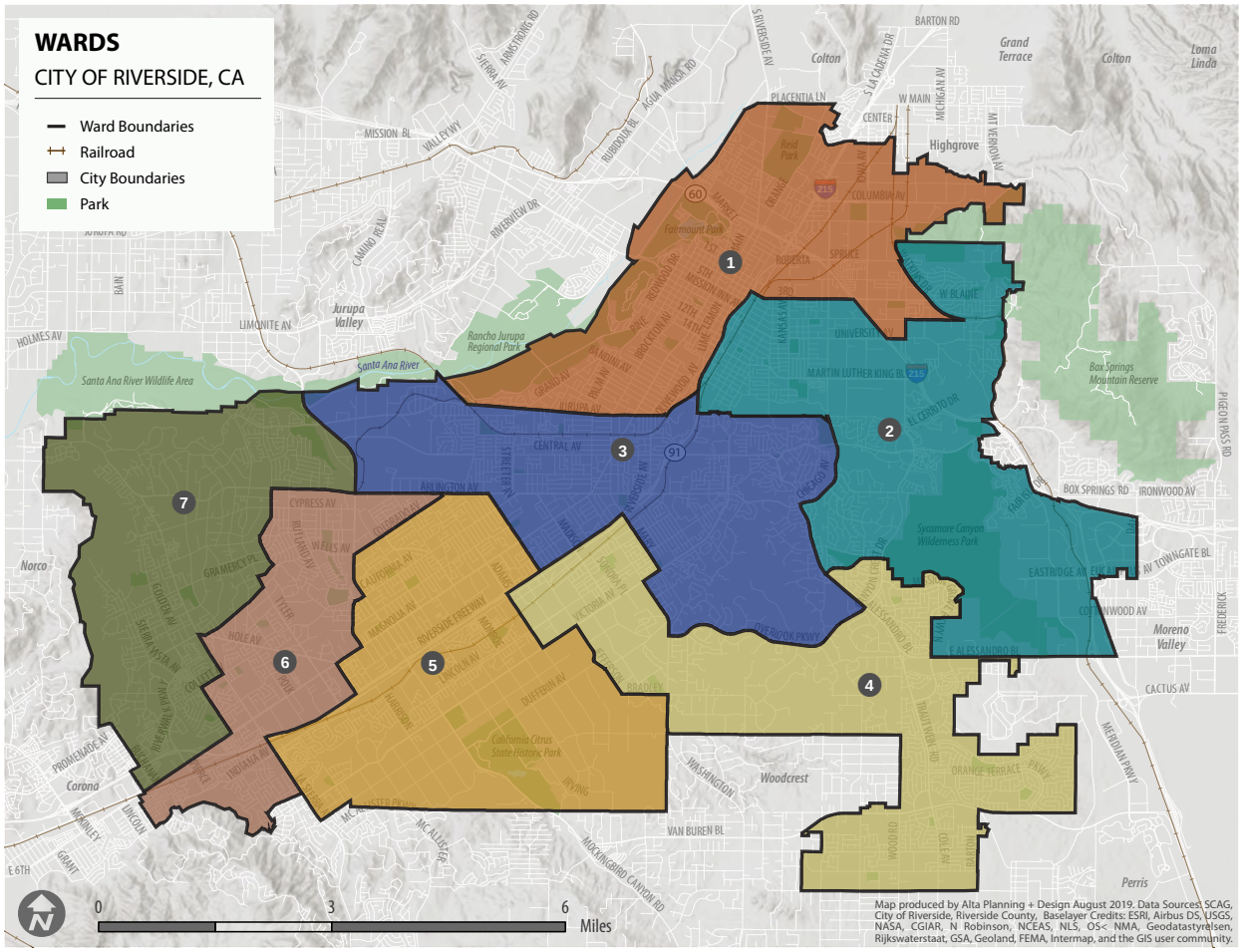
Project Area Overview

The City of Riverside is located within Riverside County in Southern California, which lies east of Orange County, north of San Diego and Imperial Counties, and south of San Bernardino and Los Angeles Counties.

The City of Riverside encompasses 82 square miles and is made up of seven wards, each of which are made up of approximately 1/7th of the City's 317,000-person population Figure 2.

There are currently 31 miles of multi-purpose trails within Riverside. This trails network, managed by the City's Parks, Recreation and Community Services Department (PRCSD), features a variety of paved and unpaved facilities that serve Riverside's walking, hiking, biking, and equestrian communities.

FIGURE 2 :CITY OF RIVERSIDE WARDS



Vision, Goals, and Objectives

The TMP updates and refines the 1996 Trails Master Plan, with a focus on facilitating implementation by providing clear guidance to City agencies and private developers.

PLAN GOALS

The TMP's three primary goals are:

- Establish a comprehensive suite of updated trail design and maintenance guidelines that are accessible by a variety of user types, and connect to major destinations throughout the city.
- Develop a prioritized list of proposed trail facilities, accompanied by recommendations for funding and implementation.
- Provide clear standards and guidance for property owners and developers.

PLAN OBJECTIVES

- Provide an analysis of current trail segments, catalogue the City's inventory of existing trails and trail classifications, and verify trail status;
- Analyze system gaps, determine property ownership and approaches for property acquisition, where necessary;
- Develop sustainable trail design guidelines which refine current standards and are compatible with adjacent trail networks;
- Examine key policy issues related to trails such as land use, easements, liability, unsanctioned use, and illegal motorized trail use;
- Develop a plan for trail implementation and phasing;
- Define the City's role in trail management and implementation and identify opportunities for other agencies to assume responsibility of the trail network;
- Identify potential trail partnerships and recommend immediate and long-term funding models;
- Provide a framework of recommendations that will serve as a blueprint for future trails planning, maintenance, and development;
- Base recommendations on input from stakeholders, other trail agencies and local trail users.

Existing Plans and Context

In addition to the 1996 Trails Master Plan, a number of City and County plans establish visions and propose trails in Riverside. These plans have been reviewed, and relevant elements have been incorporated into this Plan update to further the City's goal of delivering a comprehensive trails network throughout Riverside that connects to regional trail networks. A list of the reviewed plans is provided below. For brief summaries of the plans, see "Appendix 4: Existing Plans and Context".

TABLE 2 : REVIEWED PLANS

PLAN TITLE	YEAR
Sycamore Canyon Specific Plan	1991
Mission Grove Specific Plan	1996
Rancho La Sierra Specific Plan	1996
Trails Master Plan	1996
La Sierra University Specific Plan	1997
Sycamore Canyon Wilderness Park Stephens' Kangaroo Rat Management Plan and Updated Conceptual Development Plan	1999
Downtown Specific Plan	2002
City of Riverside Park and Recreation Master Plan Update	2003
Bicycle Master Plan	2007
General Plan	2007
Bicycle Master Plan	2012
Riverside County Box Springs Mountain Reserve Comprehensive Trails Master Plan	2015
Downtown Specific Plan	2017
Riverside County Comprehensive Trails Plan	2018
Comprehensive Parks, Recreation, and Community Services Master Plan	2020
Northside Specific Plan	2020

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Section 3: Design Guidelines

Choi Drive Roadside Trail

Best Practices

TRAIL PLANNING AND DESIGN POLICIES AND STANDARDS

The Riverside County Regional Park and Open Space District's Comprehensive Trails Plan (2018) outlines a number of trail planning and design policies and standards for the region. In addition, the City of Riverside has several existing design standards and guidelines related to urban trail planning, as identified in its 2013 Bicycle Master Plan. Many of the standards are pulled from the Caltrans Highway Design Manual and the Federal Highway Administration (FHWA) Manual on Uniform Traffic Control Devices (MUTCD).

The planning and design best practices detailed in this plan are adapted from a variety of existing trails plans and serve as a guide for trail implementation by developers, private property owners, and agencies in the City of Riverside.

TRAIL PLANNING BEST PRACTICES

Successful trails serve a variety of users, connect to other trails and the greater active transportation network, and incorporate wayfinding best practices to provide a comfortable user experience. Depending on available right-of-way and budget, trail areas can provide amenities to make the trail experience more enjoyable for all users. Successful trails also have clear management structures and funding mechanisms in place to ensure the trails are adequately managed and maintained once constructed. For additional information, see "Appendix 3: Planning and Design Best Practices"

TRAIL DESIGN BEST PRACTICES

Trails can be constructed with either hard (asphalt or concrete) or soft surface (compacted native soil or decomposed granite) materials depending on the land context of the trail and anticipated use. The trails in the City's Trails Master Plan are primarily soft surface. Of the potential soft surface materials, stabilized decomposed granite is specified for trails with high activity and equestrian use. For additional information, see "Appendix 3: Planning and Design Best Practices"

TRAIL TYPE AND SHARING THE TRAIL

Trail managers sometimes must balance the often-political decision of selecting the appropriate trail use or uses on a given piece of property. In an optimal setting, managers could selectively place trail uses in strategic locations to reduce user conflict and protect the environment, while creating a high-quality experience for all user types. This is rarely the case, and decisions made

by trail administrators and managers can sometimes result in users feeling not represented in trail systems. Selecting where trails should be located is no easy task, but it must be done to reduce user conflict. The location of a trail or trail system will also help determine the appropriate uses. Trails located in environmentally sensitive lands should consider the environmental impacts of trail users for both environmental degradation and wildlife behavior.

USER CONFLICT AND ETIQUETTE

User conflict reduction policies aim to ensure that conflict is mitigated before it raises to the point of being an issue between user groups or management. A number of policies and programs can be adopted to ensure that the risk of conflict can be reduced. These policies can be geared towards reducing conflicts between groups, provide education on appropriate use, and assist with self-regulation of trails. While policies geared towards reducing conflict can be put in place and signs implemented to the same effort, trails can often generate more demand than supply and this can frequently impact user experience (City of Des Moines, 2011, p. 192). It is recommended that the City of Riverside adopt user policies for recreational areas such as Sycamore Canyon and Mt. Rubidoux.

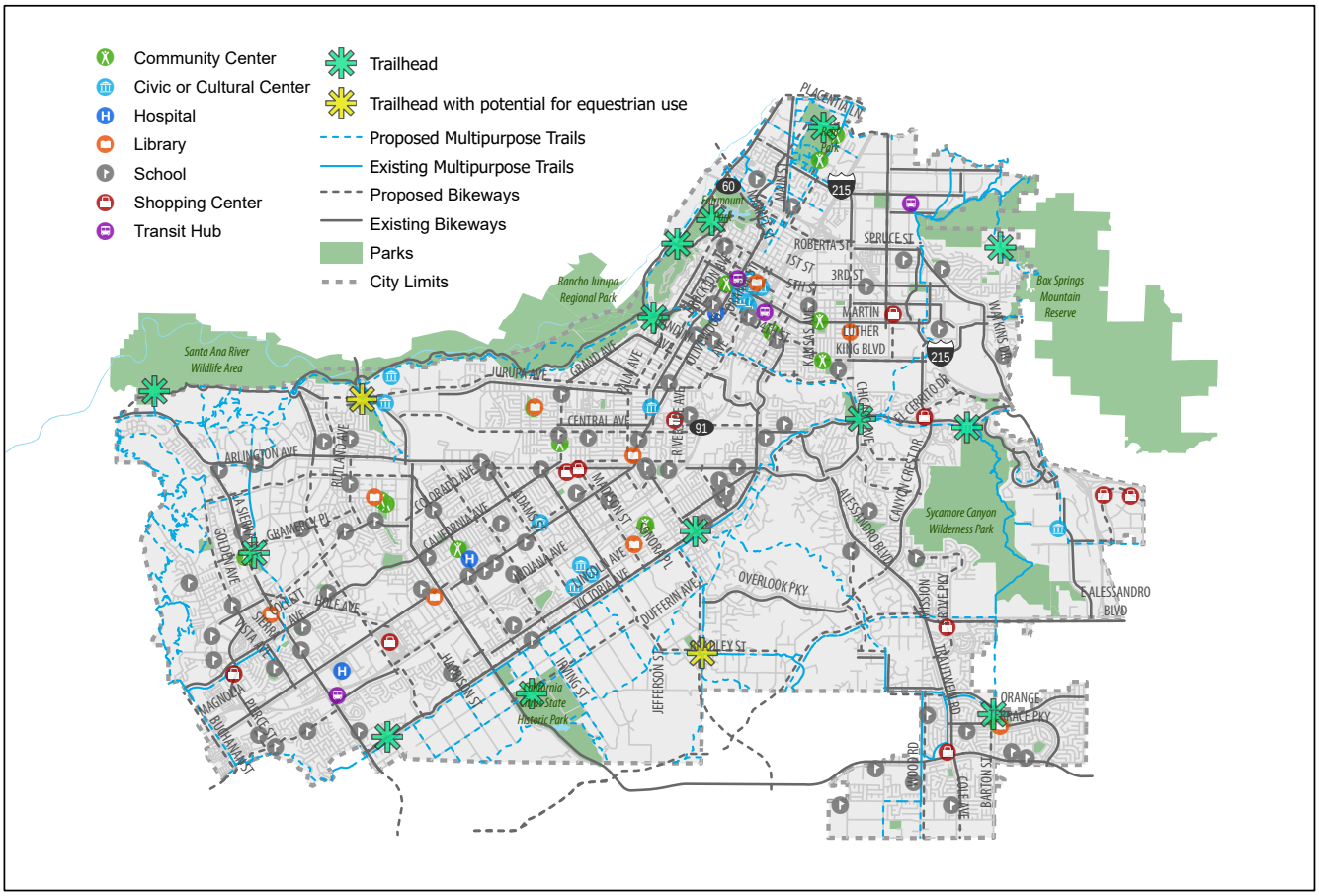
First/Last Mile Considerations

Whenever possible, it is important that the City of Riverside's trail network connects to its greater on-street active transportation network.

Figure 3 shows the overlaps and connections between existing and proposed on-street bicycle facilities, intersections between the trail and bikeway networks, and the greater Riverside trail network.

Strong connectivity between the two networks allows residents to use them as first/last mile routes to and from community destinations, including schools, shopping centers, and transit hubs.

FIGURE 3 : TRAILS, ON-STREET FACILITIES, AND DESTINATIONS



Equestrian Presence

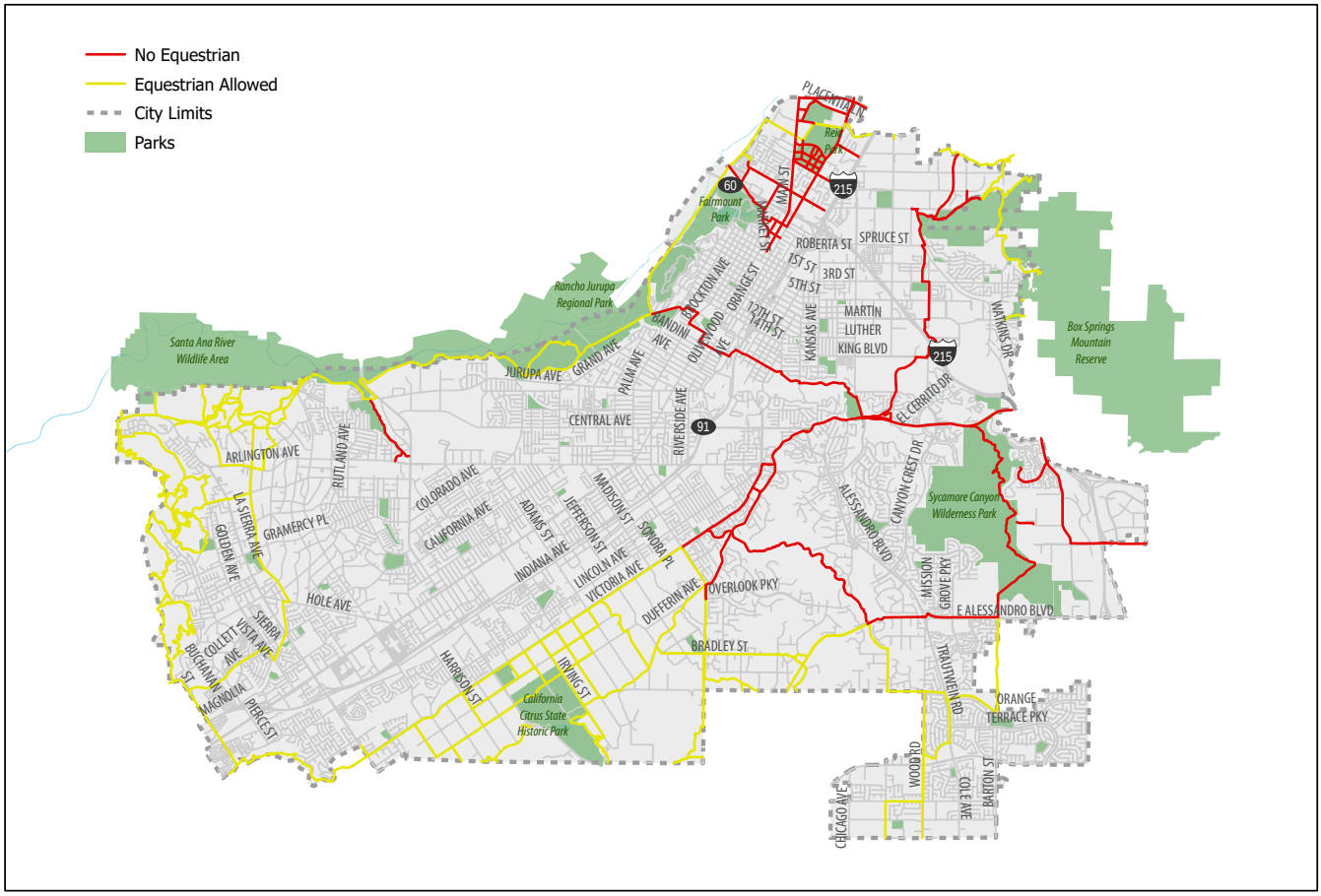
Due to the equestrian presence in Riverside, the Trails Master Plan identifies existing and proposed trail segments that do and do not allow for equestrian access.

Equestrian access to trails is possible if those trails fall within an equestrian-zoned area that allows for horse-keeping (i.e. RA-5, RC, and Residential Livestock Overlay Zone).

In addition, the Riverside, California Code of Ordinances details equestrian access within city parks. Equines are not allowed within city parks unless:

- they are being led or ridden under control upon a bridle path or trail authorized and provided for such purpose;
- they are hitched or fastened at a place expressly authorized and designated for such purpose

FIGURE 4 : EQUESTRIAN TRAILS



Trailheads

The development of informative and easily identifiable trailheads will enhance the experience of the trail user and act as a linkage between the community and the surrounding open spaces via the trails system.

AMENITIES AT TRAILHEADS

The trailheads as proposed in this Plan support the trails system framework by their location in, or near the major open spaces that surround the City; specifically, Norco Hills, the Santa Ana River, Box Springs Mountain, Sycamore Canyon, Arlington Heights, and its surrounding citrus groves. Trailheads can also be located within smaller parks that are adjacent to the existing and proposed trails system. Trailheads are intended to serve the regional population as well as the local residents.

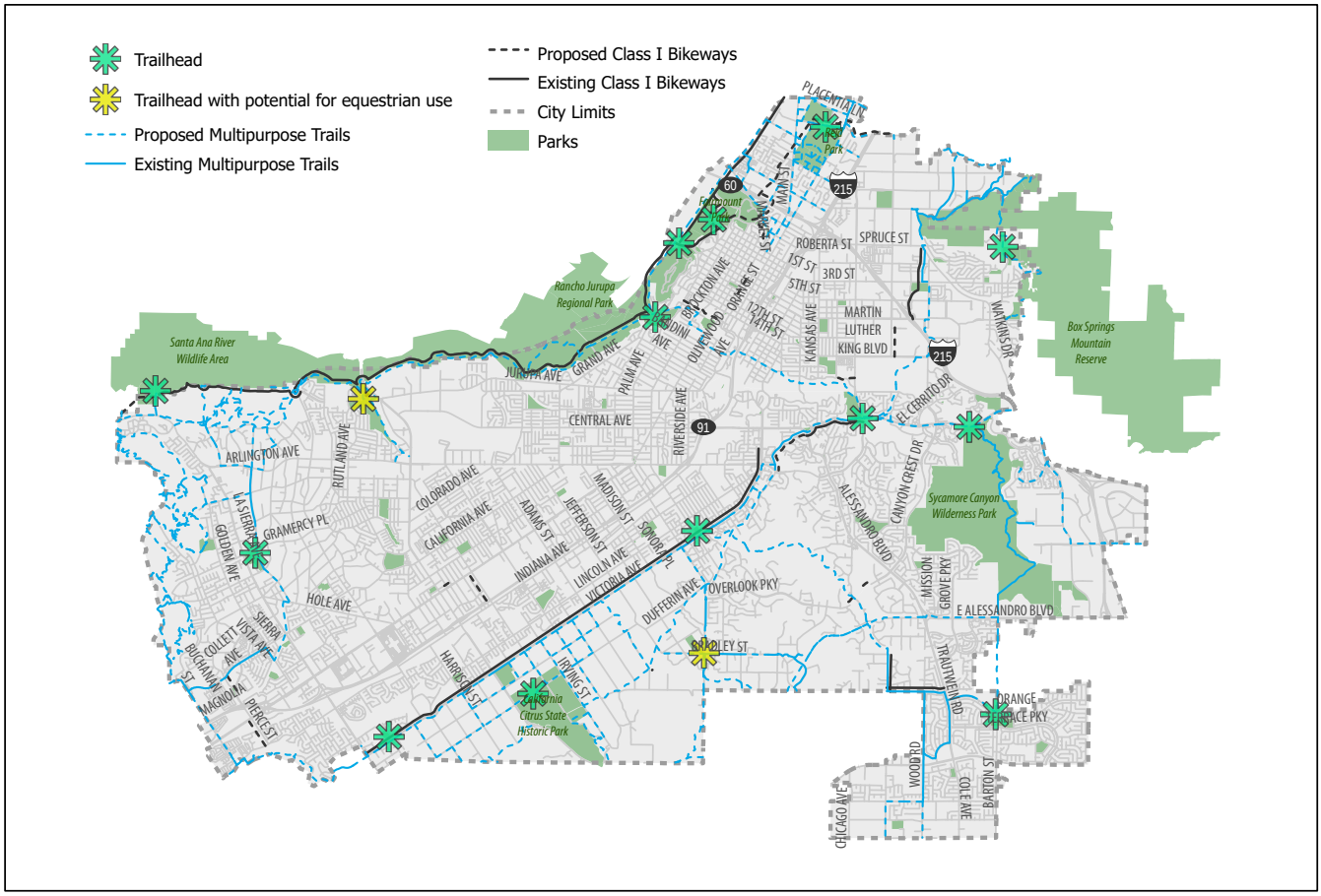
Amenities at trailheads would include the following:

- Identification and directional signs
- Marked parking stalls, including up to six pull-through stalls to accommodate vehicles with directional signs
- Drinking water
- Shade
- Seating
- Trash receptacles
- Restrooms (where feasible)

Many of the trailhead locations designated in Figure 4 are built out and do not have available space to fit equestrian amenities. However, a couple future park site locations have been identified where equestrian parking and amenities should be considered during future Park Master Plan development at each location. Additional amenities to be found at trailheads with potential for equestrian use include the following:

- Hitching posts
- Water facilities for horses

FIGURE 5 : PROPOSED TRAILHEADS



Street Network Interface

Trail intersections with roadways require special design considerations. As trails approach the street network, several design tools can be used to improve user comfort and safety when crossing. These include preventing vehicles from entering the trail, using design interventions to alert trail users of upcoming road crossings, and implementing intersection safety improvements.

MOTOR VEHICLE SEPARATION

At trail and roadway intersections, vertical curb cuts can be used to discourage motor vehicle access. “No Motor Vehicles” signage (MUTCD R5-4) can be used to reinforce access rules. Trails can be split into two sections separated by low landscaping to preserve visibility and emergency access.

TRANSITION AREAS

Optical Speed Bars / Pavement Markings

On paved trails, optical speed bars and other pavement markings can be used to increase user awareness of an upcoming change in the trail environment and alert users to decrease their speed. Speed bars are 2-foot wide pavement markings that are progressively spaced more closely together to visually narrow the trail and increase awareness of the upcoming change.

Additional pavement markings can include high-visibility crosswalks and colored concrete crosswalks.

Path Materials

On both paved and unpaved trails, path materials can be used to alert users of an upcoming change in the physical environment. This may include a change in path materials, such as transitioning from asphalt or natural surface pathway to a contrasting material.

Signage

Signage can also be used to alert users of upcoming roadway crossings. Signage should be included at both grade-separated and at-grade intersections.

GRADE-SEPARATED INTERSECTIONS

Riparian trails, rail trails, or other trails with infrequent connections to the street network make it difficult for trail users to orient themselves. Simple street signage on overcrossing or undercrossing structures can help trail users determine their location within the street network.

AT-GRADE INTERSECTIONS

Several tools can be used to improve safety of at-grade trail intersections. These include MUTCD-standard signage, enhanced lighting

and high-visibility crosswalks, pedestrian signals such as Rectangular Rapid Flashing Beacons (RRFBs) and Pedestrian Hybrid Beacons (PHBs), and curb extensions.

TRAIL ENTRIES

Trail entries at crossings should employ design elements that discourage motor vehicle access on trails. A split path entry design may be used to prevent the crossing point from appearing like a driveway. Very tight curb returns can make it very difficult for motorists to turn onto the trail. If bollards are needed they must be spaced at a minimum of five feet apart to allow for easy passage by cyclists, bicycle trailers, adult tricycles, and wheelchair users.

CA MUTCD-standard signage at-grade trail crossings

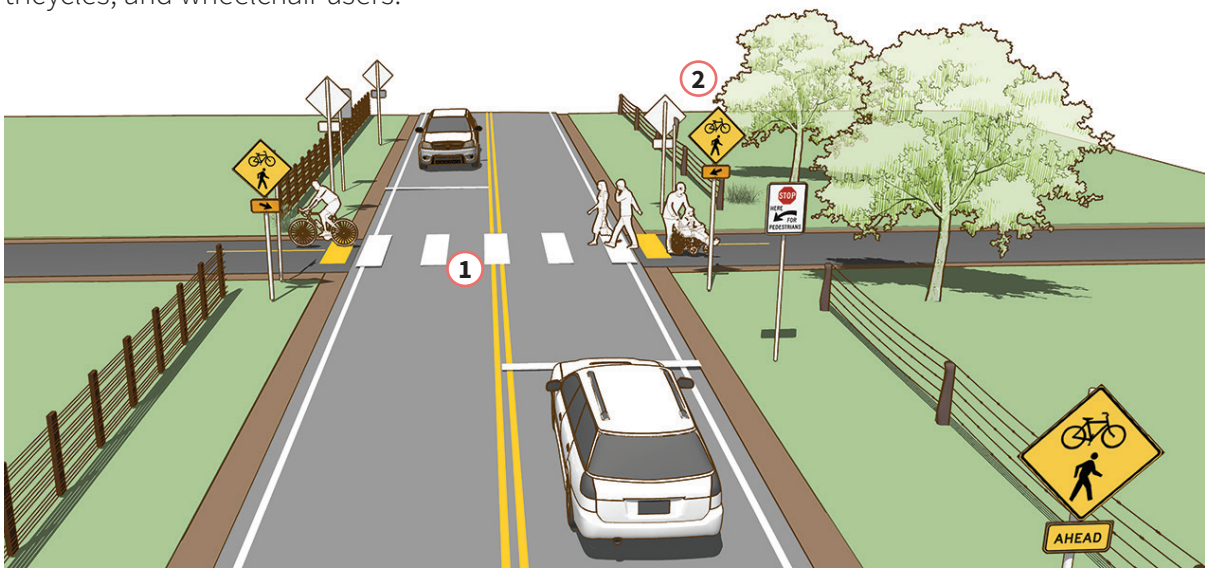


FIGURE 6 : MID-BLOCK TRAIL CROSSING

Design Features

1. **Crosswalk.** Appropriate high visibility crosswalk markings should be installed.

2. **Warning Signs.** A Bicycle/Pedestrian warning sign (W11-15) with Downward Arrow plaque (W16-7P) at the crossing, on both sides. Signs are used to warn users of the crossing location.

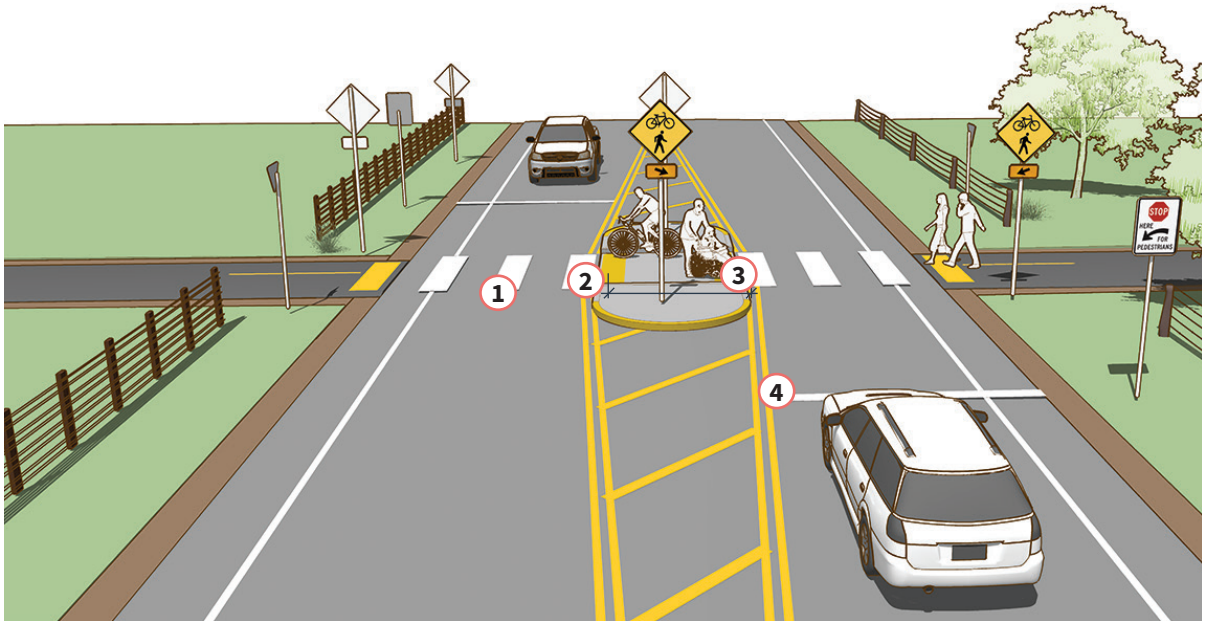


FIGURE 7 : MID-BLOCK TRAIL CROSSING WITH REFUGE ISLAND

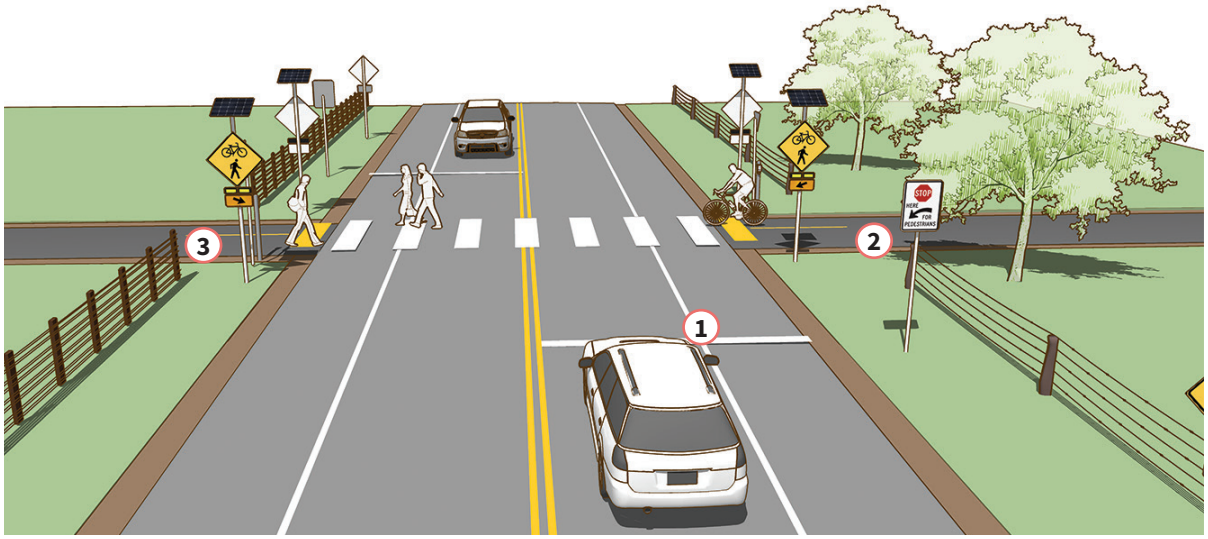
Design features

1. **Crosswalk.** Median islands should be paired with a Marked Crosswalk and Advanced Yield Line crossing treatment package.

2. **Refuge Area.** The bicycle waiting area should be at least 8 ft deep to allow for a variety of bicycle types.

3. **Safety Island.** A median safety island should allow path users to cross one lane of traffic at a time. It should be the same width as the crosswalk.

4. **Horizontal Deflection.** To promote yielding to bicyclists the median safety island should be designed to require horizontal deflection of the motor vehicle travel lanes.



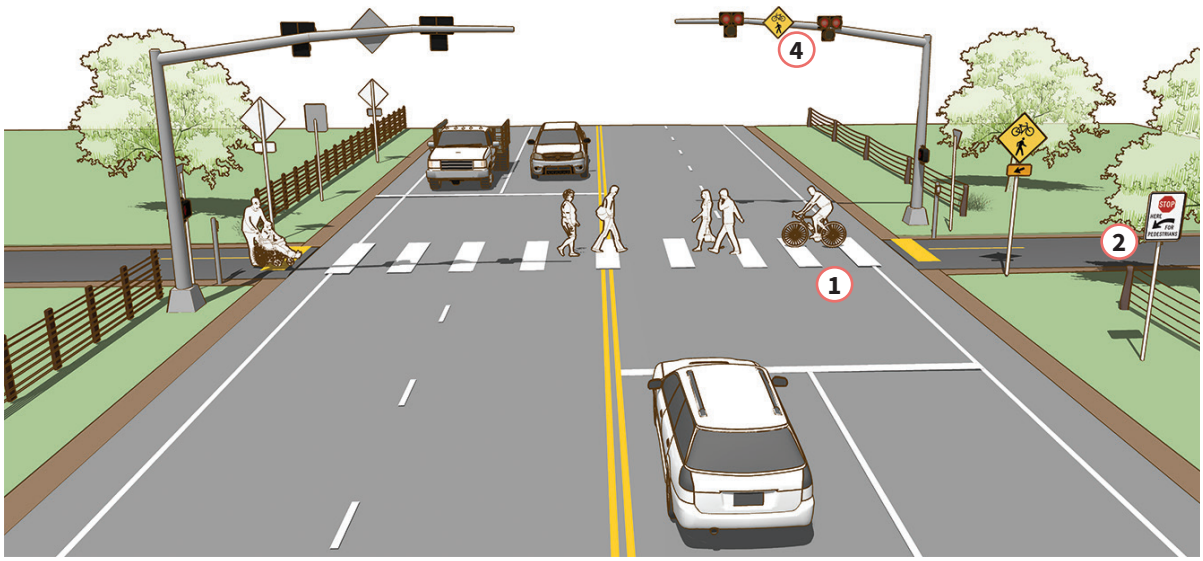


FIGURE 8 : FLASHING BEACONS AND HYBRID BEACONS

Design features

1. **Crosswalk.** A marked Crosswalk and Advanced Stop Bar crossing treatment package should be paired with the full traffic signal.

2. **Stop Sign.** A stop line and STOP HERE ON RED sign should be used.

3. **Rectangular Rapid Flashing Beacon (RRFB).** Where yield compliance is low, rectangular rapid flashing beacons can be used to draw attention to crossing path users and signal their intent to cross.

4. **Pedestrian Hybrid Beacon (PHB).** On multi-lane streets with high volumes and few gaps for crossing, a pedestrian hybrid beacon may be used to increase yielding rates.

DRIVEWAYS AND MINOR ROADS

Similar to larger intersections, driveways and small roads present additional areas of conflict when crossing a trail. When designing these trail crossings consideration must be given to the size of the driveway or road, as well as the speed of the adjacent roadway, and available space.

For large and frequently used driveways and minor roads, a bend-out design may be implemented where space allows. This design treatment widens the physical separation between the trail and adjacent roadway as it moves towards the driveway.

The trail separation should vary according to the adjacent road speed limit and available space, with larger separation given to higher speed roads, detailed in Figure 8. This design treatment provides space for right-turning vehicles to yield to trail users.

For small driveways and where space does not allow for a bend-out design, special consideration should be given to sight lines and visibility of trail users. To avoid the encroachment of vehicles exiting driveways into the trail crossing, landscaping and other furnishings or trail elements should not be placed within 15 ft of a driveway edge, detailed in Figure 7.

FIGURE 9 : SIGHT DISTANCE TRIANGLES

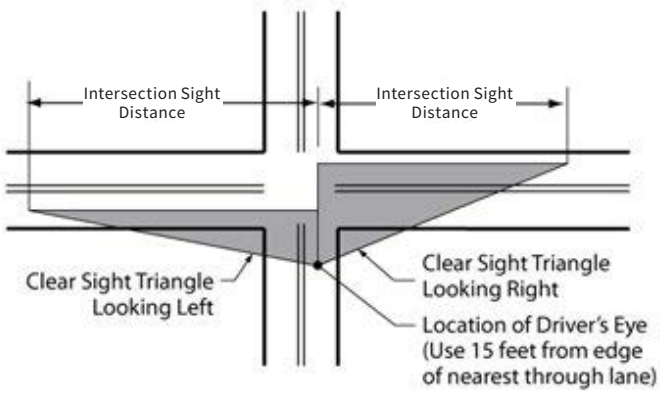


FIGURE 10 : TRAIL SEPARATION AT CROSSINGS

ADJACENT ROAD SPEED (MPH)	RECOMMENDED PHYSICAL SEPARATION (FT)
<25 MPH	6.5'
35-45 MPH	6.5' - 16.5'
≥55 MPH	16.5' - 24'

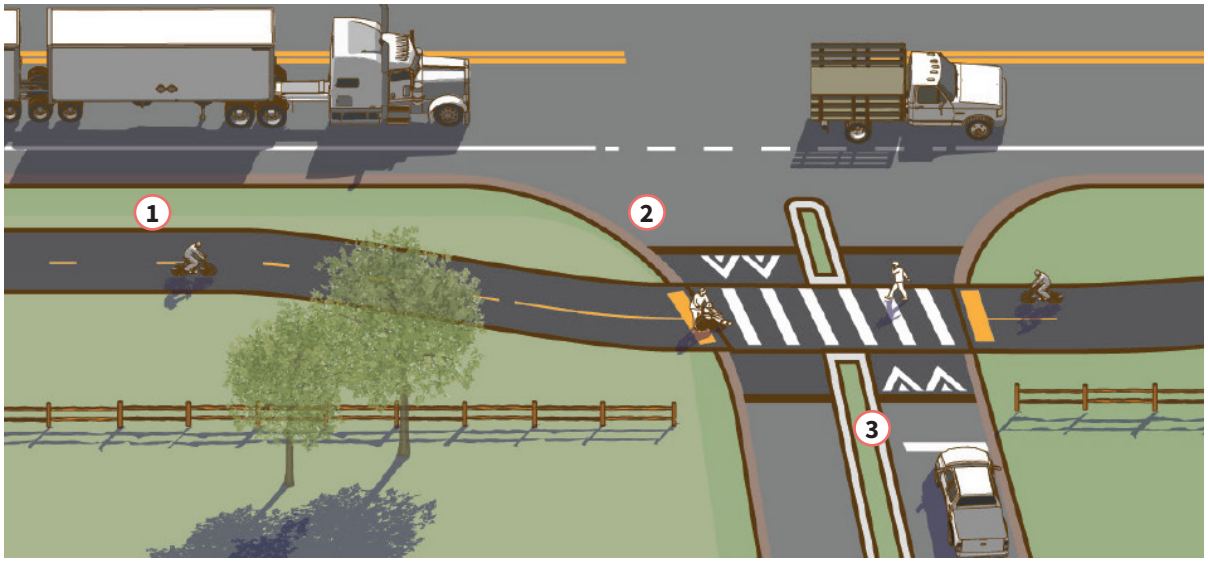


FIGURE 11 : BEND-OUT TRAIL CROSSING

Design features

1. **Sight Distance.** The trail approach to the driveway intersection should provide enough stopping sight distance to allow drivers to stop before entering the crossing area.

2. **Physical Separation.** A physical separation should be used between the adjacent roadway and trail ranging between 5 ft and 24 ft.

3. **Raised Median Island.** At major driveways and minor road intersections, provide a raised median island for additional safety and trail user comfort.

Trail Design Guidelines

The following pages illustrate typical cross-sections of trail types found within the City of Riverside, as well as their relevant design guidelines related to surface material, width, slope, and other elements.

SIDEPATH TRAILS

Sidepath trails are roadway-adjacent multipurpose trails. These generally run either parallel to or replace sidewalks on one side of the street, and are constructed from a firm, stabilized decomposed granite surface that is accessible and comfortable for equestrian use, walking, jogging, and bicycling.

URBAN TRAILS

Urban trails are defined by the presence of an off-street walking path that is adjacent to a Class I bike path.

OPEN SPACE TRAILS

Open Space trails are located away from roadways and generally are in less developed areas of the city. Open Space trails are frequently constructed with compacted soil or natural surface, but can be constructed with decomposed granite on fire road trails.

Design guidelines for these trails are on the following pages. The overall locations of these various trail types are illustrated in Figure 11.

These trail types include those that serve people of all ages and abilities, including pedestrians and hikers, bicyclists, and equestrians. It is noted that design guidelines for paved Class I bike paths can be found in the City's Active Transportation Plan. Paved Class I trails should reference the 2020 City of Riverside Standard Drawings for Construction, Standard Drawing #111.

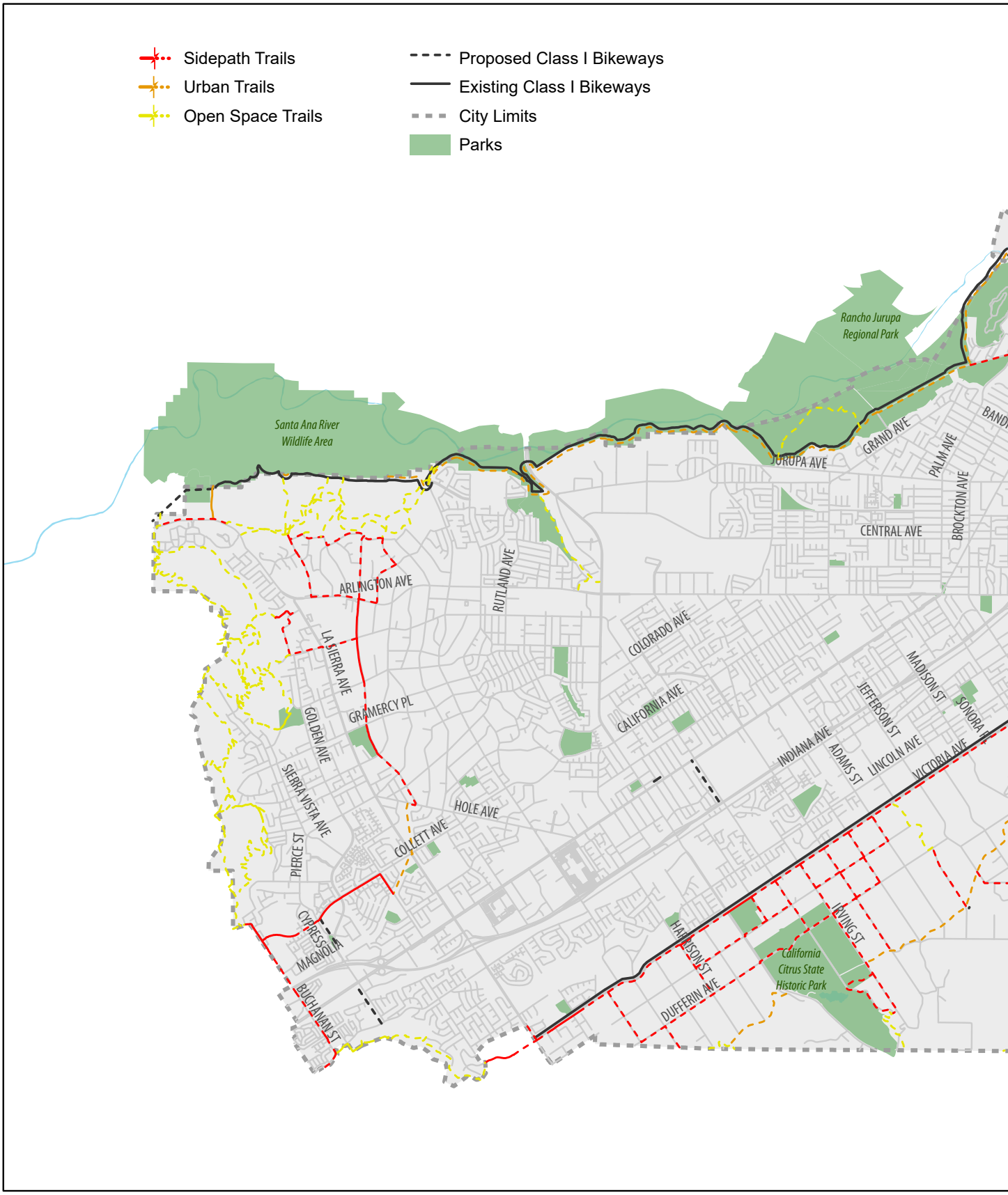
Design guidelines are primarily used to provide guidance to developers and to jurisdictions for new trail construction and future maintenance purposes. Where conditions do not exactly match those detailed in the Trails Master Plan, trails should be designed according to the most similar detail provided.

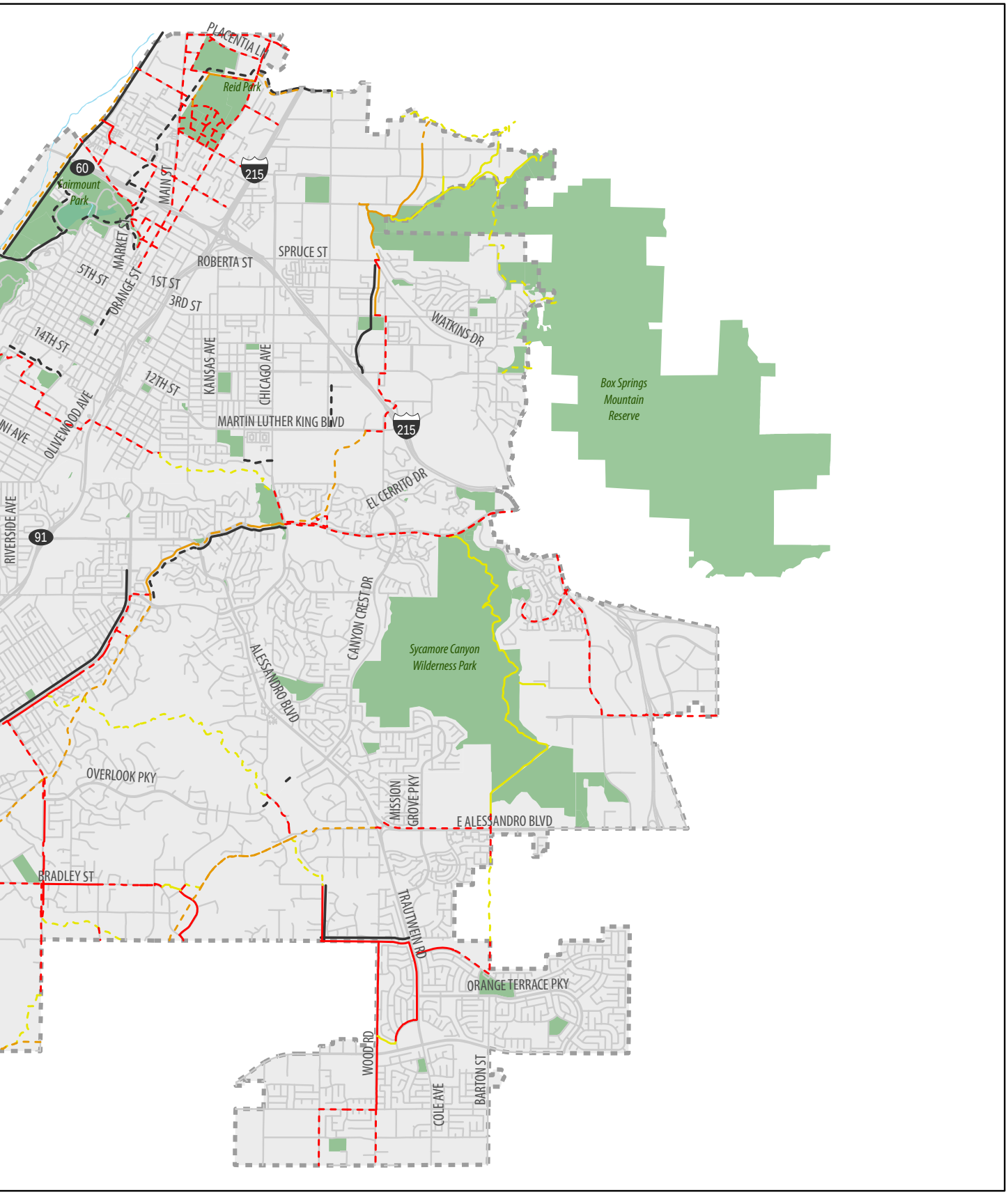
However, it is recognized that in certain situations due to physical constraints, it may not be feasible for the trails to be implemented according to the standards described in the Trails Master Plan. In such cases, variation from these standards may be allowed on a case-by-case basis subject to approval by the City's Parks and Recreation Commission, based upon staff review and recommendations. The Parks and Recreation Commission may choose to delegate this responsibility to a Trails Technical Advisory Committee.

For specific design details, see “Appendix 1: Trail Design Details”, which provides information needed to implement typical trails in Riverside. The City’s adopted trail grading construction specifications and standard details are available on the City’s website at https://riversideca.gov/park_rec/planning-projects/trails.

The City supplements these construction standards with the California State Parks Trails Handbook and the United States Department of Agriculture (USDA) United States Forest Service (USFS) Trail Construction and Maintenance Notebook and Standard Plans and Specifications, which provide standards for less frequently used trail improvements such as steps, puncheons, armored trail tread, among many other elements. Both the State and USFS standards are incorporated by reference into the City’s Trails Master Plan. For the design standards described above, see “Appendix 1: Trail Design Details”.

FIGURE 12 : TRAIL TYPES




PLACENTIA LN
Reid Park
60
Fairmount Park
215
MAIN ST
MARKET ST
ROBERTA ST
SPRUCE ST
5TH ST
ORANGE ST
1ST ST
3RD ST
14TH ST
WATKINS DR
KANSAS AVE
CHICAGO AVE
12TH ST
OLIVEWOOD AVE
Box Springs Mountain Reserve
MARTIN LUTHER KING BLVD
215
EL CERRITO DR
RIVERSIDE AVE
91
CANYON CREST DR
Sycamore Canyon Wilderness Park
ALESSANDRO BLVD
OVERLOOK PKY
MISSION GROVE PKY
E ALESSANDRO BLVD
BRADLEY ST
TRAUTWEIN RD
ORANGE TERRACE PKY
WOOD RD
COLE AVE
BARTON ST

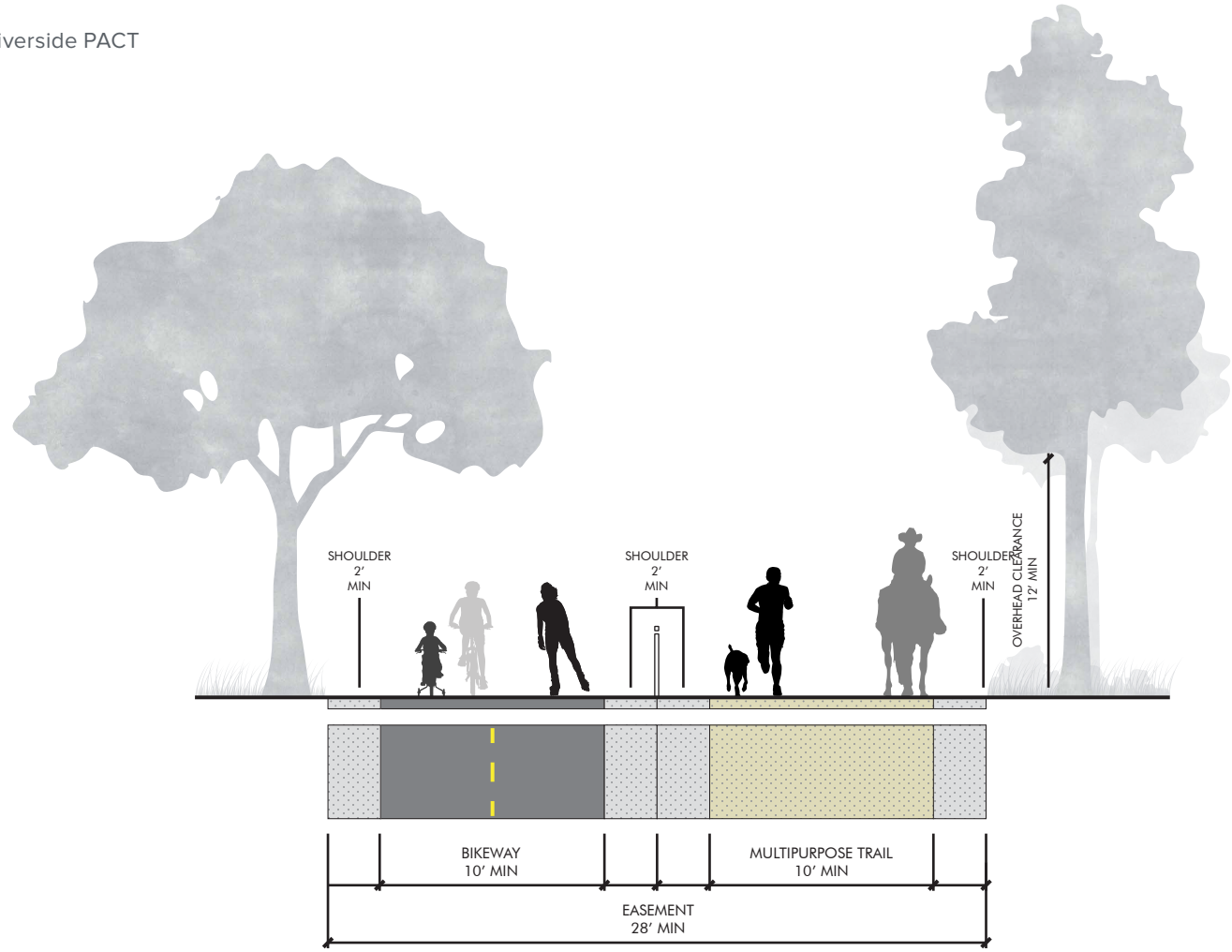


FIGURE 13 TYPICAL SECTION: URBAN (TRAIL WITH CLASS I)

Minimum Overall Width: 28'; an additional 3' buffer is required between trail and roadway when roadway is present.

Bikeway Surface: Asphalt Concrete or Portland Cement/Aggregate Mixture

Bikeway Width: 10' Min.

Bikeway/Trail Separation: 2' Min. Paved or All-Weather Surface

Multipurpose Trail Surface: Stabilized Decomposed Granite

Multipurpose Trail Width: 10' Min.

Fencing: As required. See fencing standards and guidelines, page 46.

Maximum Running Slope: 12%; Slope to match roadway where present.

Cross Slope: 2% Min., 5% Max.

Use Type: Open to all non-motorized modes.

ADA Compliance: Access to trailheads and facilities at trailheads shall be ADA compliant. Trails themselves shall be constructed for ADA compliance as site conditions allow.

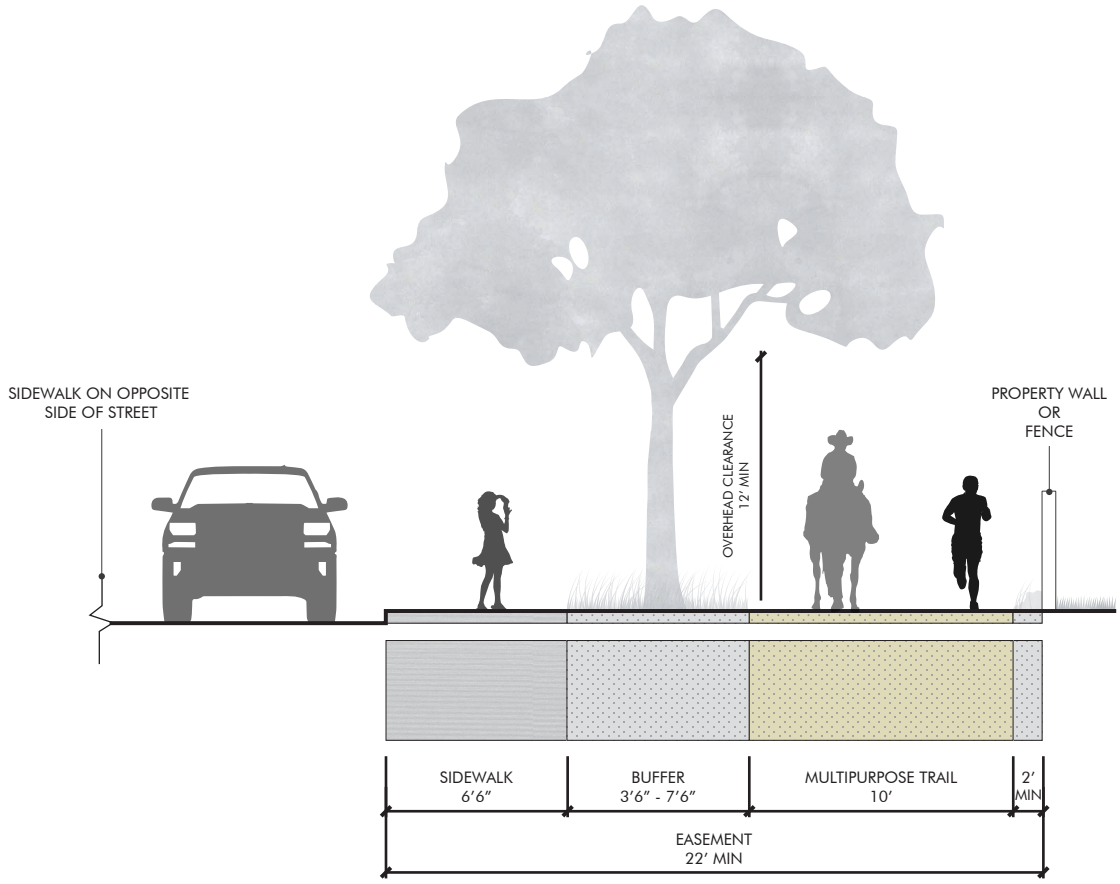


FIGURE 14 TYPICAL SECTION: SIDEPATH (MAJOR STREET TREATMENT)

Minimum Overall Width: 22'

Multipurpose Trail Surface: Stabilized Decomposed Granite

Multipurpose Trail Width: 10'

Property/Trail Separation: 2' flat shoulder at residential front yard fence, 3' bench when trail is at toe of manufactured slope, 4' when next to walls/ fences at the top of a manufactured slope, and 3' when next to any fence/wall over 4' in height.

Sidewalk/Trail Separation: 3'6" - 7'6"

Sidewalk Width: 6'6"

Maximum Running Slope: Slope to match roadway

Cross Slope: 2% if roadway grade is < 5%, 5% Max.

Use Type: Open to all non-motorized modes.

ADA Compliance: Trails shall comply with ADA-for-trails guidelines wherever possible, contingent upon existing roadway grades.

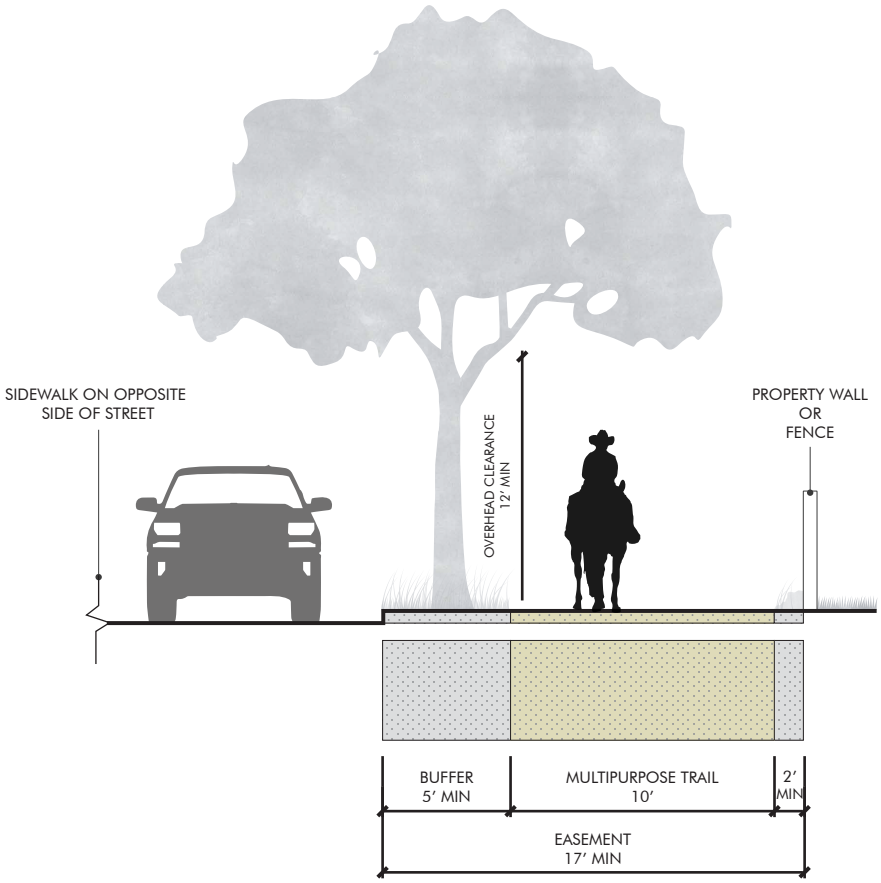


FIGURE 15 TYPICAL SECTION: SIDEPATH (SECONDARY/COLLECTOR STREET TREATMENT)

Minimum Overall Width: 17'

Multipurpose Trail Surface: Stabilized Decomposed Granite

Multipurpose Trail Width: 10' unless otherwise approved by City.

Property/Trail Separation: 2' flat shoulder at residential front yard fence, 3' bench when trail is at toe of manufactured slope, 4' when next to walls/ fences at the top of a manufactured slope, and 3' when next to any fence/wall over 4' in height.

Road/Trail Separation: 5' Min.; 8' Min. in Greenbelt

Fencing: As required. See fencing standards and guidelines, page 46.

Maximum Running Slope: Slope to match roadway

Cross Slope: 2% if roadway grade is < 5%, 5% Max.

Use Type: Open to all non-motorized modes.

ADA Compliance: Trails shall comply with ADA-for-trails guidelines wherever possible, contingent upon existing roadway grades.

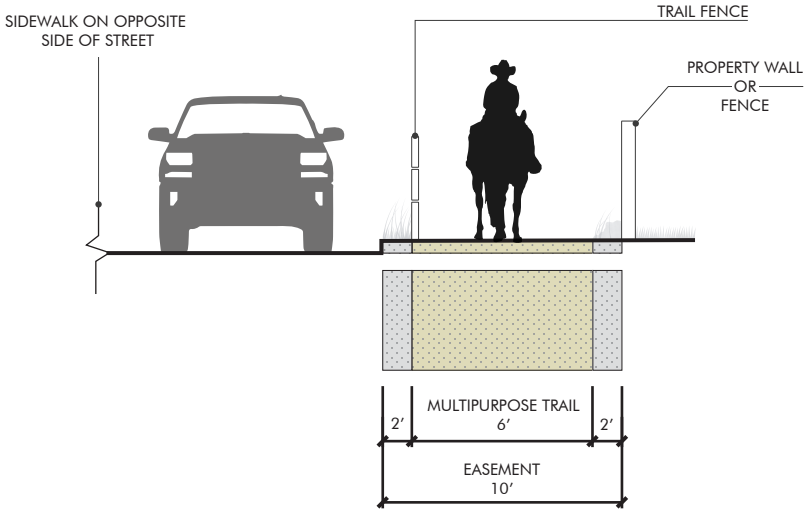


FIGURE 16 TYPICAL SECTION: SIDEPATH (MINOR STREET TREATMENT)

Minimum Overall Width:	10'
Trail Surface:	Stabilized Decomposed Granite
Trail Width:	6'
Road/Trail Separation:	2'
Property/Trail Separation:	2'
Maximum Running Slope:	Slope to match roadway
Cross Slope:	2% if roadway grade is < 5%, 5% Max.
Use Type:	Open to all non-motorized modes.
ADA Compliance:	Trails shall comply with ADA-for-trails guidelines wherever possible, contingent upon existing roadway grades.

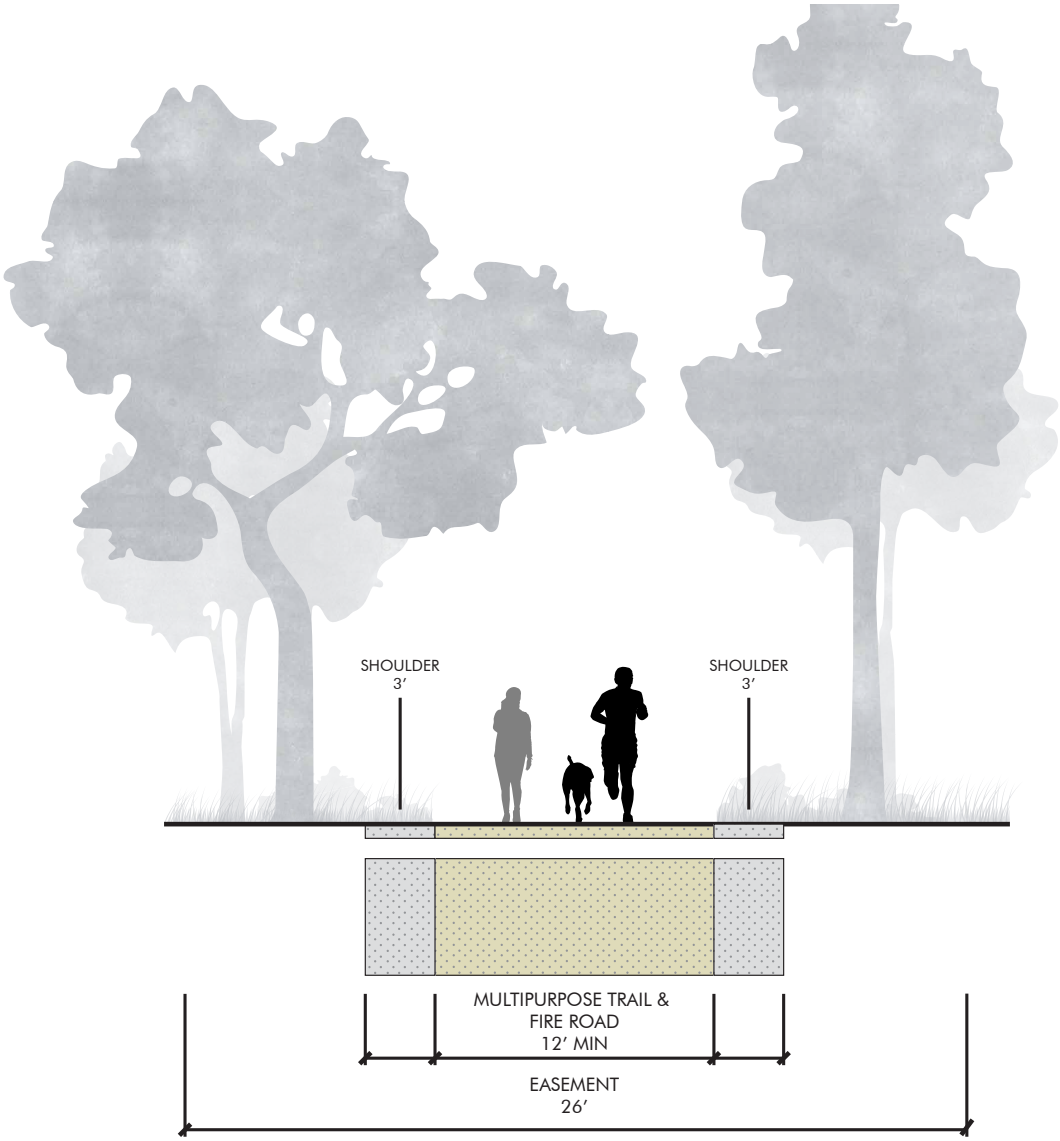


FIGURE 17 TYPICAL SECTION: OPEN SPACE (FIRE ROAD)

Trail Surface:	Stabilized Decomposed Granite - Prepared subgrade per geotechnical engineer's recommendation.
Trail Width:	12' minimum, but may be wider if specified by Fire Department.
Typical Applications:	Open spaces adjacent to development.
Maximum Running Slope:	8%
Cross Slope:	2% Min., 5% Max.
Use Type:	Use types may be limited on a case by case basis per environmental or safety constraints.
ADA Compliance:	Access to trailheads and facilities at trailheads shall be ADA compliant. Trails themselves shall be constructed for ADA compliance as site conditions allow.

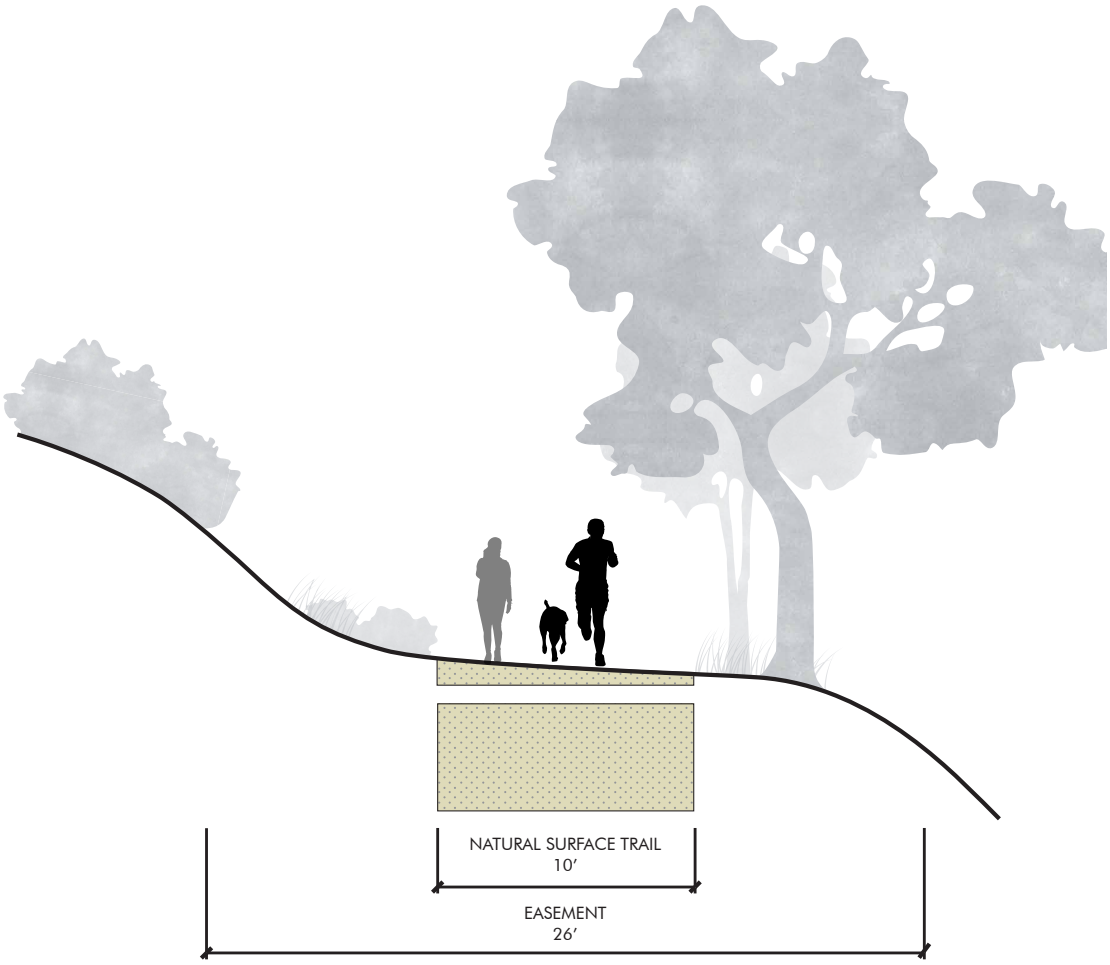


FIGURE 18 TYPICAL SECTION: OPEN SPACE (FRONT COUNTRY)

Trail Surface:	Natural Surface/Compacted Soil
Trail Width:	10'
Typical Applications:	Parks and open space areas with high levels of use and close adjacency to development. Primary trail loops.
Maximum Running Slope:	12%
Cross Slope:	2% Min., 10% Max.
Use Type:	Use types may be limited on a case by case basis per environmental or safety constraints.
ADA Compliance:	Access to trailheads and facilities at trailheads shall be ADA compliant. Trails themselves shall be constructed for ADA compliance as site conditions allow.
Note:	Use full bench construction when trails are cut into hillsides.

FIGURE 19 TYPICAL SECTION: OPEN SPACE (MID-COUNTRY)

Trail Surface:	Natural Surface/Compacted Soil
Trail Width:	8'
Typical Applications:	Secondary trail loops. Open space areas with high levels of use.
Maximum Running Slope:	15%
Cross Slope:	5% Min., 10% Max.
Use Type:	Use types may be limited on a case by case basis per environmental or safety constraints.
ADA Compliance:	Access to trailheads and facilities at trailheads shall be ADA compliant. Trails themselves shall be constructed for ADA compliance as site conditions allow.
Note:	Use full bench construction when trails are cut into hillsides.

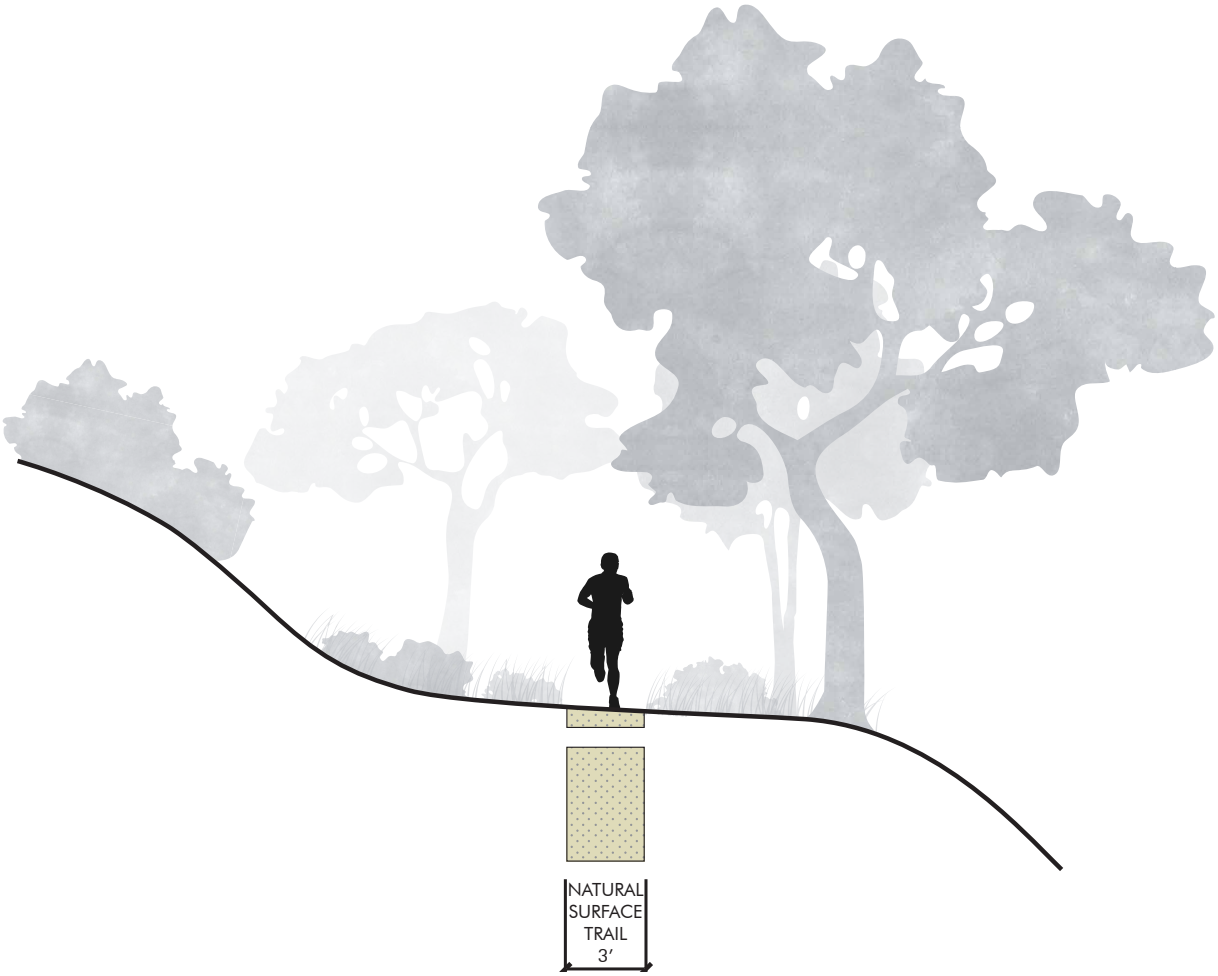


FIGURE 20 TYPICAL SECTION: OPEN SPACE (BACK-COUNTRY)

Trail Surface:	Natural Surface/Compacted Soil
Trail Width:	3'
Typical Applications:	Open space areas with lower levels of use and/or environmental constraints.
Maximum Running Slope:	20% (for stretches of 100' or less)
Cross Slope:	5% Min., 10% Max.
Use Type:	Use types may be limited on a case by case basis per environmental or safety constraints.
ADA Compliance:	Access to trailheads and facilities at trailheads shall be ADA compliant. Trails themselves shall be constructed for ADA compliance as site conditions allow.
Note:	Use full bench construction when trails are cut into hillsides.

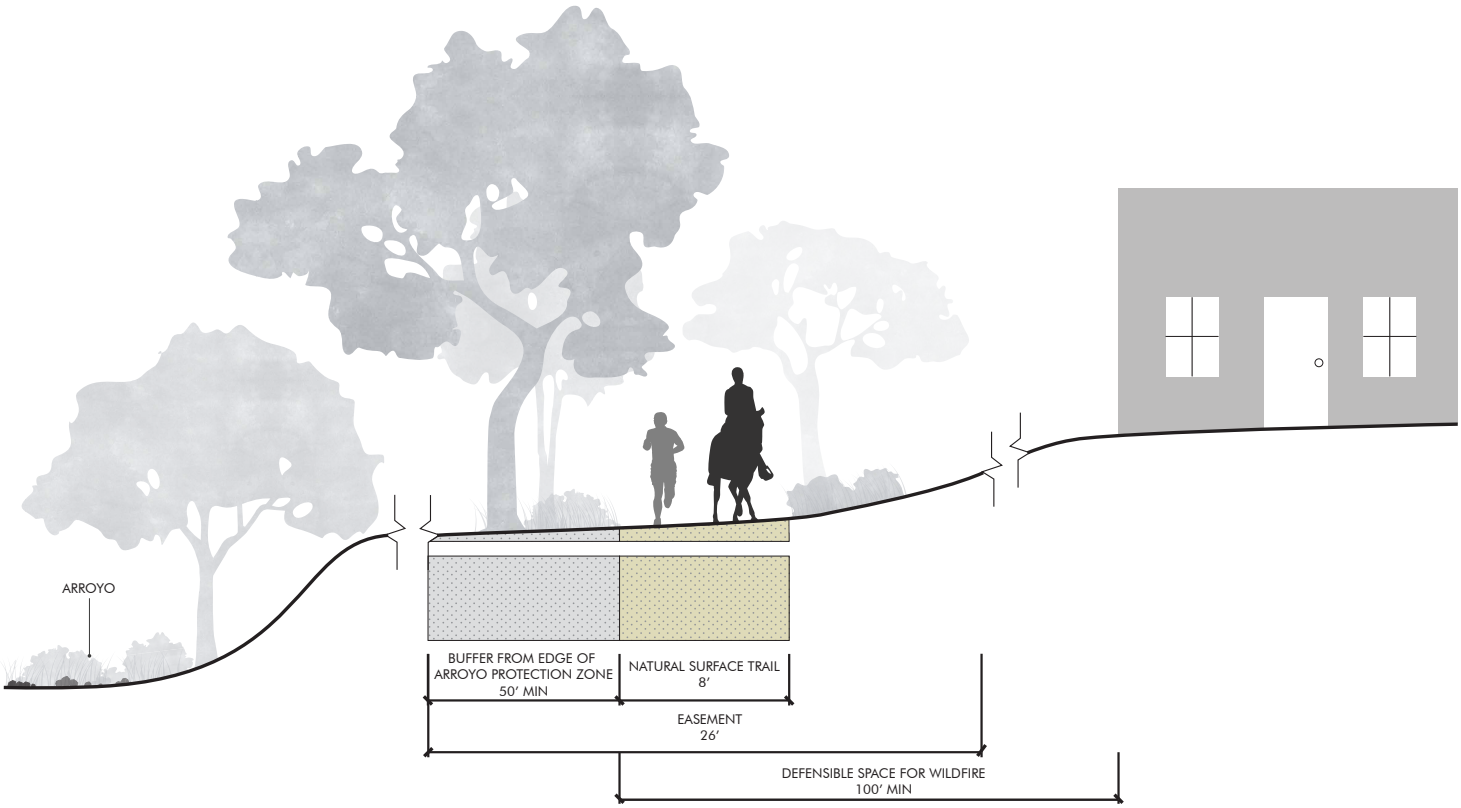


FIGURE 21 TYPICAL SECTION: OPEN SPACE (ARROYO)

Trail Surface:	Natural Surface/Compacted Soil
Trail Width:	8'
Maximum Running Slope:	Route should be selected in order to not exceed 15%.
Cross Slope:	5% Min., 10% Max.
Use Type:	Use types may be limited on a case by case basis per environmental or safety constraints.
ADA Compliance:	Access to trailheads and facilities at trailheads shall be ADA compliant. Trails themselves shall be constructed for ADA compliance as site conditions allow.
Note:	Use full bench construction when trails are cut into hillsides.

* The City of Riverside's minimum Grading Standards (Municipal Code 17.28) precludes grading or development within 50 feet of the mapped edge of certain waterways and their tributaries.

** See following pages for additional arroyo trail development concerns.

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Trail Fencing

TRAIL FENCING PLACEMENT

Urban trails require fences to help establish rights of way, protect privacy, call attention to roadside trails, and protect trail users from potential hazards.

Fencing is required in locations where there is less than a 5-foot horizontal separation from adjacent roadways, and when adjacent to sensitive environmental areas such as habitat restoration or conservation areas. In areas where elevation changes adjacent to a trail would require a guardrail, the same fencing style used along the rest of the trail should be used and modified as necessary to meet the requirements of guardrails as specified in the California Building Code. Fencing is to be installed when a trail runs along the top of a 3:1 or greater slope.

Fencing is also required as a trail approaches intersections and crossing, to help discourage cross cutting of the intersection by trail users, prevent vehicular intrusion, and improve trail visibility. Unless other barriers are present (furnishings, landscape, boulders, etc), this fencing must extend a minimum of 30 feet in each direction from the crossing.

Where equestrian and paved bicycle paths run in parallel, a fence should be provided between the paved and non-paved portions of the trail when the separation between the two trails is less than eight feet.

EQUESTRIAN FENCING

Where trails allow equestrian use, a fence must be used between the roadway and the trail when the horizontal separation from the roadway is less than 10 feet. Equestrian fencing must be 54 inches in height. All other fence design guidelines should apply.

TRAIL FENCE DESIGN GUIDELINES

A consistent style of fencing shall be used along roadside trails to ensure design continuity. Trail fence construction shall be Trex composite lumber (composed of recycled plastic and recycled wood fiber or similar materials) or city-approved equivalent. A simple post and rail design, where rail boards can be easily bolted or screwed to posts, is to be used for ease of installation and maintenance. Fence posts are to be oriented toward the outside of the trail, with fence rails oriented toward the inside of the trail (see sample construction detail in “Appendix 1: Trail Design Details” Fences are to be designed to withstand a live load of at least 20 pounds per linear foot applied either horizontally or vertically downward at the top rail. Fence materials shall have a fire rating equal or better than ‘Trex Seclusions’ (Class B in the ASTM E84 Standard Test Method for Surface Burning

Characteristics of Building Materials). Dark colors such as brown or dark gray are to be used to help the fence elements blend better with the landscape and obscure graffiti and overall wear-and-tear.

In addition to utilizing dark colors for fencing materials to conceal potential graffiti, anti-graffiti coatings should be applied. Anti-graffiti coatings create a non-stick surface that repels graffiti from paint and permanent markers. Removal of graffiti from surfaces with anti-graffiti coatings can be accomplished through pressure washing or hand-wiping without the need for abrasive cleaning and repainting.

Fencing fasteners shall be non-protruding on the side of the fence facing trail users. Fences shall terminate at posts, without protruding rails. Fences shall be two rail unless serving as a guardrail, in which case, must be modified to meet the California Building Code.

POST AND CABLE (OPEN SPACE TRAILS)

In areas where a trail passes through open space or other areas where a visually 'lighter' fence option is preferred, a post and cable design shall be used. Fence posts shall be 4"x4" galvanized steel. Cable shall be 9/16" type 316 stain steel (see sample post and cable fence construction detail in "Appendix 1: Trail Design Details"."

A 2-rail fence showing posts oriented toward the outside of the trail and rails facing towards the trail. Five Coves Wetlands, Anaheim, CA

A post and cable fence along multi-use trail

Arroyo Trails

The proposed trail network includes 4 miles of trails along arroyos in the City of Riverside. While part of the proposed trail network, there are certain challenges related to developing trails along these waterways.

Arroyos are important natural resources for many plant and animal species. They are also provide a number of environmental services, including flood and erosion control.

Where possible, trails should be built outside the arroyo protection zone established by the City. Where this is not possible due to existing adjacent development, trails should be routed to create the least environmental impact and along the most sustainable and low impact alignment.

Alternative routes were explored that formed indirect connections outside of the arroyo protection zone. The alternative trails were routed to on-street conditions, and proved more intrusive to adjacent neighborhoods. Additionally, the alternatives presented a missed opportunity for environmental education related to the arroyos that are so important to the identity of the City.

ENVIRONMENTAL CHALLENGES

It is critical that any trails built adjacent to arroyos are compatible with the existing riparian habitat. Because of the sensitive nature of the surrounding habitat, the City or property owner/developer if conditioned to do so as part of their project approval, will likely need to consult with multiple different federal, state, and county agencies to obtain relevant approvals and permits to build. These include the US Army Corps of Engineers (USACE), California Department of Fish and Wildlife, and the California Natural Resources Agency.

FLOOD AND EROSION CONTROL

Arroyos naturally help to prevent flooding and soil erosion along their banks. However, activities such as vegetation clearing, grading, and other development may alter the flow of water, resulting in increased erosion. When crossing a waterway, building a free-standing bridge would have less of an environmental impact than installing a culvert for a road crossing.

LEAST BELLS VIREO HABITAT

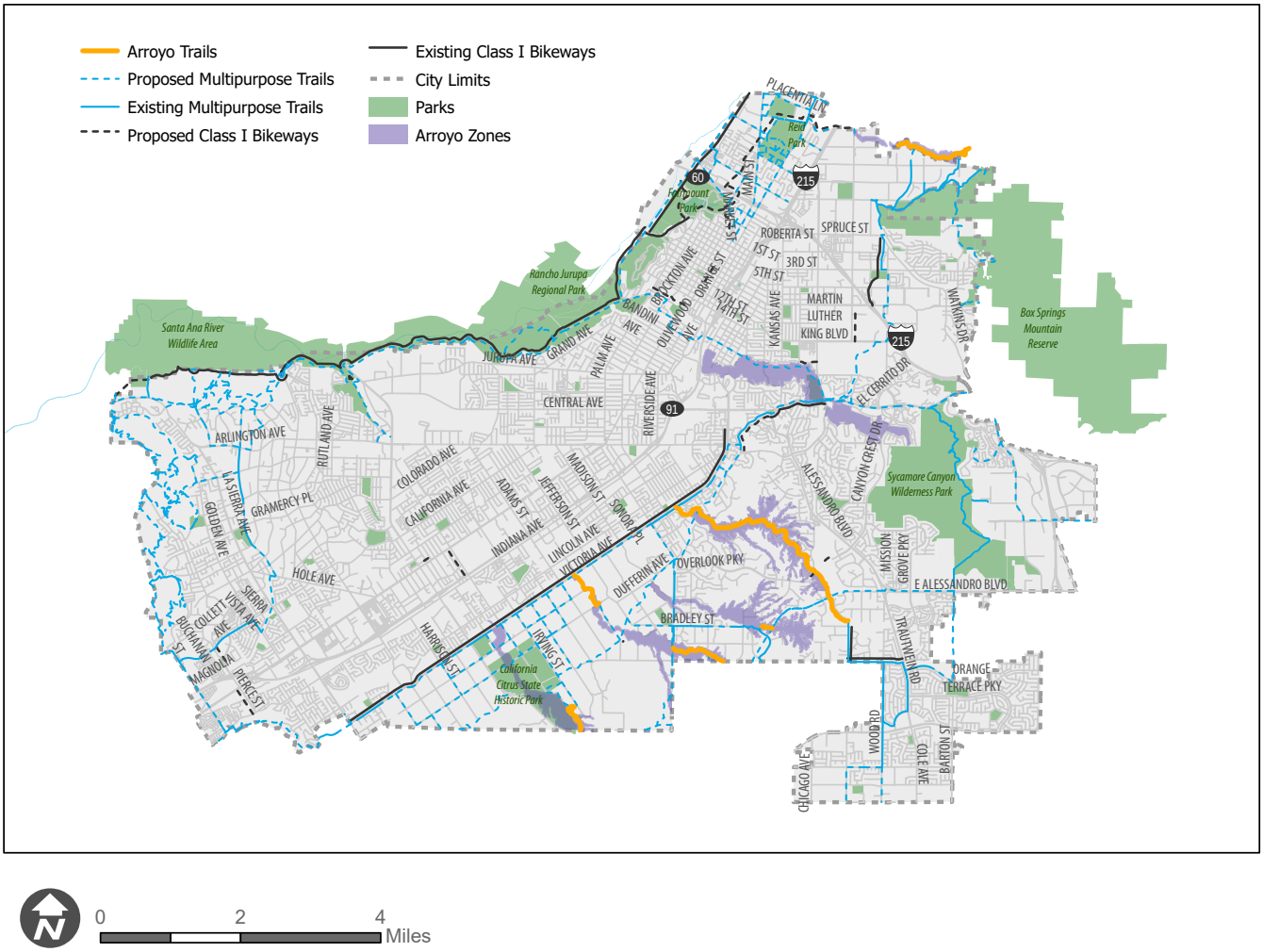
The City of Riverside is home to the Least Bell's Vireo, an endangered bird species native to California.

When building trails along arroyos, it is important to include a minimum 50' vegetation buffer between the waterway and the trail to minimize impacts to the riparian habitat (Municipal Code 17.28). This buffer is the wildlife environment that allows the Least Bell's Vireo to survive.

PROPERTY CHALLENGES

The aforementioned buffer is also important for protecting adjacent properties. In

FIGURE 22 : ARROYO TRAILS



addition, the State of California suggests that properties have a 100-foot buffer of "defensible space" between their buildings and the vegetation buffer for protection from wildfires.

IMPLEMENTATION AND FUNDING

Arroyo trails, more so than other trails in this document, will likely require full Environmental Impact Reports (EIRs) to comply with the California Environmental Quality Act (CEQA). This will create additional funding challenges, and will likely impose mitigation measures on the final trail design. The CEQA process will also require alternative alignments to be studied.

Funding for arroyo trails may be more widely available than other trail types, as arroyo trails can function more as park space, can help protect wildlife corridors, connect residents with nature, and may provide opportunities to clean water from adjacent properties prior to entering the arroyo.

Section 4: Network Recommendations