

04

Public Engagement



Public Engagement

Outreach Summary

In order to deliver a project that is reflective of community desires, the City solicited public input to better understand existing usage, concerns, and amenity preferences. This feedback was gathered through a community survey, which was advertised via direct mailers to households within 1/4 mile (or 1,320' totaling about 600 mailers) of the project corridor, signage posted at key Gage Canal access points such as the Box Springs Mountain Reserve, newspaper advertisements in the UCR Highlander and Press Enterprise, social media postings on the City's Facebook and Instagram accounts, a City-issued press release, and fliers posted around the city. Project materials and survey information were also included in messages to parents of nearby schools in the Riverside Unified School District and Alford Unified School District. The survey was available in both English and Spanish, and was open for input between April 1 - May 30, 2021.

Technical Advisory Committee

The project team reached out to a group of stakeholders who previously provided input on the city's Trails Master Plan (2021). This group met on March 1, 2021, and again on June 14, 2021. Key topics discussed included: the three main project zones (industrial, Box Springs, residential); coordination with RCTC where rights-of-way overlapped with the project corridor; access control at gateways and avoiding the use of bollards; lighting and its interaction with trees; wayfinding; interpretive signage and themes; and planting monarch butterfly host plants. The draft master plan was shared with this group to solicit feedback prior to finalizing the document.

Q1. What is your zip code?

92506	34% / 186 respondents; Canyon Crest, Victoria, Magnolia Center
92507	17% / 92 respondents; University, Eastside, Highgrove
92504	12% / 65 respondents; Alessandro Heights, Casa Blanca, Hawarden Hills

Q2. Do you currently use the Gage Canal for recreation or commuting?

Yes	73% / 399 respondents
No	27% / 145 respondents

Q3. Which best describes how you use the Trail?

Walking, Jogging, or Running	79% / 310 respondents
Riding a Bike	37% / 145 respondents
Dog Walking	33% / 131 respondents

Q4. How often do you visit the Gage Canal?

A Few Times a Month	29% / 152 respondents
A Few Days a Week	24% / 127 respondents
A Few Times a Year	24% / 124 respondents

Q5. When you think about how you use the Canal today, or how you might use it in the future, what types of trips do you think you would use it for?

Exercising	87% / 445 respondents
Being in Nature	79% / 407 respondents
Visiting the California State Citrus Historic Park	43% / 220 respondents

Q6. If you don't use the existing portions of the Gage Canal Trail, what would encourage you to use it more?

More Connections to Nature	57% / 279 respondents
Increased Safety and Security	52% / 255 respondents
More connections to Destinations	45% / 219 respondents
Improved Trail Surface	43% / 212 respondents

Q7. What types of improvements would you most like to see on the Gage Canal?

Trash Cans / Pet Waste Stations	61% / 307 respondents
Shade / Trees	59% / 296 respondents
Lighting / Safety	50% / 249 respondents

Q8. Is there anything else you'd like our project team to consider?

Maintain natural surface of trail / do not pave / preserve nature
Address homeless encampments / improve perceptions of safety
Provide amenities such as restrooms, equestrian facilities, lighting, and crossings

05

Conceptual Plans



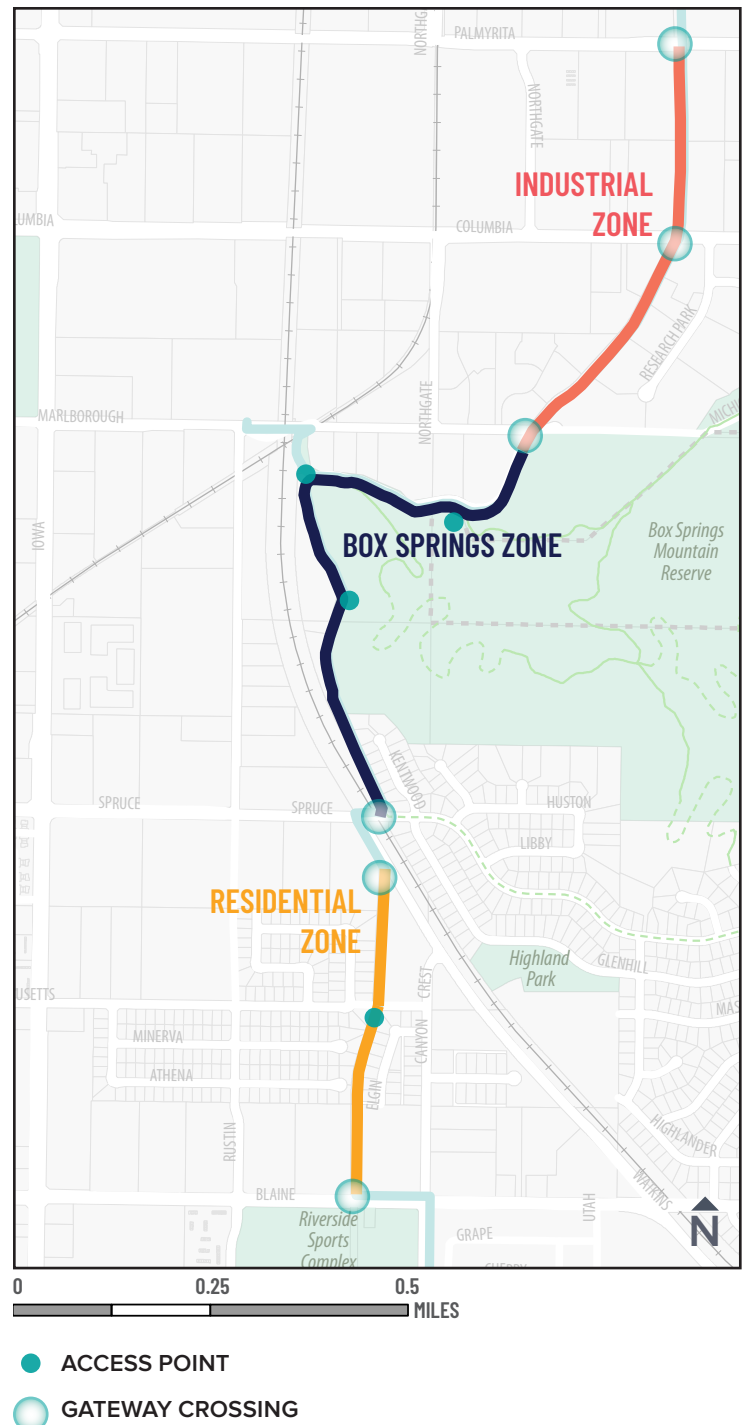
Conceptual Plans

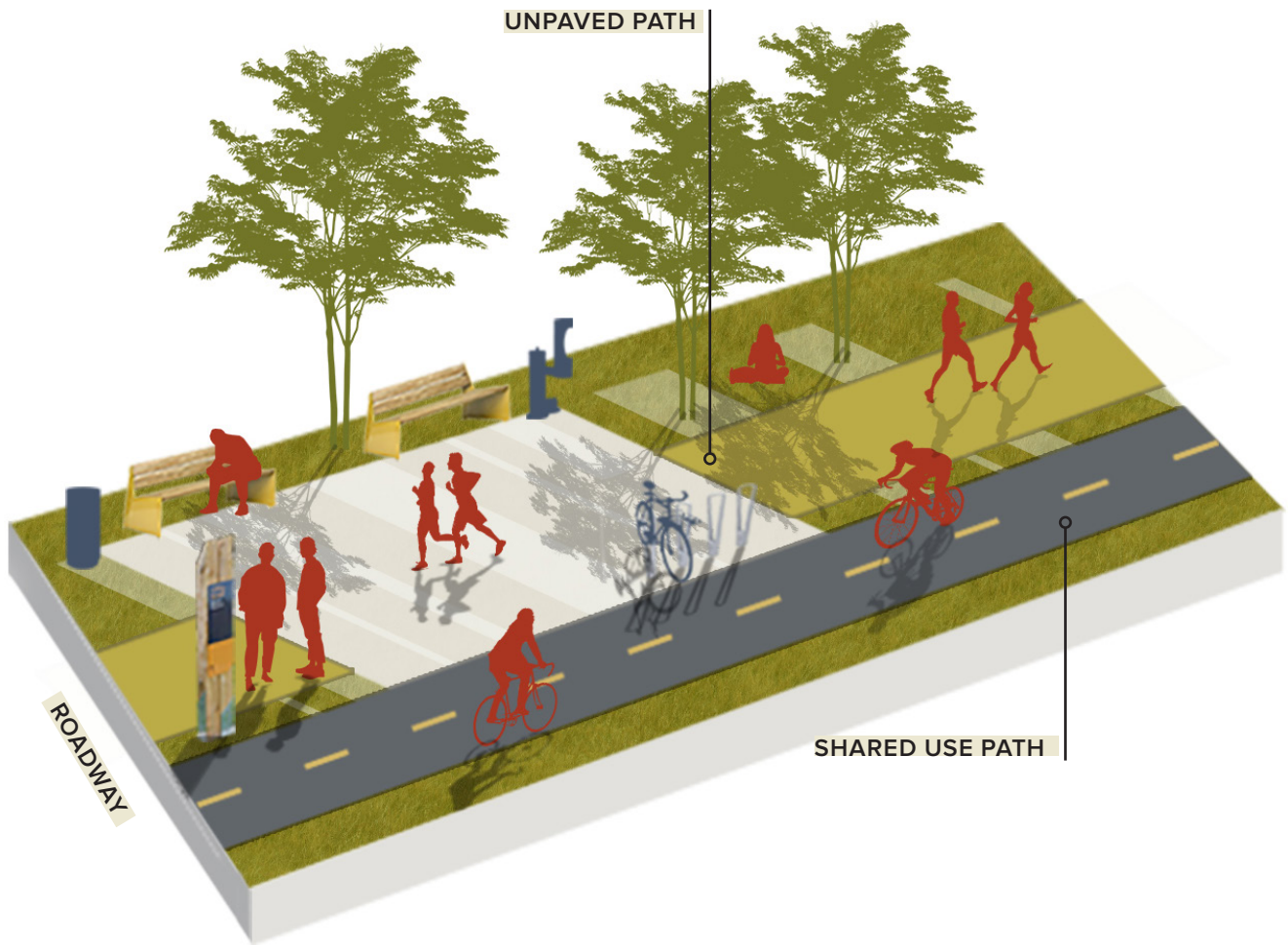
Introduction

For the purpose of design, the two-mile long trail corridor has been split into three main zones. The extents of each segment are based on the surrounding land use context. The zones are:

- Residential Zone,
 - from Blaine Street to Watkins Drive
- Box Springs Zone,
 - from Spruce Street to Marlborough Road
- Industrial Zone,
 - from Marlborough Road to Palmyrita Avenue

These zones have traits unique from one another that have influenced the design approach of each safety needs, wildlife habitat, trail function, cost benefit, maintenance commitments, connections to adjacent roadways, and levels of separation from adjacent properties will vary from one zone to another.





Gateways and Access Points

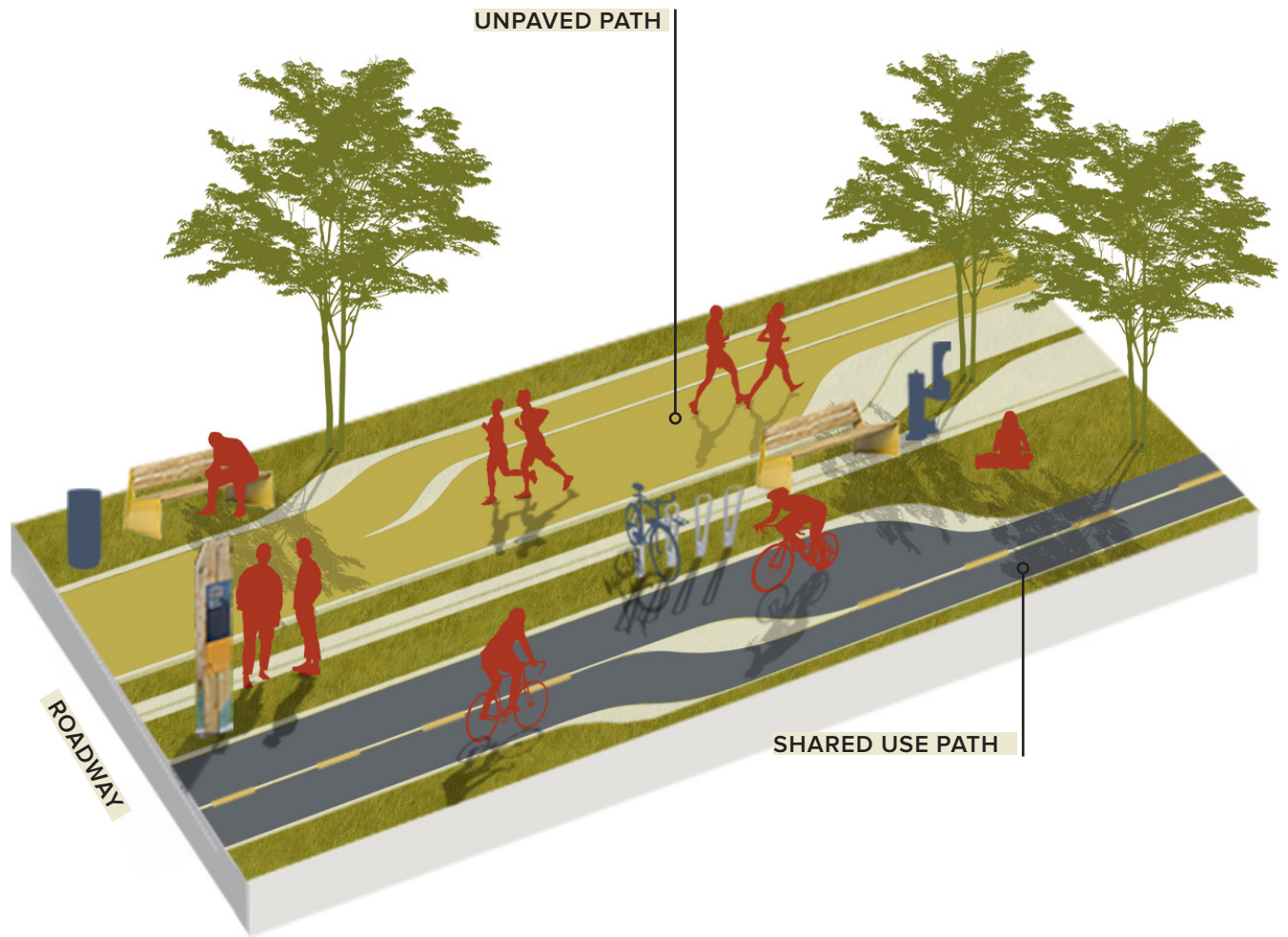
Gateways are entryways at major intersections and have the potential to reflect local culture and provide safe access to the Trail and across roadways. Gateways will include a combination of the following features: bicycle parking, seating, drinking fountains, trash receptacles, dog waste stations, bicycle repair stations, trail wayfinding and informational signage. Existing adjacent street parking may be available at some gateways. Additional information on design features appear in the Design Elements section on the following pages.

Gateway Concept Alternatives

The concepts presented here show two alternative approaches to gateway design for the Trail. A series of vehicular access strategies are presented following these two concepts, which can be applied to either concept.

Gateway Concept 1: Composed + Rectilinear

Inspired by the historical citrus groves in the city, this concept is directly connected to the use of modular grids that give composition and proportion to the space. The geometric form gives a feeling of balance, formality and unity.



Gateway Concept 2: Rhythmic + Curvilinear

Characterized by meandering lines which mimic the natural course of rivers or streams, this concept can be described as smooth lines with deeply curved undulations. The curved paths create an informal, calm, tranquil character that is associated more with nature and asymmetrical balance.

Access Control

Maintenance access and the prevention of unauthorized vehicles are significant considerations for gateway and access point design. The safety of users must be considered when proposing the use of access control elements such as gates and bollards which can become obstacles for trail users, and can lead to collision and injury. The access control alternatives presented below range from a level of lesser to greater entry control and can be varied in implementation based on the contextual conditions at a particular access point. It is anticipated that less entry control will be needed

in the residential and industrial zones, while more entry control may be needed for The Box Springs Zone to prevent OHV or motorcycle entry into the reserve. Maintenance vehicle access driveways can be configured with a rolled curb to differentiate them from a standard vehicular driveway. Descriptions of the proposed options are as follows:

Split Trail

The 'split trail' concept uses a combination of a vehicular swing gate for maintenance vehicles and a pedestrian/bicyclist entry for trail users. Unimpeded access to the Trail will be maintained for cyclists. The planted median between the split trail will discourage vehicles from entering while allowing emergency vehicles to gain entry if needed. This configuration would be most appropriate for sections of the trail that aren't attractive to OHV or motorcycles such as the southern residential section or the northern industrial section.



Chicane

The 'Chicane' concept uses a combination of a vehicular swing gate for maintenance vehicles and separate pedestrian and bicyclist entries. Easy access to the asphalt-concrete path is maintained for bicyclists while the curvilinear entry configuration with offset tree planting slows cyclists ahead of the intersection and serves as a visual cue to dissuade motor vehicles from entering. Like the 'Split Trail' concept, this configuration is most suited to areas of the trail that are less attractive to OHV and motorcycles.



Swing Gate + Bollards

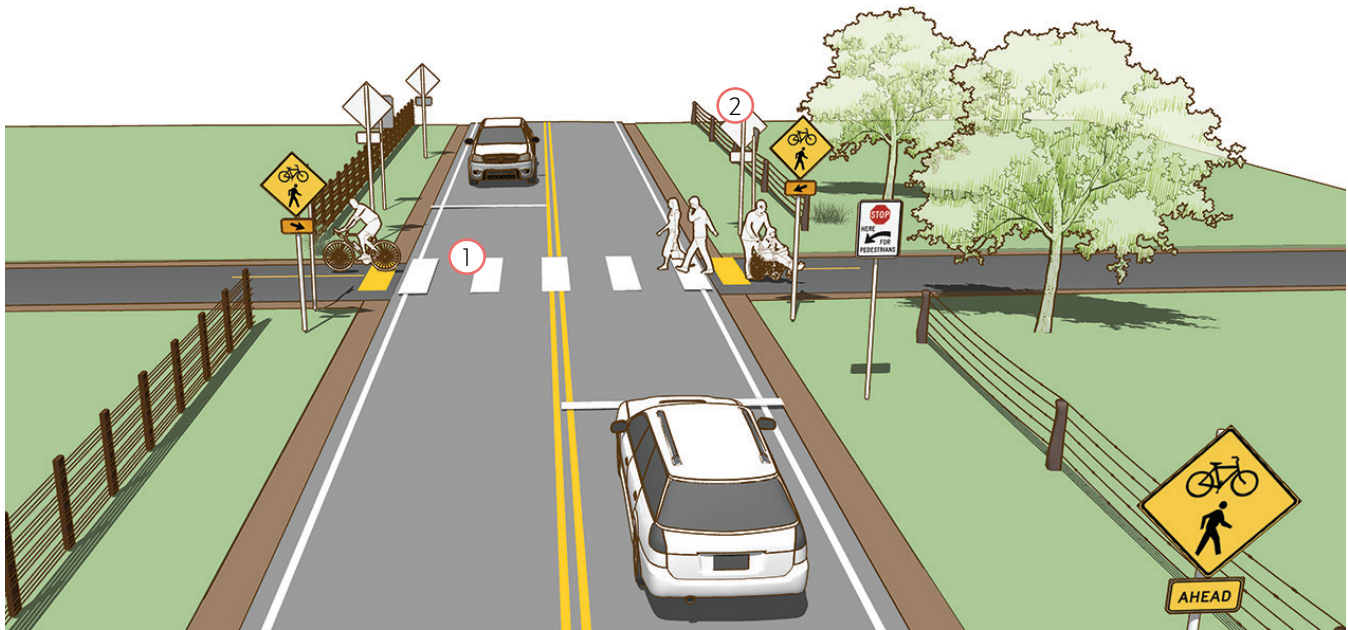
This concept provides more entry control against unauthorized vehicles by utilizing a combination of swing gate and bollards. Integrating the multi-use path striping into the entry plaza paving eliminates the 'road appearance' of the path at the entry point while the bollards are a visual cue that motor vehicles are not allowed. Maintenance vehicles access the trail via a rolled curb and swing gate. This configuration is suited to areas where additional control is desired.



Swing Gate + Barriers

This concept provides the greatest level of entry control against unauthorized vehicles by utilizing a combination of swing gate, fence, and bollard. Integrating the multi-use path striping into the entry plaza paving eliminates the 'road appearance' of the path at the entry point while the bollard is a visual cue that motor vehicles are not allowed. Maintenance vehicles access the trail via a rolled curb and swing gate. This configuration is suited to areas deemed most at risk of unauthorized vehicular use such as the Box Springs section.





SOURCE: ALTA PLANNING + DESIGN
STAR GUIDE

Roadway Crossing Treatments

Well-designed roadway crossings are essential for trail safety, convenience, and support continuous travel experiences.

Where the Trail crosses public roadways, the typical crossing treatment will be a Mid-Block Trail crossing, with a high visibility crosswalk and warning signs to alert people driving to the presence of potential trail users. Users of the Trail will cross roadways in parallel, with crossings striped separately for pedestrians and cyclists.

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.

Design Elements

The Trail will include elements such as trees, plants, lighting, seating, and other user amenities. Trees and lighting will be present along the entirety of the two mile long corridor, whereas amenities such as seating and drinking fountains will be clustered at trail gateways.

Trail Elements

The trail will, for the most part, include a parallel unpaved pedestrian path with concrete headers, and an asphalt (Class I) bicycle path. Widened curb ramps will be installed where the trail crosses roadways. Striping and signage will be provided for the trail and street crossings. Access points to the trails will be created at each street intersection, and will include amenities such as benches, bike racks, water fountains, waste receptacles, fitness equipment and enhanced landscape planting. The trail will be lit with solar lighting throughout its length, with a double row of trees where space allows.

Landscape

Tree planting patterns can be used to create a sense of uniformity or visual variation. Varying tree types along stretches of the corridor will allow for a denser planting of trees where space allows. A mix of tree species are beneficial for establishing bio-diverse landscapes that are resilient to pests and drought. Tree patterns will include those that are irregular and repeating, regular and repeating, or alternating form (see graphic below). Trees planted along the trail will emphasize locally native species, intermixed with pest and disease-resistant species that are climate-appropriate. Tree palettes will also reflect the surrounding industrial, natural, and residential contexts. Trees will not be planted directly above the canal pipeline and will be placed as far away as possible to minimize the chance for potential root intrusion to the canal wall.

Gateways will feature enhanced planting areas that will include additional native shrubs and ground covers as well as modified tree palettes to include fruit trees or specimen trees that draw attention to the gateway.

The concept as presented includes 702 trees which capture a total of 702.5 tons of CO₂.

**IRREGULAR &
REPEATING**



**REGULAR &
REPEATING**



**ALTERNATING
FORM**



Water Quality Recommendations

Stormwater infiltration areas will be designed to not seep below foundations of adjacent structures. Because of the potential for erosion of existing slopes, we recommend that v-ditches that are planned for surface water capture be maintained regularly. Based on the assessment of subsurface conditions, the upper 5 feet of the soil profile between Columbia Avenue and Watkins Drive can support infiltration; however, we recommend that infiltration devices not be planned north of Columbia Avenue and south of Watkins Drive, as the factored infiltration rates in these areas of the Project would likely not exceed the minimum infiltration rate of 0.5 inch per hour required by the County of Riverside (2006). Where practical, infiltration devices be planned a minimum of 5 feet from the proposed shared use path.

Where space and infiltration rates allow, swales and detention areas will be designed to slow and capture runoff from the asphalt trail, and to control potentially erosive runoff from adjacent properties onto the trail. As feasible, trail access points will integrate stormwater capture through bioswales and planted detention areas.

In accordance with the Low Impact Development (LID): Guidance and Standards for Transportation Projects for the Santa Ana Region Riverside County Co-Permittees, LID-based Best Management Practices (BMPs) will be incorporated into the project. Site considerations, soil conditions, and maximum drainage area, are considered in choosing the best suitable BMP for a given location. Considering the project conditions, infiltration trenches and bioretention facilities (bioswales) are recommended and varied based on adjacent conditions. In the Residential Zone between Watkins Drive and Blaine Street, bioswales are suggested due to existing drainage structures in the area. Infiltration trenches are recommended in both the Box Springs Zone and Industrial Zone, between Columbia Avenue and Spruce Street. In designing these BMPs in the Santa Ana Watershed, they are sized based on their design capture volume, VBMP. Using the spreadsheet shown in Appendix #, the VBMP is estimated to be 6160 cubic feet.



Geotechnical Analysis

Based on geotechnical considerations, the site is suitable for the proposed improvements. The primary geotechnical consideration was the variable soil conditions encountered through the corridor, which will impact the preparation of pavement subgrade and the siting of infiltration devices. Minor cuts and fills will likely be required to construct the proposed paths and infiltration devices. The earthwork for the proposed shared use path will generally be minor and will consist of cuts and fills within 2 feet of existing grades. Overexcavation will not be required for the proposed improvements. The recommended excavation bottoms in cut areas and existing surfaces in fill areas should be prepared by:

- Scarifying the upper 6 inches
- Moisture-conditioning to above optimum moisture content
- Compacting to at least 95% relative compaction

The fill and backfill should be compacted by:

- Placing in loose layers less than 8 inches thick
- Moisture-conditioning to above optimum moisture content
- Compacting to at least 95% relative compaction

The compacted subgrade soils should be firm, hard, and unyielding. Site grading may generally be accomplished with conventional heavy-duty construction equipment. The fill should be compacted using soil compactors as recommended by the Caterpillar Performance Handbook (2021) or equivalent.

Recommended minimum dense-graded hot-mix asphalt (HMA) pavement sections deviate slightly from the City's standard plan. The preferred pavement section will look to minimize the overall excavation, while meeting Caltrans design methods. The recommended minimum pavement sections are based on the following:

- R-value of 50, which we judged to be conservative based on the results of DYA's laboratory testing summarized in Section 3.2
- Caltrans (2020) design method
- Traffic index (TI) values of 5.5 and 6

Based on the previous considerations the pavement sections are as follows:

- 3" HMA over 4" Class 2 Aggregate Base over 6" Compacted Native Soil
- 4" HMA over 4.5" Class 2 Aggregate Base over 6" Compacted Native Soil
- 5.5" HMA over 6" Compacted Native Soil
- 6" HMA over 6" Compacted Native Soil

Lighting

Lighting can be an effective tool for increasing trail user comfort, improving security and reducing the likelihood of unwanted behavior. Lighting provides a choice for how to use trails during non-daylight hours. The goal of lighting trails for security is to make a place unattractive or uncomfortable to offenders while also providing a sense of security and attracting the intended use of trails. Properly lit trails should be easy to observe, eliminate potential hazards at intersections or access points, attract use and enhance other environmental design techniques.

According to the AASHTO Guide for the Development of Bicycle Facilities, pedestrian-scale lighting is preferred to tall highway style lights. Pedestrian-scale lighting is characterized by shorter light poles (standards about 15 ft high), lower levels of illumination (except at crossings), and closer spacing of standards (to avoid

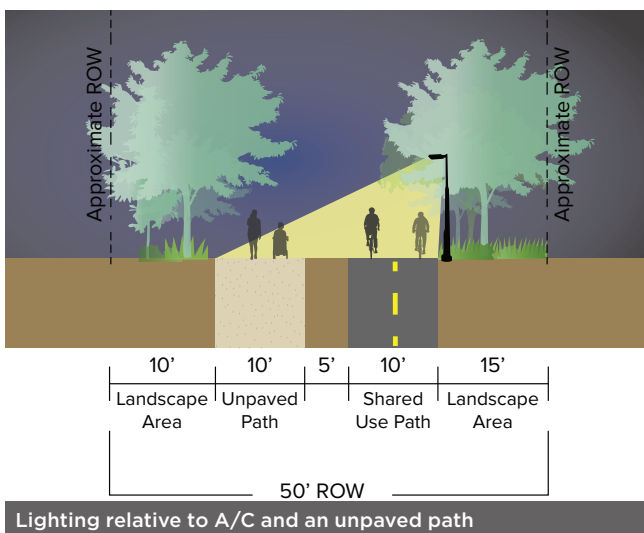
dark zones between luminaires). Additionally, overhead lighting is preferred to very low bollard lighting. Bollard lighting does not project sufficient light at eye level and distorts the available light due to the 'up-lighting' effect. This makes it difficult for users to recognize facial features, and diminishes their perception of safety. For these reasons, bollard lighting should only be used in combination with overhead lighting or when overhead lighting fixtures are not permitted or feasible.

GUIDING PRINCIPLES INCLUDE:

- Lighting will be at pedestrian scale. Placement, spacing, and other finish specifications depends on the fixture and optics
- Good lighting improves natural surveillance and visibility
- Lighting will minimize energy usage, operating costs, light trespass, light pollution and glare
- Lighting will be placed at decision points and areas of interest, such as street crossings, intersections with other trails, trail spurs, and near commercial and mixed-use developments
- Lighting will use dark-sky compliant fixtures that illuminate only the intended targeted areas and minimize spillover onto adjacent properties.
- Lighting will include timers, sensors, and remote-control technology which can enhance the sense of security and conserve energy
- Light placement works hand-in-hand with tree placement, and will be finalized as tree planting plans are completed.



Firstlight SCL2 Series luminaire at night



Lighting relative to A/C and an unpaved path

APPLICATION

Lighting has been recommended per segment context with consideration for safety needs, wildlife habitat, trail function, cost benefit, and maintenance commitments. The Trail crosses through various surrounding land-uses and landscapes, including industrial, residential, and sensitive environment areas that will allow for and/or require different lighting solutions.

Lights are directional and are anticipated to be placed on one side of the trail, casting light onto the unpaved path and shared use path. Overhead lighting has been selected for greater security and to achieve a fewer number of total fixtures. For example, the segment between Watkins and Marlborough would need six times as many bollards to achieve the same illumination



as pole mounted fixtures.

Solar panels may be either mounted per light standard or centralized, to power a series of lights. This determination will be made for the final concept, once overall alignment and tree planting concepts are determined.

Lighting calculations have been based upon a Firstlight SCL2 Series Illuminaire positioned at 16' above the ground using a type 3 lighting distribution pattern.

Furnishings and Amenities

Amenities that will be included in the trail corridor design include seating, drinking fountains, trash receptacles, and bike racks.

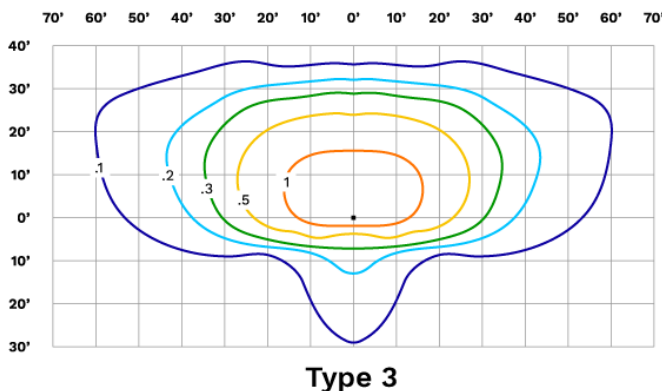
Seating contributes to the user experience by inviting users to rest, congregate, or contemplate. Seating opportunities along the trail provide a short relief and also promote added enjoyment of the scenic environment. Seating areas are designed to create identity along the trail.

Drinking fountains are spaced at regular intervals that correspond with key gateways and landmarks. Locating fountains with multiple heights will help accommodate a range of user ages and physical abilities, as well as pets.

Trash receptacles are installed at trail entry points and as-needed for user convenience. While requiring dedicated maintenance, they will help prevent the spread of refuse throughout the trail corridor and onto surrounding areas. The appearance should match other trail amenities. Bicycle racks provide opportunities for trail users to use the trail as transportation, where users can engage in other activities without the worry of losing their bicycles.

Additional amenities that may be included in the trail design if funding allows are picnic tables, fitness stations, and bicycle repair stations. Picnic tables provide places for trail users to congregate for meals, relax, or have informal events. Bicycle repair stations are self-serve kiosks designed to offer a complete set of tools necessary for routine bicycle maintenance. Fitness stations are areas where outdoor fitness equipment for workouts are included to enhance the recreational opportunities on the trail.

Amenity palettes are provided in the following sections to match the character of each design zone. If the city prefers to keep amenities more consistent, the same furnishing models can be used for all zones, and color can be used as a differentiator.



Lighting distribution photogrammetric diagram (type 3)

Map 1. Blaine Street - Watkins Drive : Conceptual Design Location

Residential Zone

The southernmost segment of the project corridor from Spruce Street south to the project terminus at Blaine Street travels through a residential neighborhood composed of single and multi-family dwellings, including student housing for UCR. A mix of CMU block walls and chain link fence line both sides in this section, and the corridor backs up to residential backyards and housing complex parking areas.

The graphics on the following pages with labels A or B correspond to the locations shown on the Conceptual Design Location map on this page.



Key Map



CONCEPTUAL DESIGN LOCATION

A



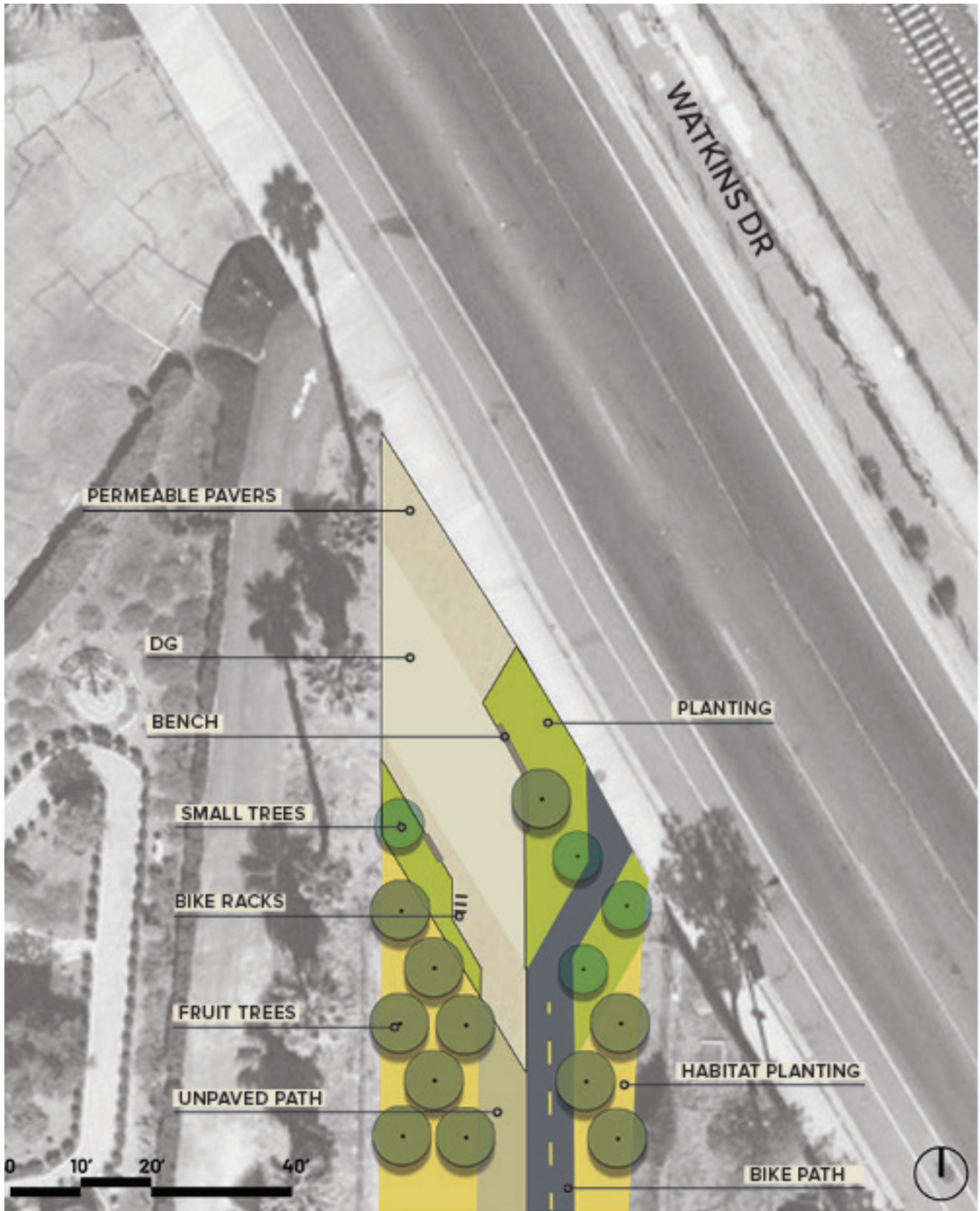
Trail gateway concept rendering located at Watkins Drive looking south

B



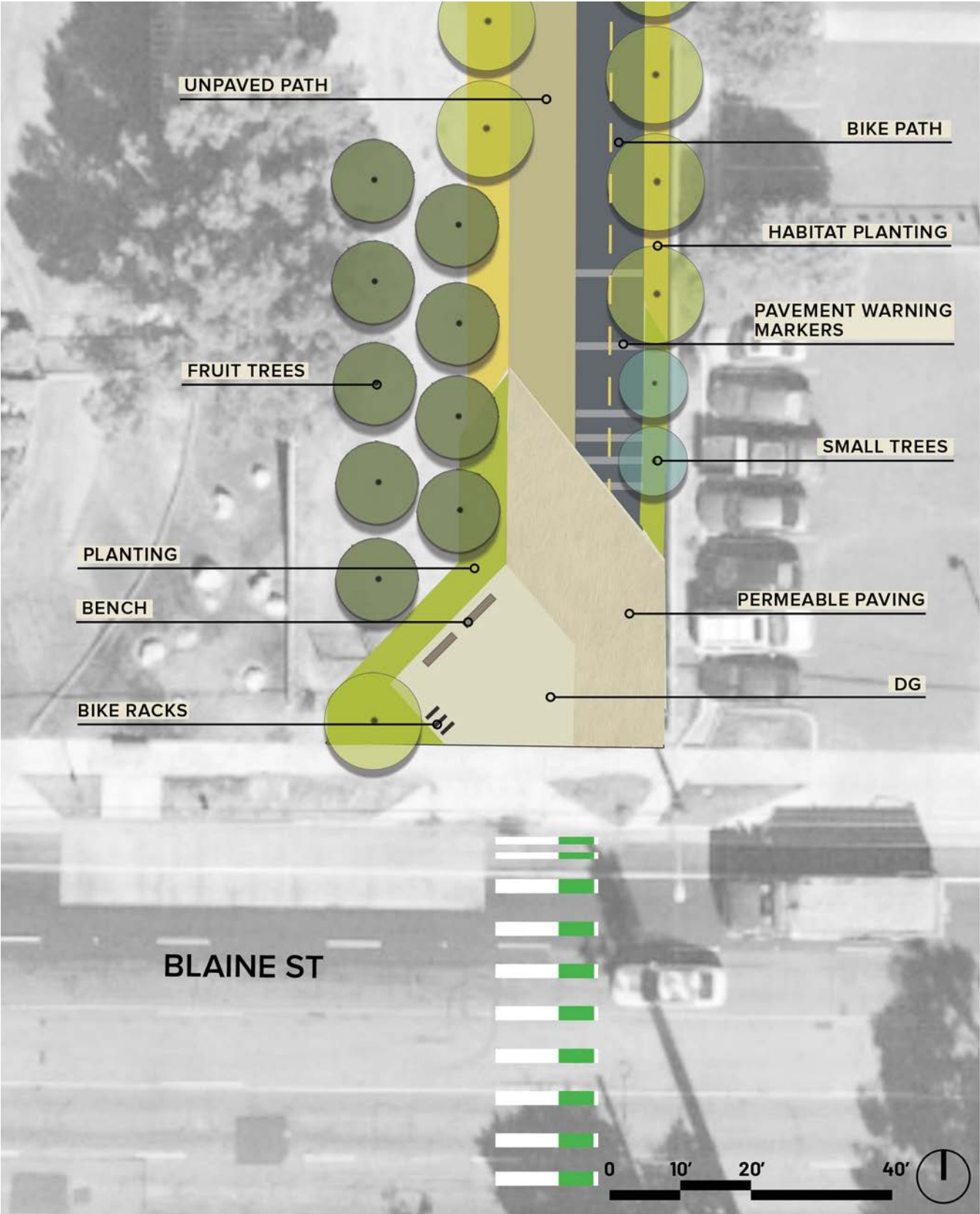
Trail concept rendering located between Blaine Street and Watkins Drive looking north

CONCEPTUAL GATEWAY DESIGN- PLAN VIEW

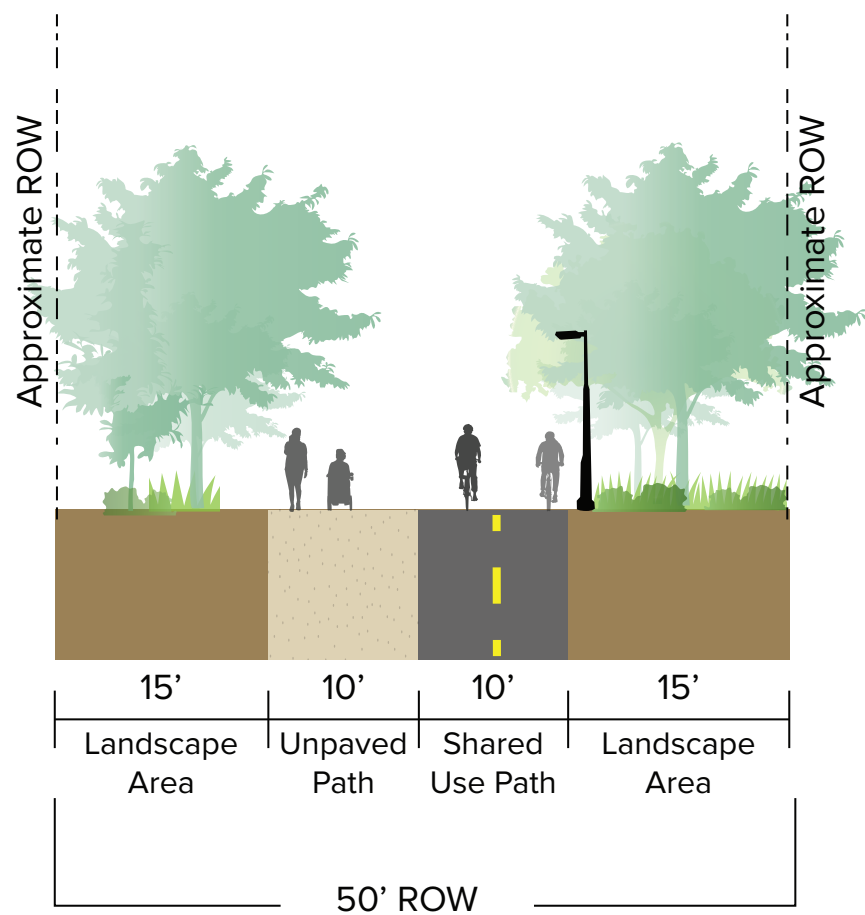


The trail gateway design depicted above is located at the trail corridor intersection on Watkins Drive. The design utilizes the rectilinear gateway typology detailed earlier in the document.

CONCEPTUAL GATEWAY DESIGN- PLAN VIEW



The trail gateway design depicted above is located at the trail corridor intersection on Blaine Street. The design utilizes the rectilinear gateway typology detailed earlier in the document.



Blaine Street to Watkins Drive Typical Section Detail



Mesquite Tree



Palo Verde Tree



Urban orchards have been created at parks and trails in Los Angeles and Riverside. These provide an attraction for visitors and an interpretive link to local history.

Landscape

The southern section of the Gage Canal Multi-Purpose Trail, between Blaine Street and Watkins Drive runs through a residential zone consisting of a mix of single family dwellings and multi-family residential complexes. The plant palette in this section should complement and reference some of the adjacent planting language found in the surrounding residential area in order to seamlessly integrate the future trail into the existing landscape. This can be accomplished by incorporating smaller, residential-scale trees such as palo verde and mesquite to support a signature large oak tree.

Another approach to planting at trailhead gateways in the residential zone is to create a community orchard. A community orchard references Riverside's rich agricultural history, while providing an attraction for the trail. Long term fruit tree maintenance agreements may be possible through community partnerships.

Lighting

This is the most densely populated section of the Trail project and therefore requires additional consideration to reduce light pollution for neighboring residents. In this section of the trail, residences are positioned on both sides of the trail, which requires that the lighting be controlled in both directions. Cut-off fixtures should be used to direct all illumination down towards the trail surface. Based on the Illuminating Engineering Society (IES) lighting standards for pedestrian and bikeways, lighting fixtures should be designed and placed to produce between 0.2-0.5 foot-candles.

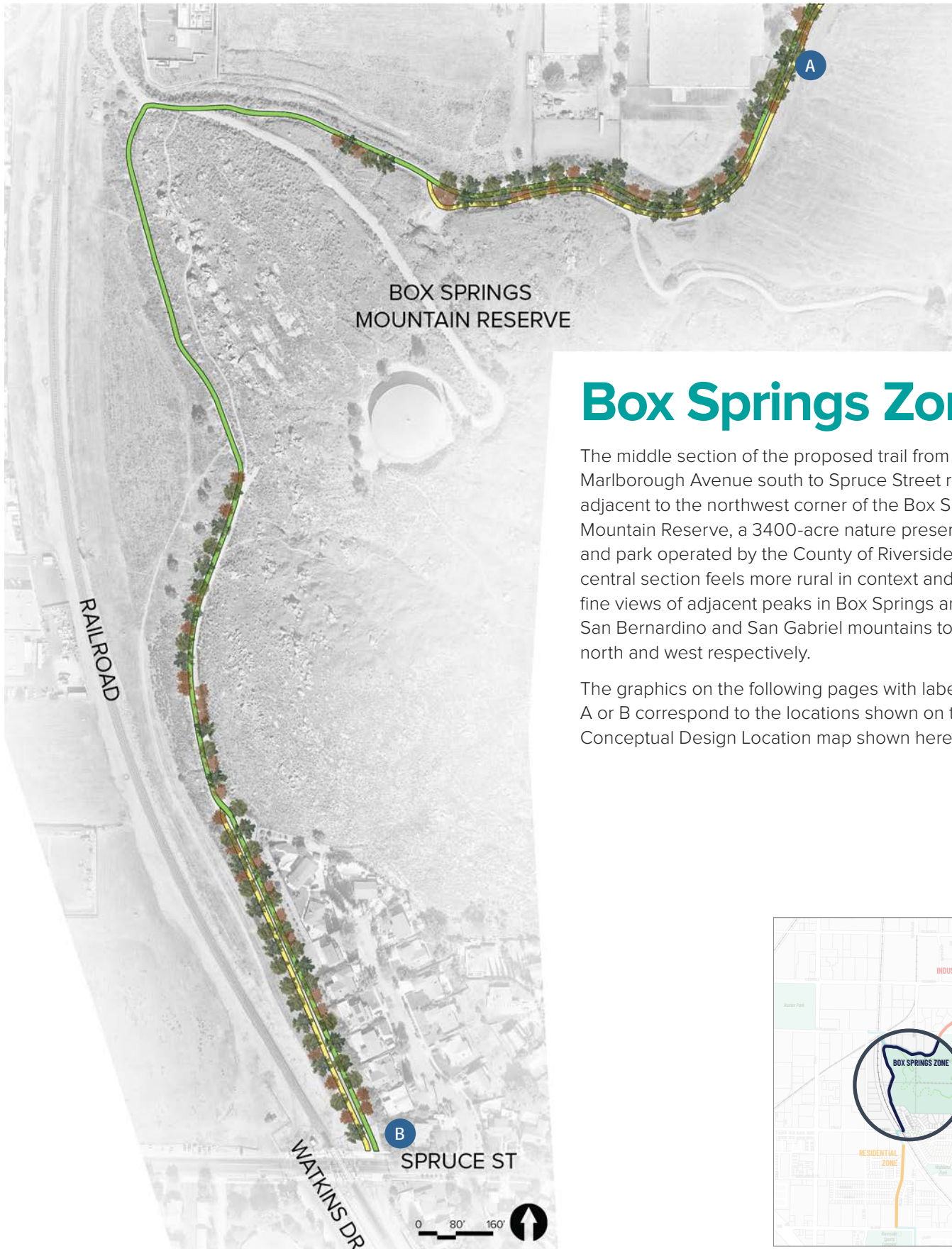
To achieve the recommended illumination of 0.2-0.5 foot-candles, the 2,280' stretch of trail will require 23 total light fixtures spaced 100' apart on center.



Amenities

Throughout the trail corridor amenities may be tailored to fit the design language of each respective zone. For implementation in the residential zone, options are proposed above for the categories of seating, water fountains, trash receptacles, and bicycle parking. Additional amenities such as picnic tables, bicycle repair stations, and pet waste stations may be implemented if funding is available.

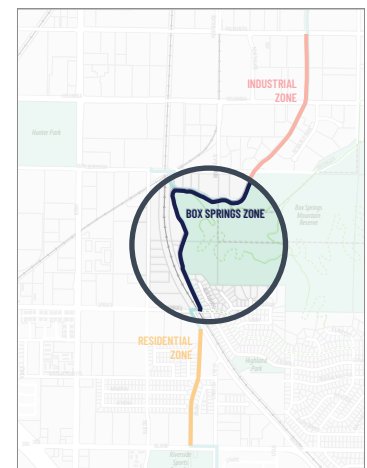
Map 2. Spruce Street - Marlborough Avenue : Conceptual Design Location



Box Springs Zone

The middle section of the proposed trail from Marlborough Avenue south to Spruce Street runs adjacent to the northwest corner of the Box Springs Mountain Reserve, a 3400-acre nature preserve and park operated by the County of Riverside. This central section feels more rural in context and offers fine views of adjacent peaks in Box Springs and the San Bernardino and San Gabriel mountains to the north and west respectively.

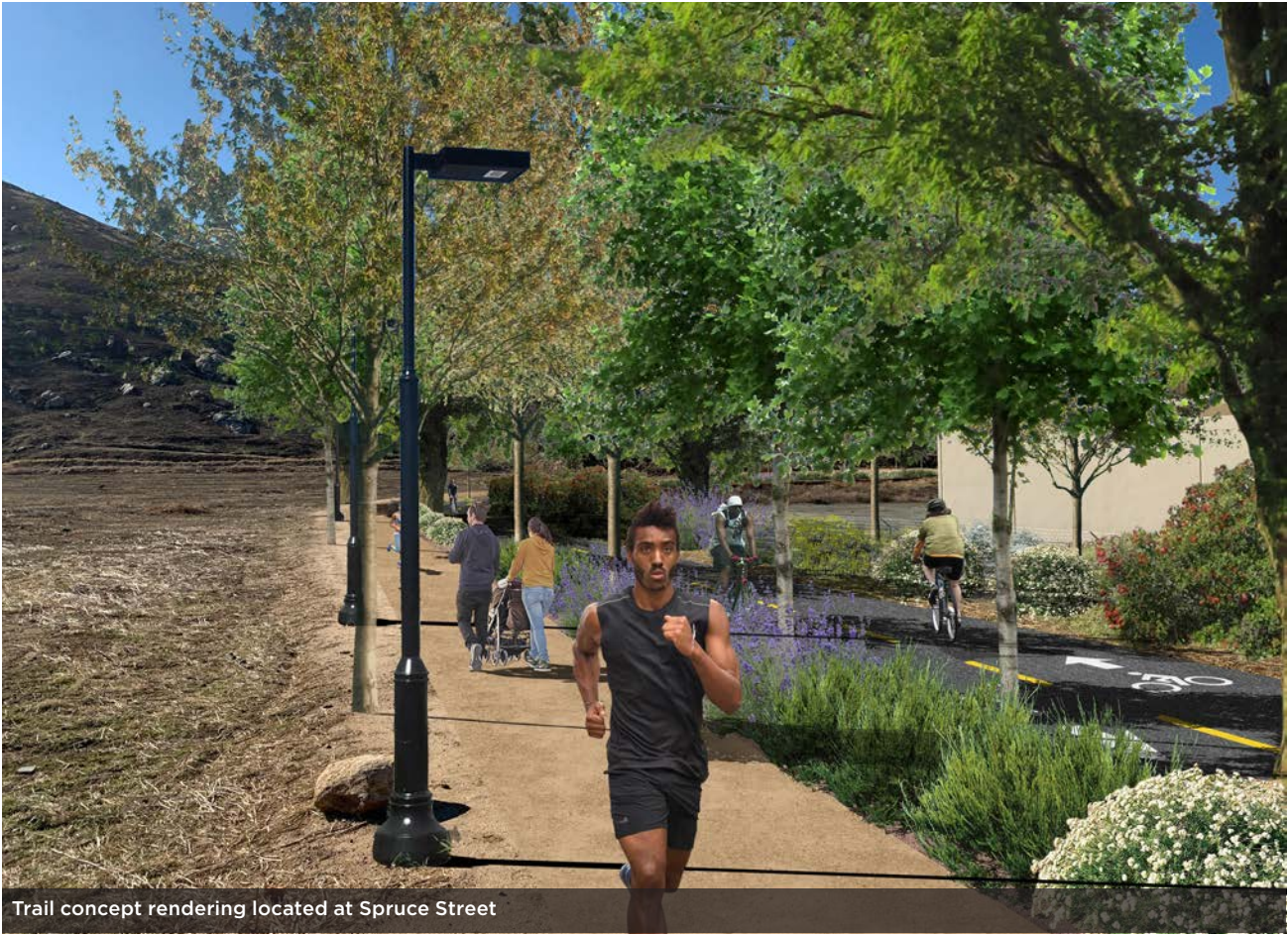
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Key Map

CONCEPTUAL DESIGN LOCATION

A



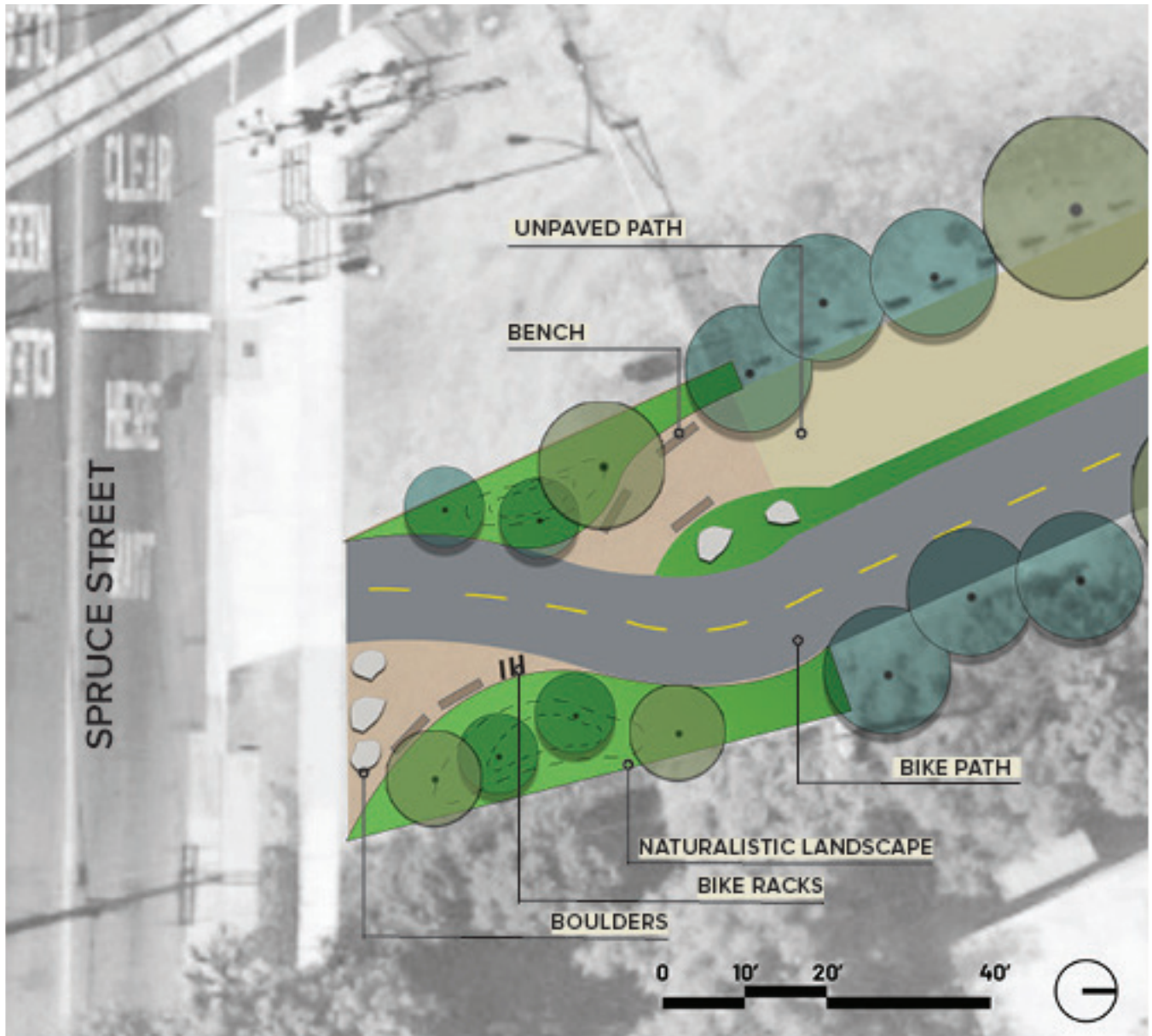
Trail concept rendering located at Spruce Street

B



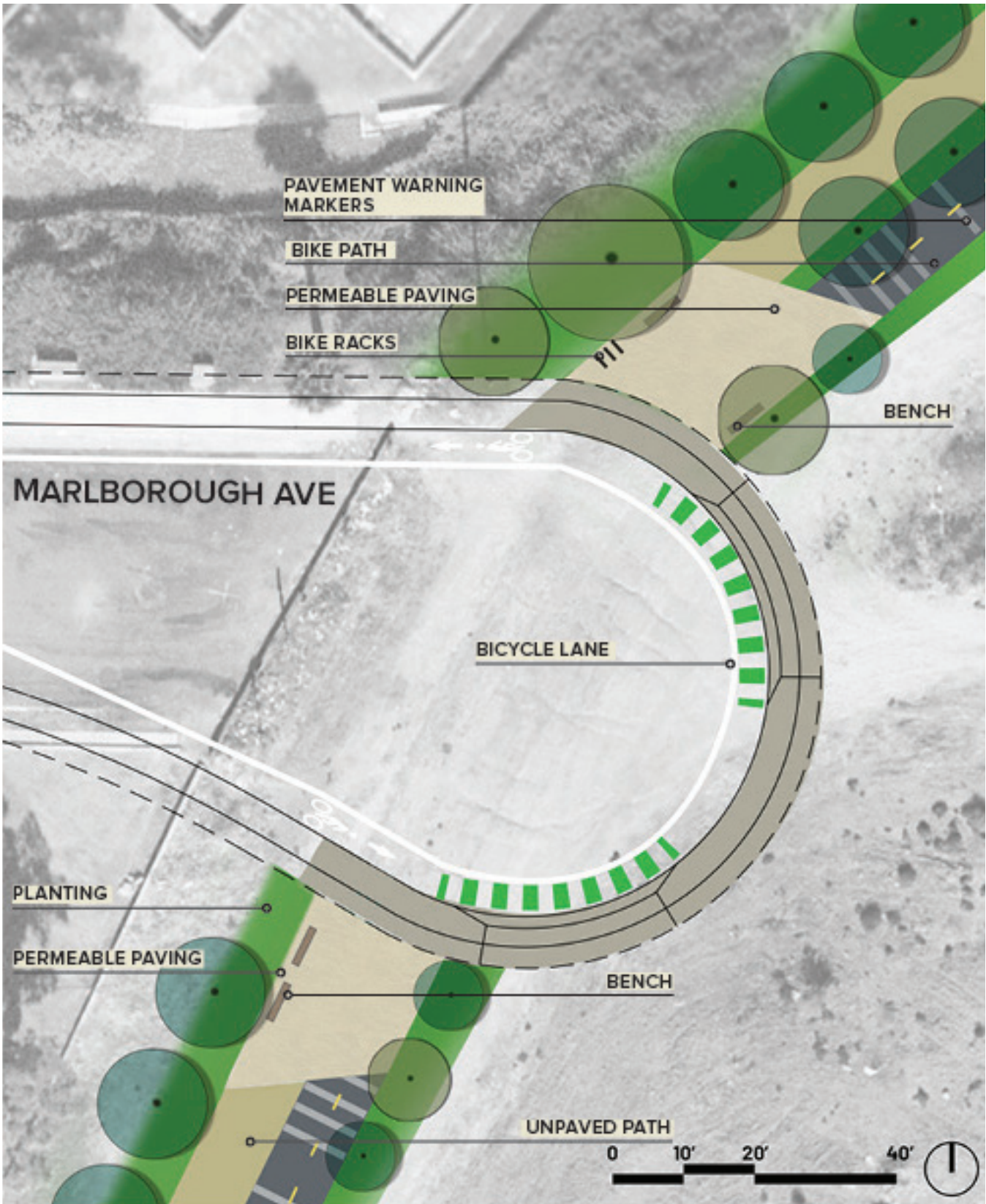
Trail gateway concept rendering at Malborough Avenue

CONCEPTUAL GATEWAY DESIGN- PLAN VIEW

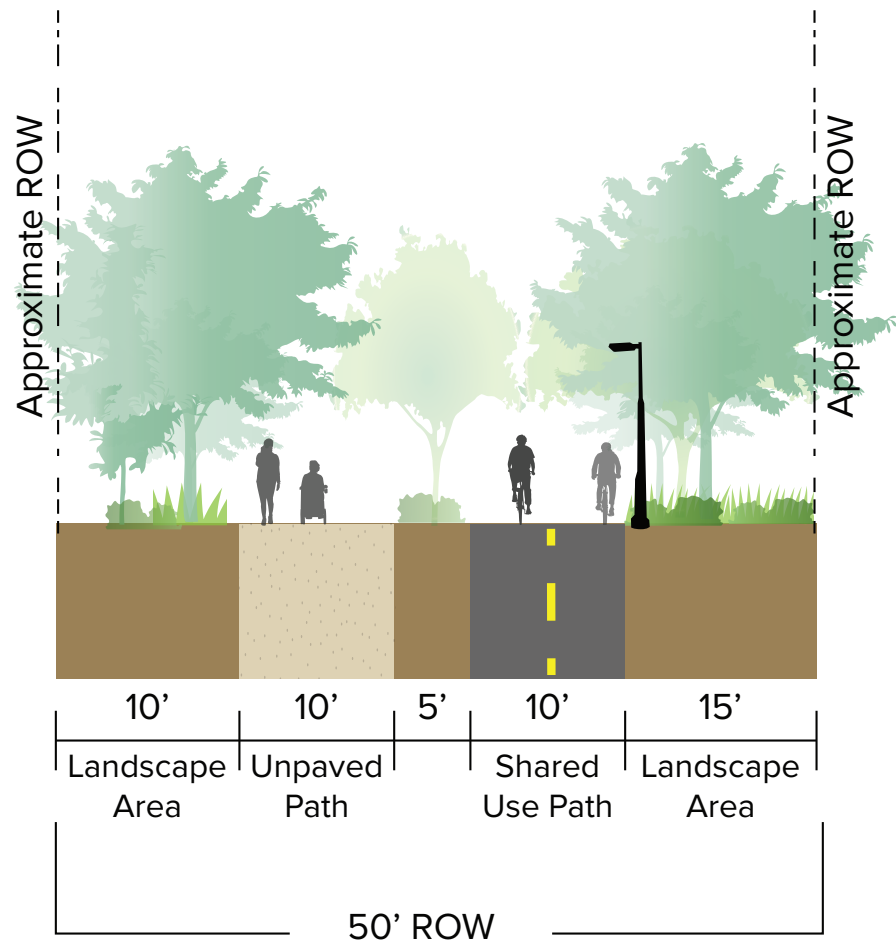


The trail gateway design depicted above is located at the trail corridor intersection on Spruce Street. The gateway is positioned adjacent to a rail right-of-way, and the design utilizes the curvilinear typology detailed earlier in the document.

CONCEPTUAL GATEWAY DESIGN- PLAN VIEW



The trail gateway design depicted above is located at the trail corridor intersection on Marlborough Avenue.



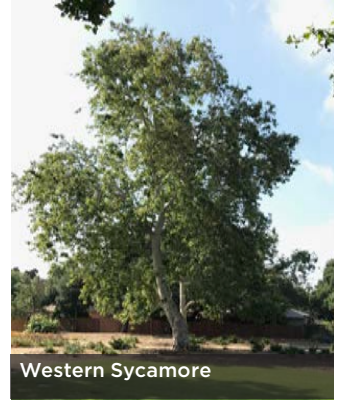
Spruce Street to Box Springs Typical Cross Section



Coral Bells



Desert Willow



Western Sycamore



California Natives Planting

Landscape

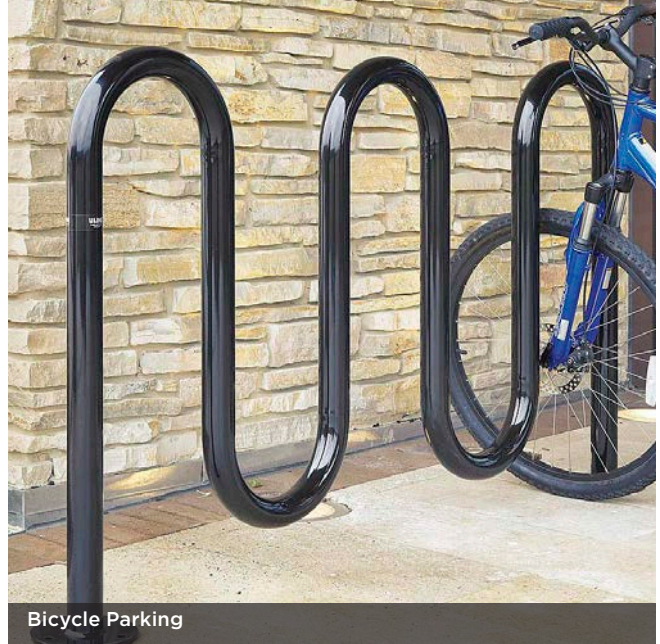
The central section of the Gage Canal Multi-Purpose Trail, between Spruce Street and Marlborough Avenue, runs adjacent to the existing Box Springs Mountain Reserve, a 3,400-acre nature preserve and park operated by the County of Riverside. As the reserve is primarily dominated by coastal sage scrub plant community, the plant palette on this portion of the trail will primarily feature trees and shrubs native to Riverside and/or Southern California. Signature large trees in this section will include oaks and sycamore, and will be supplemented by smaller, native trees such as desert willow. The planting in this section should emphasize a connection to nature and a commitment to supporting local biodiversity.

Lighting

In this segment the trail transitions to a more natural condition as it moves towards Box Springs. Here, residences are found on just the east side of the trail before moving into the unpopulated Box Springs Reserve. Like the Blaine to Spruce segment, cut-off fixtures should be used to direct light down towards the trail to eliminate light pollution to neighboring residences. Sections of trail within the Box Springs Reserve should have less lighting to limit disruption to sensitive ecosystems. Lighting fixtures should be designed and placed to produce 0.1-0.3 foot-candles along this segment and use amber colored luminaires. To achieve the recommended illumination of 0.1-0.3 foot-candles, the 4,255' stretch of trail will require 36 total light fixtures spaced 120' apart on center.



Trash Receptacle



Bicycle Parking



Water Fountain



Seating option 1

Amenities

Throughout the trail corridor amenities may be tailored to fit the design language of each respective zone. For implementation in the Box Springs zone, options are proposed below for the categories of seating, water fountains, trash receptacles, fitness stations, and bicycle parking. Additional amenities such as picnic tables, bicycle repair stations, and pet waste stations may be implemented if funding is available.



Seating option 2

Map 3. Marlborough Avenue - Palmyrita Avenue : Conceptual Design Location

Industrial Zone

The northern section of the project corridor from Marlborough Avenue to Palmyrita Avenue runs through an industrial district known as Hunter Industrial Park. It is characterized by large concrete tilt-up buildings and associated asphalt concrete parking lots. Through this section, the proposed Gage Canal Multi-Purpose Trail, is bordered on both sides by these industrial buildings and parking lots, often in view of adjacent site operations.

The graphics on the following pages with labels A or B correspond to the locations shown on the Conceptual Design Location map shown here.



Key Map

CONCEPTUAL DESIGN LOCATION

A



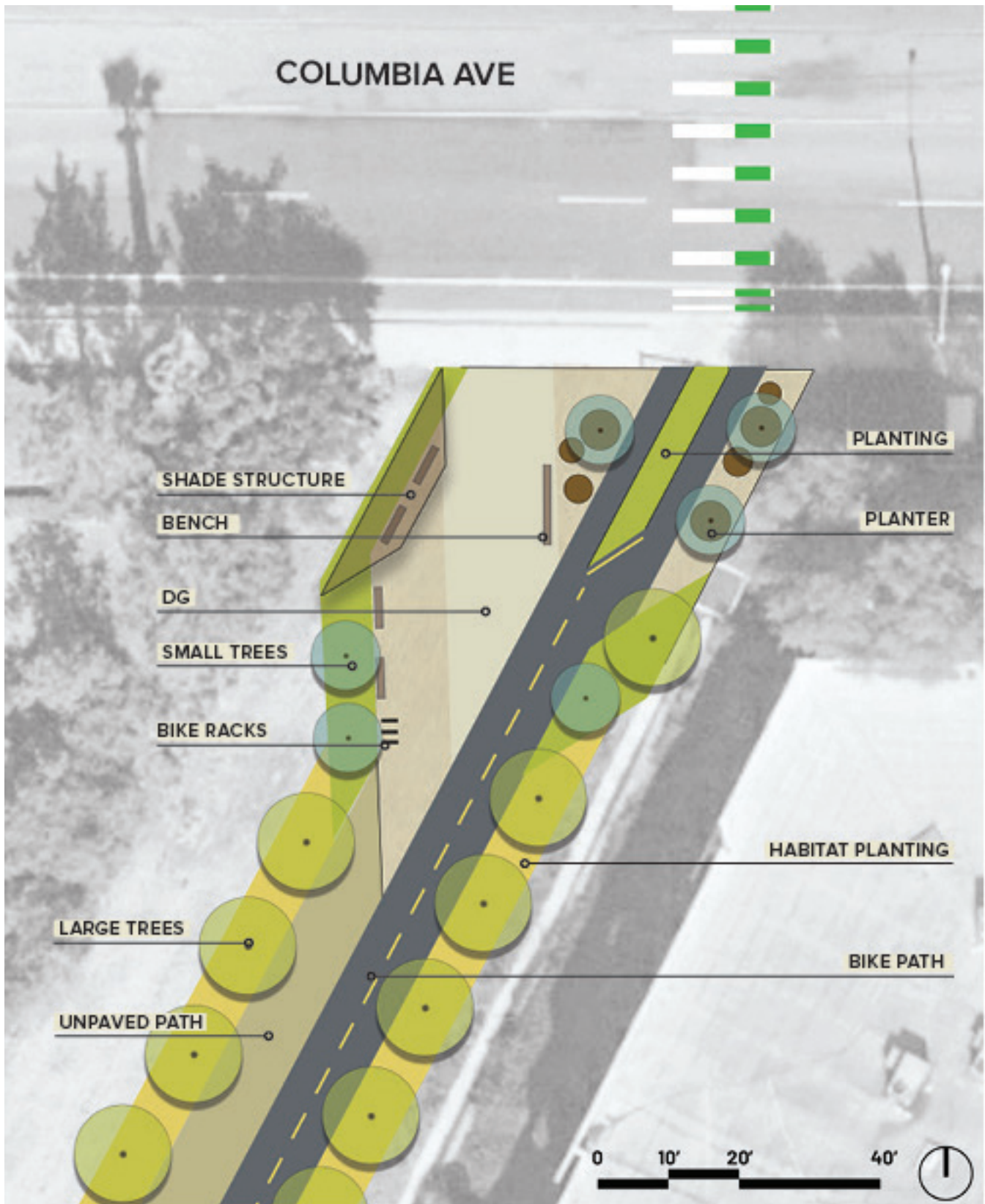
Trail gateway concept rendering at Columbia Avenue

B



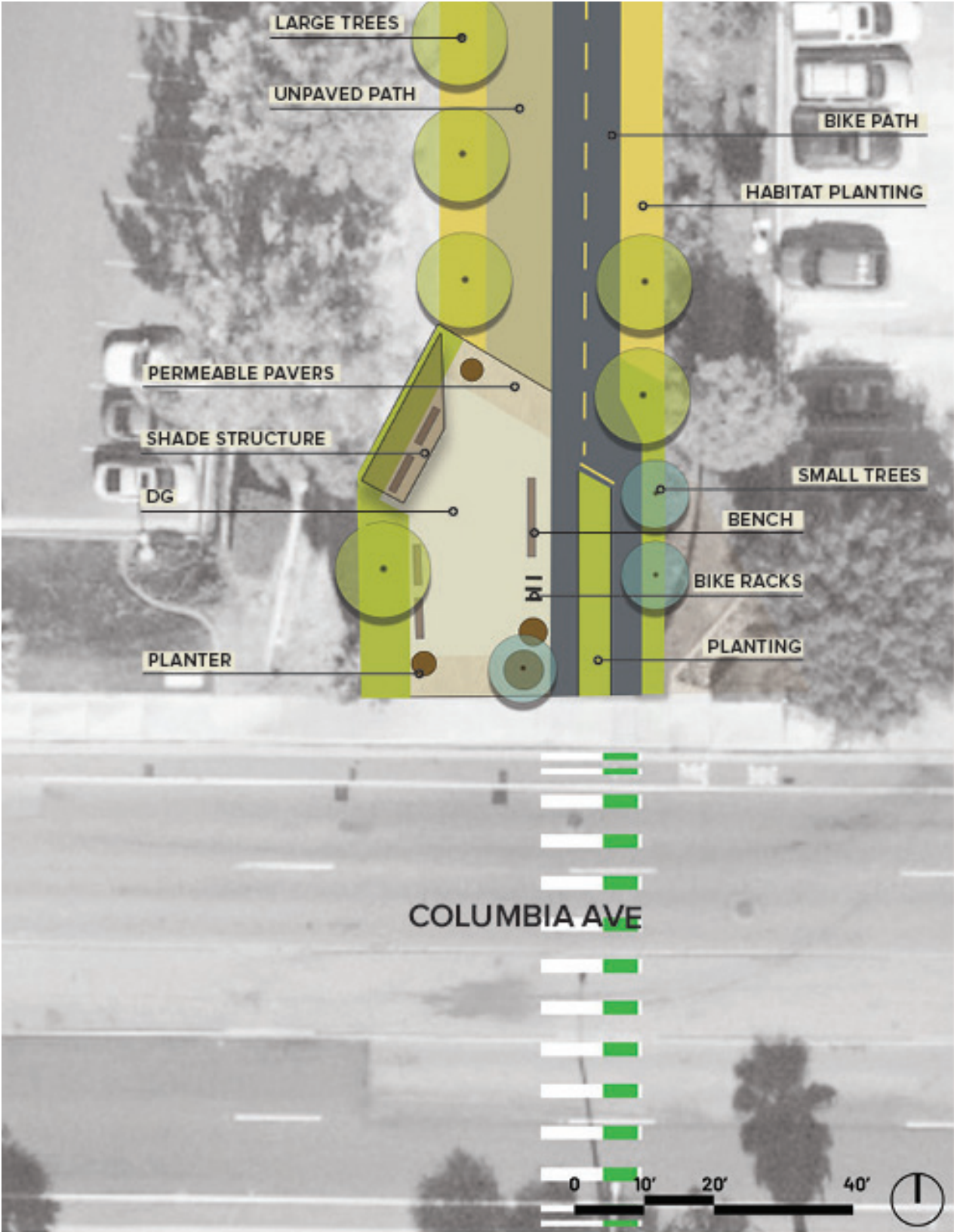
Trail concept rendering located between industrial facilities

CONCEPTUAL GATEWAY DESIGN- PLAN VIEW



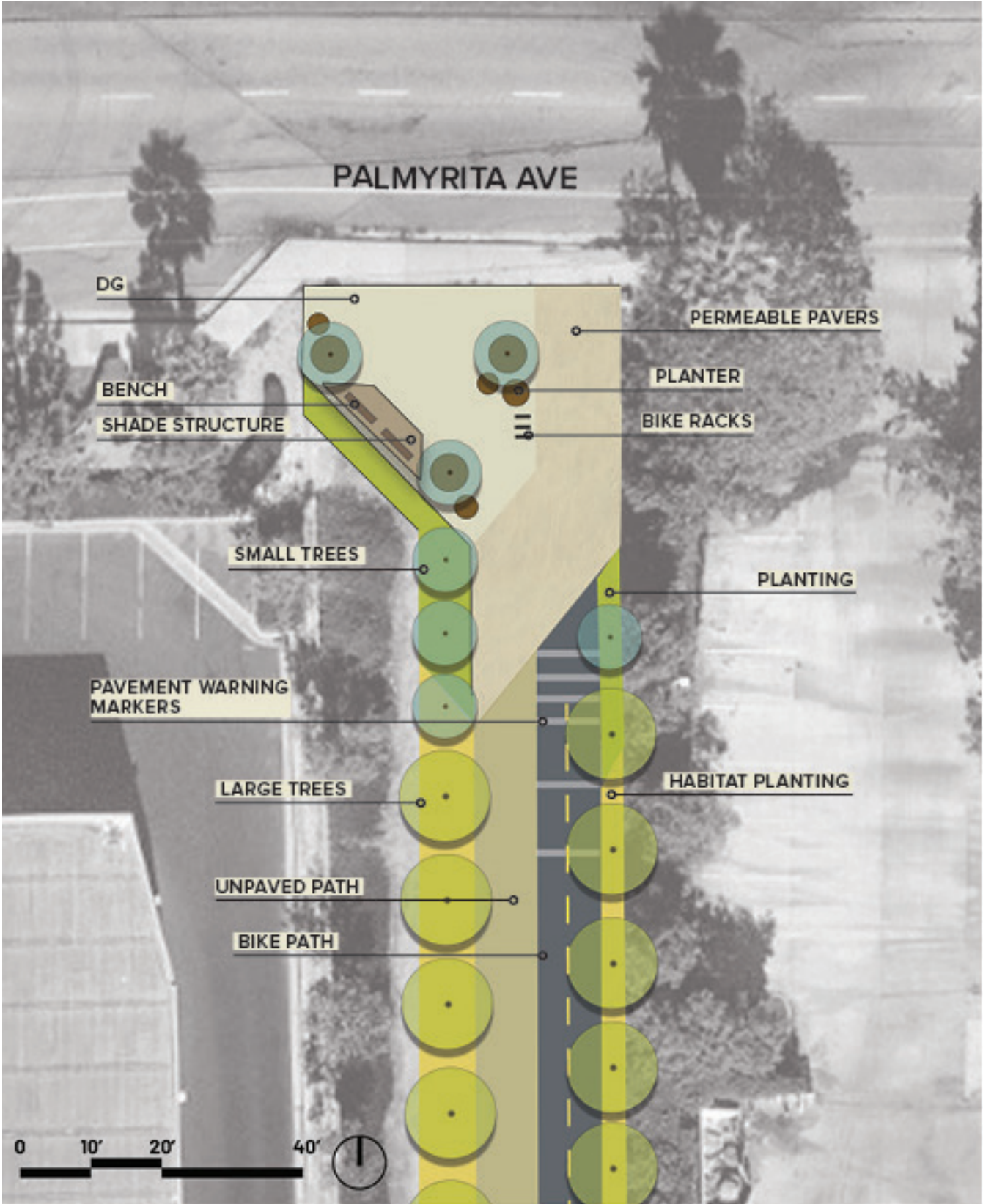
The trail gateway design depicted above is located at the trail corridor intersection on Columbia Avenue on the south side of the street. The design utilizes the rectilinear gateway typology detailed earlier in the document.

CONCEPTUAL GATEWAY DESIGN- PLAN VIEW

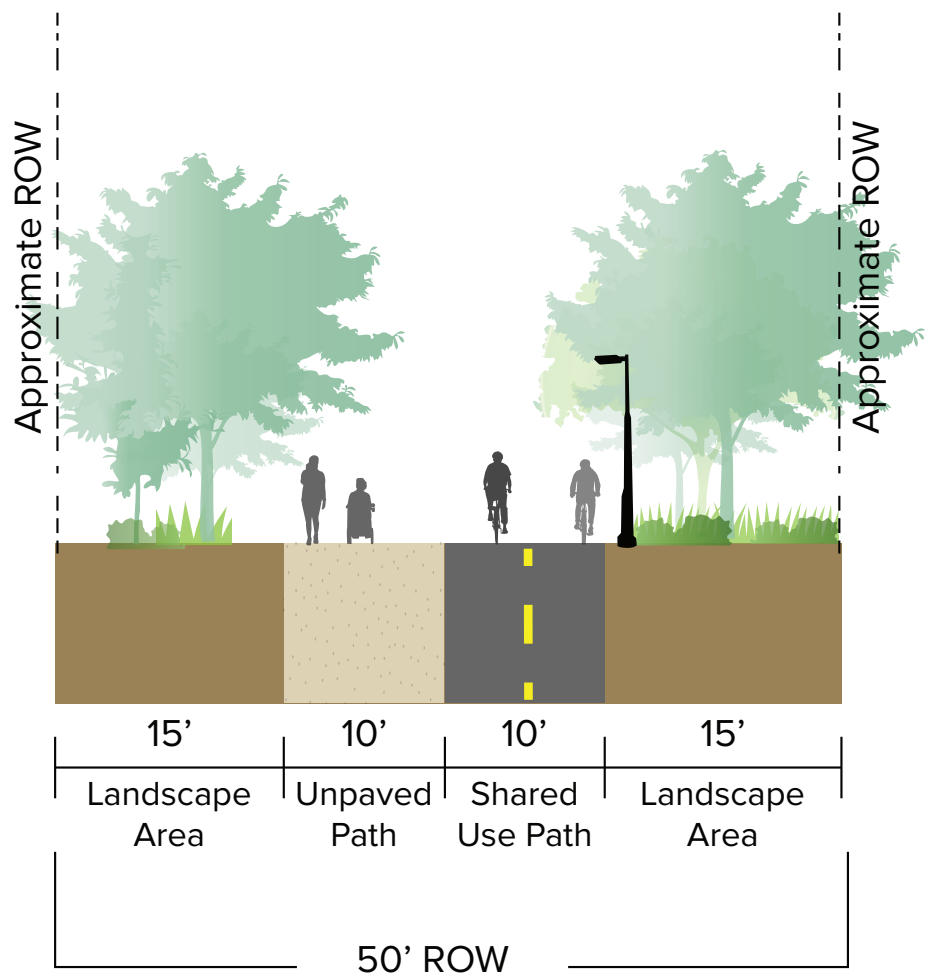


The trail gateway design depicted above is located at the trail corridor intersection on Columbia Avenue on the north side of the street. The design utilizes the rectilinear gateway typology detailed earlier in the document.

CONCEPTUAL GATEWAY DESIGN- PLAN VIEW



The trail gateway design depicted above is located at the trail corridor intersection on Palmyrita Avenue. The design utilizes the rectilinear gateway typology detailed earlier in the document.



Spruce Street to Box Springs Typical Section Detail



Brisbane Box



Industrial Zone Shrub Planting

Landscape

The northern section of the Gage Canal Multi-Purpose Trail, between Marlborough Avenue and Palmyrita Avenue, runs through an industrial area dominated by large warehousing and manufacturing operations each of which feature their own campus and street adjacent landscaping with various tree and shrub species. Signature large trees on this section of the Trail can reference and tie into the existing adjacent landscapes found along the corridor by featuring some of the same trees present in the adjacent corporate campuses. Examples of these include trees such as brisbane box or aleppo pine. By tying into the adjacent existing landscapes, the Gage Canal through this section will feel like a seamless addition to the existing fabric of industrial campus landscapes.

Lighting

The northern most segment of the Trail is surrounded by industrial land use. For this reason, spill-over from lighting fixtures is less of a concern and illumination of the trail surface can increase. Cut-off fixtures are not necessary in this location and the illumination range should be designed within .5-1 foot-candles. Additionally, trailheads should be designed with an illumination of 1 foot-candle to facilitate user access to the trail.

To achieve the recommended illumination of 0.5-1.0 foot-candles, the 2808' stretch of trail will require 35 total light fixtures spaced 80' apart on center.



Amenities

Throughout the trail corridor amenities may be tailored to fit the design language of each respective zone. For implementation in the industrial zone, options are proposed for the categories of seating, water fountains, trash receptacles, and bicycle parking. Additional amenities such as picnic tables, bicycle repair stations, and pet waste stations may be implemented if funding is available.