shall be completed with site material conforming as nearly as possible to the finish grades shown and insuring positive drainage all at no additional cost to City.

1.06 WATER: See Special Provisions Section **7-8.5 Temporary Light, Power, and Water** regarding temporary construction water.

1.07 JOB CONDITIONS:

A. Protection of Existing Items:
   1. Contractor shall furnish, place and maintain all shoring and bracing as may be required for protection of existing structures and utility services during execution of the Work.
   2. All bench marks, monuments and other reference points shall remain undisturbed unless specifically directed otherwise by the Park Projects Inspector.

B. Coordination with Others:
   1. Contractor shall give written notice to the Parks Department Representative, utility agencies, and other legal authorities prior to starting Work.
   2. Contractor shall coordinate Contractor's operations with other trades, utility agencies, and other affected public departments to assure continuity for both access and service of all utility service distribution lines, in conformance with applicable requirements of these organizations. No services to any property shall be impeded.

C. Abandoned and Unknown Utilities:
   1. Abandoned lines, meters and boxes, obstructions or piping, shall be removed, plugged, or capped in accordance with the requirements and approval of the agencies affected, or as directed by the Park Projects Inspector. Coordinate all such Work with applicable mechanical or electrical trade having responsibility. Remove all abandoned utility lines, pipes, or conduits, to a point outside new construction lines.
   2. Where unmarked utility lines or other underground obstructions or piping are uncovered within the Work area, notify the agencies or service utility companies having jurisdiction and take necessary measures to prevent interruption of service. Should such lines or services be damaged, broken, or interrupted through Contractor's own negligence, those services shall be repaired immediately by the party designated by the utility owner, at Contractor's expense. If an unmarked utility is damaged other than through the negligence of Contractor, Contractor's responsibility is limited to providing immediate and proper notification of the damage to the utility owner so that repairs can be made. Contractor shall cooperate with the utility owner and provide access for repair work.

PART 2 - MATERIALS

2.01 D.G. PAVING: Shall be Natracil ™ Stabilized Decomposed Granite/Crushed Aggregate Stone, as manufactured by Gail Materials, 10060 Dawson Canyon Road, Corona, CA 92883, (951) 667-6106, http://www.gailmaterials.com/ or City approved equal.

A. D.G.: Shall be color as approved by the Inspector to match existing, decomposed granite free of silt, clay, weed seed, and any other deleterious material, conforming with Section 400-2.3 Disintegrated Granite, per the Standard Specifications and as approved by the Parks Department Representative. Contractor shall provide a one pound sample to the Parks Department Representative a minimum of 35 days prior to ordering materials for the review and approval of the Parks Department Representative.

B. Stabilizer: Shall be Natracil™ psyllium husk binder, or City approved equal. The stabilizer shall be incorporated with the granite fines by the use of a pug mill that includes a weight belt feeder that ensures the proper ratio of binder to granite fines. Blending with the use of a bucket loader or similar is not acceptable. The binder shall be blended at the rate of 12 lbs. per ton of granite fines.

2.02 DRAIN ROCK: Drain rock for all sumps and french drains shall be pervious backfill as specified in Standard Specifications, Section **300-3.5.2 Pervious Backfill**.

2.03 FILL MATERIAL:

C. Required Approval: All fill material must be approved by the Soils Engineer and the Parks Department Representative.

D. On-site Material: On-site excavated materials may be used for fill as approved by the Soils Engineer and the Parks Department Representative.

2.04 GRANULAR BEDDING MATERIAL: Where called for on the Plans, granular bedding material shall be crushed stone or pea gravel conforming to the following grading:

Sieve Size	% Passing
3/4"	100
1/2"	95
#4	5

2.05 IMPORT:

E. Landscape Fills: All import soil used for fill in landscape areas shall be Class 'A' topsoil per Standard Specifications, Section **212-1.1 Top Soil, General**.

F. Structural Fills: All import soil used solely for structural fill shall be non-expansive, predominantly granular material free from organic contaminants, and capable of attaining the required compacted densities.

G. Approved Samples: Samples of all import soil, as obtained by the City's Inspector at the borrow site, must be approved by the Parks Department Representative prior to start of import of soil to the Project site.

2.06 TRAIL FENCE: Trail fence shall be as specified by the Parks, Recreation and Community Services Department, per the updated Trails Master Plan (2021).

PART 3 - EXECUTION

3.01 GENERAL:

A. Work Sequence: All demolition, clearing and grubbing of objectionable materials must be completed to the satisfaction of the Parks Department Representative before starting any earthwork grading and excavation.

B. Survey: See Special Provisions Section **2-9.3 Survey Service** regarding responsibility for provision of all survey services as necessary for horizontal and vertical control points, layouts, lines and levels, and staking of the Work.

C. Allowable Gradients: Trails shall be constructed in the field to comply with the following maximum and minimum gradients.
1) Cross Slope: Trail cross slope shall be between 1% minimum and 2% maximum.
2) Longitudinal Gradients:
a) Accessible Trails: Trails designated for ADA access shall not exceed a longitudinal slope of 5% (20:1) unless configured as an Accessible Ramp.
b) Non-Accessible Trails: Trails designated as non-accessible, must be so marked, and generally shall not exceed a longitudinal gradient of 10% (10:1). However, slopes steeper than this for short distances may be allowed under the following conditions:
- Maximum of 15% slope for distance of 500' or less.
- 20% slope permitted only in unique situations and limited to 100' or less.
- Under no circumstances shall any slope exceed 20%.

c) Alternate Trail Designs: Where the natural terrain is so steep that provision of a trail at more

than 20% gradient is required, to decrease grade, terrace steps may be used.

3) Accessible Ramp Systems: All ramps shall not exceed a maximum slope of 8.333% (12:1). Ramps shall not exceed a maximum of 30' in length between landings. All landings shall not exceed a maximum cross slope of 2% in any direction. All landings shall be sized at a minimum of 60" x 60" or the width of the trail whichever is greater, all per ADA requirements. All ramps and landings shall be provided with accessible handrails.

4) Trail Edge: Where adjacent to developed landscape areas, the trail D.G. shall be contained by a concrete mowcurb on each edge of the trail tread. Where adjacent to native landscapes, no mowcurb is required and may be omitted.

5) Trail Fence and Markers: All trails along public streets shall be fenced and marked per the Trails Master Plan and Trails Standard Details.

6) Crossing Concrete: Where the trail is designated to cross concrete aprons and sidewalks, such aprons and sidewalks shall be constructed of concrete with rough broom or rake finish to prevent slipping. Where such areas exist, they shall be removed and replaced with rough broom finish concrete, or shall be heavy sandblasted in place to provide an equivalent non-slip surface..

3.02 ROUGH GRADING:

A. Conformance with Plans: Rough grading of the site shall be completed in accordance with indicated contours, elevations, and limit lines shown on the Plans and shall allow for the depths of slabs, paving, sub-base, topsoil, and controlled fills.

B. Grading Tolerances:

1. Sub-grades to receive slabs and pavements shall be graded to a tolerance of plus or minus one-half (1/2) inch, and shall be compacted as specified below in Sub-section **3.04 CONTROLLED FILL**, paragraph **G. Relative Compaction Requirements**, sub-paragraph **1. Slabs & Pavement Subgrades**.
2. Tolerance for rough grading in all other areas is 1/10th of a foot.
3. In all areas, appearance and positive drainage will be factors in the acceptability of grades.

C. Compacted Lifts: Graded material shall not be left in loose layers, but shall be stockpiled for use in controlled fill or compacted in thin layers as grading takes place in accordance with the requirements for controlled fill.

D. Scarification: Shall be performed on all areas indicated to receive paving to depths as indicated in the soils report. In the absence of a soils report, scarification shall be to a minimum depth of six (6) inches or to a depth permitting twelve (12) inches of controlled fill whichever is greater.

E. Engineer's Approval: Contractor shall obtain the Soil Engineer's approval of all scarified surfaces prior to placement of fill.

3.03 CONTROLLED FILL:

A. Landscape Fills: The topmost 12" of fill in all landscape areas shall be topsoil.

B. Rocks: Rocks larger than two (2) inches in diameter shall be removed from all fills to be compacted.

C. Lifts: Fill material shall be spread in uniform lifts of six (6) to eight (8) inches of un-compacted thickness.

D. Moisture Content: Prior to starting compaction, the fill material shall be brought to optimum moisture content by spraying with water if too dry, and aeration if too wet.

E. Mixing: Thoroughly mix each lift to assure uniform distribution of water content.

F. Allow for Shrinkage & Subsidence: Bring fills to suitable elevations above required grades to provide foreffects of shrinkage and settlement.

G. Relative Compaction Requirements:
1. D.G. Pavement Subgrades: For all areas designated to receive D.G. pavement and within a perimeter five (5) feet outside these areas, each lift shall be compacted to a minimum of 90% of maximum density as determined by ASTM D1557-78.
2. Planting Areas: Where fill is required in planting areas each lift shall be compacted to a minimum of 85% maximum density.
3. Mechanical Equipment: Perform all compaction by suitable mechanical equipment and methods approved by the Soils Engineer.

H. Contractor's Responsibility: During the grading operations, inspection and field tests will be carried on by the Soils Engineer. However, Contractor is responsible to ensure obtaining the required degree of compaction and the proper moisture content. Where compaction of less than the specified percentage is found, additional compaction effort shall be made with adjustment of the moisture content as necessary until the minimum specified compaction is obtained.

I. Over-excavation Due to Unsuitable Materials: Excessively wet material, material in any soft or spongy spots, and material in standing water shall be over-excavated to such depth as directed by the Soils Engineer and replaced with suitable material, properly compacted.

3.04 EXCAVATION: Contractor shall perform all necessary excavation work for trail fence footings and mowcurbs and shall perform any additional excavation work necessary to provide ample room for installation of concrete forms where required. The bottom of all excavations shall be level and free from loose material, and shall be brought to the indicated or required grades in undisturbed earth. All excavations shall be kept free of standing water. Contractor shall perform all pumping, draining, and dewatering as may be necessary to keep excavations free of standing water while carrying on the Work. Should excavations for footings, through error, be excavated to a greater depth or size than indicated or required, such additional depth or size shall be filled with concrete at Contractor's expense.

3.05 OPEN TRENCH OPERATIONS: Shall conform with Standard Specifications Section **306-1 Open Trench Operations**, as modified by the following:

A. General: Add the following to Standard Specifications Section **306-1.1.1 General**:
" Where trench is close to existing pole mounted lights, catch basins, or other structures that are to remain, Contractor shall brace as necessary to prevent dislocation of such structures. In the area of any such structures, the trench backfill shall be compacted to 90% to the full depth of the structure."

B. Unsuitable Material: Add new subsection 306-1.1.7 as follows:
3.06-1.1.7 Unsuitable Material. The conditions and requirements for the determination and disposition of unsuitable material encountered during open trench operations shall be in accordance with Standard Specifications Section **300-2.2 Unsuitable Material**.

C. Trench Backfill: Shall conform with Public Works Department Standard Drawing No.453.

3.06 BACKFILLING:
A. Material: Select site material shall be used for backfill of trenches and shall be free from large stones and clods. Material shall be as approved by the Soils Engineer.

B. Pre-Conditioning and Placement:
1. Layers of backfill shall be pre-conditioned by moistening with water, the amount to be controlled to insure optimum moisture conditions for the type of fill material used. Excess water causing saturated earth beneath footings, walks, and curbs is unacceptable.
2. Backfill shall be deposited in layers of maximum six inch thickness.
3. Backfill shall be compacted by suitable means to a minimum relative compaction of 90%.
4. All trenches shall be backfilled in accordance with this Section, and may be tested at the discretion of the Engineer.

3.07 FINE GRADING: Fine grading, as specified under this Section, is a separate operation from finish grading as specified under Section **02480 Planting**. Fine Grading Work is to commence upon completion of all trenching and backfill operations, and prior to soil preparation.

Upon completion of Fine Grading Work all areas shall slope to drain without water pockets or irregularities and shall conform to the intent of all Plans and Specifications after thorough settlement and compaction of the soil. Fine grading should allow for Soil Preparation Work as specified under Section **02480 Planting**, such that finish grades shall meet the elevations indicated on the Plans. Tolerance for fine grading is 1/4 inch, plus or minus. Any corrections to the Grading Work required to obtain proper drainage and to bring it into conformance with the intent of the Plans and Specifications and City codes shall be performed by Contractor at no additional cost to City.

3.08 DECOMPOSED GRANITE: Pre-mixed D.G. and stabilizer shall be placed in lifts, wetted and compacted as specified by the stabilizer manufacturer to a minimum relative compaction of 90%. D.G. pavement shall be smooth, free of rills, dips, and flow lines, such that surface water will properly drain off the surface of the pavement. Contractor shall provide as a turn-over item a minimum of 10 pounds of stabilizer product per 1000 lineal feet of trail being installed.

3.09 UTILITY INFRASTRUCTURE: Any and all utility infrastructure shall be place outside of the trail. Lines may pass under the trail, however, no cabinets, valves, boxes, etc. shall be installed within the trail.

3.10 DUST AND NOISE ABATEMENT: During the entire construction period, site areas shall be kept sprinkled (either with water or an approved dust palliative) as necessary to minimize dust in the air and annoyance to sur rounding properties. Adhere to the requirements of City ordinances for dust and noise control.

END OF SECTION

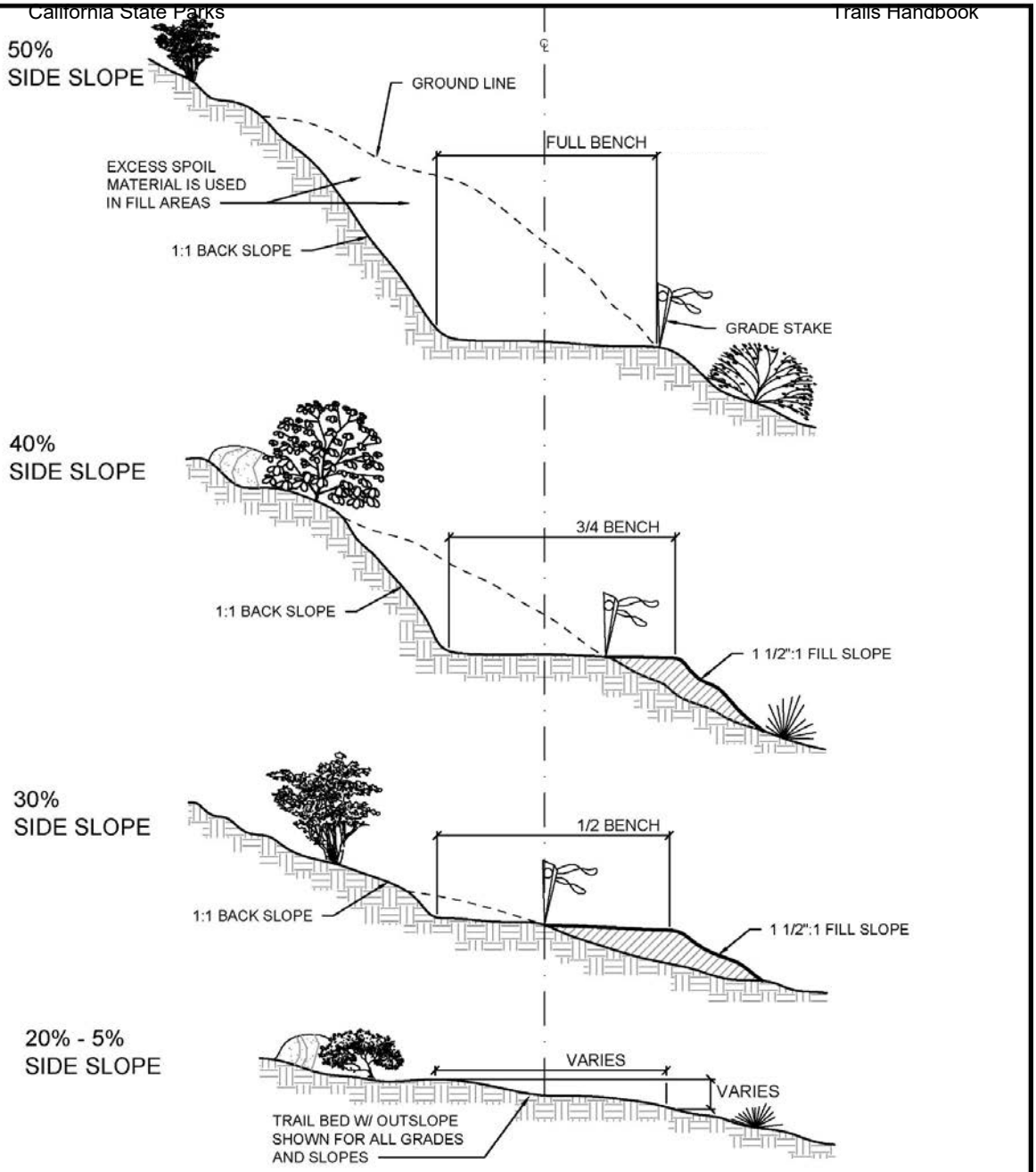


Figure 5.13 - Travelway Excavations

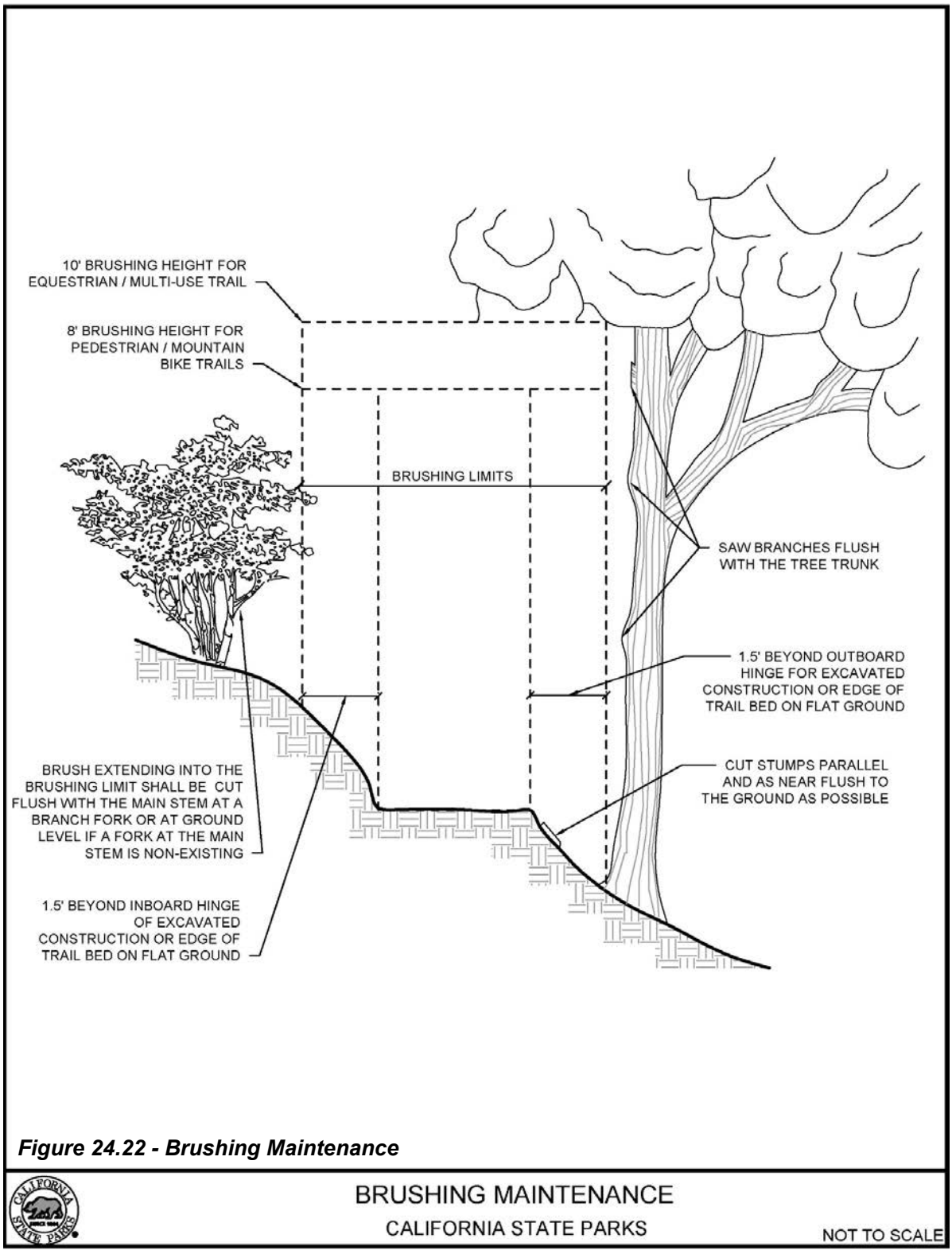


Figure 24.22 - Brushing Maintenance

24-32

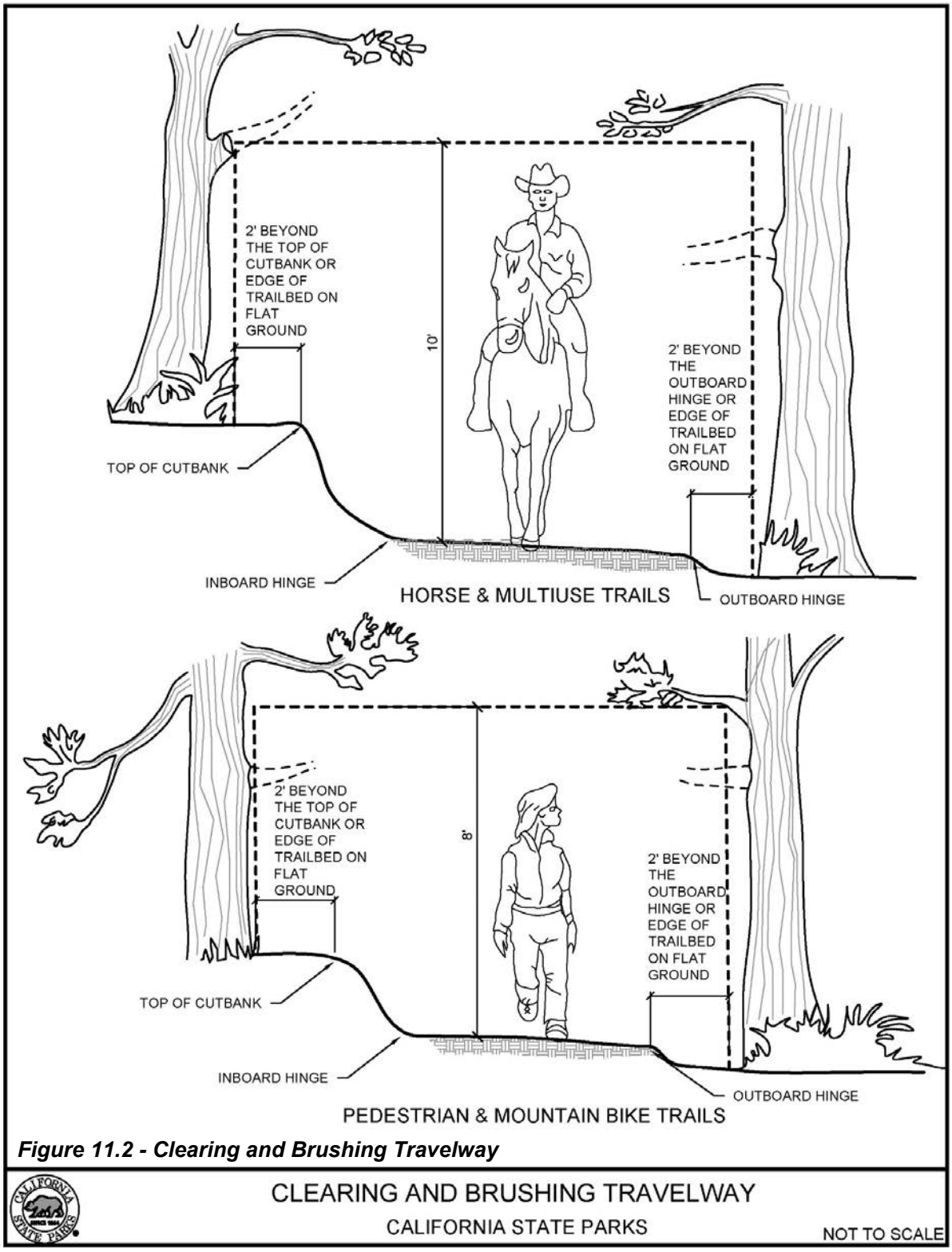


Figure 11.2 - Clearing and Brushing Travelway

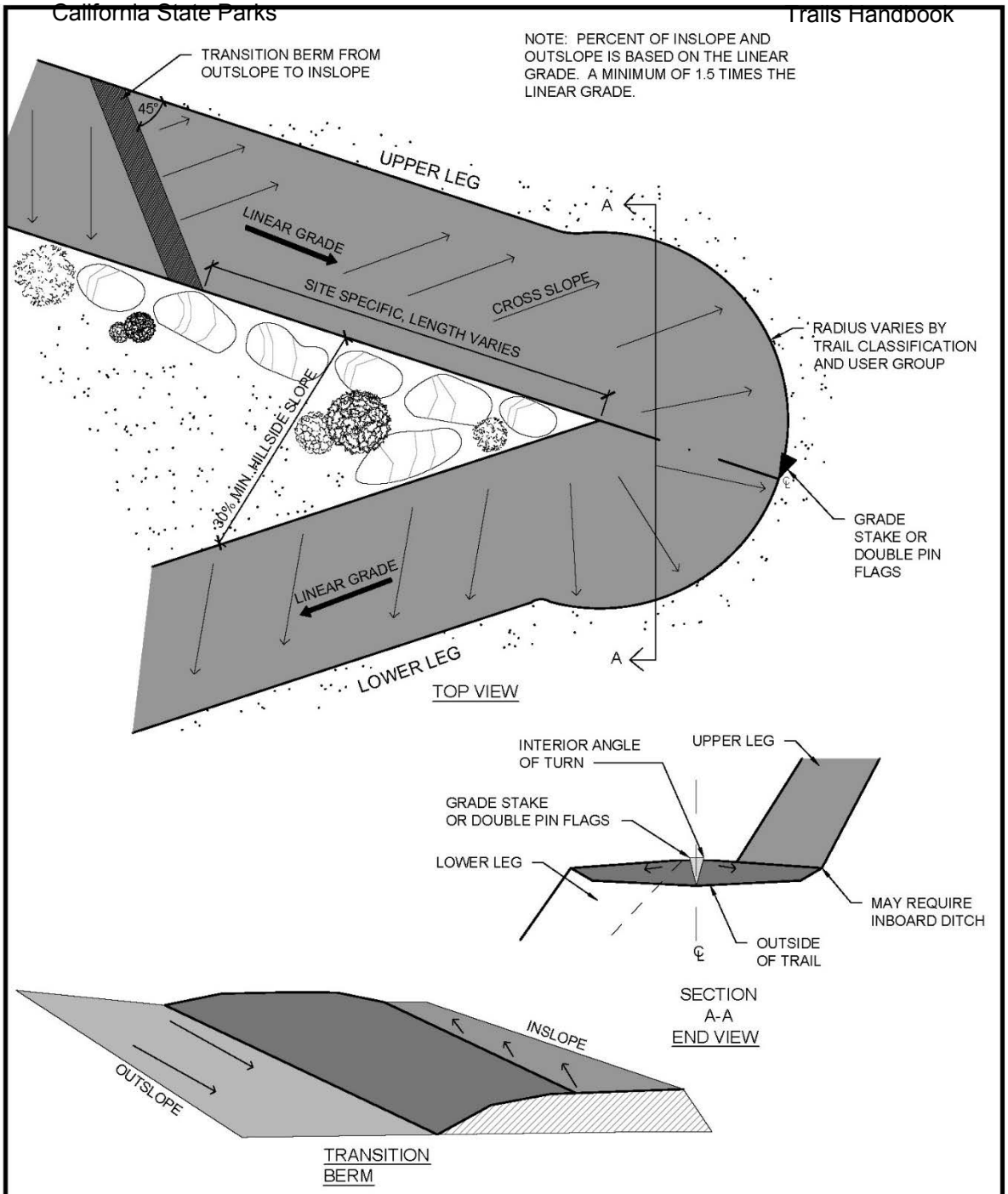
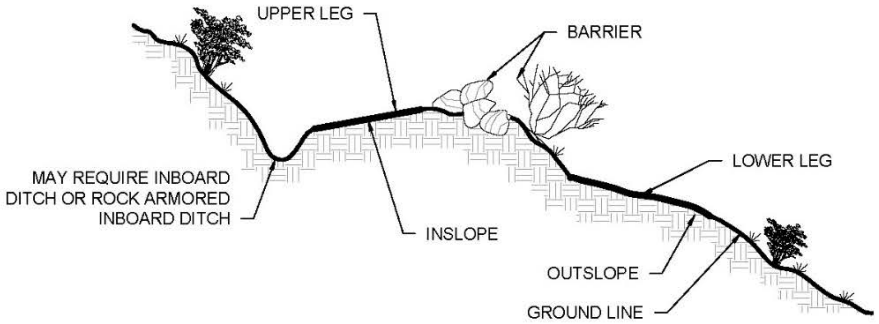


Figure 12.2 - Typical Switchback Details



CROSS SECTION

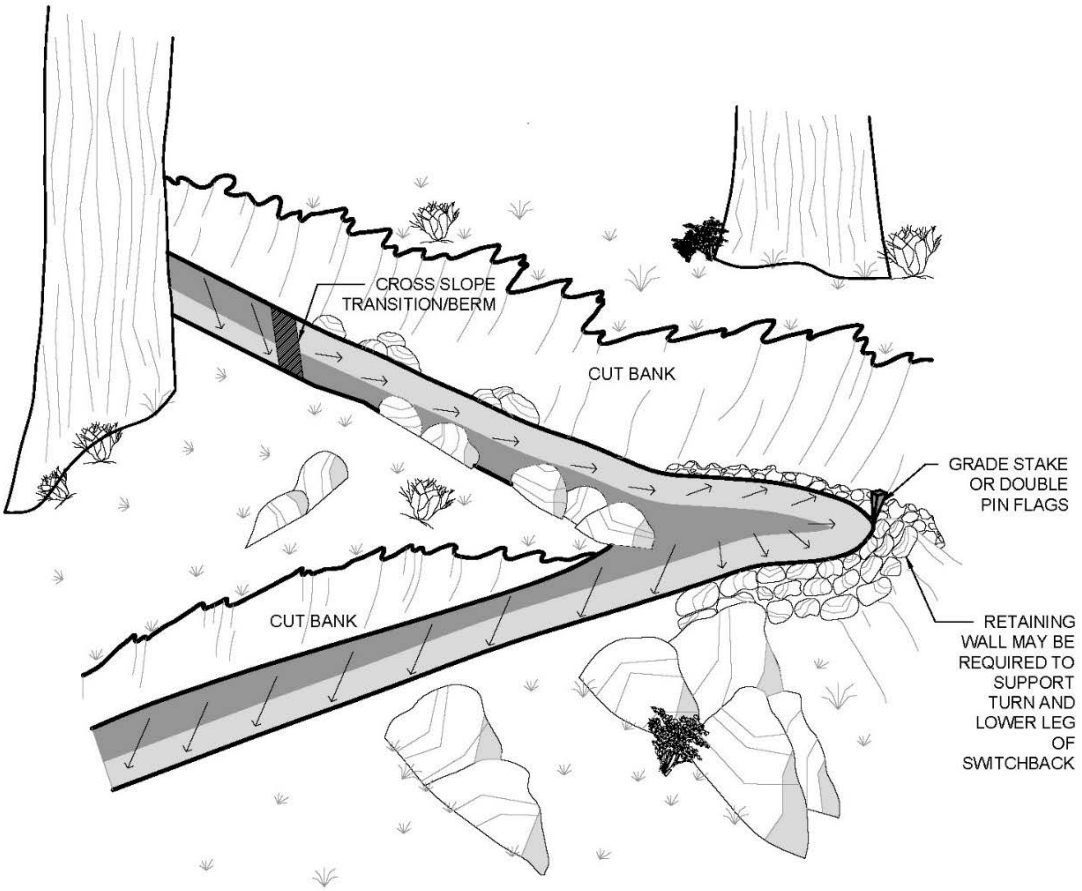


Figure 12.3 - Typical Switchback Details Continued

TYPICAL SWITCHBACK DETAILS CONTINUED

CALIFORNIA STATE PARKS

NOT TO SCALE

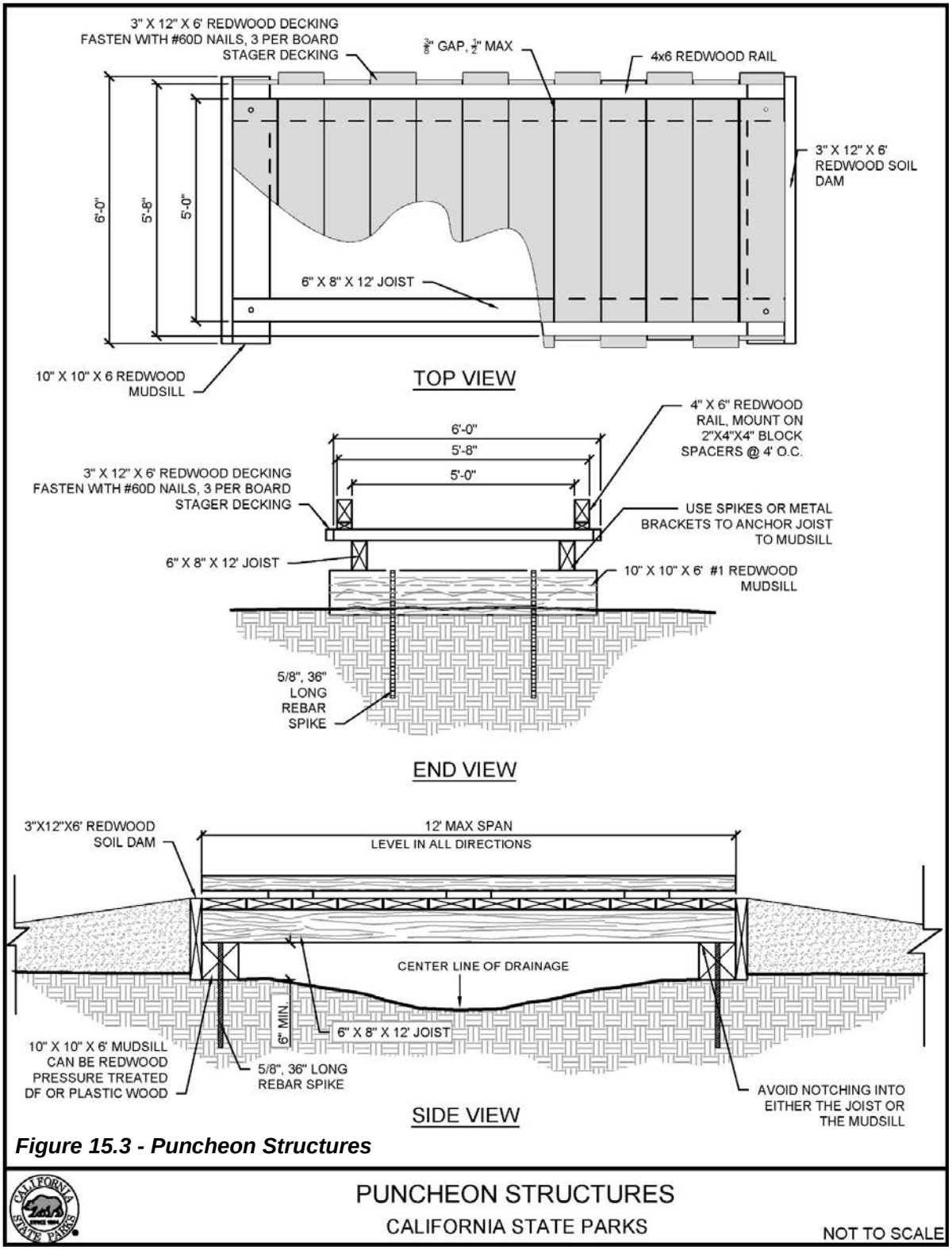


Figure 15.3 - Puncheon Structures

15-8

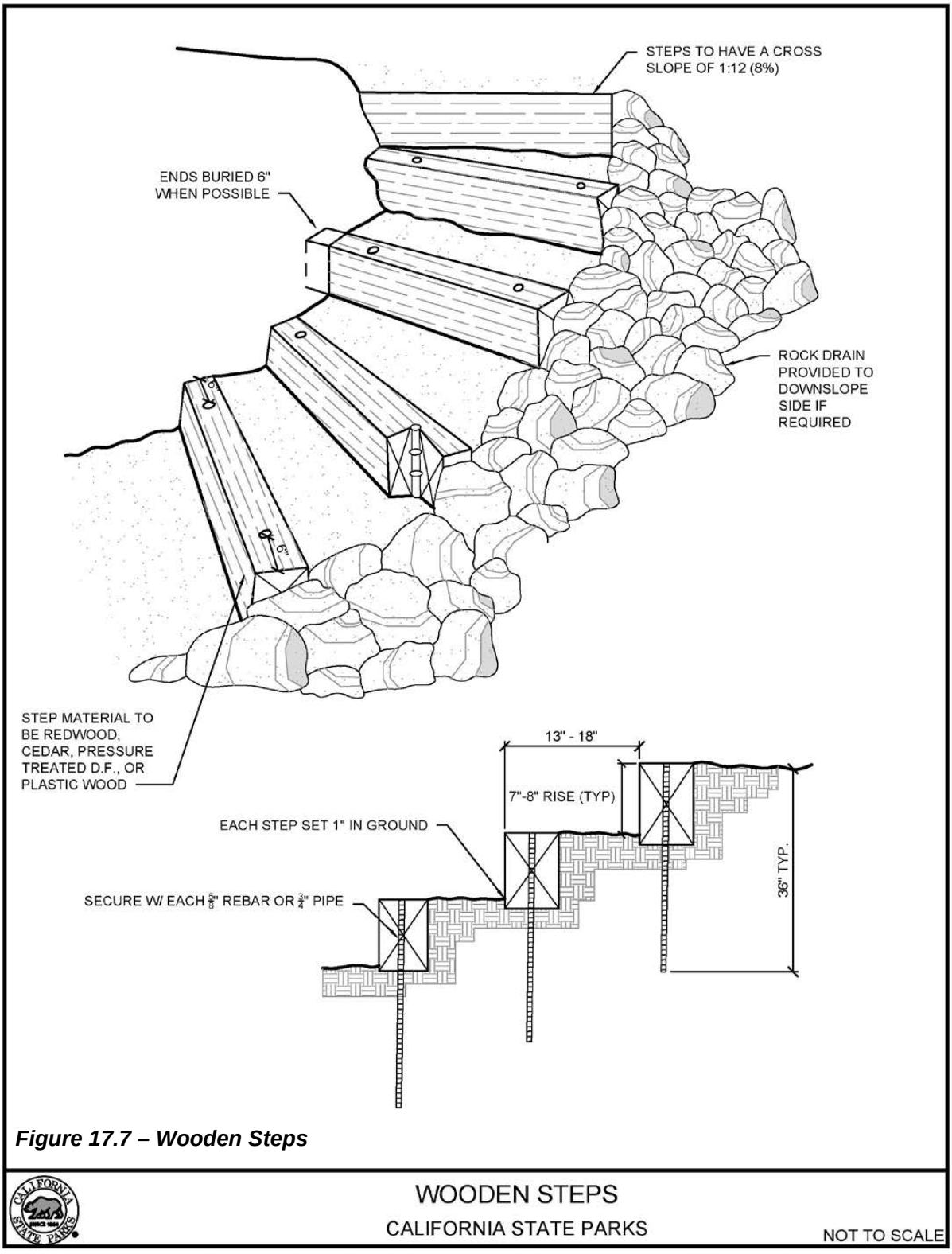


Figure 17.7 – Wooden Steps

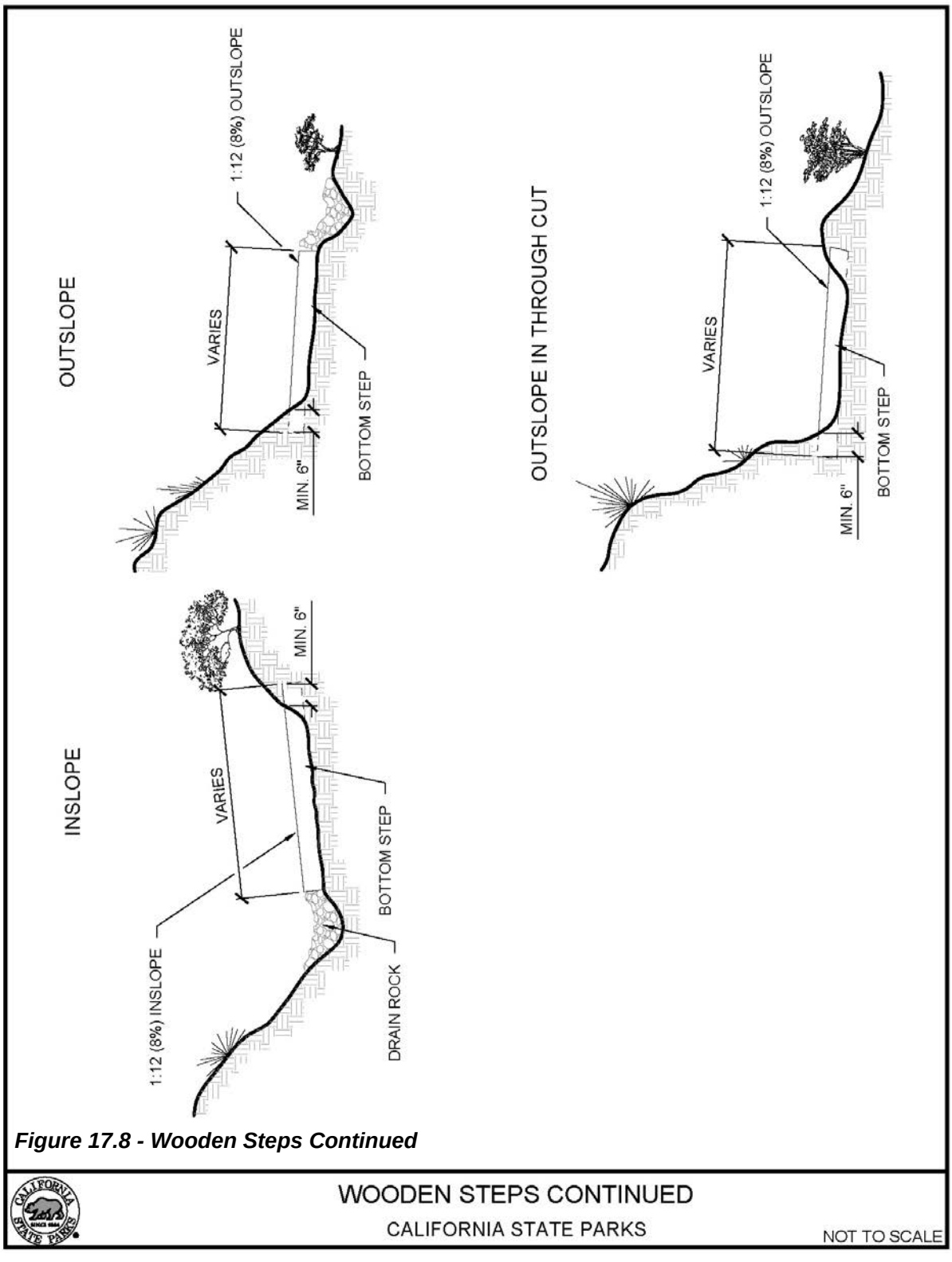


Figure 17.8 - Wooden Steps Continued

17-14

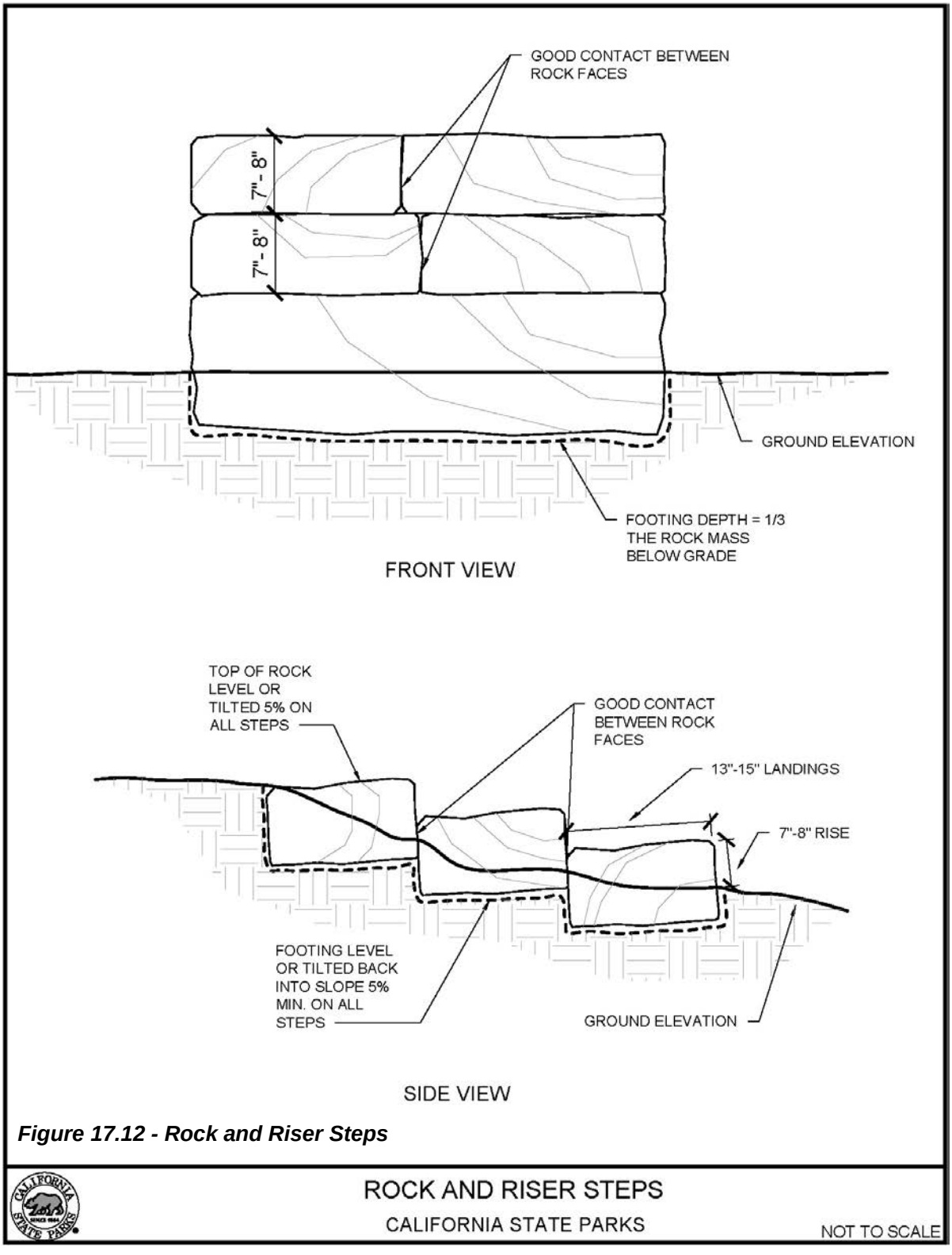


Figure 17.12 - Rock and Riser Steps

17-23

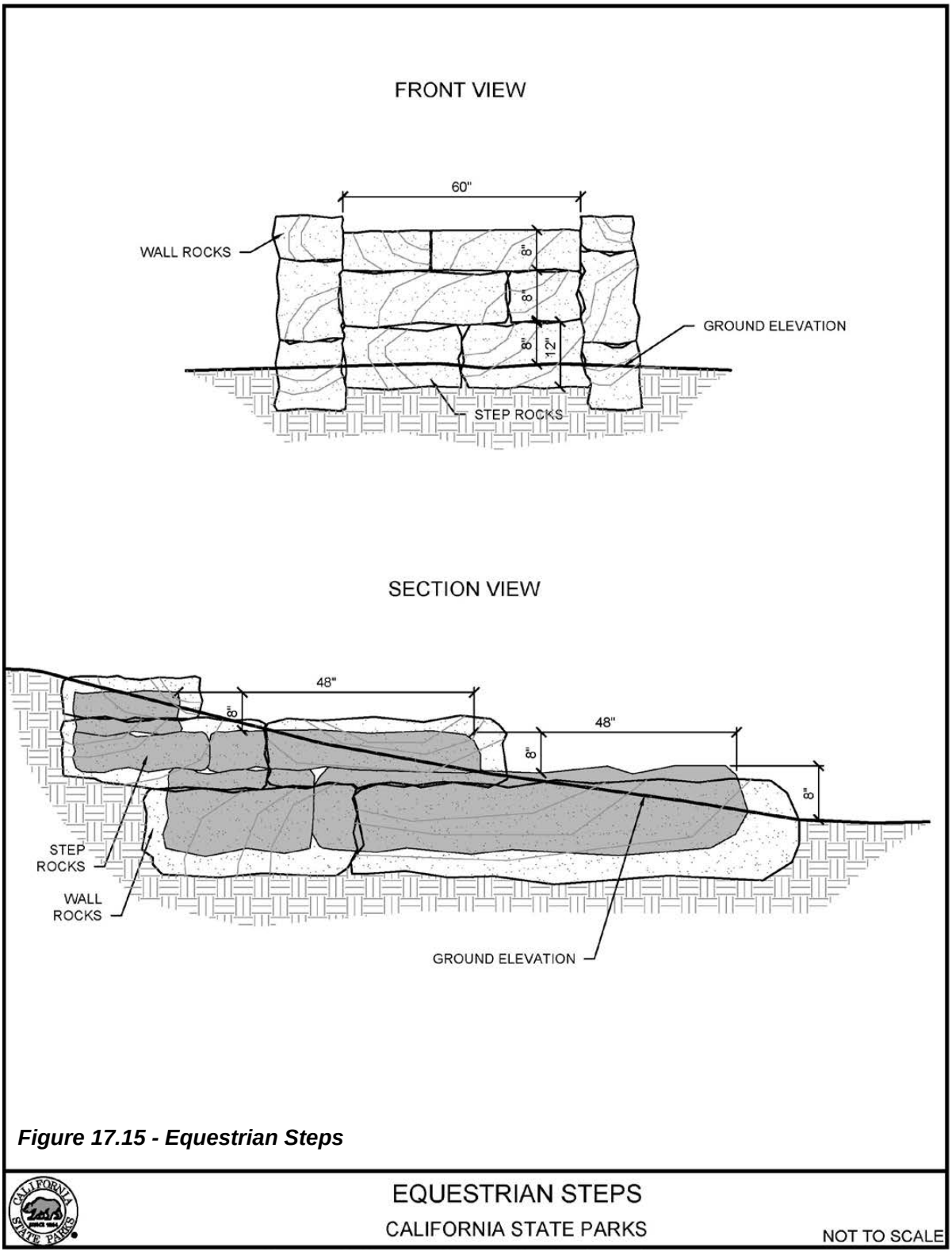


Figure 17.15 - Equestrian Steps

17-28

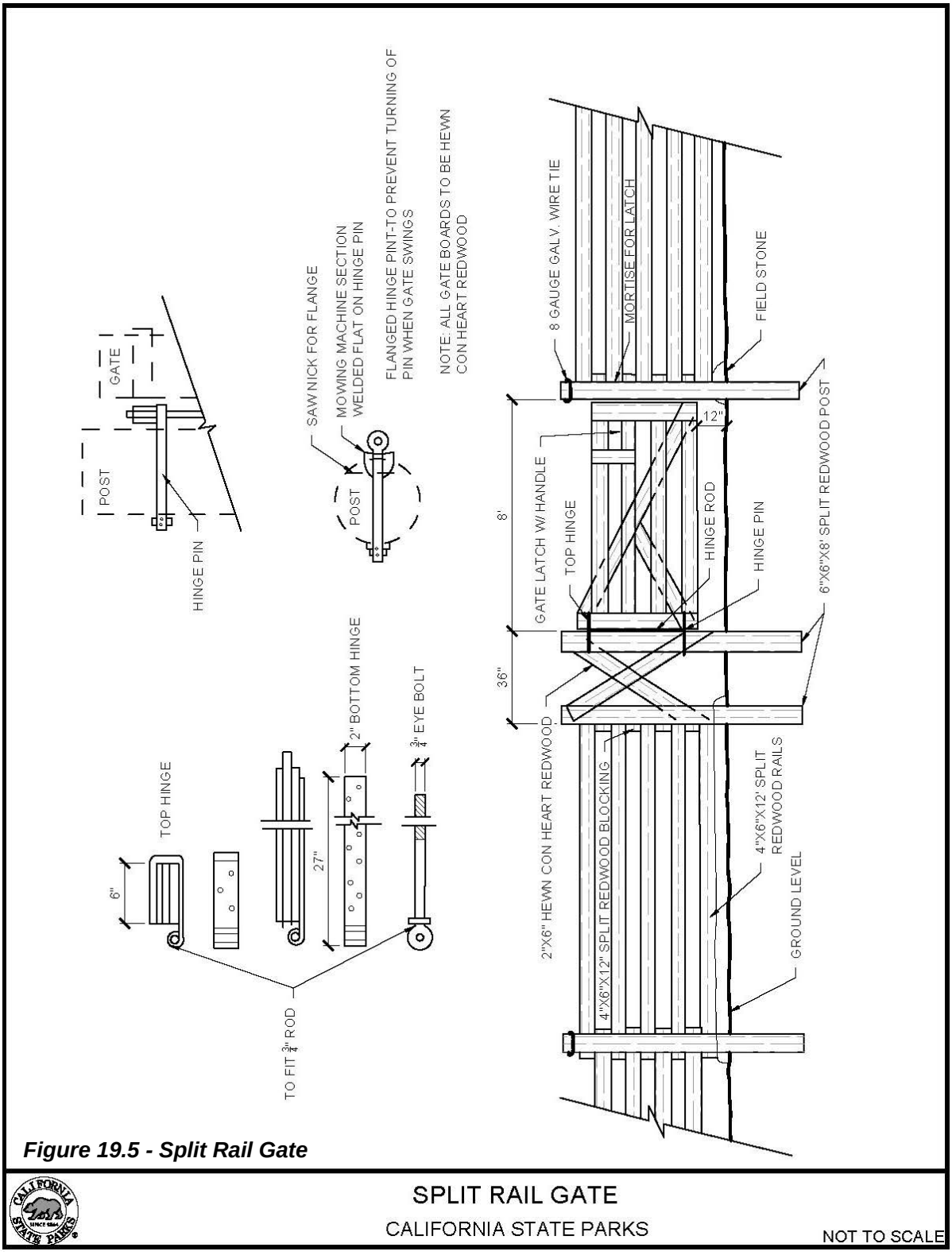


Figure 19.5 - Split Rail Gate

SPLIT RAIL GATE

CALIFORNIA STATE PARKS

NOT TO SCALE

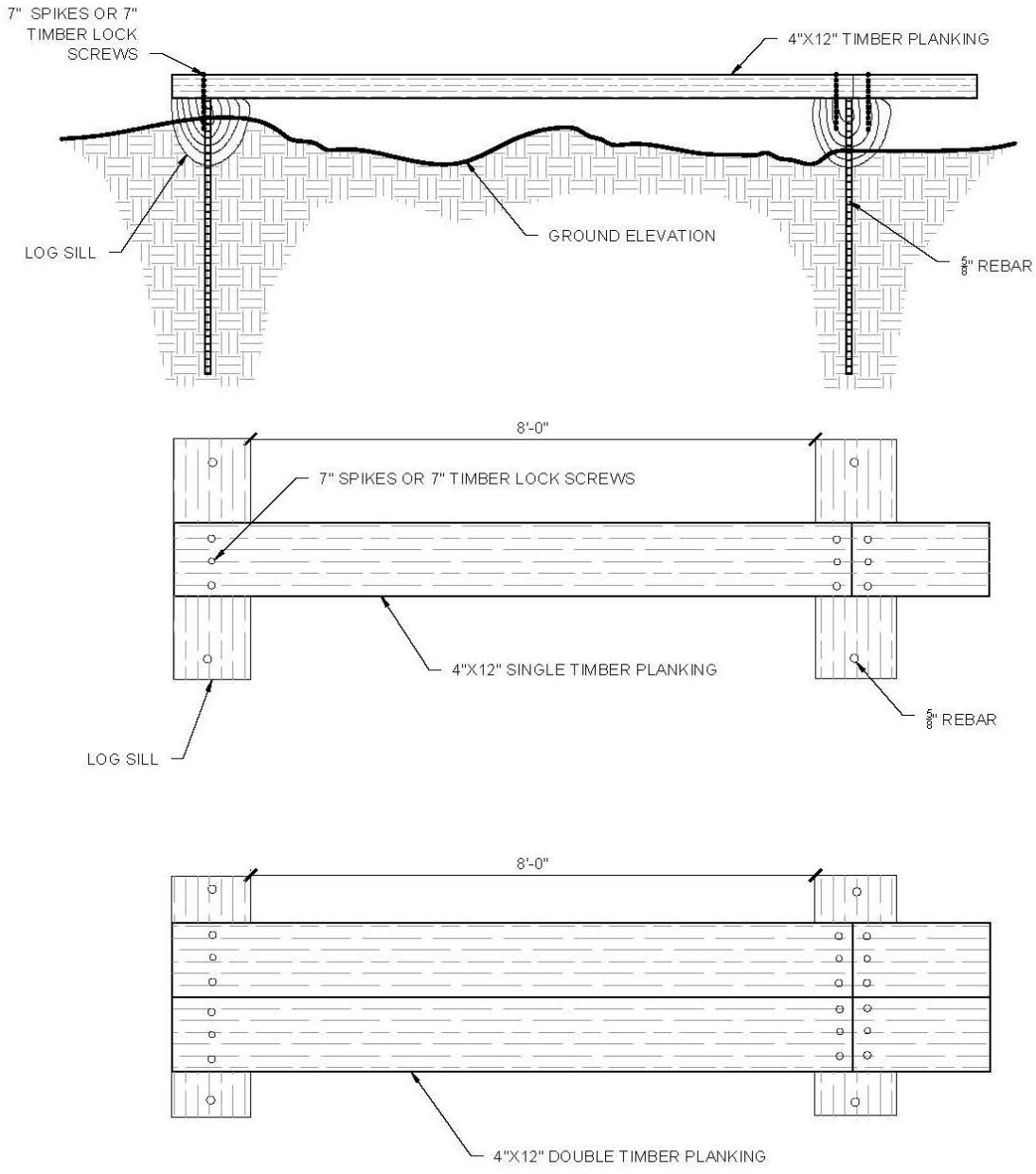


Figure 15.1 - Timber Planking

TIMBER PLANKING

CALIFORNIA STATE PARKS

NOT TO SCALE

15-6

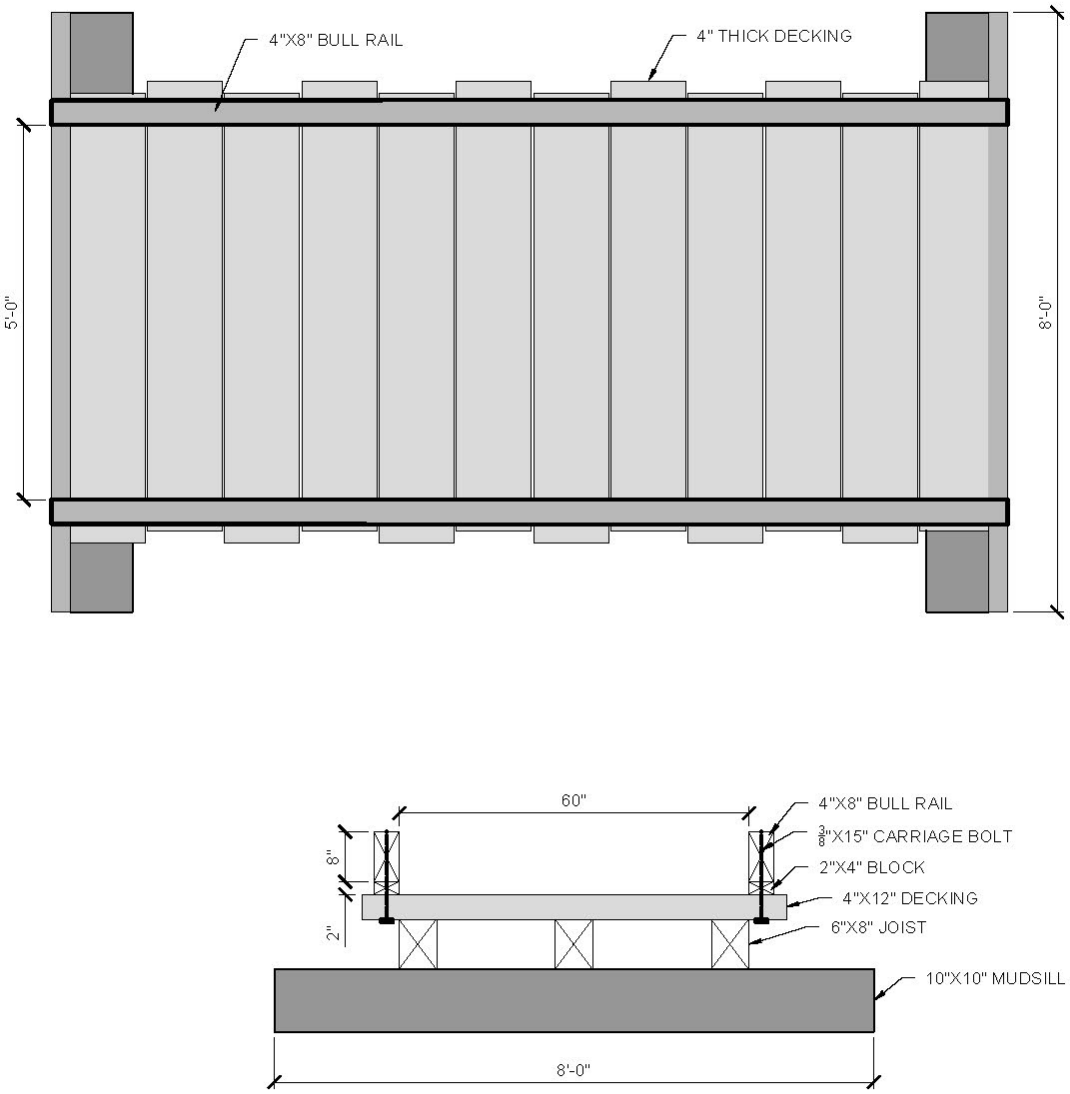


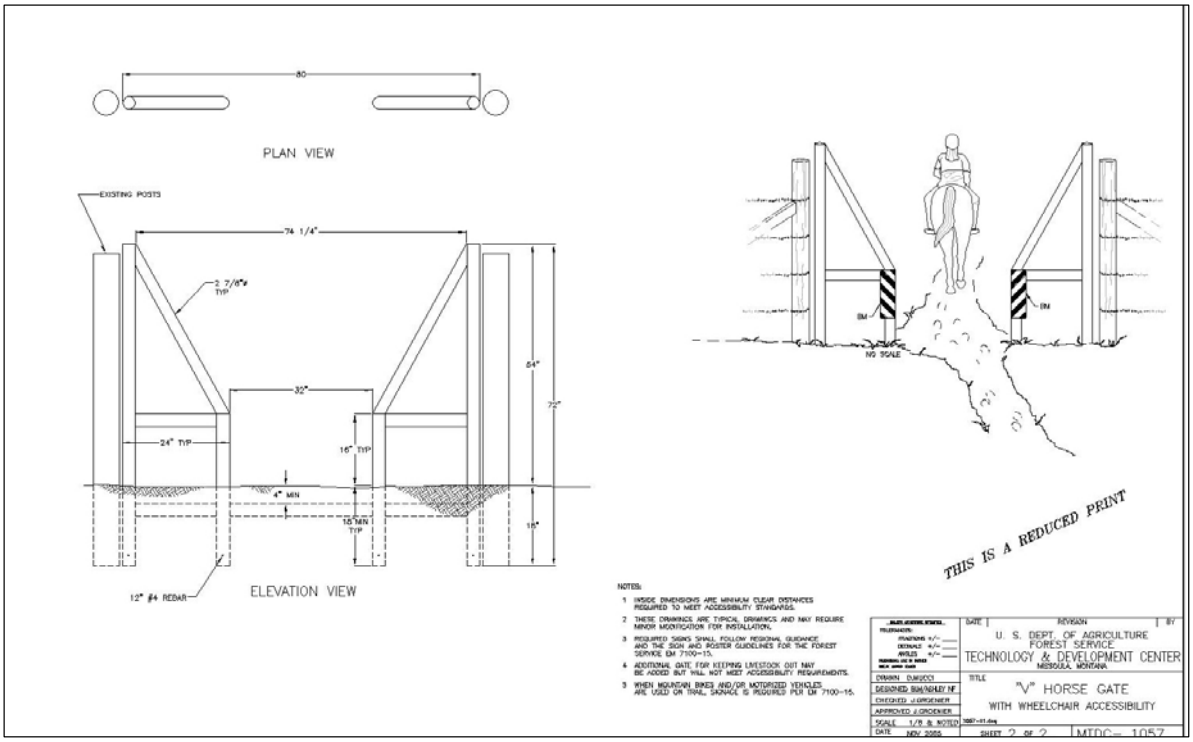
Figure 15.19 - Equestrian Puncheon

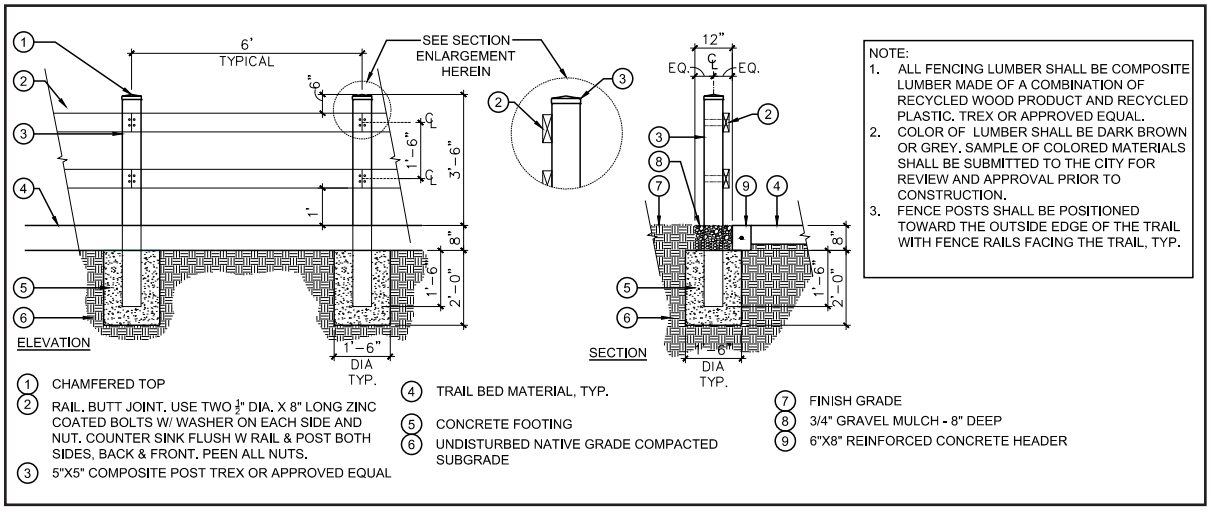
EQUESTRIAN PUNCHEON

CALIFORNIA STATE PARKS

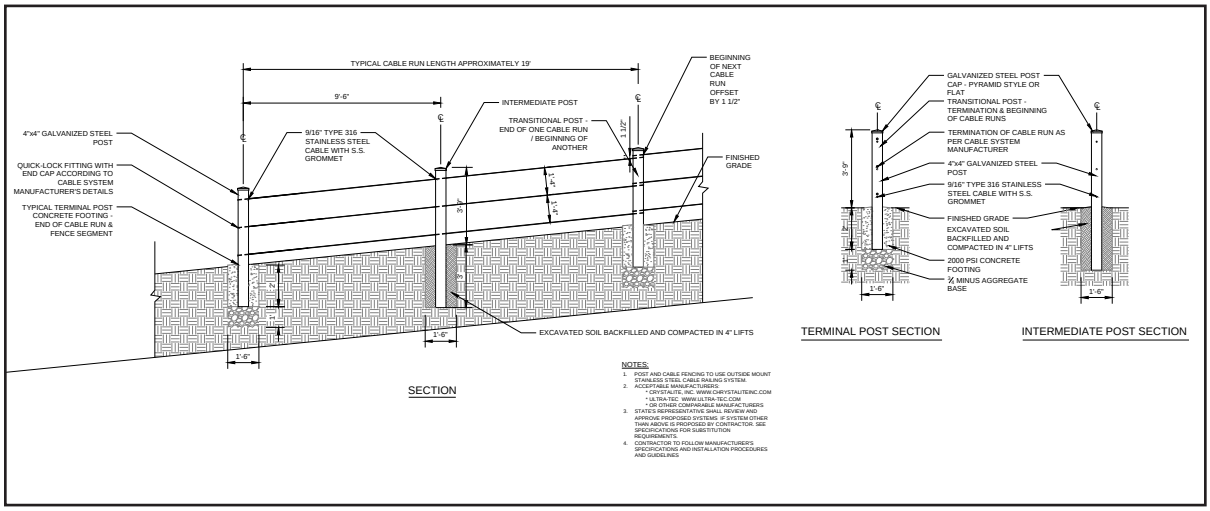
NOT TO SCALE

15-34

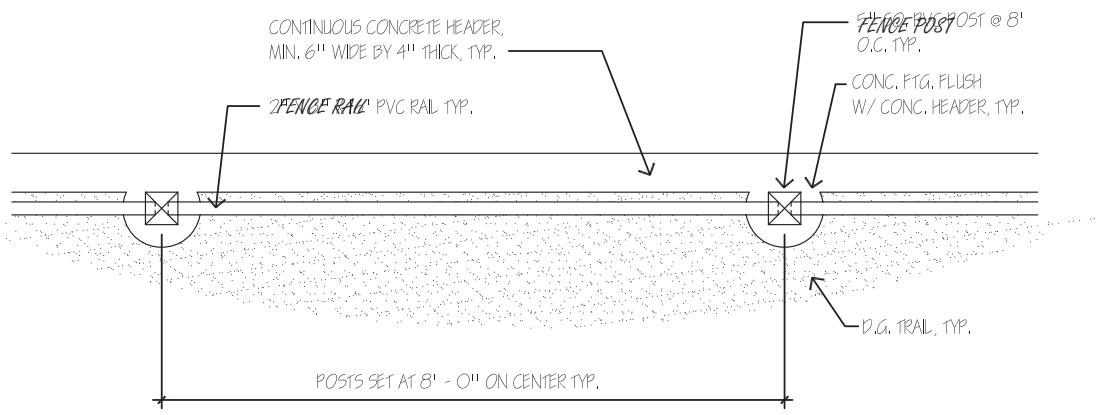

80
PLAN VIEW
EXISTING POSTS
74 1/4"
2 7/8"
TYP
84"
72"
32"
24" TYP
16" TYP
4" MIN
18" MIN
TYP
18"
12" #4 REBAR
ELEVATION VIEW
BM
BM
NO SCALE
THIS IS A REDUCED PRINT
NOTES:
1 INSIDE DIMENSIONS ARE MINIMUM CLEAR DISTANCES REQUIRED TO MEET ACCESSIBILITY STANDARDS.
2 THESE DRAWINGS ARE TYPICAL DRAWINGS AND MAY REQUIRE MINOR MODIFICATION FOR INSTALLATION.
3 REQUIRED SIGNS SHALL FOLLOW REGIONAL GUIDANCE AND THE SIGN AND POSTER GUIDELINES FOR THE FOREST SERVICE (EM 7100-15).
4 ADDITIONAL GATE FOR KEEPING LIVESTOCK OUT MAY BE ADDED BUT WILL NOT MEET ACCESSIBILITY REQUIREMENTS.
5 WHEN MOUNTAIN BIKES AND/OR MOTORIZED VEHICLES ARE USED ON TRAIL, SIGNAGE IS REQUIRED PER (EM 7100-15).
DATE
REVISION
BY
U. S. DEPT. OF AGRICULTURE
FOREST SERVICE
TECHNOLOGY & DEVELOPMENT CENTER
MISSOULA, MONTANA
DRAWN D.MUCCI
DESIGNED B.McNALEY NF
CHECKED J.GROSKREUTZ
APPROVED J.GROSKREUTZ
SCALE 1/8 & NOTED
DATE NOV 2005
TITLE
"V" HORSE GATE
WITH WHEELCHAIR ACCESSIBILITY
SHEET 2 OF 2
MTDC- 1057



Sample post and rail fence construction detail



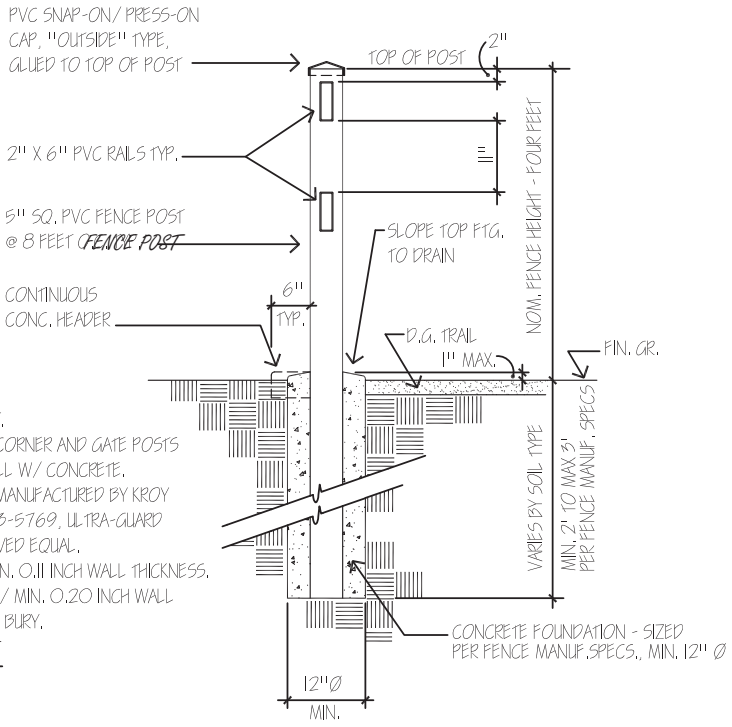
Sample post and cable fence construction detail



PLAN VIEW

NOT TO SCALE

AT RESIDENTIAL FRONT YARDS INSTALL FENCE AT PROPERTY-LINE SIDE OF TRAIL. ALL OTHER LOCATIONS, INSTALL FENCE ON STREET SIDE OF TRAIL



- PROVIDE CONC. FTG. AT EVERY POST.
- USE ALUMINUM INSERT AT ALL END, CORNER AND GATE POSTS (BOTH LATCH & HINGE SIDES) OR FILL W/ CONCRETE.
- ALL FENCE MEMBERS SHALL BE AS MANUFACTURED BY KROY BUILDING PRODUCTS INC, 800/ 933-5769, ULTRA-GUARD 800/ 592-6220, OR CITY APPROVED EQUAL.
- RAILS SHALL BE RIBBED TYPE, W/ MIN. 0.11 INCH WALL THICKNESS.
- POSTS SHALL BE MIN. 6' LENGTH, W/ MIN. 0.20 INCH WALL THICKNESS, INSTALLED W/ MIN. 24" BURY.

POST SECTION VIEW

NOT TO SCALE

Approved BJ	Date 01/ 02/ 96
Revised BJ	Date 08/ 23/ 02

Park and Recreation Department
CITY OF RIVERSIDE

PVC TRAIL FENCE

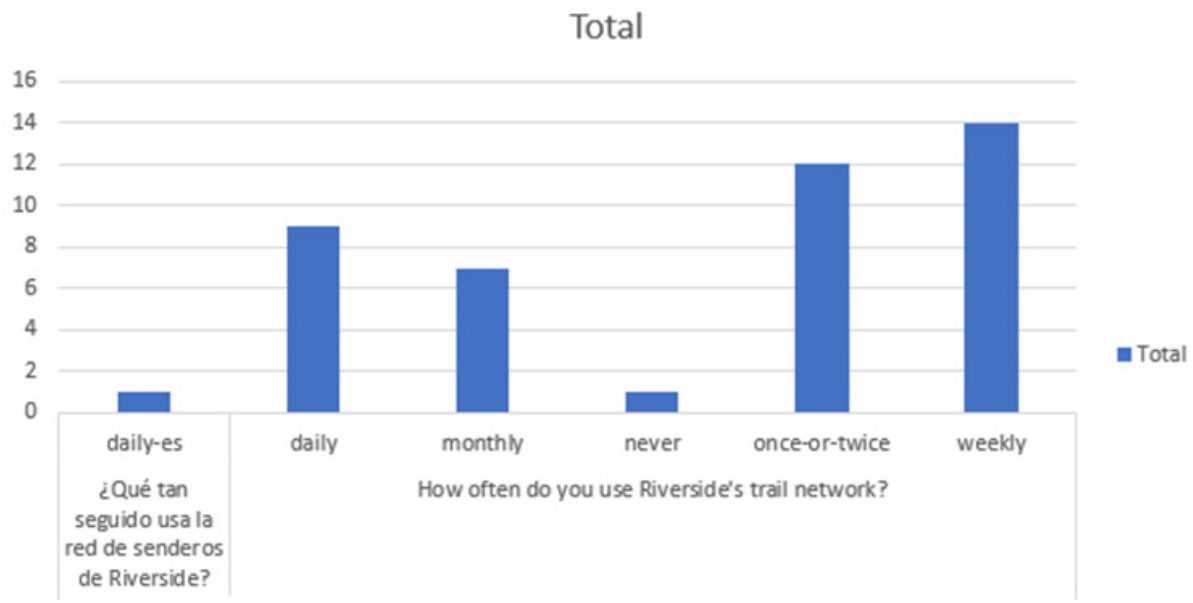
Detail No. 9

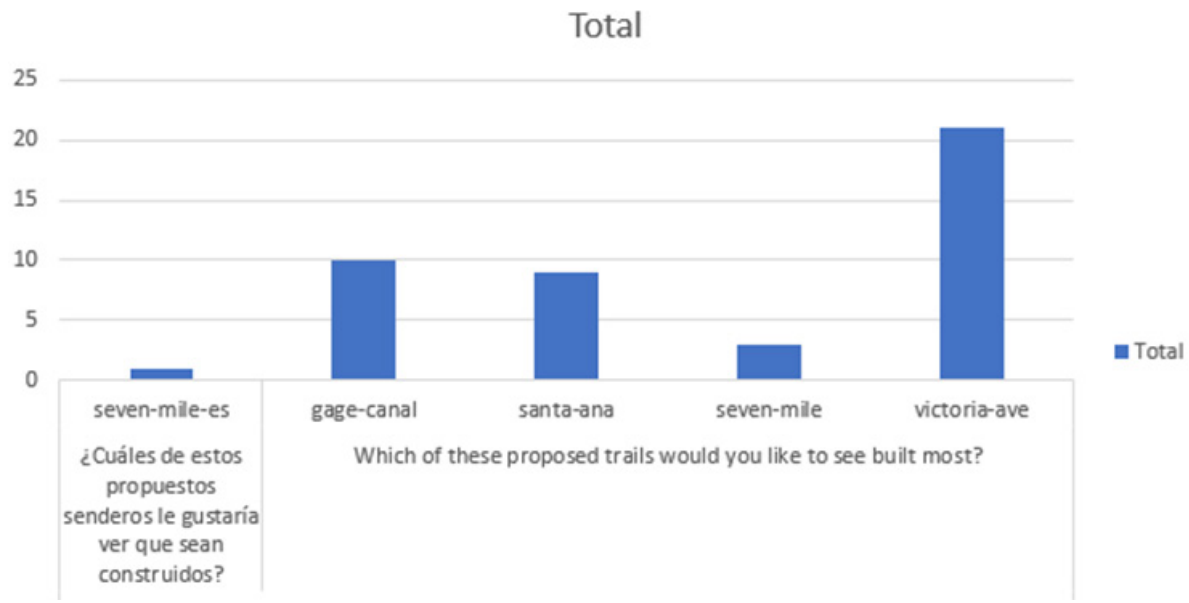
Appendix 2: Public Outreach Summary

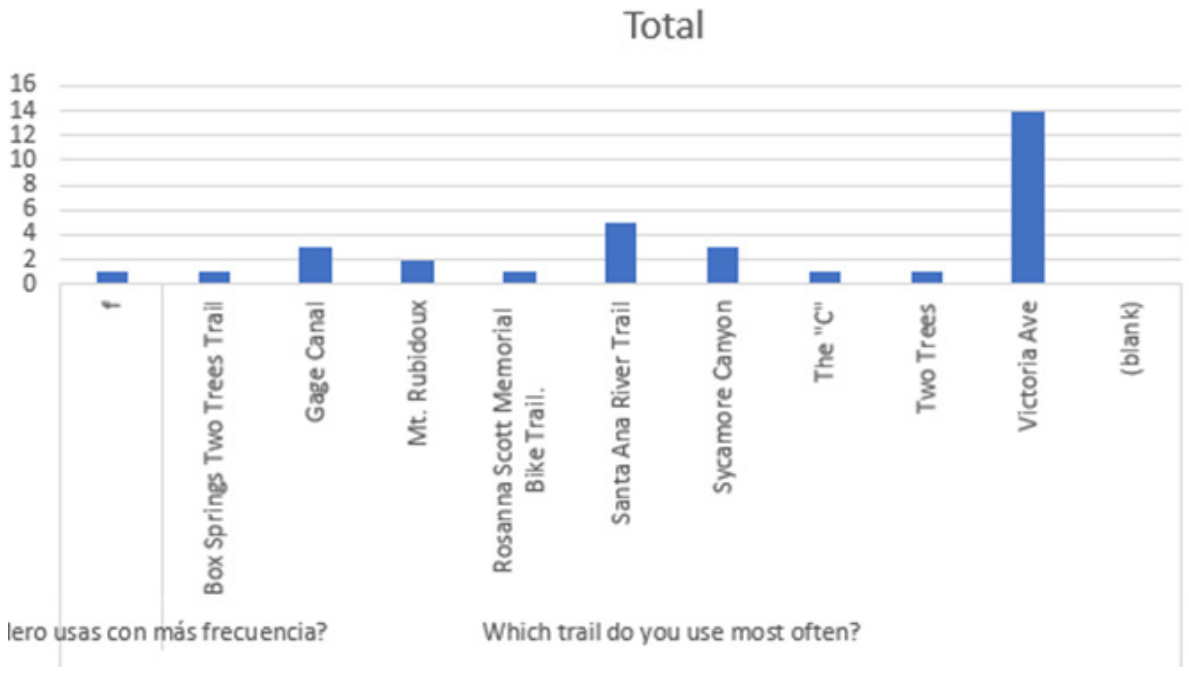
Public Outreach Summary

WEB MAP SURVEY RESULTS

The web map survey ran from March 17, 2020 - June 15, 2020. Results are shown on the following pages.



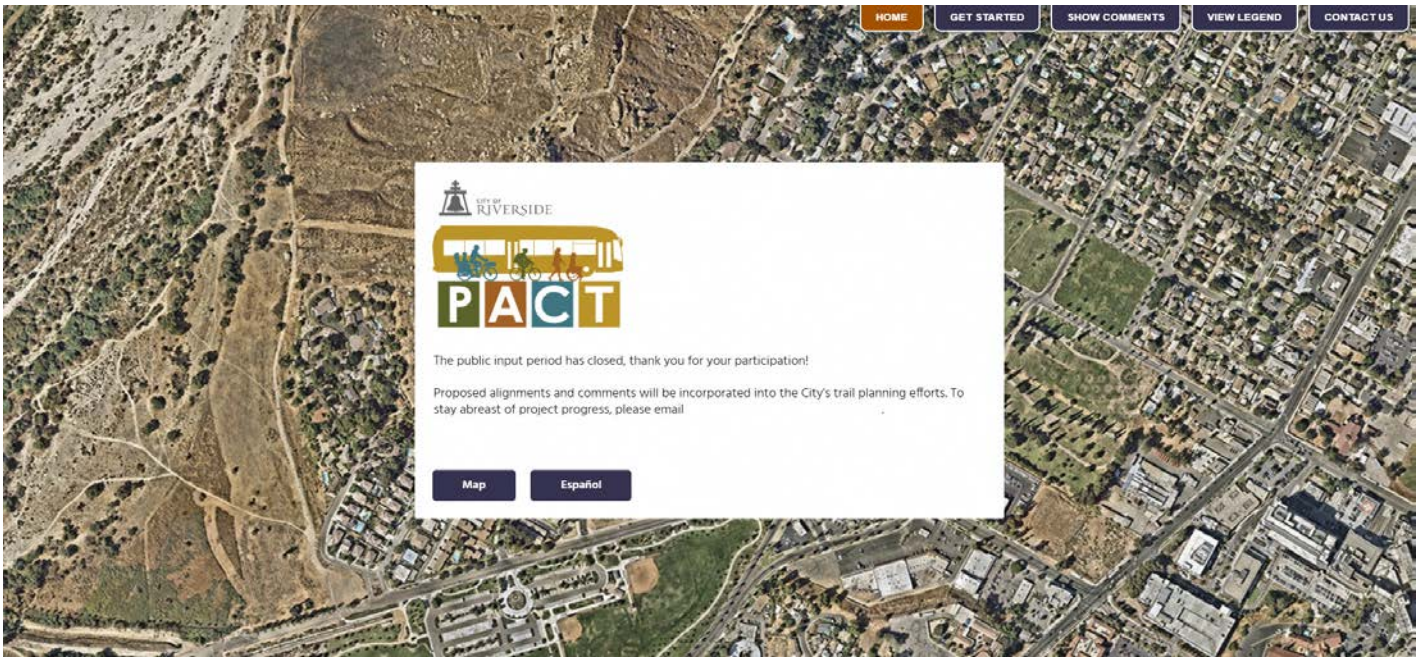

Total
25
20
15
10
5
0
seven-mile-es
gage-canal
santa-ana
seven-mile
victoria-ave
Total
¿Cuáles de estos propuestos senderos le gustaría ver que sean construidos?
Which of these proposed trails would you like to see built most?

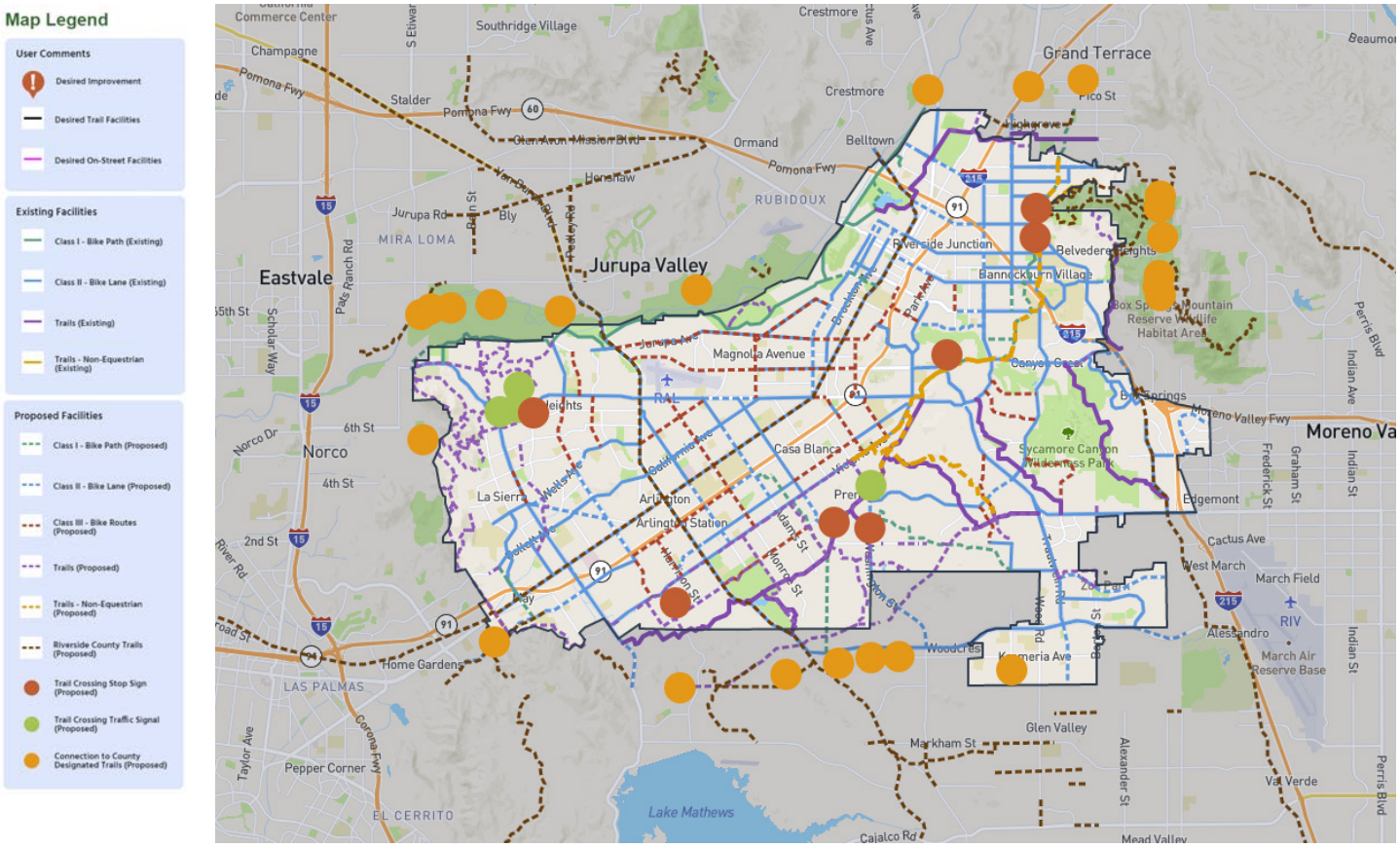

Total
16
14
12
10
8
6
4
2
0
f
Box Springs Two Trees Trail
Gage Canal
Mt. Rubidoux
Rosanna Scott Memorial Bike Trail.
Santa Ana River Trail
Sycamore Canyon
The "C"
Two Trees
Victoria Ave
(blank)
lero usas con más frecuencia?
Which trail do you use most often?

Is there a gap in Riverside's trail network you would like to see addressed? Please be specific.

- A connection between the Sycamore Canyon wilderness area north of Alessandro Blvd and the open space area south of Alessandro Blvd (West of Meridian)
- I would like to see a trail connection (away from streets) between the neighborhood of Woodcrest and the Gage Canal. Perhaps opening a connection between Gratton Street and Constable Road, or the other proposed trails that are on the map.
- The trail to the "C" needs access from UCR
- There are a few cracks, holes here &there but nothing that runners can't get around
- Need more bike paths that are not in roads with cars. Victoria Ave needs flashing stoplights.
- University to Victoria Avenue's bike paths. Bike routes painted in color coded markings through quiet residential neighborhoods.
- A safe connection corridor between SART and Victoria avenue. Possibly up La Sierra.
- Can't find info on proposed? Seven mile trail? Connect Northside neighborhood trail (off Rivera) to SART.
- There is a gap near John Street.
- Victoria Avenue trails, especially on the south side.
- The City should establish a plan to complete the (currently) erratic and inconsistent trail system on Victoria Ave. The outbound side should be asphalt and the inbound side should be decomposed granite. And the trail system should run, at a minimum, from Arlington Ave to La Sierra Ave.
- Victoria Ave Madison south
- Inbound Victoria Ave.
- Trigger the light to change when a bicycle is present in the travel lane. It's hazardous to try to cross the right-turn lane in front of cars in order to press the pedestrian button for a light change.
- The gage trail would be good too
- We walk gage canal a lot. It really feels like you are on a non residential trail
- West side of Riverside nearest Country Lane Homes (La Sierra/Dufferin) connecting to Gage Canal
- Honestly, I do not know.
- I want to be able to bike from my home to different places. It is simply not safe to do so. Thus, more biking options and trails well away form speeding cars is what I request.

Web map landing page and input map with public comments





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Appendix 3: Planning and Design Best Practices

Best Practices

User Types

Riverside trails serve a variety of users, including bicyclists, pedestrians, and equestrians, all of whom have different characteristics and needs. Urban trails, also known as Class I facilities or multi-use paths, also serve users with mobility disabilities. Class I facilities are described in more detail in the Active Transportation portion of this Plan. Trails are not intended for use by off-highway vehicles (OHV).

PEDESTRIANS / RUNNERS / HIKERS

- Speed of Travel: 1 to 3 mph
- Comfortable on trails that are grade-separated from vehicles and fast active users. May use both paved and unpaved trails.

BICYCLISTS

- Speed of Travel: 6 (slow/child bicyclists) to 25 mph (experienced/fitness bicyclists)
- Road bicyclists prefer fewer crossings, paved separated paths, and room for fast users to pass slower users. Mountain bikers prefer natural surface trails.

EQUESTRIANS

- Speed of Travel: 3 to 8 mph (trot)
- Prefer a soft surface tread separated from people riding bicycles. In park areas, equestrian use can be compatible with people hiking.

Accessibility

Trails should be accessible to users of all ages and abilities, given environmental limitations. Wheelchair users and people pushing strollers can use unpaved trails if they are designed to American with Disabilities Act (ADA) standards and utilize firm surface material. In some cases, natural-surface trails or those with steep grades may not be accessible to users with mobility disabilities.

ADA Standards

The United States Access Board issued updated provisions to the 2004 ADA-ABA Accessibility Guidelines in 2014. These updated provisions, also referred to as the "Final Rule," include new provisions for accessibility standards for trails[1].

The trail accessibility standards are not included in the Department of Justice's (DOJ) 2010 ADA Standards for Accessible Design[2], which apply to sidewalks and other urban transportation routes.

Accessibility guidelines for trails apply to pedestrian-designated trails that connect to accessible trailheads or other trails. They do

1 *United States Access Board (2014): A Summary of Accessibility Standards for Federal Outdoor Developed Areas*

2 *https://www.ada.gov/2010ADAstandards_index.htm*

not apply to trails primarily designated for bicyclists or equestrians.

Accessible trails require a minimum width of 36 inches, the use of "firm and stable" surface materials, and grades of less than 5% (except in short segments with resting intervals) (Table 9). Other design standards are related to cross slopes, passing spaces, resting intervals, and tread obstacles.

In certain conditions where meeting these standards would be exceedingly difficult, such as in wilderness areas or areas with very steep slopes, trails are exempt from the requirements.

Connectivity

Trails that connect to other trails and major destinations create a network of recreation and transportation facilities that serve a greater number of users.

Amenities

Where there is sufficient right-of-way available at access points, amenity areas including seating, bottle filling stations and drinking fountains, interpretive signage, and shade structures should be considered.

Management & Maintenance

A strong management structure provides oversight and coordination for the trail. A well-developed maintenance plan ensures trails are adequately maintained to provide a comfortable experience for trail users.

Trail Corridor Width

Trail corridor widths typically range up to 12 feet, depending on the land context, available right-of-way, and anticipated use of the trail. Two-way shared-used paths should be at least 8 feet wide to adequately serve expected users. However, 10 to 12 feet is recommended in areas with higher concentrations of users. Sidepaths can be placed adjacent to trails to accommodate different user groups, and should be a minimum of 4 feet wide in areas with constrained right-of-way or low expected use. Trails in more rural or park areas can be as narrow as 4 feet in certain conditions.

Trail Grade

Natural surface trails should have a sustained gradient of less than 12%, though short segments of up to 15% to 20% may be acceptable in certain situations. Bike routes with grades steeper than 15% are often difficult to travel uphill. Urban trails should have a grade of less than 5% in order to serve users of all ages and abilities.

Fall-Line Orientation

For long-term sustainability, an unpaved trail should avoid a fall line orientation, which is a route that drops directly down the hillside. Fall-line trails follow the same

TABLE 9 : ADA STANDARDS: MAXIMUM RUNNING SLOPE & SEGMENT LENGTH

MINIMUM SLOPE	MAXIMUM SLOPE	MAXIMUM LENGTH OF TRAIL SEGMENT
1:20 (5%)	1:12 (8.33%)	200 feet
1:12 (8.33%)	1:10 (10%)	30 feet
1:10 (10%)	1:8 (12%)	10 feet

TABLE 10 : NATIONAL PARK SERVICE TRAIL SLOPE RECOMMENDATIONS

STANDARDS	RECREATION SETTING			
	URBAN	RURAL	SEMI-PRIMITIVE	PRIMITIVE
Maximum Sustained Slope (Hiking)	10%	10%	15%	Varies
Maximum Sustained Slope (Accessible Areas)	5%	8%	12%	Varies
Maximum Slope (Hiking)	15% for 100 feet	20% for 100 feet	30% for 100 feet	Varies
Maximum Slope (Accessible Areas)	8% for 30 feet	10% for 50 feet	10% for 50 feet	Varies
Maximum Cross Slope	3%	5%	8%	Varies

Source: National Park Service - Handbook for Trail Design and Construction and Maintenance - 2015

path that water flows, resulting in segments that are difficult, if not impossible, to drain. In general, trails should have a gradient no steeper than 1/2 the native side slope gradient. An exception to this rule is for hill climb trails, which are stabilized with hardened steps or stairs.

Trail Drainage

One of the most important considerations for sustainable unpaved trails is maintaining natural drainage patterns. Trails need to be drained by drain dips (reverse grade dips or rolling dips) installed at frequent (100 to 175 foot) spacings. The larger (deeper) the dip the longer the life expectancy. These dips prevent water from concentrating on trails, and also force water from them frequently, preventing concentrated flows that can erode the trail surface.

Switchbacks

To the extent feasible, trails should be laid out to avoid or minimize switchbacks as users often "cut" the switchback which can lead to erosion problems.

Steep Unstable Slopes

In more rural or park areas, trails should avoid crossing steep unstable slopes wherever possible to prevent erosion and to ease passage by visitors.

Swales and Valley Bottoms

In general, trails along valley and swale bottoms should be avoided as they can be difficult to drain and tend to be wet and subject to getting muddy and rutted.

Full Bench Construction

All new natural surface trails should be constructed using full bench construction, meaning cutting the full width of the tread into the hillside. The tread must be outsloped at least 5 percent. Full bench construction results in trails that are more durable and require less maintenance than those built using partial-bench construction.

Equestrian Facilities

Equestrian facilities may be part of shared-use paths that accommodate multiple modes or may be separated by a buffer. In areas with higher concentrations of users and along paved trails, a separated

Long, straight sections of steep trail can lead to long-term erosion issues

sidepath for horseback riding is preferable to minimize conflicts between user groups. These equestrian-only trails are also known as bridle trails or bridle paths, and should be separated by at least a 6-foot buffer in trail corridors with high concentrations of users. In areas with lower concentrations of users or with constrained right-of-way, a 2- to 3-foot buffer can be used.

In park areas with steep grades, steps should be designed to allow horses to comfortably navigate them. These steps should ideally be no higher than 12 inches tall.

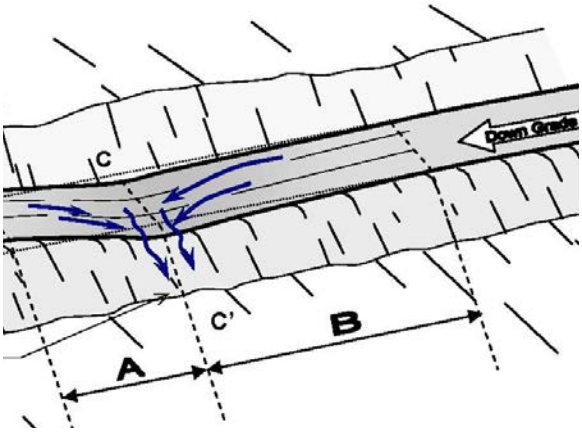
OHV Use Prevention

OHV use can significantly impact any trail. Potential strategies to prevent OHV use include avoiding alignments in close proximity to established OHV routes and areas where OHV use might be tempted to extend down the trail. Where unable to avoid OHV routes, physical barriers, trail width, and the spacing of drain dips can also be used. The proximity of potential switchbacks to established OHV trails may further encourage misuse of the proposed trail alignments and/or result in trail damage.

Safety

Trails should be designed with Crime Prevention Through Environmental Design principles, such as natural surveillance, territorial reinforcement, natural access control, and maintenance. Trails should have high visibility for legitimate users and keep unwanted behavior under observation.

In urban settings, low fencing, hardscape, landscaping, and topography should be used to separate private areas from public areas and control access. Trails should be separated from vehicles by curbs/hardscape, open-style fencing, and landscaping.



Drain dips can help alleviate drainage problems on steep trails

WAYFINDING

A comprehensive wayfinding system is important for making sure trails are safe, accessible, and well-used. Wayfinding provides users with a sense of direction and security, and alerts them of upcoming destinations and trail connections. Important aspects of wayfinding include:

- Improved awareness of trails;
- A greater sense of security and comfort;
- Enhanced environmental protections as trail users are notified to keep on the trail and out of sensitive areas; and
- Information to inform users of the intensity and length of the trail.

New wayfinding signage should be consistent with existing wayfinding systems in Riverside. Should a new signage design theme be desired, the City should undergo a comprehensive wayfinding design process to determine a design theme that will be standardized across multiple trails and properties. A wayfinding system should have a uniform design style, including graphics and icons, colors, fonts, materials, shapes, and proportions.

Accessible Signage Design

Wayfinding should be accessible to all trail users, regardless of language or cognitive ability. In areas with high concentrations of non-English speakers, consider implementing signs in multiple languages. Do not rely only on text; instead, utilize icons, graphics, and consistent colors. Follow ADA guidance for sign placement, offsets, and text sizes. Signs should include information about trail surface, slope, and distance.

Fonts & Text Hierarchy

Aside for fonts used for logos, a single sanserif font family should be used across an entire wayfinding system. A hierarchy of size and font properties such as bold font or italics should be used to communicate tiers of detail. Color

A minimal color palette should be used across all signs in a wayfinding system. As a general rule, maintain standard background, logo, and text colors.

Branding & Iconography

The City of Riverside could implement a branding scheme to create a strong identity for its trail system as a whole or for individual trails.

Types of Signage

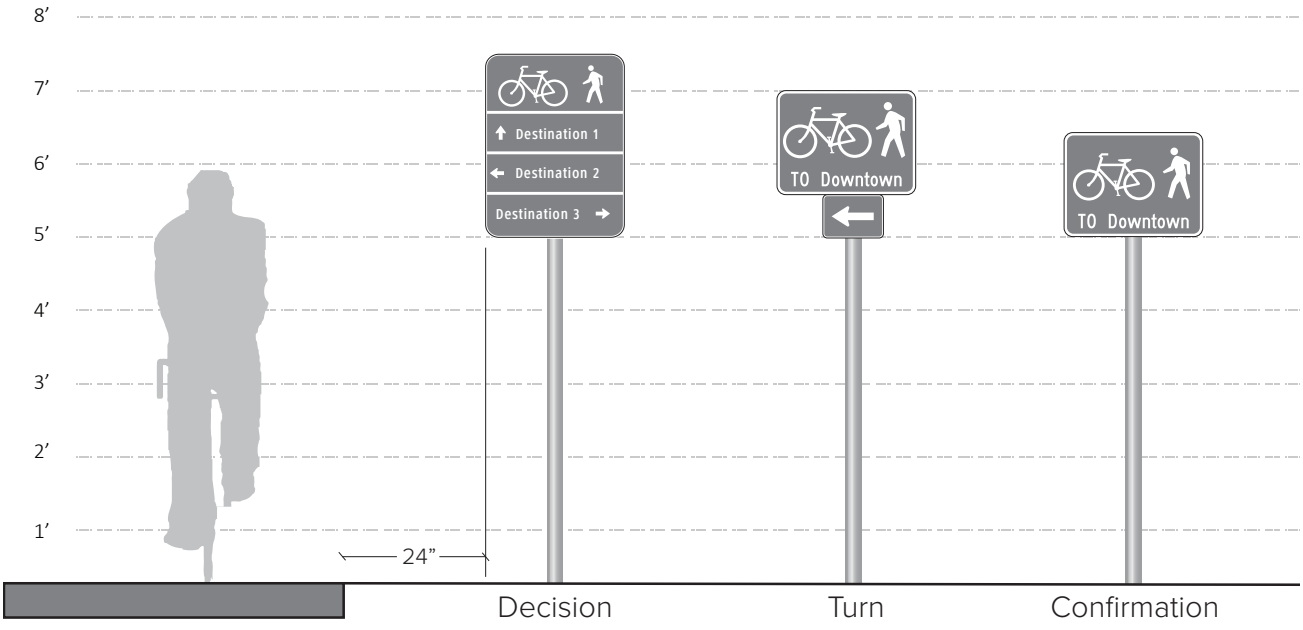
There are several types of signage typically used in wayfinding systems. These include:

- Gateway/Monument Sign: Placed at major trail access points, gateway signs enhance the visibility of the trail.
- Direction Signs: Direction signs provide directional and distance information to

destinations, trail amenities, and other trails.

- Trailhead Kiosk: Placed at access points, trailhead kiosks are the first point of orientation for trail users.
- Confirmation Posts: Confirmation posts inform users they are on a designated trail and include, at minimum, an arrow indicating the intended direction of travel.
- Mile Marker: Mile markers allow trail users to track how far they have traveled. Mile markers are generally placed every 1/4 to 1/2 mile.
- Interpretive Signs. These signs provide educational, historical, or cultural content that informs, educates, and entertains the public.

FIGURE 44 TYPICAL NAVIGATIONAL SIGNAGE



Appendix 4: Existing Plans and Context

Existing Plans and Context

TRAILS MASTER PLAN (1996)

The 1996 Trails Master Plan has guided trail development in the City for over 20 years, focusing on developing a network of trails throughout the natural areas that surround the City, along with connections from these trails to nearby neighborhoods and trails traversing the City's interior. It establishes minimum trail standards such as easements, setbacks, grading, fencing, and trail surfacing, as well as cross section illustrations of typical trail treatments and material specifications. The 1996 Plan also does not include a prioritized list of trails by need, type, ward, or public input. This guidance has been modernized and expanded to include a larger range of existing and proposed trail typologies found in this update.

GENERAL PLAN 2025 (2007)

The Circulation and Community Mobility Element of the City's General Plan includes a subsection on walking and biking in Riverside that establishes a vision to "provide an extensive and regionally linked public bicycle, pedestrian and equestrian trails system." This vision is supported by 13 policy objectives that provide guidance for expansion of the City's trail network, including maximizing connections between trails and major activity centers and neighborhoods, linking to the trails of adjacent jurisdictions, and incorporating trails into future development projects.

BICYCLE MASTER PLAN (2007; 2012)

Riverside's Bicycle Master Plan, adopted in 2007 and updated in 2012, recommends several Class I Bike Paths such as the completion of the Gage Canal Trail and providing connections to the Santa Ana River Trail. The Bicycle Master Plan also proposes guidelines to encourage trail usage, and calls for coordination with the County to connect City trails with the County's network of regional trails.

DOWNTOWN SPECIFIC PLAN (2002; 2017)

The Downtown Specific Plan proposes a network of urban trails primarily geared toward pedestrians and cyclists, including a scenic downtown trail loop that could lead to historic and cultural elements, as well as extending west to capture the area's natural elements such as Fairmount Park, Mount Rubidoux, and the Santa Ana River Trail.

NORTHSIDE SPECIFIC PLAN (2020)

The Draft Northside Specific Plan (expected

to be adopted in 2020) proposes an extensive open space network, including the restoration of the Springbrook Arroyo to a natural channel, accompanied by a series of natural surface trails. In addition to interior trails in parks, the draft plan proposes connecting trails running along Main Street, Orange Street, and Center Street, among others.

LA SIERRA UNIVERSITY SPECIFIC PLAN (1997)

The La Sierra University Specific Plan references the 1996 Trails Master Plan's call for a multi-purpose trail along Collett Avenue, which is now built.

MISSION GROVE SPECIFIC PLAN (1996)

The Mission Grove Specific Plan calls for the construction of a semi-improved access trail within the arroyo in Sycamore Canyon Park, which has since been built.

RANCHO LA SIERRA SPECIFIC PLAN (1996)

The Rancho La Sierra Specific Plan establishes a vision for a public trail network linking area neighborhoods with the Santa Ana River Trail as well as connections to trails through Norco Hills. Though much of the development specified in this plan has not yet been developed, a trails network connecting to the Santa Ana River Trail is in place.

SYCAMORE CANYON SPECIFIC PLAN (1991)

The objective of the Sycamore Canyon Specific Plan is to protect the area's natural hillsides and arroyo areas, and provide a network of trails within the Canyon. The trails existing on the land designated as public park and habitat conservation land at the time of Specific Plan adoption were adopted in the plan.

SYCAMORE CANYON WILDERNESS PARK STEPHENS' KANGAROO RAT MANAGEMENT PLAN AND UPDATED CONCEPTUAL DEVELOPMENT PLAN (1999)

Urban development through the 1970s and 1980s led to population decline among the Stephen's Kangaroo Rat species, landing it on the endangered species list in 1988.

The Sycamore Canyon Wilderness Park Stephens' Kangaroo Rat Management Plan and Updated Conceptual Development Plan includes passive recreational activities such as hiking and wildlife observation as an encouraged managed activity.

The plan does not contain specific guidelines for design, construction, use, and maintenance of trails, rather, the

management plan offers trail planning considerations, defines appropriate recreation activities and provides recommendations for ensuring the compatibility of uses. In addition, the plan included conceptual plans for the overall development of Sycamore Canyon Park.

COMPREHENSIVE PARKS, RECREATION, AND COMMUNITY SERVICES MASTER PLAN (2020)

The 2020 Parks Master Plan identifies trails as one of the City's top facility needs, a conclusion supported by analysis of existing offerings and public input that ranked trails among the most supported and requested improvements. In addition to recommending that the City explore creating trail connections where possible to expand its overall trail network, the Plan recommends a Trails Master Plan Update to "ensure the viability of trail implementation under current development conditions and to ensure connectivity with regional trails beyond city limits." The Parks Master Plan identifies 6 opportunities for expanded trail systems:

- Update existing Trail Master Plan and trail design and construction standards.
- Develop a joint use agreement with Riverside County Parks and local non-profits to work towards the construction of a trail route over or under the Perris Valley Metro Link line to provide access to Box Springs Mountain Reserve and from the City to the "C" Trail.
- Update Sycamore Canyon Wilderness Park Stephens' Kangaroo Rat Management Plan and Updated Conceptual Development Plan (1999) based on a suitability and sustainability analysis of the current inventory of trails in the park.
- Develop a Master Plan for 7 Mile Trail working in conjunction with Riverside Public Utilities, County of Riverside, and other appropriate agencies.
- Continue to work with Riverside Public Utilities, County of Riverside, and other public agencies to explore further opportunities for opening of waterways/ drainage areas such as Gage Canal for trail use.
- Explore opportunities to develop Green Streets or Linear Parkways within the park poor sections of the town.

RIVERSIDE COUNTY COMPREHENSIVE TRAILS PLAN (2018)

The 2018 Riverside County Comprehensive Trails Plan addresses the nearly 4,000 miles of planned and existing trails within the Riverside County Parks and Open-Space District, and overseen by a mix of federal, state, county, and local communities in

the County. The plan establishes three primary goals: 1) the creation of a backbone trail network that is feasible, compatible with other plans, leverages trails within other jurisdictions, and closes gaps in a countywide trail system; 2) providing guidance for the design of trails which are accessible, usable by a variety of users, and connect to major destinations and other trails; and 3) sharing recommendations for continued management of regional trails. The backbone trail network incorporates elements of the Santa Ana River Trail and the Juan Bautista De Anza Historical Trail that lie within the City of Riverside.

RIVERSIDE COUNTY BOX SPRINGS MOUNTAIN RESERVE COMPREHENSIVE TRAILS MASTER PLAN (2015)

The Box Springs Trails Master Plan was created to establish a vision for improved trails and increased connectivity within the 3,400 acre reserve. While much of Box Springs is situated outside of the city, a portion of the land falls within Riverside's northwestern border. This plan identifies the "C" Trail, a steep 0.95-mile trail leading to the concrete UC Riverside "C" as a trail-improvement opportunity that is partially situated within city limits. Several other opportunities are included in this plan and the City's Trails Master Plan to connect from the City trail network to Box Springs Mountain Reserve.

CITY OF RIVERSIDE PARK AND RECREATION MASTER PLAN UPDATE (2003)

The City of Riverside Park and Recreation Master Plan Update was created to be a decision making guide through the year 2020. The Report addressed the adequacy of the existing park and recreation facilities within the city, and identified future needs and opportunities. The plan update also made recommendations to the trails system as it relates to park, recreation, and open space connections.

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Appendix 5: Network Prioritization

Trail Network Prioritization

The following pages include maps detailing how trail segments scored against the different criteria used in the trail network prioritization process.

FIGURE 45 : CALENVIROSCREEN SCORE

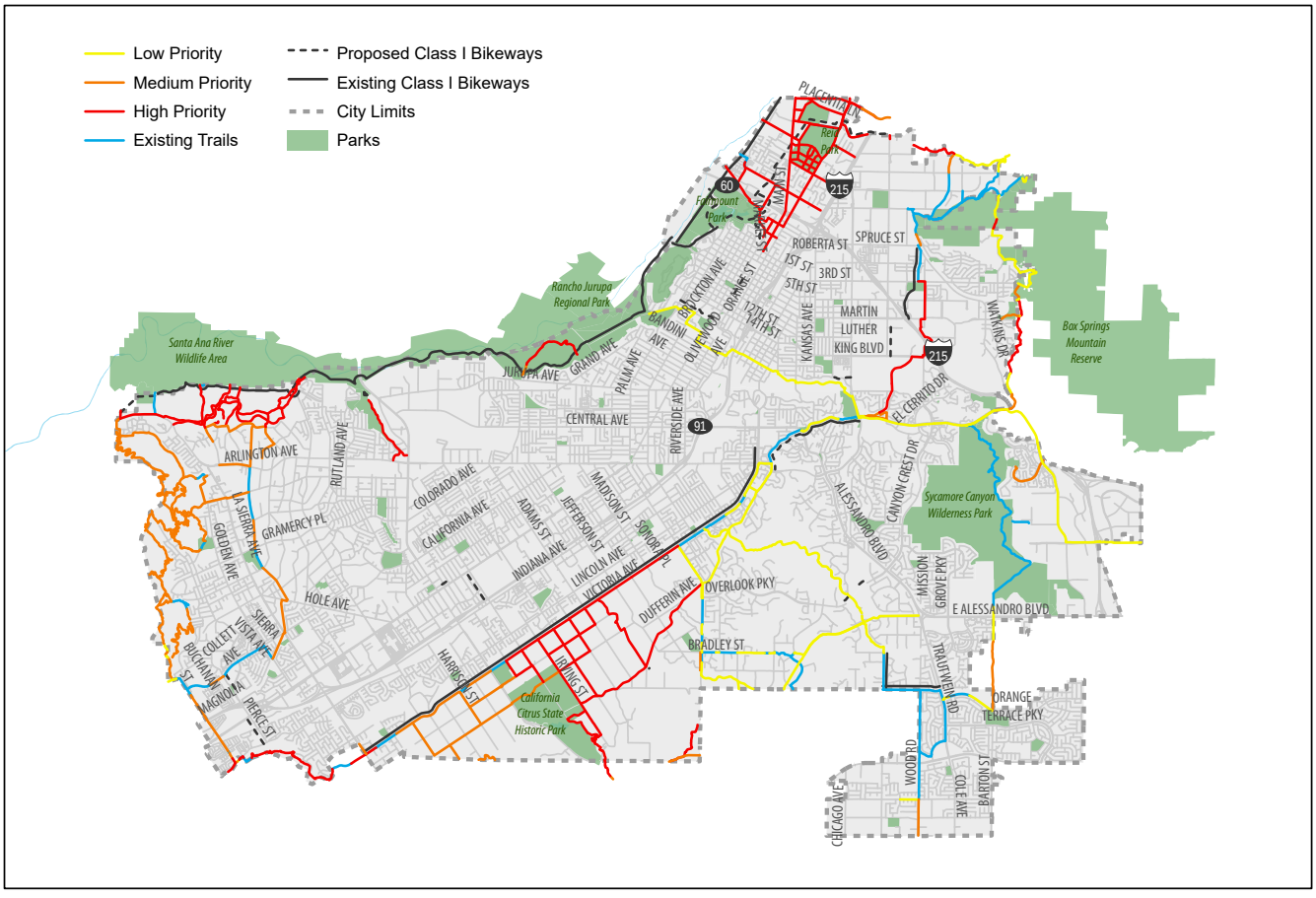

FIGURE 46 : SAFETY - ADJACENT COLLISIONS

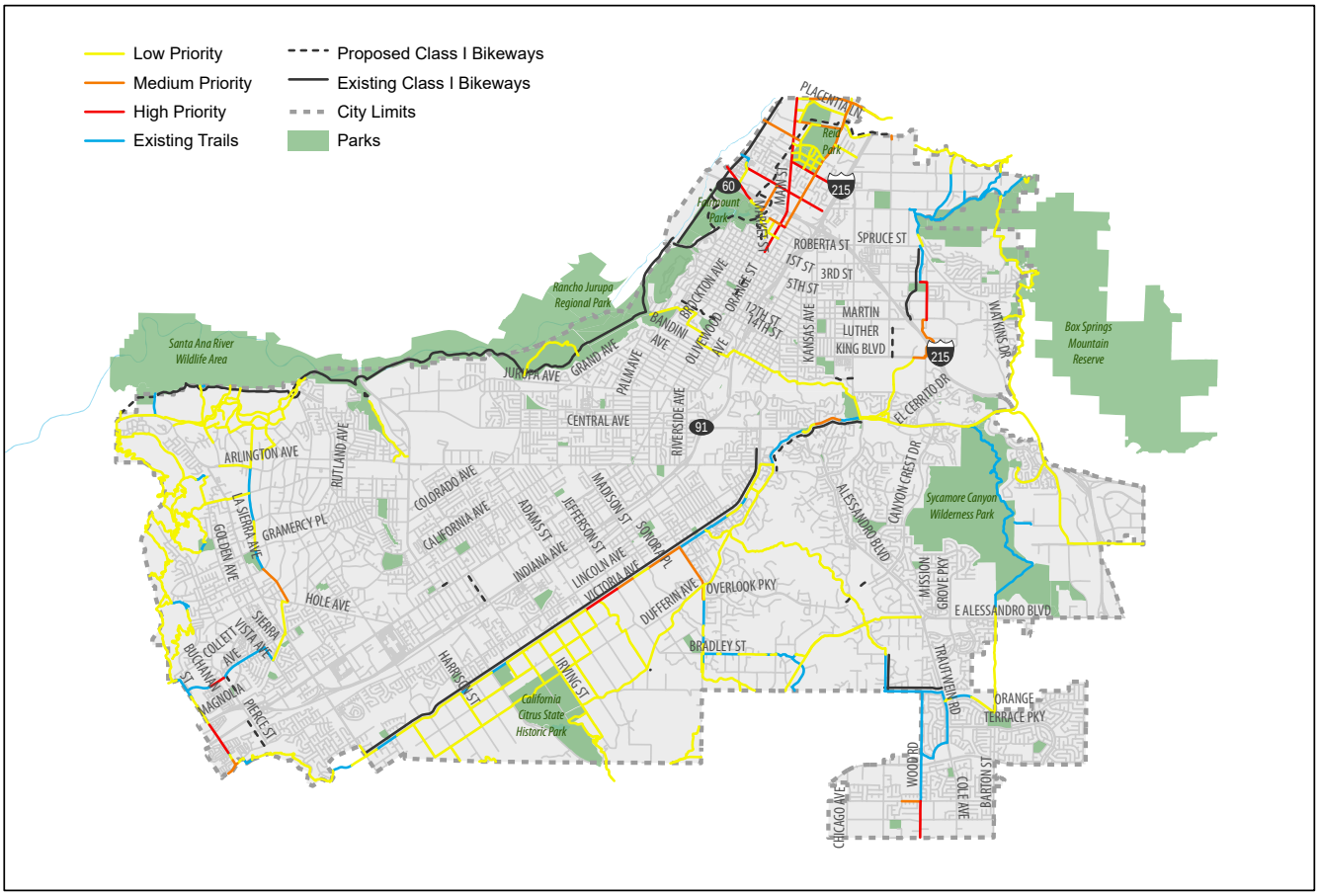

FIGURE 47 : DISADVANTAGED COMMUNITIES - FREE AND REDUCED MEALS PROGRAM SCORE

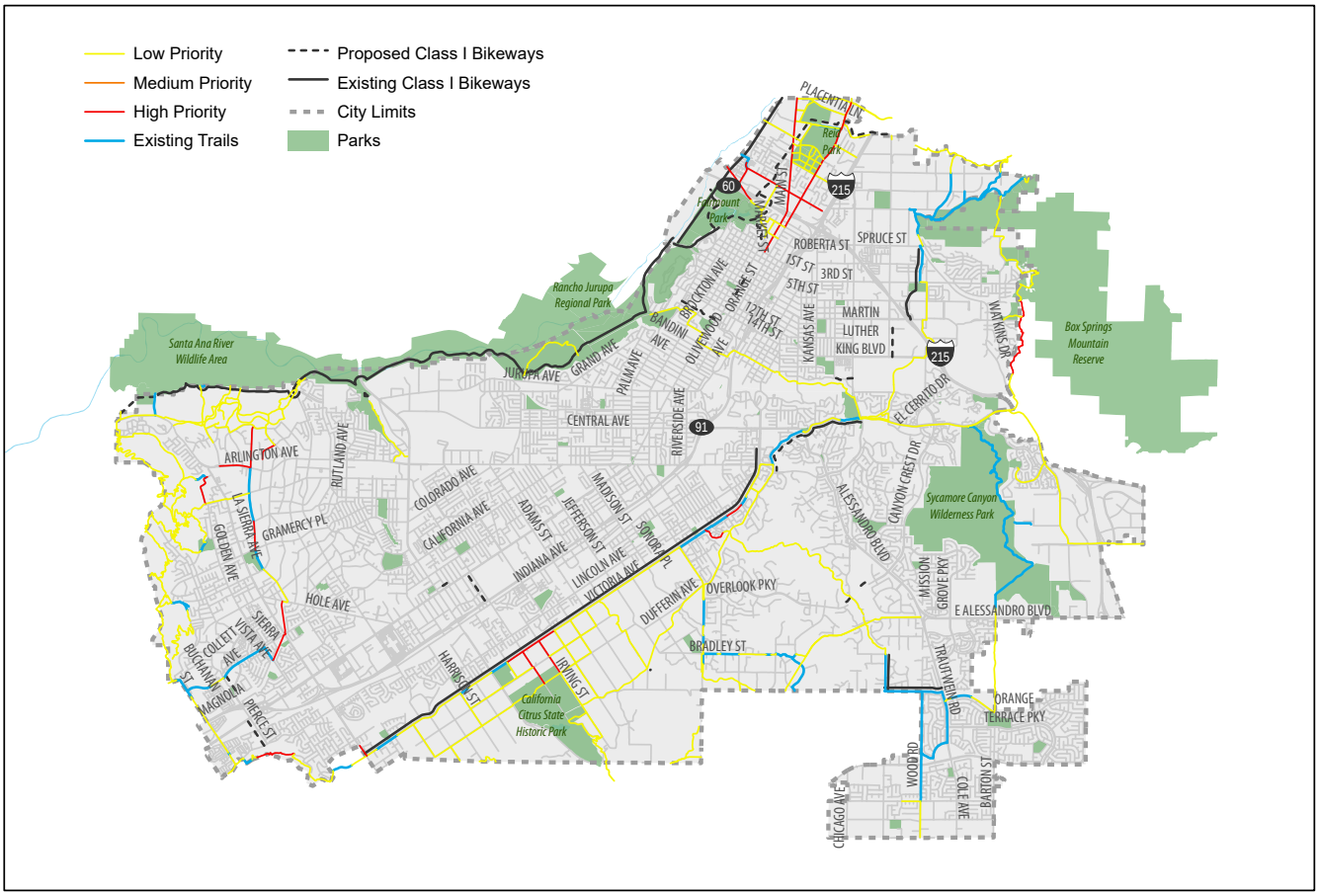

FIGURE 48 : GAP CLOSURE SCORE

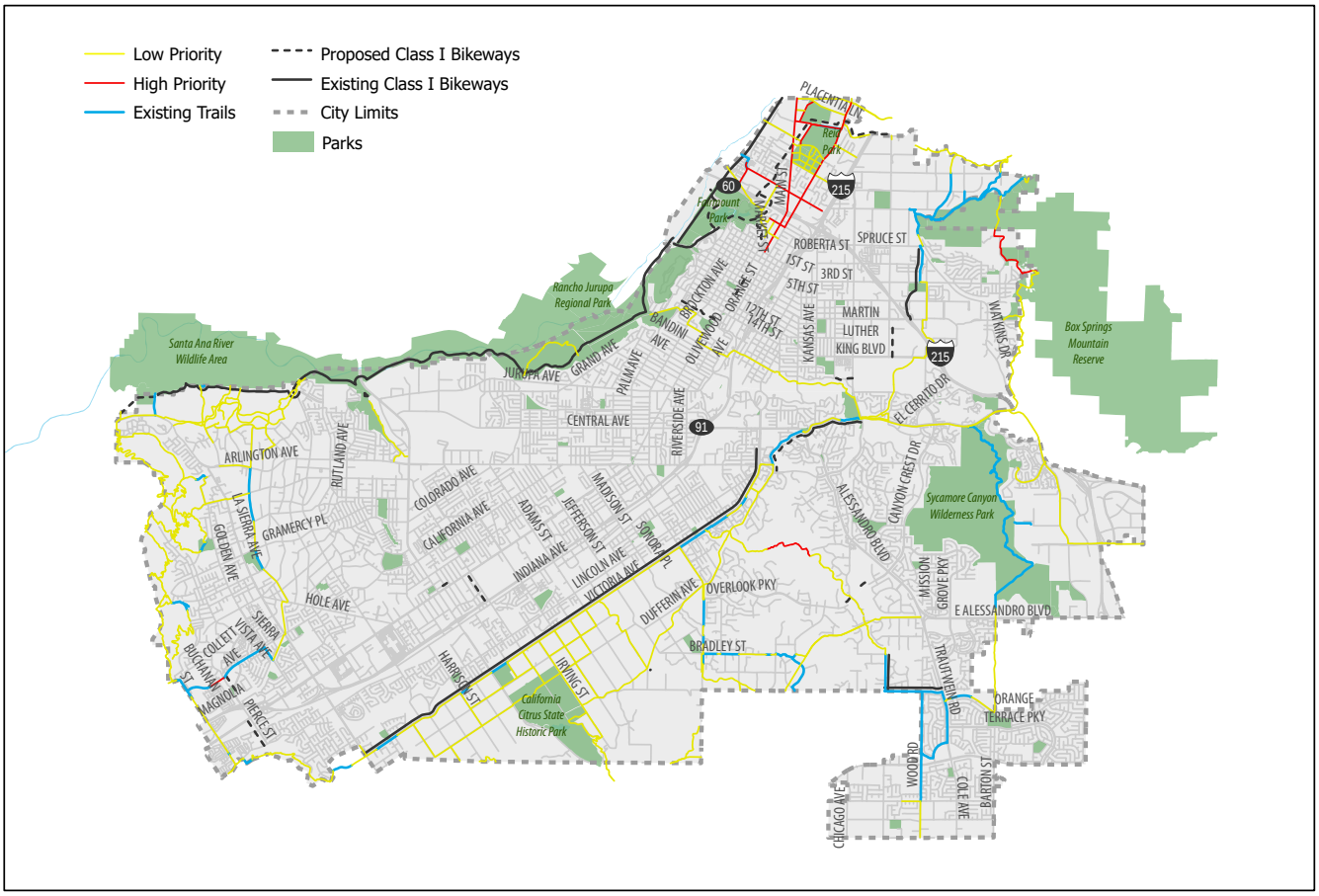

FIGURE 49 : DISADVANTAGED COMMUNITIES - INCOME SCORE

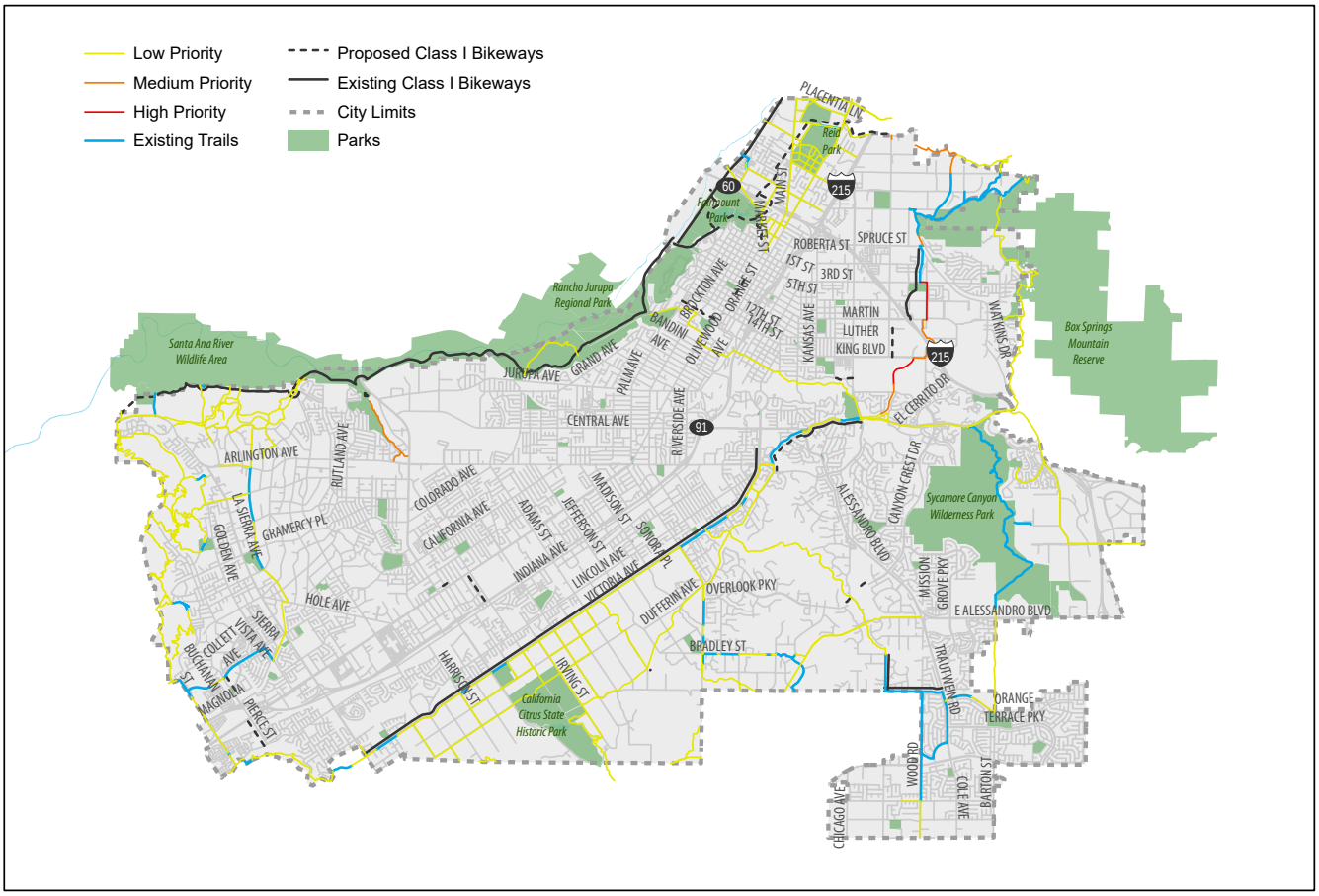

FIGURE 50 : CONNECTIVITY: LIVE, LEARN, WORK, PLAY SCORE

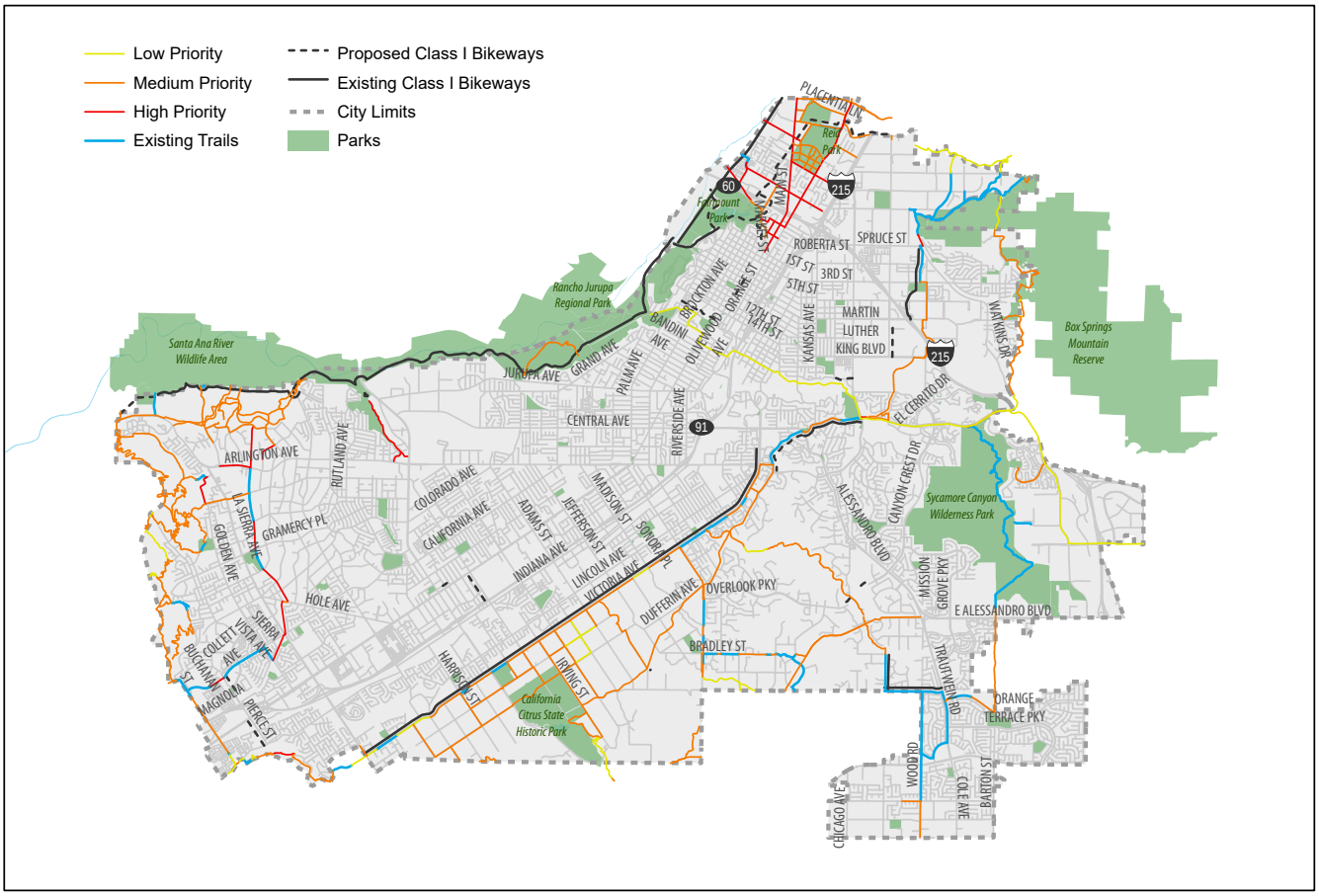

FIGURE 51 : LOCAL TRAIL SCORE

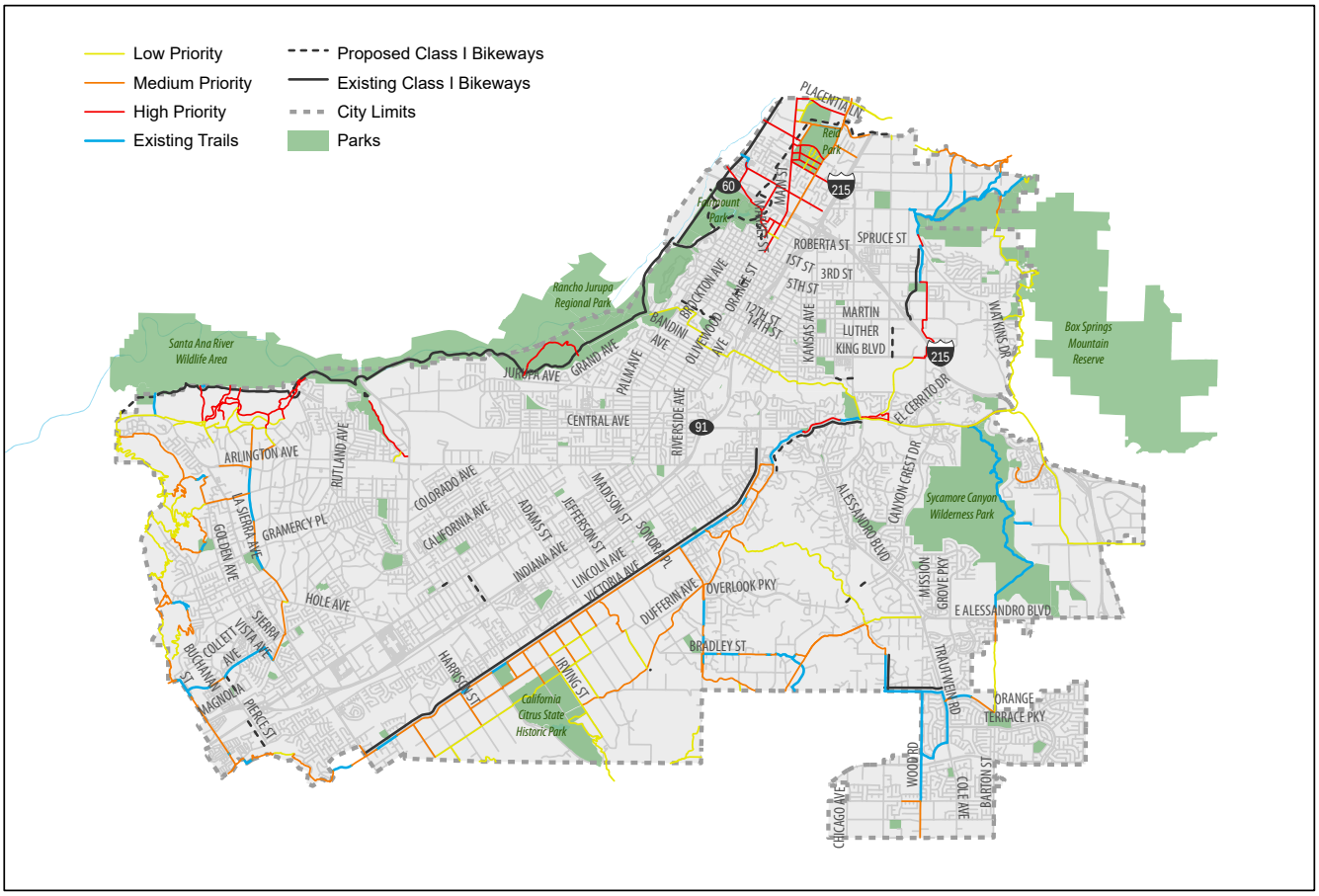

FIGURE 52 : REGIONAL TRAIL SCORE

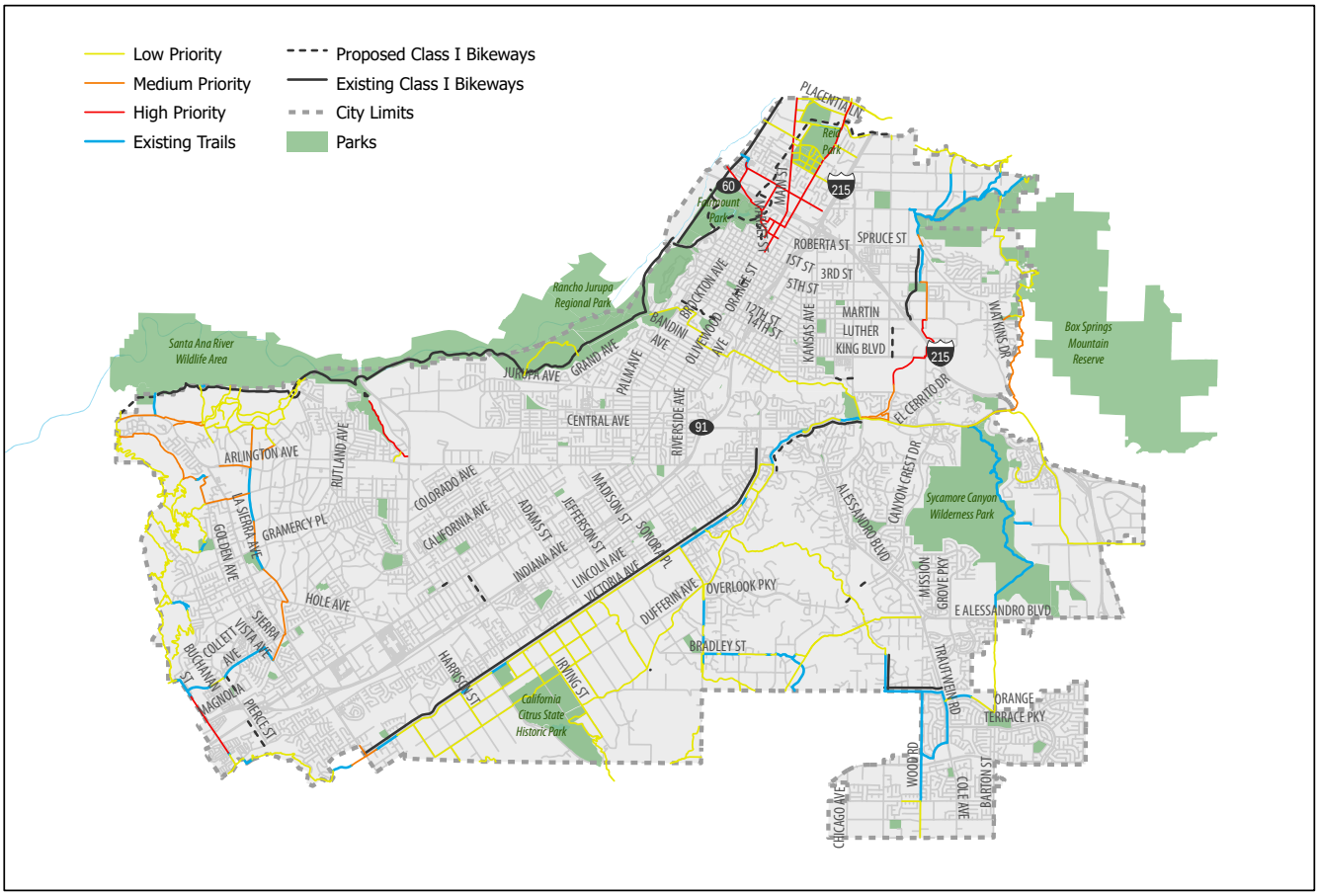

FIGURE 53 : PUBLIC SUPPORT SCORE