Angels Creek Master Plan and Trail

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ANGELS CAMP
CALIFORNIA

Acknowledgments

The Angels Creek Bicycle Master Plan and Trail is a result of a collective effort on the part of the community, the City of Angels, and RRM Design Group. We appreciate the opportunity to help create a plan that describes the steps to implement a well balanced and beneficial Bicycle system throughout the city.

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Executive Summary

The Angels Creek Master Plan and Trail establishes the framework for a bicycle and pedestrian trail along Angels Creek within the City of Angels. The proposed trail is approximately 5.1 miles in length starting at the intersection of Murphys Grade Road and Hwy 4 Bypass and extending south to New Melones Reservoir.

The Angels Creek Master Plan and Trail was identified in the 2020 General Plan as an Implementation Program. The Master Plan was funded by the Calaveras Council of Governments' Overall Work Program (OWP).

The Master Plan defines the proposed trail alignment and trail types. Trail support facilities are identified including parking, restrooms, benches, shade structures, and drinking fountains. Project phasing strategies and potential funding sources are addressed.

Management guidelines including trail maintenance and law enforcement are outlined. Educational opportunities and signage are addressed to help guide the trail sign theme.

The community was involved in the preparation of the Master Plan in several ways including: Visioning Workshops, Key Stakeholder Meetings, Comments, and the Technical Advisory Committee. The community provided direction on the location of the trail.

The trail will be implemented as development occurs and as grants are obtained. The Master Plan can be utilized in the applications for grants.

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INTRODUCTION

Background

The City of Angels incorporated in 1912 as a General Law City and is located at the intersection of Highways 4 and 49 in Calaveras County approximately 50 miles east of Stockton. The latest Census report indicates a population of approximately 3,600 residents.

The Angels Camp 2020 General Plan defines the Angels Creek Master Plan and Trail project. Conservation and Open Space Implementation Program 4.D.c "Draft a Creek Corridor Preservation & Management Plan for Angels Creek" called for "A trail along the creek through the city limits (with potential future links to trails extending along the creek beyond the city limits)".

The proposed trail extends from the Highway 4 Bypass in the north to New Melones Reservoir in the South, approximately 5.1 miles in length. The proposed trail is broken into three phases prioritizing construction. The three phases are North, Central, and South. The phases are further divided into preferred and alternate alignments.

The City of Angels has developed a new brand for itself which has identified it as a Mountain Sports Base Camp. With this effort the City and local businesses are looking to capitalize on outdoor recreation and tourism to bolster the City's sales tax and transient occupancy tax revenues. The City has formed a Brand Leadership Team comprised of City and business leaders responsible for guiding and implementing the brand. Part of the branding effort included a Branding, Development, and Marketing Action Plan. The plan identified bicycling as the top outdoor sport in the United States. The Angels Creek Trail complements this effort by connecting the City to local and regional recreation lands and the existing United States Bureau of Reclamation (USBR) trails around New Melones Reservoir.

Benefits of the Trail to the Community

Trails and Greenways have proven time and again to be of measurable benefits to both local and regional communities. Trails by their very nature of linear connection, create a more livable community by way of improving economic, cultural, natural, and physical opportunities. Studies continue to show the economic benefits through tourism, civic improvements, and alternative transportation choices for the local community. Trails provide greater access to city parks, schools, neighborhoods, commercial and retail areas, and transit systems. These connection opportunities grow with time and create additional prospects to add on to the existing

and proposed trail networks within the City and eventually connecting to adjacent towns, transportation systems, and parkland trail systems.

Cities that preserve their natural resources create sustainable places people want to live. Trails often become the ambassador resource for citizen's involvement and interest in the preservation and restoration of public open space. Trail systems are often the key funding mechanism to open space restoration efforts and create the avenue for stewardship. And finally, trails lead the way to providing healthy communities by supporting cost-free physical activity and outdoor exercise, improving fitness and mental health.

Purpose

As described in the General Plan, this Master Plan: defines the trail alignment, defines access points, identifies creek crossings, defines trailheads, specifies maintenance, describes design guidelines, and proposes interpretive features. A map of the trail is a part of the Master Plan.

The Master Plan is a roadmap for future projects that will construct individual segments of the trail system. The Master Plan defines phasing and approximate costs of implementation. The Master Plan will be a tool utilized by the City to obtain funding for this project

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Chapter Contents

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TRAIL SUPPORT FACILITIES

The Angels Creek Master Plan and Trail provides for a non-motorized multi-use trail primarily for pedestrian and bicycle use. Various facilities and amenities are necessary to support the use and function of the trail. The support facilities may include, trailhead parking, restrooms, trash receptacles, picnic tables, signs, bridges, and interpretive sites. The need for trail facilities or amenities may vary throughout the corridor and may be satisfied by shared use of other facilities such as existing or proposed developed recreation areas or co-managing agency public lands. These support facilities shall be determined on a case-by-case basis as the trail system is developed through its three phases.

Accessibility

"Accessibility" or "Universal Access" shall be considered in the decision-making processes including planning, design, construction, and management of the Angels Creek Trail. At a minimum, current State and Federal regulations concerning the Americans with Disabilities Act (ADA) shall be applied to provide access to a wide range of user capabilities where it is deemed appropriate and reasonable.

Trail Design Elements

A trail is designed by its use and the local terrain. There are several factors which effect how a trail is designed and maintained. The final physical location of the trail is governed by site constraints such as slope, vegetation, geological terrain and feasible water crossings. The following are brief descriptions of these components.

Trail Tread

The width of a trail or its "tread" is determined by the type of trail use, field conditions such as topography, and the presence of impact-sensitive resources. Trail tread width is also determined by the volume of trail users. Trail treads tend to be wider closer to populated areas and the first ¼ mile of the trailhead. See Figure 4.A for illustration of trail tread.

Exhibit 4.A: Trail Tread

Grade

The grade of a trail is the degree or steepness to which it rises or falls over a linear distance. Trail grades are heavily influenced by the

topography of the site. It is an important factor in determining trail length, level of difficulty, appropriate use, and long term maintenance requirements. Varying trail grades are acceptable, but excessive steep grades should be minimized. Trail designs should comply with current drainage and storm water pollution Best Management Practices (BMP's). Trail grades 10% or less help to avoid excessive erosion, minimize runoff pollution, and lower maintenance requirements.

Cross Slope

The cross slope (the slope of the tread surface perpendicular to the longitudinal slope) is also a critical factor in the design, construction, and maintenance of trails. Cross slope allows surface water to drain across the trail rather than along the longitudinal slope. The three primary types of cross slopes are: out-slope, in-slope, and crowned. Out-slope and in-slope surfaces typically occur on trails that traverse the side slope of a hill. Crowned surfaces are typically found on trails across relatively flat ground or wet areas. Cross slopes no greater than 2% will help drain the trail tread and make it comfortable to hike and bike.

Surface Material

Trail surfaces should permit a variety of recreational uses and be easily maintained. Trail surfaces shall be constructed from materials that provide a firm, smooth surface and comply with ADA guidelines where applicable. Some examples of trail surfaces:

HARD SURFACE	*SOFT SURFACE*	*NATURAL SURFACE*
Concrete	Decomposed Granite (DG)	Native Soil
Asphalt		Native Soil with Soil Stabilizers
Flagstone or Pavers		

Horizontal and Vertical Clearance

Horizontal and vertical clearance is necessary for a safe travel way for trail users. Horizontal trail clearance should be no less than 2' from the trail edge. Vertical clearance for a trail should be no less than 10' and consistent throughout the trail corridor. When branches need to be removed, they should be cut as close to the main trunk as possible, without cutting into the branch collar. Chemical sealants should not be applied to native trees. Plants that must be completely removed should be cut as close to the ground surface as possible. Dispose of all removed vegetation in areas not clearly visible from the trail. Visible evidence of trail construction should be confined to the horizontal vegetation clearance limit.

Trail Type Definition

The Angels Creek Trail will wind its way through a variety of land uses, vegetation, roadways, and terrain. The north and central segments of the trail is planned around a more urban setting with many connections to streets, neighborhoods and parks.

Some of the trail segments are part of a Class I bike route where it becomes a shared use with neighborhood streets whereas other segments are along more rural and backcountry areas where the grades are steep and the use is less intensified. This document provides a guide to build each of the trail segments to fit the character of the local surroundings.

The trail types have been broken down to three categories, Type A, Type B, and Type C trails.

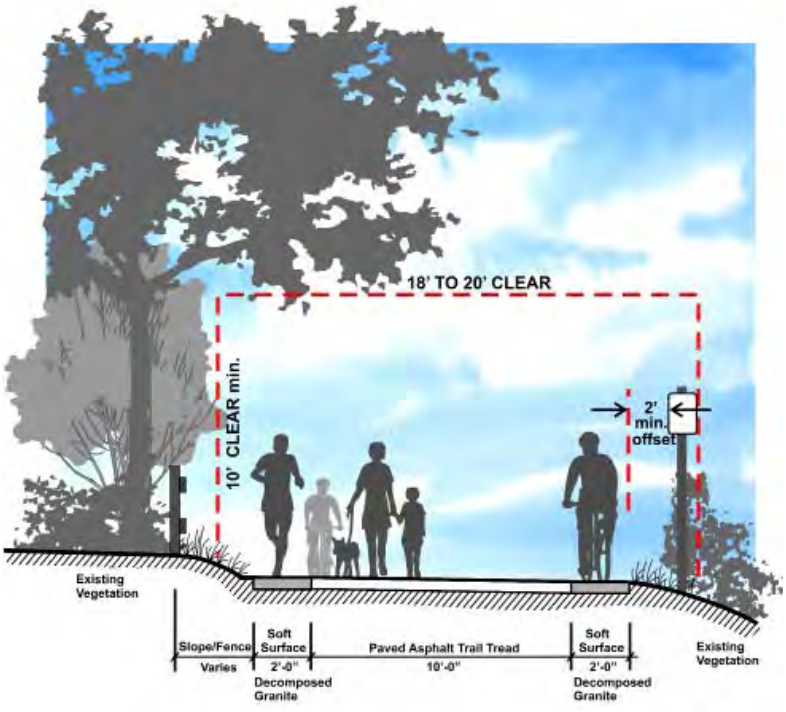

Exhibit 4.B: Type A Trail (Asphalt Paved Surface)

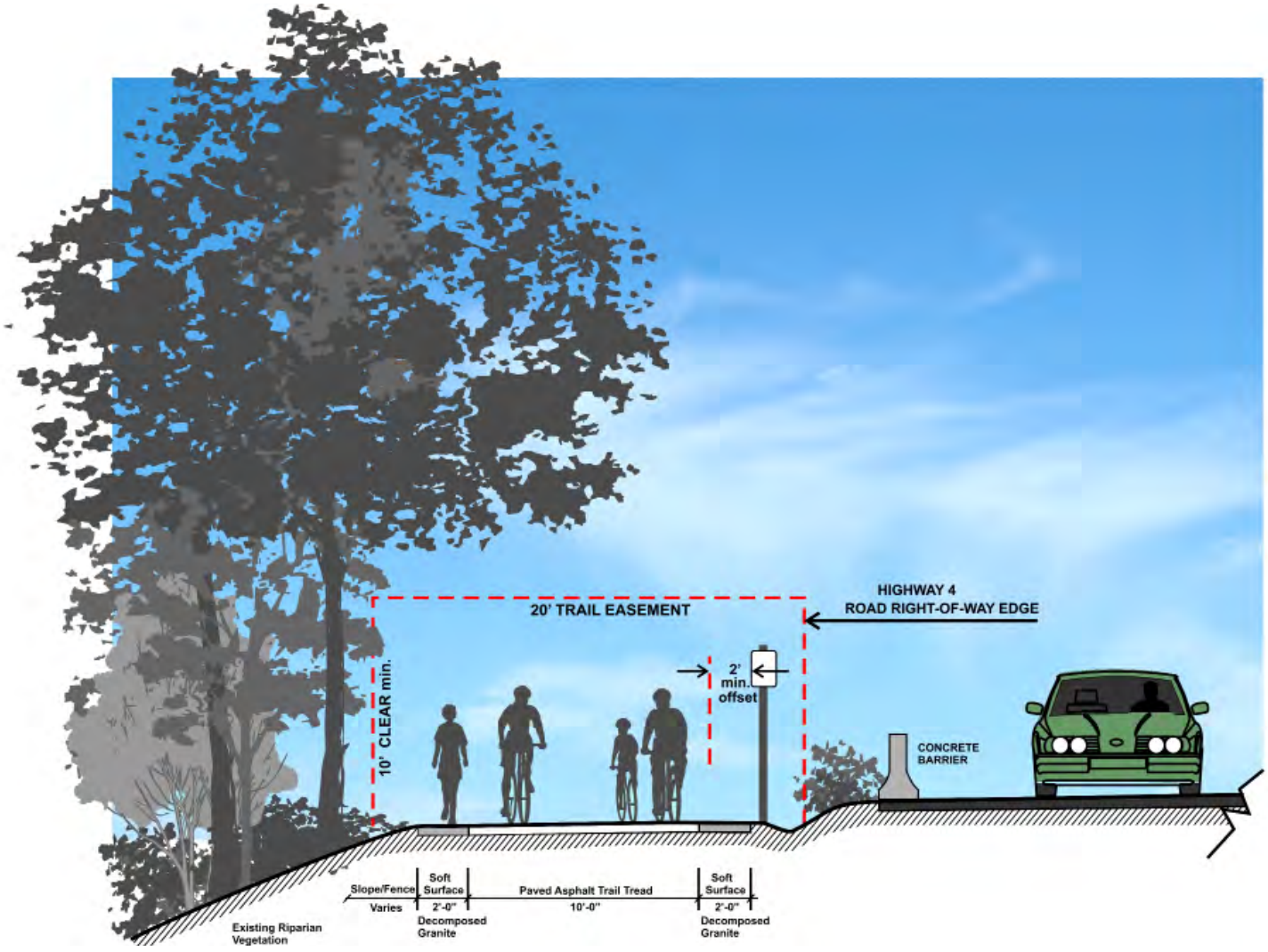

Exhibit 4.C: Type A Trail (Asphalt Paved Class 1 Path Next to Hwy 4)

Type A Trail (Asphalt Paved Surface)

Type A Trails have the widest right-of-way and are in areas where the amount of use is greater. The Type A Trail is a hard paved surface of asphalt or concrete no less than 10 feet wide. The edge of the paved surface is lined with a 2' wide compacted soft surface of decomposed granite (DG) or crushed fines. The trail alignment will require fencing in some areas to protect wildlife habitat and or private ownership from trespassing. (See Exhibits 4.B, 4.C, 4.D)

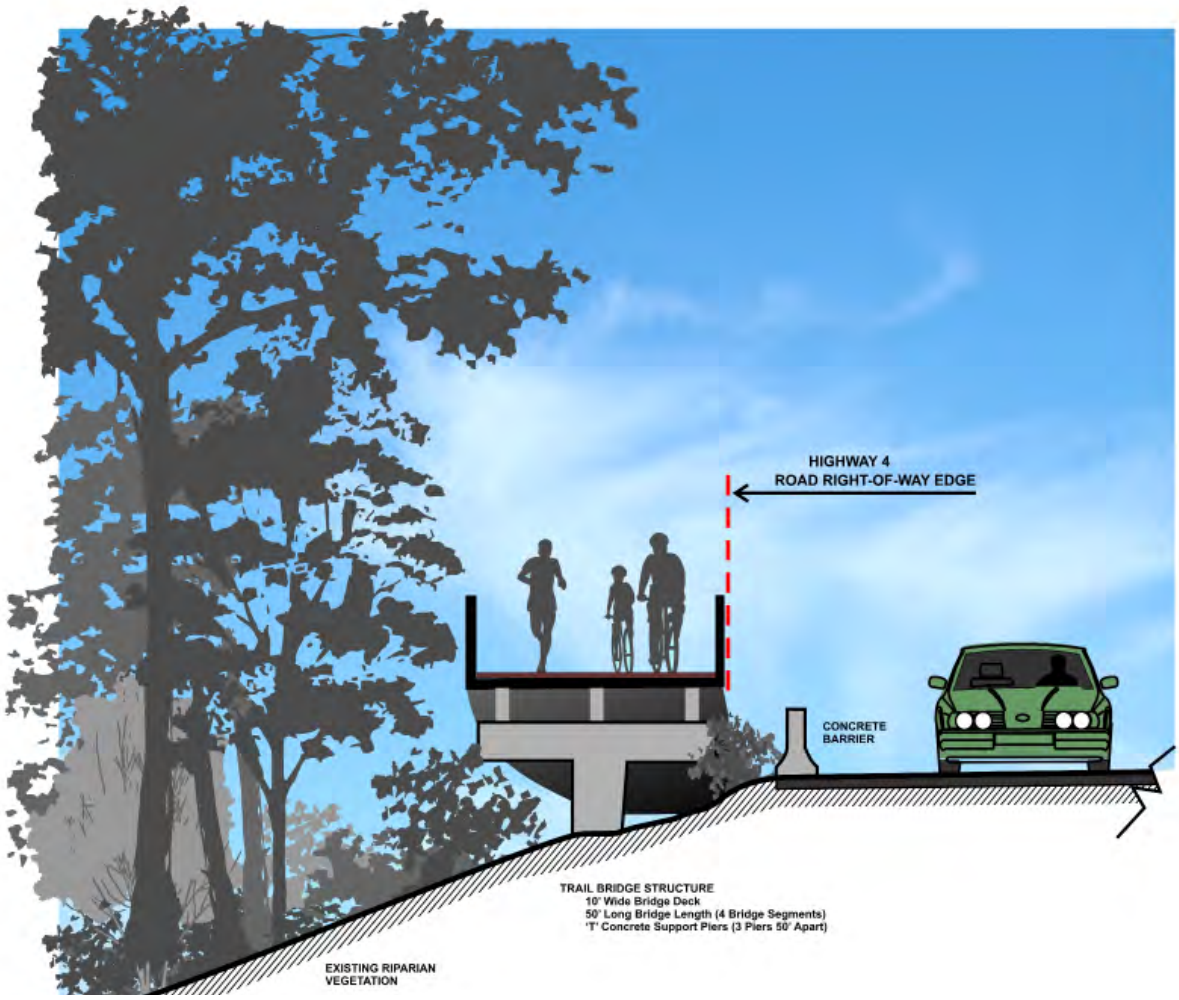

Exhibit 4.D: Type A Trail (Trail Bridge Structure Adjacent to Hwy 4)

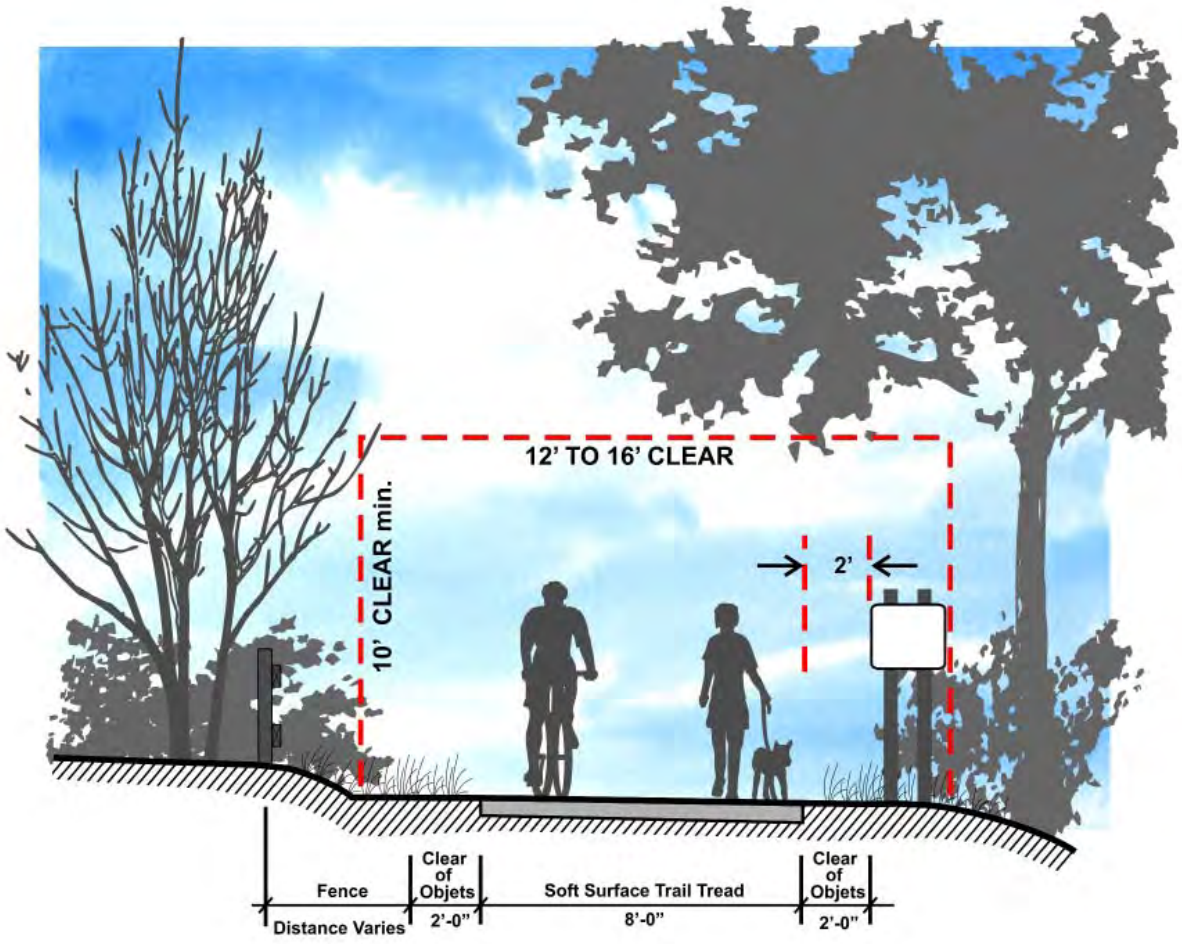

Exhibit 4.E: Type B Trail (Soft Surface Trail)

Type B Trail (Decomposed Granite)

Type B Trails are located in areas where the path is in a more rural and park-like settings. Type B Trails will consist of an 8' wide DG Path 6" to 8" deep on a Class II base material. The Type B Trails may also require fencing where applicable (See Exhibit 4.E).

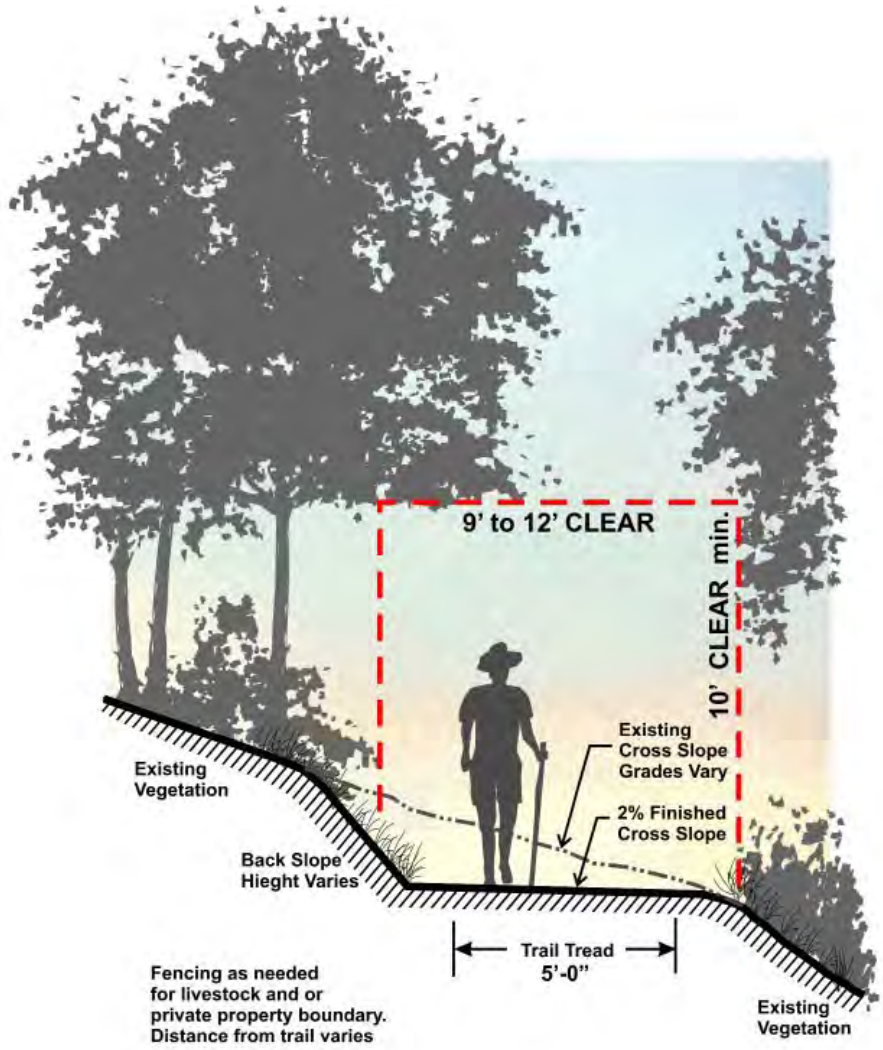

Exhibit 4.F: Type C Trail (Natural Surface Trail)

Type C Trail (Natural Surface Trail)

Type C Trails are located in the more remote areas of the corridor. These types of trails occur in the South Reach of the project and connect to the existing trails at New Melones Reservoir. Type C Trails are natural surface trails only 5' to 6' wide through steeper terrain and wooded areas (See Exhibit 4.F). To keep the trail as maintenance free as possible, these trails are designed to avoid exceeding grades greater than 12% when possible. Type C Trails require some hand tooled segments with drainage crossings, native stone walls, and some switchbacks. It's important that these trails blend with the sites character and slopes as much as possible.

Trail Layout

The proposed trail alignment crosses many types of terrain, slopes, land uses, drainage areas, and vegetation as well as private and public property. This presents opportunities and constraints when selecting trail tread location. The following guidelines balance a quality user-experience with protection of natural and cultural resources. At a minimum these guidelines shall be considered during each phase of the planning, design and construction of trail system. These reflect other resource management plan guidelines. Their application will help minimize future maintenance, operation problems, user conflicts, and impacts to cultural and natural resources. The guidelines are as follows:

- Use existing access roads or existing foot paths whenever possible.
- Avoid or minimize development on erosion-prone soils, especially on steep slopes.
- Avoid endangered or sensitive plant species and wildlife breeding habitats if possible.
- Consider alternative surface materials for erosion control including: gravel, fiber matting, polymer-based compounds, and mulching with native materials.
- Minimize erosion from construction of trails as follows:
  - Construct trails parallel to slope contours with the cross slope toward downhill.
  - Utilize additional drainage features and techniques.
- Trails and maintenance/emergency roads shall not be paved unless otherwise specified.
- Avoid concentrating and directing storm water runoff from parking areas into Angels Creek.
- Minimize paving when possible.
- Landscaping shall not include invasive exotic species. Use local native plant species for landscaping or to replace vegetation.
- Optimum trail widths and other conditions shall be determined on a case-by-case basis.
- Curvilinear trail alignments or drain dips are preferred over switchback alignments when climbing steep grades.

Trail Experience

Sight distance, views and the overall visual quality of the surrounding environment are important to the human experience as well as the more practical applications for safety and environmental protection. An attempt shall be made to consider the following guidelines concerning sight distances and views when developing trails and trail systems:

- Design trails to blend in with the surrounding environment, utilizing exiting trees and shrub massing to screen the trail as much as possible.
- Screen views of the trail from adjacent landowners who may not want to view the trail from their property when feasible and appropriate.
- Align trails across the face of open hillsides just below the ridge line.
- Avoid ridge top trail alignments to keep from silhouetting trail users on the ridge
- Excessive cuts in slopes should be avoided.
- Use native soils and plant seeds for restoring areas disturbed by trail construction
- Align trails on cross-slopes of less than 45 percent when possible

Exhibit 4.G: Trail Example (Design and construct the trail to fit the local landscape)

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Trail Signs and Wayfinding

Signs provide valuable information to visitors about the trail, safety tips, and expectations while recreating along the trail. The information will include rules and regulations, trail maps, trail names, locations, and distances for orientation and interpretation, as well as city department contact information.

Signs will be placed appropriately and strategically to minimize sign pollution along the trail corridor. Generally, the greater number of signs occurs within the first ¼ mile of the trail.

Signs can be grouped into four major categories;

- Regulatory
- Directional (wayfinding)
- Informational
- Interpretive (educational)

Regulatory

Most regulatory signs already have an industry standard shape and color. Regulatory signs will be used according to the Manual on Uniform Traffic Control Devises (MUTCD) signs standards and are typically aluminum signs with vinyl lettering.

Examples of typical regulation signs would be:

- Stop signs
- Yield signs
- Bike Route signs

Traffic signals, signs, and pavement marking on the street may also regulate users and vehicular traffic where the trail comes in contact with the street network.

Other Regulatory Signs

Park and trail rules and regulation signs are created by the managing agency and the local law enforcement group. These signs are often enforceable by law and are listed at all trailhead and access locations. See Law Enforcement chapter for possible rules and regulations list.

Exhibit 6.A: Trail Xing Sign *(posted at roadway intersections and street crossings)*

Exhibit 6.B: Class III Bike Route Signs

Exhibit 6.C: Signs

Directional (wayfinding)

Directional signs vary in their style, materials and content. These signs tend to be more customized by the managing agency and are designed to create continuity through the trail experience. These signs are used to identify location, direction, distance and places of interest for trail users. Trail markers should be placed at intervals of one-half mile to 1 mile or at strategic areas such as intersections, viewing spots, and rest areas.

Directional sign example:

- Entry Monuments
- Directional arrow signs
- Trail Name Signs
- Designation and length

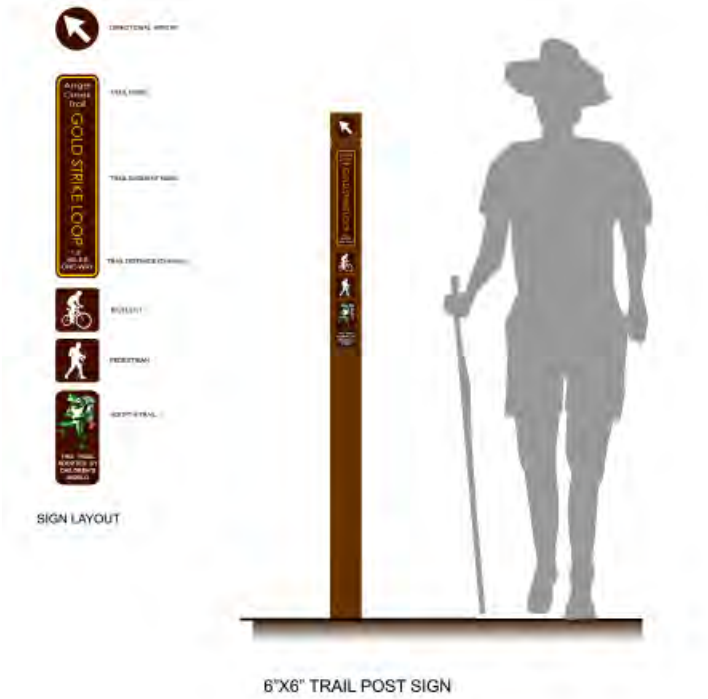


Exhibit 6.D: Trail Post Sign Examples

Entry Monuments

There are two entry sign concepts designed to be located at primary trailhead parking lots and key pedestrian accesses points at neighborhoods or park connected to the trail.

The trailhead parking entry monument signs are used as identification markers to be seen from a approaching vehicle from a roadway. These roadway entry monuments serve to create the sense of arrival and are the larger of the two signs. The material for entry monument signs will be high density foam sign with router surface, supported by a native stone base veneer, 6x6 wood posts, and 2x6 wood cross beams.

SIDE VIEW

Exhibit 6.E: Entry Monuments

The smaller entry sign, located at primary pedestrian and bike access points along the trail, will include the high-density foam sign with wood post. This sign will be scaled down version of the larger entry monument sign to set the overall character of the trail sign theme. Each of these signs will include the name of the trail, the City name and branding logo.

Trails cover great distances, like a linear park, and it's important that the signs and trail facilities share some unifying features for the visitor to identify where they are. Directional signs help orient and direct the trail user to a destination. These signs should be clear and concise with some reference to the park architectural theme. Themed signs and park facilities are another way to help visitors know they are on the same trail system from the beginning to the end of the experience. Using color, materials, text, and design, also helps the trail user to know they are still in a designated recreation area. This is important as a reminder that the trail rules and regulation apply even if the visitor is at the farthest reaches of the trail system.

Informational

Informational signs should reflect the character of the region and be harmonious with elements in the trail corridor by selecting native materials and colors. To insure efficiency in managing and maintaining the signs in the trail system, the materials and construction of the signs should have consistency in their style, materials, color and design.

Recreational Yield and Right-of-Way

Signs clearly indicating user right-of-way and yielding protocol will be posted to minimize user conflicts. Bikes must yield to pedestrians. This system of yielding is based on the degree of control trail user has over their mode of travel and is not intended to favor any particular user group.

Exhibit 6.F: Trail Post Signs

Trail post sign with trail name, mile marker, and directional arrows. Posted at key intersections and directional changes in trail alignment. Sign posts can be made with recycled plastic and wood composite, 4"x 4" post with aluminum sign face.

Interpretive Signs

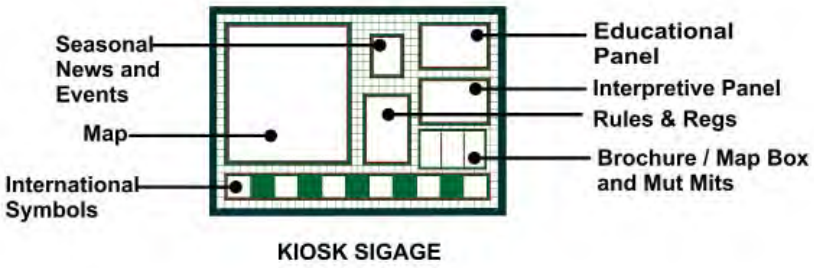
Interpretive signs differ most in their appearance and character. The important element to interpretive signs is the way they are displayed to provide universal access so they serve the majority of trail visitors. Interpretive signs identify and educate about topics such as natural and cultural resources. They should be placed in strategic locations such as trailheads, parks, overlooks and other features of interest. For example:

- Identification Native Plant Species including habitat and use by wildlife and humans
- Creek and Riparian Ecosystem
- Hydro-Electric Power Generation
- Gold Mining and Early Settlement
- Native American and other historic and cultural events
- Resource Preservation/degradation (over grazing, urban runoff, exotic plant invasion, overuse, trash, etc.).
- Three dimensional displays of animal tracks, local fish, large scale insects, or animal droppings as part of an interpretive display.
- Wildlife behavior such as foraging and hunting

Exhibit 6.G: Interpretive Signs

Kiosk and Interpretive Signs

Trailhead information kiosks provide trail users with their first bit of information about the trail and their immediate location within the corridor.



KIOSK SIGAGE

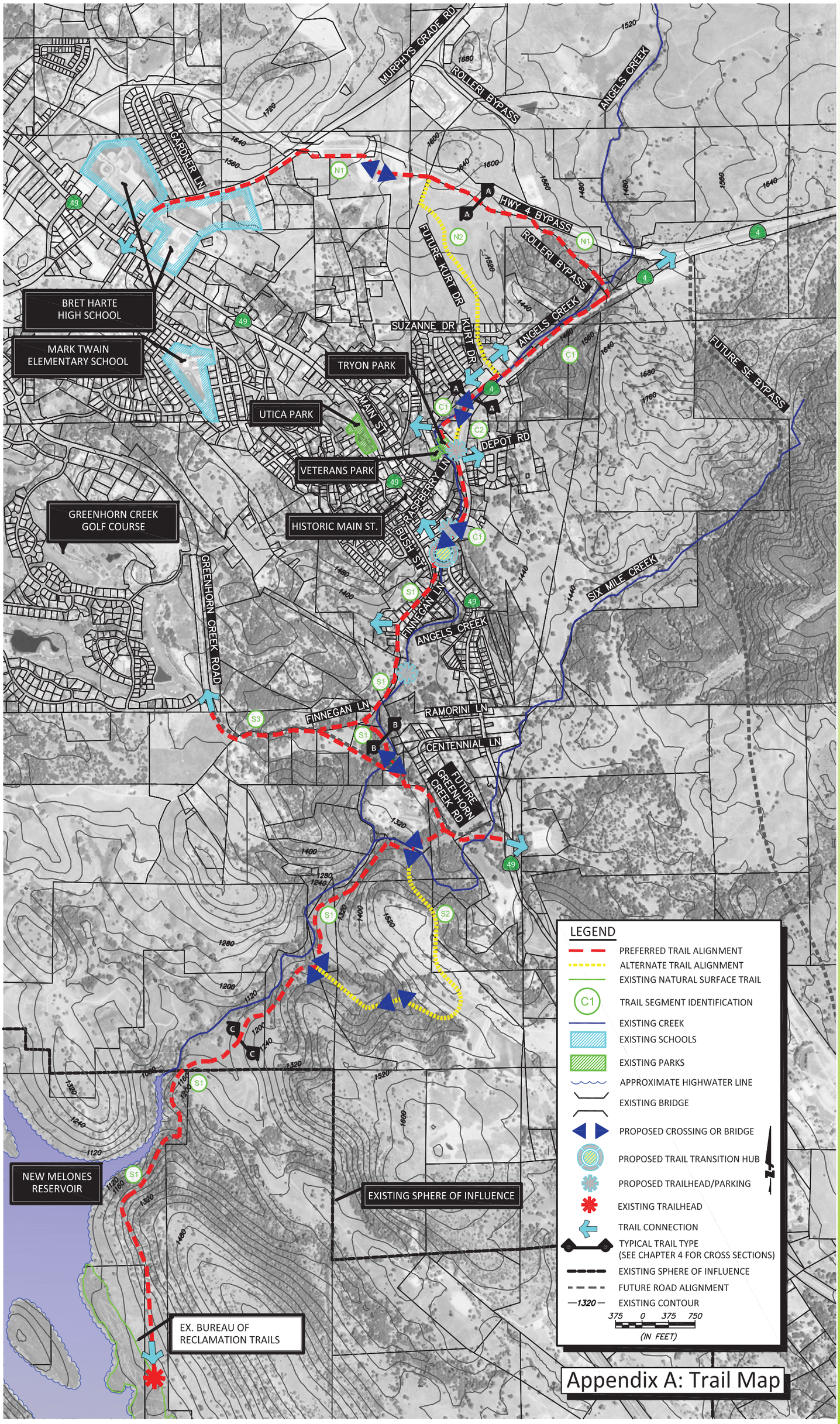
The kiosk is designed with a trail map, rules and regulations, brochure boxes, and interpretive information. The architecture of this structure carries through from the entry sign to strengthen the theme and identity of the trail. Large kiosks will be located at Regional Trailheads and smaller kiosk signs will be located at major trail access points.

Exhibit 6.H: Trailhead Kiosk Example

Branding

The City of Angels spent some time over the past few years to create a branding idea for the City and has recently settled on this frog as both a mascot and local character to represent some of the cultural heritage of the City's history. The hiking frog was developed as a way to promote recreational activities in the area and this copyrighted frog, Monty, is proposed as a key element of wayfinding along the trail. This symbol will be used on directional signage, kiosks, and entry signs as a way to create unity throughout the trail corridor.

Exhibit 6.I: Frog Mascot, Monty



Appendix A: Trail Map