

SAN JOSÉ TRAIL NETWORK TOOLKIT PLANNING & DESIGN

CITY OF SAN JOSÉ
DEPARTMENT OF PARKS, RECREATION
AND NEIGHBORHOOD SERVICES

TRAIL PROGRAM

in collaboration with
MIG, INC.

JULY 2018
BUILDING COMMUNITY THROUGH FUN

SAN JOSÉ
PARKS, RECREATION &
NEIGHBORHOOD SERVICES

CITY OF
SAN JOSÉ
COUNCIL OF SOUTHERN VALLEYS





*Lower Guadalupe River Trail
in north San José*

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Intersecting trails in north San José

TABLE OF CONTENTS

- Trail Network** **7**
- Executive Summary** **9**
- Chapter 1: How to Use The Toolkit** **13**
- Chapter 2: Trail Network Planning** **17**
 - Our Focus..... 17
 - Planning & Design Objectives..... 19
 - Trail Types 22
 - Core Trails
 - Edge Trails
 - Hiking Trails
 - Trail Development 24
 - San José Trail Settings
 - Universal Accessibility 30
 - Safety and Crime Prevention Through
 - Environmental Design (CPTED)..... 32
 - Cost Savings and Innovation..... 32
- Chapter 3: Working with Partner Agencies** **39**
- Chapter 4: Trail Design Details** **53**
 - Trail Surfacing 53
 - Site Grading and Layout 53
 - Gateways 57
 - Bridges 58
 - Undercrossings 61
 - Fencing..... 63
 - Ramps 63
 - Wheelchair Ramps
 - Vehicle Access Ramps
 - Curb Ramps
 - Bike Ramps
 - Levee Ramps
 - Signage..... 66
 - Informational
 - Guidance
 - Regulatory
 - Warning
 - Signage Clutter

- Lighting 70
- Striping..... 68-70
- Aesthetics 73
- Trail Gateways and Access Points 73
 - Node-Intersecting Trails
- Trail Systems and Design Themes..... 76
- Interpretive Signage 81
- Public Art and Design Amenities 84
- Landscaping 87
- Seating 92
- Bike Racks 93
- Bollards and Gates..... 94
 - Multi-Agency Bollards
 - Swing-Arm Gate
 - Flexible Bollard
 - Removable Aluminum Bollard
 - Removable Steel Bollard
 - Private Gates
- Fitness Stations..... 95
- Lighting 96
- Memorials..... 96
- Picnic Areas..... 96
- Trash Receptacles 96
- Furnishings Not Typically Provided..... 97

Chapter 5: References and Resources **99**

Credits **101**

TABLES

- Table 2.1 Trails by Setting** 26
- Table 2.2 Compliance with ADA** 30
- Table 2.3 Trail Cost Saving Practices**..... 33
- Table 3.1 Permit Requirements**46-50
- Table 4.1 Trail Design Parameters**..... 57
- Table 4.2 Tips for Use of Striping**..... 70
- Table 4.3 Trail Systems and Design Themes** 77-79
- Table 4.4 Site Furnishings Support** 91



Lower Guadalupe River Trail



TRAIL NETWORK

The Toolkit supports City staff, consultants, developers, the public, and other agencies in the understanding and sharing of common principles for planning and design of San José Trails.

A clear and consistent approach to development supports efficient project delivery and offers certainty and predictability to our Partner Agencies, regulatory agencies, and other stakeholders.



San José's Department of Transportation is developing a 400-mile bikeway system to link to the Trail Network

EXECUTIVE SUMMARY

THIS TOOLKIT SUPPORTS A WORLD-CLASS TRAIL NETWORK:



Off-street trails



Variety of experiences



Interconnected



Sustainable



Signature elements



Valuable attributes

The City of San José is a recognized national leader for trail development and its network approach to ensure equitable access to recreation and active transportation trails. The high quality of San José's trail network occurred through a focus on innovation, data-driven decision making, access through major barriers, beneficial partnerships, and focused and rapid paced development. This Toolkit documents the City's approach to quality planning and design to ensure a common understanding by all persons involved in the championing, planning, and design of trail projects.

Use of this toolkit and adherence to its guidelines ensure that trails meet functional and aesthetic objectives, provide common and familiar infrastructure, and advance the state of the practice. The Toolkit is purposely general and broad when defining preferred planning and design approaches.

San José has one of the nation's largest trail networks which leads to numerous opportunities and constraints. Planners and designers should view the Toolkit as a starting point and rely on related local, state, and federal documents for detailed guidance based on specific site conditions.

The Toolkit has been formatted for quick access to key details. It serves as a starting point to gain a general understanding of the "why" and "what" of planning and design decisions. Photographs, figures, and charts are used when possible to reinforce subject matter.

Many San José trails are developed in collaboration with other public agencies, as they may be a land owner, operator, or stakeholder in existing infrastructure. In these instances, a trail's design must consider the primary operational needs of the agencies. Early consultation is important in defining design and operational conditions. San José frequently works with the following agencies and the Toolkit attempts to capture likely planning and design considerations for joint-agency projects:

- **Santa Clara Valley Water District (SCVWD)**, especially with riparian trails,
- **US Army Corps of Engineers (USACE)**, with SCVWD serving as the local partner,
- **Association of Bay Area Governments (ABAG)** and its **San Francisco Bay Trail team**,
- **State of California Department of Transportation (Caltrans)**, for use of federal and some state funding, and public rights-of-way coordination,
- **Pacific Gas and Electric (PG&E)**, for utility corridor coordination in its jurisdiction,
- **Santa Clara County** and adjacent cities for regional trail connectivity.

This Toolkit supports a world-class trail network that provides:


- Off-street trails meeting Class I Bikeway standards for recreation and/or active transportation
- A variety of experiences via short- and long-distance trail systems
- Interconnected trails throughout the City
- Sustainability through high-quality design and sensitive development
- Signature elements for San José's identity
- Valuable attributes for economic development.

THIS TOOLKIT...

... is a companion to standard detail and specification documents available from the **Department of Public Works (DPW)**. These additional resources are listed in **Chapter 5: References and Resources**.



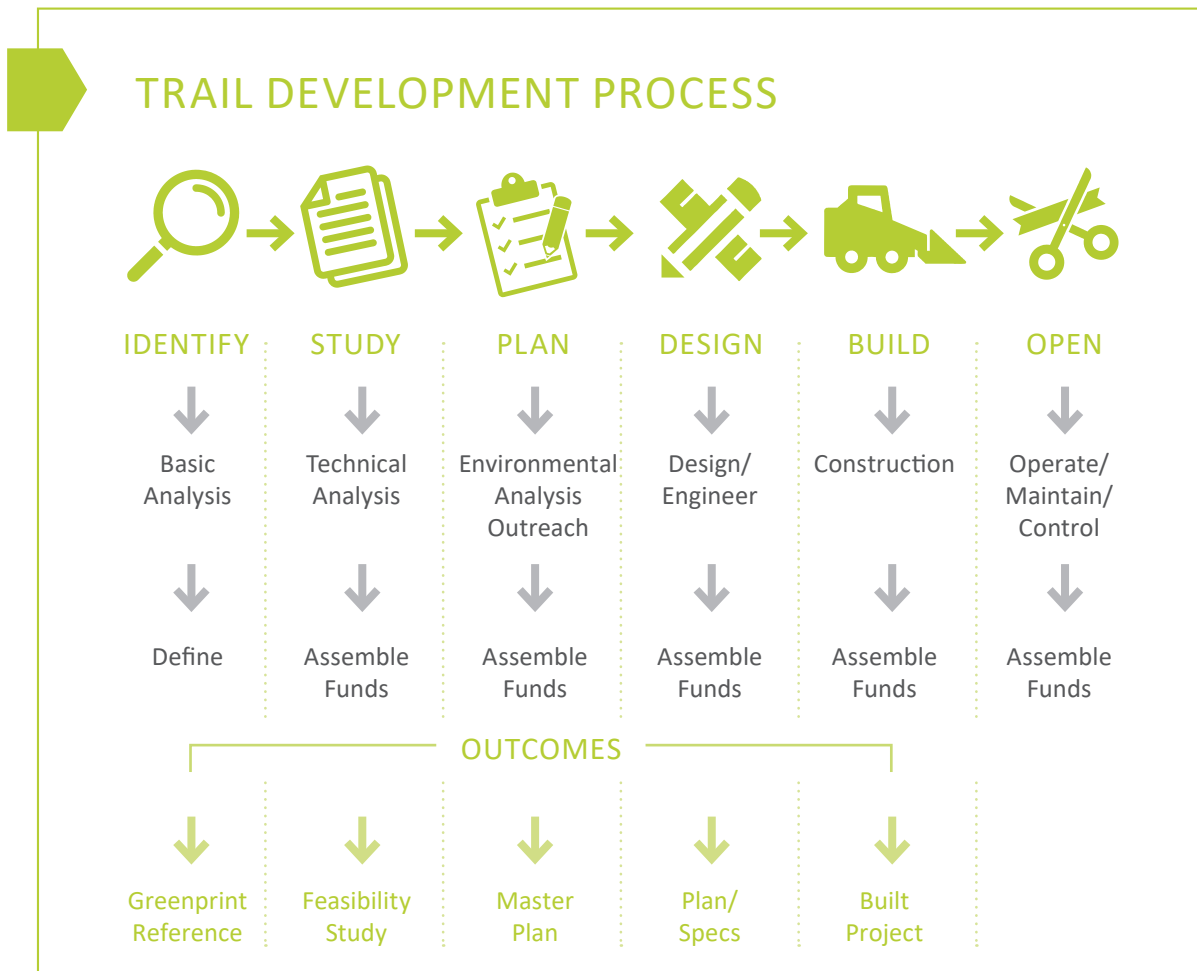
Alum Rock Park



WHAT
QUESTIONS
DOES THE
TOOLKIT
ANSWER?

1 HOW TO USE THE TOOLKIT

The Toolkit presents the considerations planning an optimized alignment and its design. It is a starting point to understand the City’s vision and unique intents and purposes of its trail network. It also clarifies the City’s expectations from initial identification of a project in order to streamline inter-agency coordination and approvals for trail projects in the City of San José.



This Toolkit is organized to provide answers to the following questions:

Chapter 1: How to Use The Toolkit

What questions does the Toolkit answer?

Chapter 2: Trail Network Planning

What differentiates a San José trail?

What are the differences between off-street and on-street facilities?

What are primary planning and design decisions for San José's trails?

Who uses San José's trails?

Chapter 3: Working with Partner Agencies

How do you work with public agencies?

Chapter 4: Trail Design Details

What features define San José's trails?

What makes a San José trail memorable?

Nature on a San José trail?


What design elements enhance trail use?

Chapter 5: References and Resources

Where can I learn more?



Unique gateway features for each Trail System; "Compass Medallion" found along Guadalupe River Trail

An aerial photograph of a paved trail winding through a lush, green forest. Two cyclists are riding on the trail, one in the foreground and one further ahead. The trail is bordered by tall, dry grass on the left and right. In the background, a city skyline is visible through the trees, and a small airplane is flying in the clear blue sky. A large, light green arrow-shaped graphic points from the left towards the center of the image, containing the text.

WHAT
DIFFERENTIATES
A SAN JOSÉ
TRAIL?

2 TRAIL NETWORK PLANNING

San José is nationally recognized for its approach to comprehensive trail planning, high-quality trail design, pursuit of innovation, and collaboration via inter-agency agreements. Many of its projects are award-winning and support recreation and active transportation.

OUR FOCUS

The City of San José seeks to deliver the best possible trail network. San José has insured these outcomes by focusing on six areas when making planning and design decisions. The trail network's national reputation is supported by a long-term adherence to six promises:

- **Innovation:** Mileage markers linked to the 911 Call Center, a custom formula for highly reflective trail striping, cost-efficient levee ramps, and other innovations define San José efforts to continuously improve. **As you plan and design based on this Toolkit, we encourage innovative proposals that save time, money, resources, and/or offer a better trail for the public.**
- **Data Driven:** Good planning and design depend on understanding the end user's needs and the anticipated volume of usage. San José conducts regular trail data-collection events. From this **Trail Count** data, San José can report that for the Guadalupe River Trail, 35-55% of the 1,000-1,200 users each weekday are commuters. **San José offers data to support your trail development efforts and seeks pre- and post-project data collection from its project partners when possible.**
- **Quality:** San José trails welcome users with gateway features at most entry points, our trail design meets the **State of California Department of Transportation's** (Caltrans') standards for Class I Bikeway facilities, and our master plans provide detailed guidance to streamline design work. **The Toolkit supports the highest quality planning and design work to sustain a reputation that reflects positively on the City and your organization or community.**



- **Access:** San José Trails have been developed to travel beneath roadways and freeway interchanges, or to bridge across rivers and creeks in order to meet a Class I Bikeway trail standard. In most instances, San José Trails meet the Americans with Disabilities Act (ADA) guidance for accessibility. **The Toolkit encourages trail improvements that address and remove all barriers to accessibility.** Trail development within flood control channels may limit full ADA compliance due to site constraints or flood capacity demands. Early planning and design with Santa Clara Valley Water District (SCVWD), and US Army Corps of Engineers (USACE) when jurisdictionally involved, can potentially permit improved access.
- **Partnering:** Many San José Trails are developed upon lands held by other public agencies. Working with multiple partners can be challenging. **The Toolkit offers best practices for successful multi-agency projects to streamline the project delivery process.**
- **Pace:** San José is developing one of the nation’s largest urban trail networks through trail master plans, the City’s General Plan, and the Department of Parks, Recreation & Neighborhood Services’ (PRNS) Greenprint. Strong support has focused needed resources for delivery of several new trail miles each year. **The Toolkit presents the information necessary for planners and designers to put forward projects that meet City expectations and reduce the potential for costly and time-consuming changes.**

PLANNING & DESIGN OBJECTIVES

Based upon the City’s focus areas, Trail Planners and Designers need to identify, develop, and deliver projects that meet five major outcomes:

Functional (Trails support recreational needs and commuting)

- Meet State and federal guidelines for multi-use trails with capacity for high daily usage and peak travel usage (AM, midday, and PM commuters)
- Align with, or guide new trail users to resources (public restrooms, retail, neighborhoods, employment, points of interest, etc.)
- Provide relatively direct alignments in support of commuting. Limit highly meandering alignments unless they supplement a primary route.
- Link neighborhoods to recreational facilities, parks, employment, retail, businesses, entertainment, education, etc.
- Include fitness and play stations when space permits, serving the needs of children and adults.
- Align the trail to adjacent parks when feasible in order to maximize recreational potential.
- Design trails with sufficient width to provide users with room to navigate away from other users for a more pleasurable experience for everyone.

Sustainable (Easily accessed for maintenance and best design approaches)

- Minimize the use of gates and bollards except where needed to allow maintenance access and/or trail closure for safety and operational functions.
- Provide safe access from adjacent streets, off-street parking, and alongside the trail where feasible to avoid informal paths being created (presenting no barrier to users).
- Provide through access by maintenance vehicles. When an alignment’s width, curvature, or other obstructions prevent passage, the project should include space for a vehicle turn-around. This feature should be installed near the obstruction to maximize vehicular access and/or as space permits along the alignment.
- Research and utilize technologies that reduce waste, consume less energy, and/or present less environmental harm or risk (such as the use of warm-mix asphalt, recycled asphalt, aligning trails along existing maintenance roads, etc.).

- Seek to develop trails in the most cost efficient manner. Measure best practices against cost, and weigh all factors.
- Seek to install bridge undercrossings along creeks at no less than the 10-year flood level.
- Avoid infrastructure that is difficult to repair or replace (concrete post and rail fence as an example).
- Select plant materials that are drought-tolerant and placed appropriately so they do not grow onto the trail or uplift the pavement.

Availability (accessibility and public safety)

- Scale projects for high-use; supporting a greater sense of safety and personal security.
- Orient new homes and businesses to offer views of trails. Maximize visibility from existing developments.
- Maximize visibility of the trail from arterial roadways when possible. Use gateways for visibility and reinforce the pedestrian/bicycle functionality of the trail.
- Post signage with typical safety notices for dips, bends, and other potential challenges to an alignment.
- Include an enforceable rules sign at all trail heads.
- Offer amenities and features as a means to increase usage and discourage illegal behavior (examples include interpretive fencing, directional signage, fencing to limit trespassing, etc).
- Seek to maximize visibility along the trail for user comfort; avoid blind turns and hiding spaces.
- Support universal accessibility through the inclusion of trail signage to caution users to be watchful of others at varying speeds and modalities.
- Design trail to State and Federal standards to support multi-use and ability: people of all ages with varying abilities, including but not limited to youth, seniors, strollers, wheelchairs, and assisted walking.
- Consider adjacent activities along urban trails, such as exercise, running, cycling, and playing; separate these activities from the active trail route to allow through traffic flow.
- Provide ADA-compliant ramps at grade changes when possible.
- Avoid creating “box canyons”- areas where the trail corridor is fully enclosed by dense vegetation, walls, backs of buildings, or other barriers.

Diversity (Attract a range of users that reflect San José’s population)

- Support universal accessibility to the greatest extent possible (i.e. available space may limit design parameters in areas with flood protection improvements). Sign accordingly.
- Seek opportunities to link proposed trails to existing trails via Class I Bikeway connections or good wayfinding.
- Develop gateways unique to each trail system.
- Develop a network of trails that provides a range of experiences – from urban to suburban to rural; trails that are destinations in and of themselves as well as connecting other destinations; and trails that have interest whether the user is commuting or taking a leisure outing.
- Increase use of the trails by connecting, or signing to, residential areas (especially high-density residential areas).

Memorable (Appealing for first-time and recurring visits)

- Include aesthetic design elements and wayfinding to superior destinations when a trail is short in length or along a less than desirable feature (highway, industrial development, etc.).
- Create a gateway for every trail that welcomes users and encourages use.
- Provide access to a variety of natural and man-made sites to encourage recreation and a deeper understanding of the surrounding area in such a way that doesn't prevent maintenance.
- Provide destinations and/or "stop and learn" interpretive moments (interpretive signage, signage to points of interest, viewing areas, etc.) once each mile on longer trails to highlight interesting features, draw more people to the trail, and encourage dynamic connectivity.
- Incorporate public art as large and small quality gestures and deploy at highly visible locations, such as Lupe the Mammoth or the Center of Santa Clara Valley in binary marker.
- Acknowledge our local and desirable California and Mediterranean climate landscape by selecting native and drought-tolerant landscaping.
- Deploy custom signage to reinforce the San José Trails brand.



WHAT ARE THE DIFFERENCES BETWEEN OFF-STREET AND ON-STREET FACILITIES?

TRAIL CLASSIFICATION & DESIGN

The City of San José uses a common classification system for trails and bikeways. The envisioned 100-mile trail network is planned to be entirely off-street and recognized as a Class I Bikeway. An additional 400-mile on-street Class II/III/IV Bikeway System is being developed by the City’s Department of Transportation. There are four classifications of bike facilities identified by the *California Highway Design Manual (Manual)*. Class II (Bike Lanes), Class III (Bike Routes), and Class IV (Separated Bikeways) are not counted in San José’s Trail Inventory which is developed and managed by the City’s Department of Transportation.

San José trails are typically 12’ wide asphalt with 2’ wide hard-packed gravel shoulders. The Class I Bikeway standards permit an 8’ width with no shoulder when site constraints warrant or where usage is anticipated to be low. Unpaved trails occur in an interim manner or as part of hiking systems in more rural areas.

TRAIL TYPES

San José’s interconnected trail network includes three types of Class I Bikeway Trails. Analogous to the roadway system’s highways, arterials, and streets, San José has Core, Edge, and Hiking Trails.

Core Trails

Core Trails are the primary routes used for recreation and active transportation. They typically carry high volumes of traffic, extend significant distances or link to regional systems outside of the City’s boundaries. They tend to be designed to the full extent of Class I Bikeway design standards.



TRAIL CLASSIFICATION



CLASS I BIKEWAYS (TRAILS)



CLASS II BIKE LANE



CLASS III BIKE ROUTE



CLASS IV SEPARATED BIKEWAY/CYCLE TRACK

Edge Trails

Edge Trails tend to be neighborhood-focused trails and extend shorter distances. Ideally, they link to other trail systems in the network or lead to a significant attraction (park, open space, residential area or commercial zone). Edge Trails offer neighborhood access and/or function primarily as a neighborhood amenity, and may be less efficient for commuting due to significant meanderings, at-grade crossings, and other design considerations. They may serve some active transportation value because of their connection to neighborhoods, but are more often used as a neighborhood recreation feature. Edge Trails tend to meet at least minimum standards for Class I Bikeways.

Hiking Trails

Hiking Trails typically occur in the more rural areas of San José in open space and natural areas. Their emphasis is on recreation and not active transportation. Class I Bikeway standards are a design objective, but these trail systems tend to have a combination of paved and unpaved sections, with less than Class I Bikeway standards in terms of width.

For additional background on San José's trails and their characteristics, please see the [Trail Program Strategic Plan](#).

TRAIL DEVELOPMENT

Each of the trail types may be developed parallel and adjacent to a roadway. In those instances, the trail should meet the Caltrans Design Manual guidance – with special attention to the following:

- Class I design adherence; minimum 8' wide pavement, standard 12' with hard-packed gravel shoulders is preferable.
- Divided from roadway by a park strip.
- Independent of sidewalk that serves adjacent developments, may replace sidewalk if 12' wide.
- Special pavement or markings reinforces that facility is for pedestrian and bicyclists as it traverses through roadway intersections.
- Core and Edge trails tend to be paved. Hiking trails tend to be hard-packed earth surfaced.

REMINDER: Planners and developers seeking to provide bike access within the public right-of-way should be seeking to meet Class II, III or IV Bikeway standards, and refer to other local and state guidelines. San José Trails, as defined by this Toolkit, are Class I Bikeway facilities.

SAN JOSÉ TRAIL SETTINGS

The City of San José's urban trail network is composed of 40 unique and planned trail systems. These trail systems are categorized in one of three ways based on their anticipated usage:

CORE: Long distance routes that link a variety of land uses and destinations (like a highway)

EDGE: Shorter distance routes that link to Core Trails (like a neighborhood arterial roadway)

HIKING: Recreation-focused trails in more rural areas of the City

The user experience on either side of Core, Edge, or Hiking Trails varies by the environment traveled. Common elements include:

RIPARIAN



Paved trail within a riparian corridor

Example: Guadalupe River Trail

PARKWAY-UTILITY



Paved trail within a landscaped, utility corridor

Example: Albertson Parkway

HIGHWAY



Paved trail within a highly urban and fenced environment in close proximity to a highway

Example: Hwy 87 Bikeway

PARKWAY-RAIL/TRAIL



Paved trail within a former railway corridor

Example: Three Creek Trail

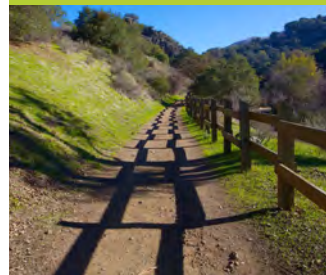
INTERIM (temporary)



Gravel or dirt maintenance road suitable for public access

Example: Thompson Creek Trail

RURAL



Limited access and often single track facility

Example: Alum Rock Park

Table 2.1: Trails by Setting

Trail Type	Description	Composition	Intended Use
Riparian	Along rivers and creeks	Meandering alignment within native or ornamental landscape areas – typically no lighting allowed	Recreation, tourism, commute
Parkway-Utility	Within a corridor otherwise reserved for public utilities, in some instances, these types of facilities are called Parkways due to their landscaping	Meandering alignment within native or ornamental landscape areas – often building and planting restrictions related to overhead and underground utilities	Recreation and commute
Highway	Along, but physically divided from a highway facility	Direct routes with limited or no landscape element	Commute
Parkway-Rail/Utility	Within a corridor formerly used for rail transport	Meandering alignment within native or ornamental landscape areas	Recreation, tourism, commute
Interim	Along an unpaved, hard-packed surface, may occur in riparian, utility, railway environments	Surfaces vary – typically maintenance roads used as a trail	Recreation, tourism, and commute – interim trails typically use maintenance roads as a means to providing public use within a relatively short period of time
Rural	Limited access, generally in less developed areas	Surfaces vary - may be a combination of paved, converted roadway, aggregate or compacted soil. May include steps and other access challenges.	Recreation

THIS TOOLKIT...

... supports development of San José's Class I (off-street) bikeways. Refer to local and State guidance for on-street facilities: Class II, III, and IV.



WHAT ARE PRIMARY PLANNING AND DESIGN DECISIONS FOR SAN JOSÉ TRAILS?

TRAIL BASICS

All trail projects have a common process that should be followed to make sure that site specific issues are properly considered and addressed. Trail alignment should avoid mitigation sites, limit undercrossings and bridges, avoid locating directly along creek banks, etc. Proposed solutions will vary, but successful projects all work through the following steps:

Identify: Anticipate that riparian corridors, utility corridors, and other open space areas may already be designated for future trail development. San José's vision for a 100-mile interconnected Trail Network is reflected in its Greenprint, *General Plan* and many site-specific master plans. Planners or developers should reference these documents to determine if trail work may be required or *contact the San José Trail Manager* for guidance.

In some instances, developments may benefit from new trail alignments that could link to the network or meet other site goals.

Consult with the *San José Trail Manager* to determine if the trail has been identified and what documents may already support its further planning or design.

Study: Site complexities including physical obstructions, land rights, or operations may appear to be a barrier to trail development. Early discussion with partner and regulatory agencies can help identify barriers, design restrictions, constraints, etc., prior to planning a trail. Narrow-focused



PLANNING AND DESIGN DECISIONS



Note: Consultation with San José trails staff (PRNS and DPW) should occur through each stage of further guidance, review, and input.

studies are often prepared to better understand challenges and options prior to engaging the community in a planning process. In all cases, San José seeks to bring viable ideas to the community and avoid planning for non-viable projects.

Consult with the San José Trail Manager, property owner(s), and easement holder(s) to discuss known site constraints and if existing or related studies may help to address primary complexities.

Plan: The master planning process engages a team of technical professionals (often multi-department teams and consultants) in order to fully understand a project site and define a viable and preferred trail alignment. The planning process engages the community, property owner(s), and local Council District office in defining opportunities and constraints.

NOTE: A master plan is likely required even if the identified trail may be noted in the City's Greenprint or General Plan. These general documents often convey the intent to build a trail, but do not resolve its precise alignment, design details, regulatory guidance, and/or stakeholder property owner buy-in. A completed master plan includes an approved California Environmental Quality Act (CEQA) document.

Consult with the San José Trail Manager to determine if the trail is already master planned, and if not, the appropriate process for community and council engagement.

Design: Design of the trail system includes the specific grading, alignment, material, and amenity features of a trail. The design is based upon the approved master plan alignment, and is most often prepared by an engineering professional with the assistance of a landscape architect.

Consult with the San José Trail Manager, property owner(s), and easement holder(s) to review the design submittal process. Include the Department of Public Works and Planning, Building Code Enforcement (Development Services), and other groups in a multi-review process as the project plans evolve.

Construct: Private developers should contact the City's Trail Program staff early in the planning process to confirm the existence of an alignment or need based on nearby trail development efforts. Commercial/industrial projects will be coordinated through the City's Development Services group, so it may be necessary to request participation by the Trail Program staff. Residential projects will be coordinated through PRNS, and Trail Program staff will be brought into coordination meetings as needed.

Open: Upon completion of the trail, maintenance, and operational responsibility is turned over to PRNS.

UNIVERSAL ACCESSIBILITY

San José’s trails, by their inclusive design, are intended to be accessible to a diversity of users. Designers shall seek compliance with the *Americans with Disabilities Act (ADA)*, which “prohibits discrimination and ensures equal opportunity for persons with disabilities.” Further design guidelines may be referenced from the *Architectural and Transportation Barriers Compliance Board’s Guidelines for Outdoor Developed Areas, Chapter 10: Recreation Facilities, Section 1017 Trails*. The US Access Board’s Final Guidelines for Outdoor Developed Areas serve as the best practices guide for trail accessibility while new guidelines for Public Rights-of-Way and Shared Use Paths are developed. San José seeks to design trails in the spirit of the law and in compliance with applicable guidelines whenever feasible. For these reasons, trails must meet the following design guidelines. Additional detail can be found in the Related Guideline Documents listed below:

Table 2.2: Compliance with ADA

Attribute	Guideline	Related Guideline Document
Width	Spacing between bollards or other obstructions shall be 5’ minimum.	Caltrans Highway Design Manual
Cross Slope	1:48 max for asphalt/ concrete, 1:20 allowed on other surfaces when needed for drainage per ADA	US Access Board Final Guidelines for Outdoor Developed Areas
Ramp Slope	5% or less is preferred. No more than 8.33% when resting points are provided every 200’.	Consistent with ADA guidance for ramp structures
Surface	Concrete, asphalt, or other firm and stable material such as compacted crushed fines or as defined by the ADA	Consistent with <i>Final Guidelines for Outdoor Developed Areas</i>
Exception	In some instances, trail development may come after a completed flood protection project with existing maintenance access ramps that are not designed for ADA access. Trail planning should analyze whether these existing ramps can be modified to meet both ADA requirements and flood protection operation and maintenance requirements, where possible.	



SAFETY AND CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN (CPTED)

San José Trails are often planned in consultation with the San José Police Department. The Police Department offers guidance on crime prevention through environmental design (CPTED) practices to support a safer user experience. The Trail Planner/Designer should consider this input and balance it with guidance and requirements from the other experts and agencies that support the City in defining a final trail design. Some CPTED practices are noted below, and the Trail Planner/Designer is encouraged to seek CPTED guidance early in the planning process:

- Ensure trail users have 100 feet of both forward and rear visibility on a level grade whenever possible. Sight distances are particularly important at approaches to tunnels, bridge underpasses, and intersections.
- Balance permit needs/requirements, environmental sensitivity, sustainability, and context of vegetation along and near trails (i.e. trails along riparian corridors have different needs and considerations than those along roadways).
- Avoid creating spaces along trail corridors that are fully enclosed by dense vegetation, walls, backs of buildings, or other physical and/or visual barriers.
- Avoid landscaping offering concealment.
- Ensure trail users have opportunities to leave and enter the trail at regular intervals. Avoid creating long trail segments without access to retreat from any safety hazards.

COST SAVINGS AND INNOVATION

The City strives to find less expensive and better ways to provide public access and related amenities. The Trail Program has pursued a number of innovations to save costs when performance is not sacrificed. The following table highlights a few examples. Trail designers, developers, and vendors should reach out to the Trail Manager if seeking to use alternative materials or approaches.

Table 2.3: Trail Cost Saving Practices

Product/ Practice	Current Cost (2017)	Cost Savings	Benefits
Removable Aluminum Bollard	\$950 (removable steel bollard)	(additional \$100/unit)	Reduces weight from 40 lbs. to 20 lbs., reducing injury potential, allowing persons on light duty to perform task. Increase visibility due to use of retro-reflective coating. Graffiti-resistant.
On-site Aggregate Base and Asphalt Recycling	\$3.50/square foot	\$2/square foot	Reduces material delivered to the site, reduces landfill waste and charges, supports compliance with State mandates for waste reduction.
Warm-Mix Asphalt	\$120/ton	(additional \$2 to \$5/ton)	Reduces emissions, fumes, and odors generated at the plant and on site. Better suited for binding recycled asphalt.
Compost Blankets	\$8.50/square yard for hydroseed with blanket	\$4/square yard	Substitutes for hydroseeding for erosion and sediment control. Makes use of recycled materials.
Compost Socks	\$5/linear foot for hay fiber roll	\$1/linear foot	
Wood Split Rail Fencing	\$60/linear foot	\$28/linear foot	Less costly than concrete split-rail, easier to repair, and visually consistent with trail environment.
Sign-Mounted Mileage Markers	\$500/unit	\$650/unit	Reduces potential for vandalism versus pavement or flexible ground-mounted signage, lighter weight reduces potential for injury during installation.
Vehicle Exhaust - Spec. 10.1			Do not require diesel engines to be turned off at same frequency as internal combustion engines as diesel produces greater levels of hydro-carbons from cold starts.
Strategic Re-Use (Interpretive Signage)	Limited access, generally in less developed areas	~\$5,000	In a large trail network, there are opportunities to repeat subject material along trail systems. As one example, the Hetch-Hetchy pipeline travels under both the Guadalupe River and Coyote Creek. An educational sign on that subject occurs along both trail systems.

WHO USES SAN JOSÉ TRAILS?



DIVERSITY OF TRAIL USERS

San José’s trails are popular and serve a wide range of trail users from individuals to groups, residents, tourists, pedestrians, people using mobility devices, bicyclists, and equestrians. The proximity of trails to urban development makes them popular venues for active transportation. Good planning and design can support and accommodate this diversity of users.

Per California State law, Type 1 electric bikes (pedal-operated with maximum speeds of 20 mph) are permitted along Class I Bikeway trails. The City will post 15 mph notice on its Trail Rules sign and has developed speed limit signage that will be posted along the trail. Enforcement and additional signage will be considered should excess speed or other concerns arise from electric bike usage.



San José has conducted Trail Counts since 2006. The counts and surveys have helped the City identify the data on the following pages that defines the likely user and their needs.

Planners and designers should refer to existing Trail Count data to better understand their potential trail users. The City also encourages that data be gathered for the specific project site, and data leveraged from planned housing or commercial developments. In all cases, good planning and design should be used to develop a trail built for the intended user audience.

The following information was gathered via Trail Count data to provide general demographic information and user needs. The full data set is available on the Trail Program website, on the [Trail Count page](#). Consider all available data to accurately define user needs prior to planning and design.

PERCEPTIONS FROM A DECADE OF COUNTING AND SURVEYING

BUILD TRAILS AND THEY WILL COME



SAN JOSÉ TRAILS IN 2007

39.8 MILES
OF PUBLIC TRAILS
67% PAVED



SAN JOSÉ TRAILS IN 2016

58 MILES
OF PUBLIC TRAILS
81% PAVED



SURVEYS OF THE
GUADALUPE RIVER TRAIL AT
COLEMAN AVENUE FOUND A
422% INCREASE
IN USERS OVER THE DECADE

HIGHLY USED TRAILS MAY ENCOURAGE MORE WOMEN TO USE TRAILS



SAN JOSÉ TRAIL USERS BY GENDER (2016)

44% FEMALE / 56% MALE



NATIONAL AVERAGE

(10-25% FEMALE)

THE PRESENCE OF MORE TRAIL USERS INCREASES A SENSE OF SAFETY

A MAJORITY OF TRAIL USERS HAVE REPORTED FEELING SAFE AND VERY SAFE ALONG SAN JOSÉ TRAILS OVER THE PAST DECADE



Source: San José Trail Count data from 2007-2017

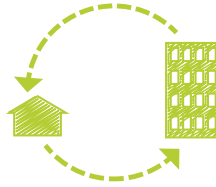
PRIMARY REASONS FOR TRAIL USE



57.3 %
HEALTH
EXERCISE



21.6 %
RECREATION
FUN/RELAXATION



19%
ACTIVE
TRANSPORTATION



2%
OTHER

AVERAGE MILEAGE BY PERCENT



IN SAN JOSÉ TRAILS ARE A WAY OF LIFE

IN 2008, 75.2% OF RESPONDENTS VISITED TRAILS DAILY TO SEVERAL TIMES PER WEEK. THE PERCENTAGE HAD NOT CHANGED IN 2016, WHEN 75.5% OF RESPONDENTS REPORTED FREQUENT WEEKLY VISITS





HOW DO
YOU WORK
WITH
PUBLIC
AGENCIES?

3 WORKING WITH PARTNER AGENCIES

Trails in San José are located in a mix of urban, suburban, natural open space, and riparian corridor settings. In many instances, trails may also follow a utility corridor since these urban open spaces are often suitable for joint use. Many of San José's trails are on or along stream or utility corridors and require coordination and permitting from partner agencies. These lands often have environmental sensitivities and operational concerns that must be addressed. SCVWD, USACE, ABAG, Caltrans, PG&E, and Santa Clara County are frequent partners with the City as trails often cross or are located on their lands.

The City is sensitive to the needs of partner agencies and their concerns that trail development not create conditions that degrade the use and purpose of the partner agency land or their ability to operate and maintain it for its primary purpose. Many of San José's remaining 40 miles of its 100-mile interconnected trail network are on public agency lands. During the early development of public trails, existing gravel maintenance roads supported a rapid pace of trail development; however, opportunities for these "easy" sites are now limited and future trail developments will be more challenging given constrained sites, limited land rights, and operational demands, as well as regulatory and permitting challenges.

Trail Planners/Designers should be mindful of the natural environment along certain planned alignments. Consideration of nearby trail usage and estimations of future usage should be considered when a trail cross-section is defined. An optimum trail design should contribute to the natural surroundings, and lower levels of anticipated usage may support a minimum cross-section for a Class I Trail (8') or a more natural surface where limited neighborhood usage is anticipated. The Saratoga Creek Trail alignment between Bollinger Road and English Drive is a good model to follow, where a paved trail extends from Bollinger to Murdoch Park (destination) and a minor gravel-surface trail extends from the park to English Drive for low volume access by area residents.

Early and continued engagement with partner agencies is needed to support on-going trail development. The following, while not



**US Army Corps
of Engineers®**



**Association of
Bay Area Governments**



Caltrans®



exhaustive, provides a list of considerations for trail projects that involve partner agency coordination to support project development and increase the likelihood of being permitted:

Communicating the partner agency's role and interests: Inter-agency collaboration for development of a trail system does not conclude with the ribbon cutting. Agreements like leases and joint-trail agreements create long-term working relationships between agencies which must be managed, sustained and enforced. When working with agencies like the Santa Clara Valley Water District, it is important to manage the trail system in a manner that does not limit the District's access to its lands for maintenance and operation of waterways and open space.

If a trail or pedestrian bridge constructed on Water District land needs to be temporarily or permanently removed for a Water District project, such as flood control improvements, the California Environmental Quality Act may require mitigation. The Water District will include language addressing this issue in agreements with local agencies, and may ask agencies to participate in mitigation requirements, which may include cost sharing for relocation, reconstruction, or development of alternate alignments.

The Water District's role in permitting recreational trail development should be actively and regularly reported to trail users to support goodwill but also remind trail users that operations and maintenance may demand their cooperation in respecting short-term and prolonged closures. The message being that many water ways are primarily operating as flood protection facilities, with public recreational access via trails as a secondary feature. Cities can convey this information through signage at entry points that convey the agency partners, interpretive signs that explain flood protection measures, on-going social media campaigns on the subject matter, and outreach efforts to advocates and local media when operations may prevent trail access.

Per joint-trail agreements, cities should actively manage the impacts of operational closures by informing the trail community and supporting posted closures. The Water District often conducts its work with large trucks and equipment that occupy sites and can present a safety risk to the public. For efficiency of operations and public safety, it is important that the Water District receive support from cities managing the trails to ensure no public access. Cities can actively support this effort with early notification of closures, outreach to advocacy groups, development of brochures/websites about planned closures and assuming the lead in managing trail user issues and concerns.



With future joint-use agreements and their renewals, the Water District may seek to formalize detour plans should operation and maintenance closures be required. This step will reduce concerns about closures and provide an opportunity for cities to periodically remind trail users of the alternatives. It can also support cities in prioritizing investments for enhanced on-street routes as closures can occur at any time.

Common infrastructure: Agencies need unobstructed access to their sites for maintenance purposes and may need to alter their sites for unforeseen reasons, such as changes in federal requirements. Paved trails, signage, benches, and other improvements may need to be removed. Recreational improvements other than trails are often not supported upon agency lands because of space and operational constraints. Lighting is generally limited to bridge undercrossings on partner agency land; impacts to creek and riparian habitat must be addressed as part of environmental review.

Storm flows: Trail Planners/Designers should develop trail cross-sections that avoid sheet flow and the erosion issues that may result, in accordance with the 2015 California Regional Water Quality Control Board San Francisco Bay Region Municipal Regional Stormwater NPDES Permit. In general, non-erodible surface materials should be used along pavement edges and any disturbed soils should have a hydroseed mix applied with successful growth at time of project acceptance. At bridge undercrossings where plant material is not viable, consider the use of cobbles and small boulders sized large enough to remain in place during flooding events. Ensure that a fall zone per Highway Design Manual is preserved alongside the trail. Striping or signage is advisable for a change in shoulder condition. Coordination with SCVWD and/or other public agency owners should occur early in the planning process to define a recommended trail cross-section and shoulder vegetation plan.

Gates and access: The City and some utilities allow private gates onto trails; they are typically not allowed where they present a public safety concern due to operation and maintenance needs. If a trail crosses a patchwork of ownership, a consistent approach to private gates should be developed to eliminate confusion regarding access. Where the trail corridor is narrow or trail use during maintenance operations would be a public safety concern, provide gates at street crossings to close the trail. Undercrossings are often preferred for continuity of trail use, reduction of conflict with road traffic, and for being less expensive than over-road structures. However, they can create issues during and after flood events, limiting their use. At undercrossings subject to flooding, advance warning signs stating no access during high water events are required. Trails in low elevations tend to require sediment removal; space for sediment removal operations should be built into the design. Ramp structures may be installed leading to levee trails when there are no nearby trailheads or a trail system intersects the levee in coordination with SCVWD and/or other agencies with jurisdiction. SCVWD prefers trails be located only on one side of the creek/river to minimize environmental, operational, and maintenance efforts.

Note: User created or informal paths along levees (pioneer trails) are discouraged due to the damage they may cause to adjacent lands and environment. The City has a joint responsibility with agencies to design and install trail features at appropriately located public access points.

Grading/Site disturbance: Trails located in PG&E corridors should be coordinated with them. No excavation is allowed within 20-feet of any PG&E tower footing. Trails near PG&E towers may need to install anti-climbing guards on affected towers. No excess fill may be placed under the conductors that would decrease the minimum ground to conductor clearance requirements. Construction must be coordinated with PG&E's Electric Transmission Superintendent.

Trail surface: Trails can be constructed with earth or paved surfaces. The pavement type should meet user needs, reflect the aesthetics of the site, and be designed for maximum vehicular loading of service/maintenance vehicles. Asphalt may feel more rural than concrete. Stabilized decomposed granite (DG) might be a good option if centerline striping is not required. Trails should be wide enough to accommodate maintenance trucks or they risk edge deterioration.

Roads/highways: Caltrans manages the State's highway system and it is prudent to not impact those operations. Early coordination should include an overview of safety and barrier systems to

create a permanent division between bikeway and highway uses. Caltrans may view its available lands as suitable for utilities. Trail proposals should be put forth as longitudinal utility corridors.

Architecture and art: Special features such as architecture or art should be planned in the early stages and development coordinated with agencies to ensure that they are located so they do not impede current or future operations. Good planning and design should anticipate these future needs and avoid installations that may create a constraint in the future. No structures are allowed within PG&E easement or fee property. Any aesthetic improvements are secondary to flood protection measures.

Memorials: Memorials are subject to each respective agency's guideline requirements as well as their maintenance and operation needs .

Trees and landscaping: USACE does not allow trees on levees or within 15 feet from the toe of a levee. Other than hydroseeding disturbed areas, typically no City project planting is allowed on SCVWD lands. City required mitigation plantings need to occur on City land; agency mitigation plantings must be on their lands and retained for their use. No trees or landscaping that will exceed a height of 20 feet is allowed under any PG&E overhead wires, or within 25 feet of any PG&E tower.

Maintenance: The trail should not diminish the agency or utility's ability to continue to safely access its facilities for maintenance and operations. Trail plans must not increase maintenance cost for facilities within the trail plan. Trail plan must not interfere with agency or utility's scheduled maintenance, inspections, non-schedule patrols, insulator washing and required equipment, and emergency vehicle access needs. If trails need to be removed for the agency or utility to carry out their mission, desired conditions, and terms should be included in the joint trail agreement (JTA) with the City.

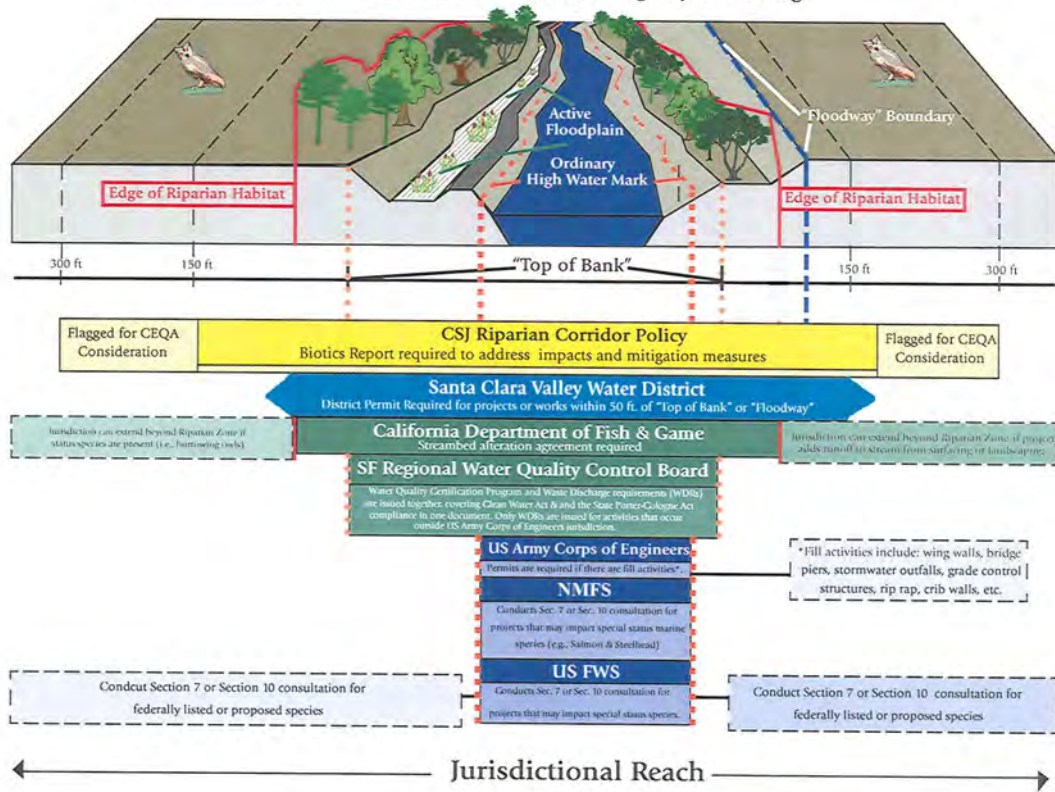
Permitting/Coordination: If the trail crosses or is in a utility corridor, check the agency or utility's guidelines and requirements for setbacks, planting restrictions, above- and below-ground clearances, access requirements, permitting, maintenance and operational need, and other coordination items.

If PG&E's fee parcels or easement rights are affected, California Public Utilities Commission (CPUC) filing requirements are triggered; this review can take 6 months or longer from the date a complete package is submitted to PG&E, including all documentation and negotiations. There is a possibility that CPUC may not approve the requested use. Proposed projects must

be in compliance with all California Environmental Quality Act (CEQA) and applicable Environmental Testing requirements, including any mitigation requirements. A list of equipment planned for use in constructing the trail must be provided and reviewed by PG&E. Contractors are required to maintain all Occupational Safety and Health Administration (OSHA) clearance requirements from PG&E conductors. PG&E facilities must be provided with protection from City and any third party vehicles. The City must indemnify and hold PG&E harmless against damage to trail by PG&E's maintenance and operations. (Early coordination with PG&E is encouraged to ensure compliance with any updated guidance from PG&E or the CPUC.)

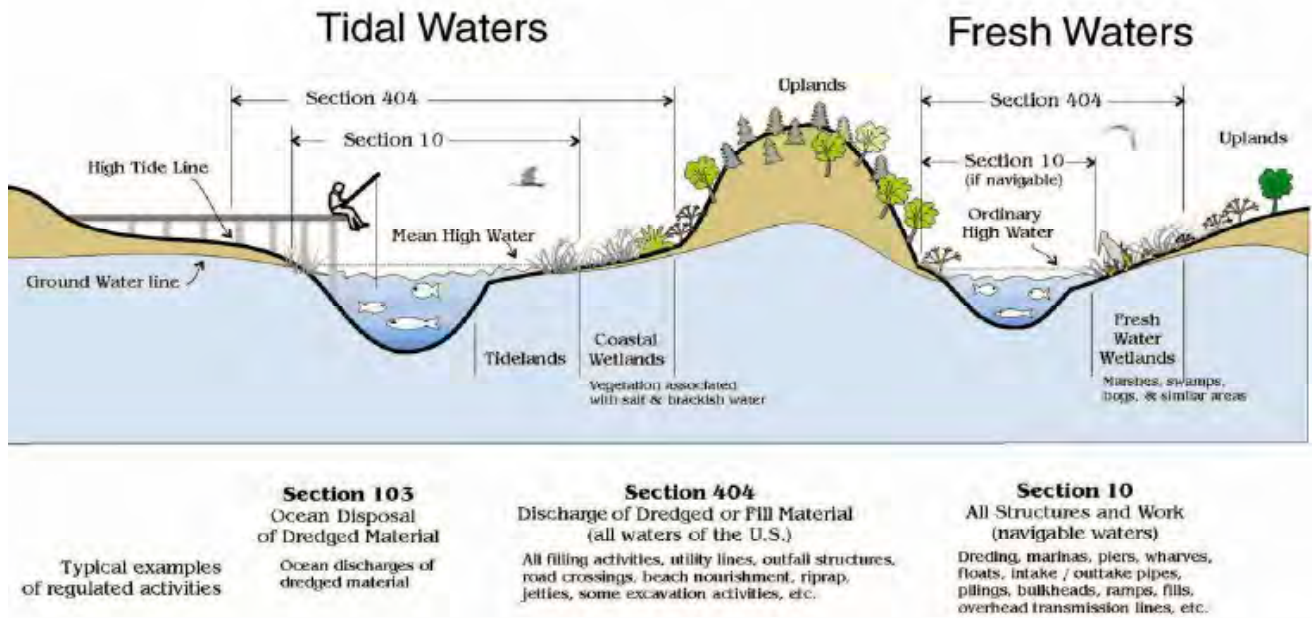
Table 3.1 outlines many of the required permits and their application. The City of San José has developed a regulatory jurisdiction diagram to help clarify who has what jurisdiction with regards to work conducted in and around waterways. Likewise, USACE has their own diagram to help clarify their regulatory jurisdiction; see the following figures.

Jurisdictional Overview of Resource Agency Permitting



Jurisdictional Overview of Resource Agency Permitting
Image Source: City of San José

CORPS OF ENGINEERS REGULATORY JURISDICTION



Corps of Engineers Regulatory Jurisdiction
Image Source: Corps of Engineers

Table 3.1: Permit Requirements

PERMIT/PURPOSE	JURISDICTION	TIMELINE	FEE	*HABITAT CONSERVATION PLAN (HCP) IMPLICATIONS
<p>Nationwide Permit (NWP) or Individual Permit (IP) from USACE. For activities that result in a discharge of dredged or fill material within waters under their jurisdiction. NWP are permits issued on a nationwide basis to streamline activities that result in minimal individual and cumulative adverse effects on the aquatic environment. NWPs are issued every 5 years and are valid for 5 years only at which point they must be re-issued. Last NWPs issued 3/18/17 and are valid until 3/18/22.</p>	<p>USACE has permitting authority over activities affecting waters of the US. This includes surface waters such as navigable waters and their tributaries, all interstate waters and their tributaries, natural lakes, all wetlands adjacent to other waters, and all impoundments of these waters.</p>	<p><i>Complete application found here</i> http://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/Obtain-a-Permit/ No timelines apply. Typically takes 18-24 months to obtain from time of application. If other agencies are brought in for formal or informal consultation, those need to be complete before USACE will issue their permit. If you need a 401 permit from RWQCB, you must secure it first before the NWP can be issued. USACE may ask for a Section 7 consultation from National Oceanic and Atmospheric Administration (NOAA) Fisheries and/or US Fish and Wildlife Service (USFWS).</p>	<p>No fee.</p>	<p>If project meets threshold criteria under Regional General Permit (RGP) issued to the HCP (costs \$5,000 to have the Habitat Agency review), no further permits required. Federal Take Authorization is also granted through the HCP. Implementation of HCP "Conditions" are still needed, even if paying fees.</p>
<p>1602 Lake & Streambed Alteration (LSA) Agreement, California Department of Fish and Wildlife (CDFW). Protection of existing fish and wildlife resources in rivers, streams, or lakes.</p>	<p>Required when CDFW determines that the activity as described in the LSA may substantially adversely affect existing fish or wildlife resources, with special emphasis on state-listed endangered or threatened species (sometimes also requiring a state [2081] Take Permit).</p>	<p>After you submit your application package, CDFW has 30 days to notify you if it is complete. If it isn't, submit additional docs requested and the 30 day clock starts again. Once the application is deemed complete, CDFW has 60 days to issue your draft agreement. When you receive the draft agreement, if you agree to terms of agreement, you need to get it signed by the Director of Public Works and returned to CDFW. CDFW will finalize the agreement and send a copy back to you. If CDFW fails to get back to you with a draft agreement at the end of the 60 day period, then you will operate under the "Operations of Law" (OpLaw). This means that you must follow all the terms of your submitted application exactly. You cannot amend the description of the project nor extend the time duration of the permit. If either of those are necessary to complete the work, then a new application must be submitted.</p>	<p>"Fees due with application submittal. <i>See https://nrm.dfg.ca.gov/</i></p>	<p>Still need a Section 1602, but would not need a Take Permit. Implementation of HCP "Conditions" are still needed, even if paying fees.</p>

Table 3.1: Permit Requirements (*continued*)

PERMIT/PURPOSE	JURISDICTION	TIMELINE	FEE	*HCP IMPLICATIONS
401 Water Quality Certification (RWQCB). Protection of any surface water or groundwater including saline waters within the boundaries of the state.	Any project that proposes to fill or otherwise physically alter creeks, wetlands, or other waters.	<i>See Permits Streamlining Act here</i> http://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/psa_memo.pdf 30 days to determine if application is complete. Once complete, 60 days to issue permit.	Fee due with application submittal. <i>See Fee Calculator here</i> http://www.waterboards.ca.gov/water_issues/programs/cwa401/	RWQCB does not participate in the HCP.
Encroachment Permit (Caltrans).	Required for construction projects which have improvements and other activities on the State's highway system rights-of-way.	<i>See Encroachment Permit Manual here</i> http://www.dot.ca.gov/trafficops/ep/docs/EP_Application_Guide_Booklet.pdf The permit process takes a long time. Apply as soon as you can to avoid project delay.	Caltrans will determine the fee at the time of application.	N/A
Section 7 Formal or Informal Consultation, Biological Opinion or Section 10 Habitat Conservation Plan (USFWS). Required when federal (Section 7) or non-Federal (Section 10) activities could result in take of threatened or endangered species.	If project has potential of incidental take of endangered or threatened species, then under Endangered Species Act, USFWS may authorize the activity via consultation (Section 7) or permit (Section 10).	Contact the nearest field office to find out permit application requirements. Allow a minimum of 90 days for processing. Applications are processed in the order in which they are received.	No fee.	Even if an RGP eligible project, still need USFWS and/or NMFS consultation, but the process ("consultation") is streamlined.
WDR (RWQCB). Protection of waters that are <u>not</u> subject to the jurisdiction of the USACE as waters of the US.	Required for construction projects which have a dredged or fill discharge to waters deemed by the USACE to be outside of Federal jurisdiction.	Same application as 401 certification. Note that the California State Water Resources Control Board (SWRCB) is in the process of adopting important new rules about impacts to Waters of the State.	Fee due with application submittal.	RWQCB does not participate in the HCP.

Table 3.1: Permit Requirements (*continued*)

PERMIT/PURPOSE	JURISDICTION	TIMELINE	FEE	*HCP IMPLICATIONS
Land Use Permit, San Francisco Public Utilities Commission (SFPUC).	SFPUC manages over 210 miles of ROW lands which are owned in fee or controlled as easements on land located in Alameda, Santa Clara, and San Mateo Counties. The ROW contain the major arteries of the water transmission system which can be categorized into three groups: 1. primary transmission lines; 2. secondary transmission lines supplying major reservoirs and 3. tertiary lines supplying wholesale customers.	Start process as soon as possible. Can take up to 2 yrs (or more) to obtain. Application for <i>Revocable ROW Permit can be found here</i> http://sfwater.org/Modules/ShowDocument.aspx?documentID=3565 See Lower Guadalupe River Trail - SAFETEA-LU under permits for an example of the most recent permit obtained by the City. The permit must be reviewed by City Attorney.	Fees listed on application.	N/A
NPDES General Permit for Discharges of Storm Water Associated with Construction Activity (RWQCB). Statewide General Permit (NPDES and WDRs) for construction activities.	Required for construction projects which disturb 1 acre or more of land.	Enter project in <i>Storm Water Multiple Application and Report Tracking System (SMARTS) here</i> https://smarts.waterboards.ca.gov/smarts/faces/SwSmartsLogin.xhtml	Fee determined upon submission of Notice of Intent	
Lease of State Lands (State Lands Commission).	Required for construction projects which encroach onto property owned by State of California.	Contact Land Management Division prior to filling out or submitting application to make sure you are using the correct application. <i>Application and instructions can be found here</i> http://www.slc.ca.gov/Forms/LMDApplication/Lease_App_Guidelines_2011.pdf Commission has 30 days to respond after receipt of application to let applicant know if package complete. If complete, then has 180 days to approve or deny request.	Fees listed on application.	
Section 7 Formal or Informal Consultation, Biological Opinion (BO) (NOAA). Stewardship of nation's ocean resources and their habitat, including anadromous fish species.	USACE brings in NOAA for formal or informal consultation on a case by case basis. NOAA Fisheries has jurisdiction over anadromous fish (primarily the Central California Coastal steelhead and its critical habitat).	NOAA Fisheries has no timing parameters. Typically takes 18-24 months to obtain from the time USACE requests it.	No fee.	Even if an RGP eligible project, still need USFWS and/or NMFS consultation, but the process ("consultation") is streamlined.

Table 3.1: Permit Requirements (continued)


PERMIT/PURPOSE	JURISDICTION	TIMELINE	FEE	*HCP IMPLICATIONS
<p>Construction Encroachment Permit (SCVWD).</p>	<p>SCVWD manages 10 dams and surface water reservoirs, 108 miles of levees, 393 acres of groundwater recharge facilities, 140 miles of water transmission pipelines, three water treatment plants, three pump stations, and 278 miles of stream channels. To protect these assets, the Community Projects Review Unit administers the Water Resources protection Ordinance using the Water Resources Protection Manual, provides cost-sharing for good neighbor fencing, facilitates land use transactions and joint use agreements, and offers technical assistance to land use agencies for applying Guidelines and Standards for Land Use Near Streams.</p>	<p>Information on the Water Resources Protection Ordinance and encroachment permits can be found at: http://valleywater.org/contractors/doing-business-with-the-district/permits-for-working-on-district-land-or-easement.</p>	<p>No fee required because the City has a joint use agreement with SCVWD for public access for recreational benefits.</p>	<p>N/A</p>
<p>Habitat Conservation Plan (HCP) (Santa Clara Valley HCP). The Habitat Plan was developed by the Santa Clara VTA, SCVWD, County of Santa Clara, and the Cities of Gilroy, Morgan Hill, and San Jose. The Habitat Agency executes the requirements of the plan including acquiring and managing a reserve system that will serve as mitigation for project impacts and contribute to the recovery of the species covered by the Habitat Plan.</p>	<p>The HCP meets the federal ESA requirements and enables local agencies to allow projects and activities to occur in endangered species' habitat. The projects/activities must incorporate HCP-prescribed measures to avoid, minimize, or compensate for adverse effects on natural communities and endangered species.</p>	<p>Instructions for public projects can be found at: http://ca-scvhabitatagency.civicplus.com/</p>	<p>Fee determined at time of application.</p>	

Table 3.1: Permit Requirements (*continued*)

PERMIT/PURPOSE	JURISDICTION	TIMELINE	FEE	*HCP IMPLICATIONS
Union Pacific Railroad.	The Industry and Public Project Group will review all projects proposing recreational trails. Establishing new trails over the railroad track and ROW not adjacent to existing public roadways requires over or under grade separation structures. Refer to the <i>Joint BNSF/UPRR Guidelines for Railroad Grade Crossing Separation Projects here</i> https://www.up.com/customers/ind-dev/operations/specs/index.htm especially Section 7 on page 40.	Start by contacting the Manager of Industry and Public Projects. Send a <i>Preliminary Engineering Agreement found here</i> http://www.up.com/cs/groups/public/@uprr/@realestate/documents/up_pdf_natedocs/pdf_up_quiet_prelim.pdf along with a <i>Concept Print found here</i> http://www.up.com/cs/groups/public/@uprr/@realestate/documents/up_pdf_natedocs/pdf_up_reus_xing_concept.pdf	UPRR will determine fee. Fee due with Preliminary Engineering Agreement submittal.	N/A
* (assuming project is a “covered project”)				



*Albertson Parkway Trail
Photo by Ron Horii*

A dirt hiking trail in Alum Park, San José, with large trees and a wooden fence in the background. The image shows a dirt path leading through a wooded area with large trees and a wooden fence in the background. A large green arrow-shaped graphic is overlaid on the left side of the image, containing the text.

WHAT FEATURES DEFINE SAN JOSÉ'S TRAILS?

Hiking trail in Alum Park

4 TRAIL DESIGN DETAILS

The following represents the core attributes needed for a quality San José trail.

TRAIL SURFACING

San José prefers asphalt concrete (AC) paving for most trail surfaces. The material is relatively inexpensive to install. Spot and major repairs can be accommodated. The cross-section depth varies depending upon soil conditions and maximum loading (generally based on maintenance vehicles operated by Santa Clara Valley Water District (SCVWD) and City of San José). Concrete (PC) is generally used at under-crossings for trail sections that lie below the 100-year flood event elevation line. Hard-packed surfacing is common to interim trails.

SITE GRADING AND LAYOUT

Good trail design supports effective management of stormwater. A modest cross slope along the trail supports sheet flow onto adjacent landscapes. Where topography supports it, gentle running slope (direction of travel) manages the speed of flow. In both instances, well-managed stormwater can prevent serious erosion, costly repairs, or closure of trails.

Tips for site grading and layout:

- Paths should be smooth and continuous, avoiding vertical disruption or changes in surfacing, and avoiding low points which may concentrate runoff and cause erosion of levees or creek banks.
- Trails should strive to have running slopes of less than 5% and cross slopes less than 2% to provide positive drainage and accessibility.
- Surface material changes should be limited to gateway entry areas. Travel speeds at these points tend to be slow, and the placemaking value of decorative gateways draws greater usage which supports safer operations.

Paved Trail Surfacing

The San José trail network is 85% paved, with the remainder being interim trails. This number excludes rural trails which are being inventoried at this time. Rural trails will likely remain earth.



- Trails should drain with the natural drainage pattern, if applicable, with care given to slow any runoff via a landscaped buffer to avoid erosion. Sustaining existing flow is encouraged to avoid outfall structures into riparian channels.
- Sharp turns should be avoided. At turns, clear the approaches of trees and shrubs to maximize decision time for users.
- Trail alignment should strive to sustain 5' of clearance from fences, particularly if private gates onto City-owned trail segments are possible or likely.
- Gates may be allowed into non-riparian channels; however, private gates are discouraged in riparian channels and areas that are subject to frequent closure to accommodate maintenance and operations needs by agencies. Gate installations should be reviewed by the Trail Manager prior to any design or construction.
- Trails should end at a street or destination; they should not dead-end.



Hiking Trail Surfacing

Hiking trails tend to be located outside the urban core. These trails have a recreation focus and, while they may be paved, are typically surfaced with stabilized soil to blend with their environmental setting.



*Photo Above - Airport Gateway
along Guadalupe River Trail*

*Photo Below - Tully Road Gateway
along Coyote Creek Trail*



GATEWAYS

Gateways are a required component of the trail system. The intent of a gateway is to increase the visibility of the trail from roadways. Each trail system follows a design theme, which should be interpreted and refined during the planning and design phase. Gateways are to occur at roadway entries or nodes with interconnecting trails/paths. Refer to Placemaking on page 71 for specific design considerations.

Table 4.1: Trail Design Parameters

Element	Design (Optimum)	Design (Minimum)
Width	Meets Class I Bikeway standards, typically 8 to 12' in paved width. Includes 2' wide hard-packed gravel shoulders.	8' width with no shoulders. Provide advance signage for further reductions in width, or at points where width is altered.
Cross Slope	2%, draining towards waterway if there is a vegetative buffer	Must provide positive drainage off trail
Running Slope	5% maximum over a distance	A constant slope supports safer usage by cyclist but can be challenging or a barrier to persons with mobility issues. Include off-trail resting points or additional trail width with a level surface at prudent intervals.

Manual on Uniform Traffic Control Devices (MUTCD) and Americans with Disabilities Act (ADA) guidelines provide additional resources.

BRIDGES

Bridges may be necessary for trail continuity or access. They are required to span rivers or address a significant grade change. Bridges are expensive pieces of infrastructure and provide an opportunity to create a focal point that enhances the trail experience and supports the trail system's theme.

The San José trail network has over 50 pedestrian bridges. They range from stone bridges in Alum Rock Park constructed in the 19th century to newly installed steel truss bridges. The City of San José strongly supports iconic or placemaking bridges at high-traffic and highly-visible locations, as they can encourage greater usage, and support tourism and community identity.

Cities around the world have commissioned world-class architects to design signature bridge structures as part of trail systems. Per the General Plan, the City encourages enhancing San José's identity regionally, nationally and internationally (Cultural Attractions Policy IE-5.1). Project leads and developers should bring forward proposals if resources permit.

Tips for good bridge planning and design:

- Provide minimum 12' width (new structures) to meet Class I Bikeway standards; for pedestrian, bicyclists, equestrians and others.
- Accommodate passage by maintenance vehicles for efficient and routine access to the trail.
- Consider maintenance demands when determining bridge surfaces. Preference is for weathering steel construction (corten or similar), with paved surfaces or sustainable hardwood (black locust, ipe, or others).
- Sustain a clear line of sight when feasible.
- Limit bridge crossings of creeks to those that provide lineal continuity to the trail, not for ease of trail access.

EXISTING SAN JOSÉ TRAIL BRIDGES

HISTORIC



TRUSS



ICONIC/ENHANCED



SIGNATURE/CUSTOM



BRIDGES THAT INSPIRE



Custom bridges are encouraged when resources permit.

Photos from left to right: Frank Gehry's BP Bridge in Chicago, IL, Santiago Calatrava's Sundial Bridge in Redding, CA, and Decorative Corten Steel Pedestrian Bridge, location unknown.



*Lower Guadalupe River Trail
beneath Airport Parkway*

UNDERCROSSINGS

Undercrossings provide trail continuity beneath roadways and other locations where trails meet or cross significant public infrastructure.

Tips for undercrossings:

- Undercrossings can help sustain an unobstructed Class I trail system.
- Clearance of 14' is generally desirable to allow for maintenance access.
- Ramps should extend and provide roadway access to the trail.
- “Do not use during high-water event” signs should be installed at entry to undercrossings.
- When viable per regulatory permits and environmental impacts, shielded lights to illuminate the undercrossing should be installed.
- Concrete paving should be used to reduce deterioration from periodic flooding and ease clean up and maintenance if the concrete will not cause or increase creek/channel erosion by decreasing roughness and thereby causing the water velocity to increase.
- Retaining wall surfaces should be considered for artistic/aesthetic surface treatments.

FENCING AND RAILINGS

POST-RAIL FENCING



TUBULAR STEEL FENCING



WIRE FENCING



CUSTOM FENCING



FENCING

Tips for fencing and railings:

- Fences and railings should be avoided unless required by code or to address a hazard, establish rights-of-way, or protect privacy.
- Fences and railings should be designed to complement both function and adjacent aesthetics.
- A consistent style of fencing should be used where applicable to ensure design continuity along a lengthy distance or within a neighborhood-character district.
- Fence material should be coordinated with City staff.
- Chain-link is only appropriate for temporary installation during construction.
- In most instances the City depends upon the adjacent land owner to define the property line with their fence and will not add a secondary fence.
- A City-installed fence will be on the property line.
- The City and some utilities allow private gates onto trails; they are typically not allowed where they present a public safety concern due to operation and maintenance needs. If a trail crosses a patchwork of ownership, a consistent approach to private gates should be developed to eliminate confusion regarding access. Where the trail corridor is narrow or trail use during maintenance operations would be a public safety concern, provide gates at street crossings to close the trail.

RAMPS

San José installs common and unique ramps of various sizes to provide access to trails.

Wheelchair Ramps

A wheelchair ramp is commonly installed where a trail reaches an on-street intersection. The ramp permits travel from the trail to crosswalk, in most instances. This ramp is intended to support access for persons in a wheelchair, but they also support bicyclists, persons with some physical limitations, and parents with strollers. The common width of a ramp is adjusted depending on likely or documented usage.

Vehicle Access Ramps

Vehicle access ramps shall be used where there is planned access for maintenance or emergency vehicles.

Curb Ramp

A chamfered curb shall be used in instances where a vehicle access ramp may be confused as a public access driveway. This ramp style is seldom used because access from Class I Bike Lane to the trail is most often desired, even if a pedestrian crossing may not be permitted. Curb ramps can be found where a maintenance route to the trail isn't intended for public use.

Bike Ramps

A bike ramp may be installed in circumstances where access from on-street bike lanes to off-street trails is desired but doesn't align with an intersection or legal crossing of the roadway; tactile domes are typically not used in this situation. The ramp's design is similar to a wheel chair ramp but doesn't include ADA markings to convey a crossing and has a narrower depth and "Bike" stamp to reinforce its special function.





Levee Ramps

Ramp structures may be installed leading to levee trails when there are no nearby trailheads or where a trail system intersects. Ramps must be constructed by placing fill next to the existing levee, cuts cannot be made. Space for the ramp fill will have to be provided by the adjacent property. The ramping structure shall be developed only upon approval by SCVWD and/or other agencies with jurisdiction.

For trails in North San José , ramp design and installation locations are pre-approved. Refer to the North San José Ramp Study.

Tips for good ramp installation:

- Ramps intended for public access should meet accepted ADA guidance.
- Wheelchair ramps convey a safer location for crossing; therefore, they should not be used as an alternative to a bike ramp.

SIGNAGE

The City desires a balance of signage and information that doesn't overwhelm and clutter the view or create pinch points along trails. The City has identified a collection of informational signs that are generally categorized as guidance, regulatory, warning and custom/informational:

Informational

- Informational signage is generally limited to Trail Rules that are posted beneath the identification signage.
- Some trail systems may have been developed through a partnership with other agencies. A sign should be posted beneath the identification signage to identify participating agency brands.
- Interpretive signage does provide information, but is discussed in the *Placemaking* section on page 65.

Guidance

- Guidance signs identify the trail by name, provide wayfinding or directional information, and identify locations of destinations and amenities.
- A sign posted at trail entry points should identify the system by name and its iconic symbol. San José has developed a set of icons unique to each of the 40 trail systems. Refer to the *Signage and Mileage Marker Guidelines* for additional information.
- Milestone markers are special signs with locational information that provide recreation benefits and enhance safety. Recreational users can utilize the sequentially-numbered signs to track distances traveled on their run, walk, or bike ride. For safety, that same numbering system is utilized by the 911 Call Center to better locate trail users in need of assistance and to provide details on access routes to the emergency responders. This information will improve response time because the precise location of the markers will be available to the 911 call center. Consider mile markers at 1/2-mile increments where there is good visibility and/or roadway proximity.
- Wayfinding is preferable for trail systems that will regularly draw new users or people unfamiliar with the surrounding area because of a trail's overall distance. Wayfinding is intended to guide trail users to useful or interesting resources. Signs directing to public restrooms, food, or points of interest are common subject material.



SIGNAGE

GUIDANCE



REGULATORY



WARNING



CUSTOM/INFORMATIONAL



Regulatory

- Regulatory signs provide the rules and regulations as well as good behavior direction.
- Standard City trail rules and regulations should be posted at all trailheads. Additional rules and regulation signage may include no motor vehicles, no trespassing, dog ordinance, stop and yield signs, pass left/keep right, and temporary trail closures. Follow rules and best practices to guide rules/regulatory sign placement.

Warning

- Warning signs are very similar to traffic signs in that they alert users to changes in the trail such as curves, narrowing, cross traffic, steep grades, and areas of potential high water.
- Warning signs cover a range of conditions to provide trail users with awareness of potentially dangerous conditions. Warning signs include notice about curves, narrowing trails, u-turns, grade changes, water hazards, and potential animal concerns, such as mountain lions.
- Temporary construction that changes or impacts trail access requires signage to clarify routes and trail closures related to construction or maintenance activities. The party responsible for the closure should utilize common MUTCD signage to identify a closure and provide detour guidance to the nearest and best on-street routing. Review, approval and posting of the closure/detour should occur per the San José Trail Closure Process.

Signage Clutter

A trail often requires a variety of signs to inform users about the trail's name, rules, warnings and guidance. At trail entry points, these multiple signs might also have further signage to acknowledge agency partners, jurisdictions, or special trail designations. The City seeks to minimize sign clutter through consolidation of signs and encourages partner agencies seeking recognition do so by incorporating their brand and role as part of interpretive signage when possible.

SIGN CLUTTER



Tips for good signage:

- Consolidate: minimize signage to avoid visual clutter and consolidate onto a single sign post or as few sign posts as possible.
- Relocate: consider placing acknowledgment signs elsewhere along the trail so as to not overburden the trail user with too much information if sign placement is not mandated by grant/funding requirements.
- Prioritize: warning and guidance signage should be a priority. Be mindful of preserving focus on key signage message by not over-signing on one pole.
- Creative Alternatives: work with partner and funding agencies to determine if their brand can be more meaningfully represented in an interpretive sign.
- Dual Purpose: work with partner and funding agencies to celebrate their participation via embedded tiles in a seat wall, etched surface on a bench, or other means.
- Aesthetics: remind all parties involved in a project that excessive signage may not offer the positive recognition sought - find other strategies for recognition.
- Back to Basics: critically assess what is most vital for the safer enjoyment of trails, and build carefully and strategically from that basic set of signage.

LIGHTING

Lighting of trails occurs in very limited fashion and fixtures are deployed less frequently than in previous applications. Lighting supports a safer user experience and is designed and installed to reduce impacts to the surrounding environment. In riparian corridors, lighting is typically limited to undercrossings and light is directed to the trail while shielding illumination of the water channel; light-emitting diode (LED) lights offer precise direction of light, limiting ambient spillover, and attracting fewer flying insects which may reduce bird activity.

The Guadalupe River Park and its trails are a unique condition based on agreements reached in the 1990s and 2000s; most trails built since that time seek reduced or no lighting.

STRIPING

Striping is used primarily on paved trails to define direction of trail, and can also be used to define an intersection, trail entry or terminus, or areas of caution. All striping should follow Caltrans Highway Design Manual, MUTCD and other standards. Striping should be installed per the City of San José specifications for cold-formula thermoplastic striping. This method provides a highly reflective stripe with low vertical profile that guides trail users during day and night hours without creating a tripping hazard. This material is suitable for asphalt or concrete application and is applied using standard airless spray equipment with stainless steel components. The high reflectivity is easily seen with bicycle lights even when light levels are low and provides no impact to surrounding riparian corridors.

Type/Color of Striping	Placement
Yellow, centerline broken striping	Along segments of trail with good visibility
Yellow, centerline solid striping	Along segments of trail with limited visibility and at bollards
White, solid shoulder striping	Along paved trail edge, when indicating a potential risk. As examples, a fall zone along the shoulder or trees in close proximity. Refer to the Highway Design Manual for trail development along shoulders.
Stop bar	At trailheads with associated pavement message and “Stop” signage



STRIPING

STOP BAR



CENTERLINE: DASHED



CENTERLINE: SOLID



WHITE SHOULDER STRIPING



GAP AT "INTERSECTING" TRAILS



SPECIAL CONDITION



An aerial photograph of a paved trail. At the top of the frame is a large, circular compass rose made of red and grey tiles, with the letters 'NW' and 'W' visible. Below the compass rose is a wide, paved path with red and grey tiles. At the bottom of the path, the words 'GOLD STREET' are written in white on a red background. Two people are riding bicycles on the path: one in the lower left and one in the upper right. A yellow caution tape is strung across the path near the top. The path is bordered by grass on both sides.

WHAT MAKES A
SAN JOSÉ TRAIL
MEMORABLE?

*Gold Street Gateway to trail
Photo by Bill Maney*

GOLD STREET

PLACEMAKING

San José trails are a defining element of the City. Planning and design of quality trails supports the City's image as pedestrian and bike friendly. Incorporating placemaking features adds further quality and makes the trails memorable. The City uses trailheads, gateways, destinations, interpretive sites, and public art as a means to create visual interest.

AESTHETICS

Placemaking features like architectural gateways and custom paved surfaces help to welcome trail users and create a visual identity for the trail system. These features are important as a signature element for the San José trail network.

TRAIL GATEWAYS AND ACCESS POINTS

Trail gateways are installed at the trail entrance, and/or at the transition from on-street public right-of-way to the off-street trail system. The gateway creates the primary opportunity to convey a unique design theme and character for the trail system. The use of special pavement, seat walls, architecture and/or special furnishings creates a sense of welcome to the user. It also notifies motorists that this is a trail corridor, so it will not be misinterpreted as a service road. Some gateways are designed/located at maintenance access points. In those cases, the gateway needs to be designed to accommodate maintenance access but prohibit public vehicular access.

Gateways can assume a wide variety of forms depending on the individual trail system's design theme, but also site constraints that may limit the extent of improvements. Existing gateways in the San José trail network have used a variety of design features including monumental signage, decorative pavement, seat walls, stone-clad columns, custom fencing, and etched concrete. Refer to [Table 4.3](#) for specific theme recommendations for each trail system. Guidance is general to encourage planners, designers, architects and engineers to interpret and alter within the general thematic parameters.

Access points are similar to gateways in that they offer public access, but they are generally smaller in scale. They provide trail access from spaces other than public roads, such as from a neighborhood, publicly accessible pathway, park or open space.

Node-Intersecting Trails

When two trails meet or intersect, there is specific guidance based on the types of trails (Core, Edge, or Hiking):

- In all instances, the intersection of trail systems should seek to maximize visibility.
- In all instances, the use of special pavement should denote the intersection. Centerline striping should not enter the intersection (similar to a public road intersection).

GATEWAYS





A generous circular form should define the node. Surface treatments and architecture should be unique to the trail system, and per Table 8.1.

- For intersecting Core Trails, the intersection should include decorative features, based upon [Table 4.3](#).
- For the intersection of a Core Trail with an Edge Trail, the design theme for the Core Trail should be dominant.
- For intersection of Edge Trails, the pavement surface can be modestly enhanced with score joints.
- Project budgets or goals may support high-content gateways or access points. Consult with the Trail Manager for input and guidance.

Tips for good gateways and access points:

- Specify and use real materials for longevity. Real stone, corten steel, steel, and concrete construction.
- Design and build surfaces to withstand loads carried by maintenance vehicles and operations.
- Avoid landscape solutions unless the gateway can be viably and cost-effectively linked to existing park facilities.
- Consider existing gateways installed along the trail system to ensure design continuity.
- Coordinate early with agencies like SCVWD and Pacific Gas & Electric (PG&E) that either own the land or require access via easement. Their operations should be honored and may prevent vertical seatwalls or other constraining features.

- Specify hardscape and material selections that have longevity and do not require sustained and periodic maintenance, preservation or replacement. Maintenance staffing and resources vary from year to year, and it is best to assume minimal long-term upkeep and the ease of repair if damages occur when selecting design features, finishes or fixtures.

TRAIL SYSTEMS AND DESIGN THEMES

The City has developed a design theme for each of the trail systems in its trail network to support a sense of place and uniqueness.

The following table provides general direction. Consult with the Trail Manager if seeking to incorporate an altered design theme.

The “compass” gateway shown here is specific to the Guadalupe River Trail system. Refer to Table 4.3 for guidance on all trail systems within the Trail Network.



Table 4.3: Trail Systems and Design Themes

Trail System	Icon	Theme	Forms & Materials (assumes paved trail)	Gateway Feature
Alum Rock Park	Eagle	Structures within the historic park/ silhouette of mountain	Stone, Corten Steel	Sign Post (primary gateways are to park, not to individual trails)
Bay Trail	Bay Trail logo	Archimedes Screw	Brick, colored concrete	Low seat walls, decorative pavement
Albertson Parkway	Oak Tree	Landscape / floral	Timber fence	Post-Rail fence, red roses, no surface feature
Berryessa Creek	Western Screech Owl	Riparian landscape / naturalistic	Timber fence, colored concrete	Post-Rail fence, decorative pavement with riparian-themed etching
Calero Creek	Water Bird	Farming implements and land forms (Martial Cottle Park)	Timber fence, Corten steel, colored concrete	Decorative fencing, decorative pavement with crop row theme
Canoas Creek	Snake (subject to change)	Riparian landscape	Time fence, seasonal wildflowers	Post-Rail fence, no surface feature
Communications Hill	Hawk	Hillside landscape, cattle	Formed concrete, cast stone (refer to Communications Hill Staircase)	Seat wall, decorative pavement
Coyote Creek	Coyote	Coyote, creek cobbles	Real stone veneer, colored concrete	Coyote-themed etching (large scale), transition away from existing “compass themed” installations, and stone clad seat wall.
Coyote Alamos Canal	Checkerspot Butterfly	Water conveyance	Colored concrete	Water-themed etching.
Component Parkway	Lizard (subject to change)	Circuit Board, Technology	Colored concrete	Large scale graphics, representing technology (circuit board, disk drive, San José-based technologies)

Table 4.3: Trail Systems and Design Themes (continued)

Trail System	Icon	Theme	Forms & Materials (assumes paved trail)	Gateway Feature
Doerr Parkway	Hiking Boot (subject to change)	Sister Cities, countries, chronology	Etched concrete	Etched place names, etched iconic structures from Sister Cities
Edenvale / Great Oaks	Rose	TBD*	TBD*	TBD*
Evergreen Creek	Checkered Spot Butterfly	TBD*	Corten and timber	Fencing elements, concrete with right-angle grid
Fisher Creek	Trout	Coyote Valley hill profile	TBD*	TBD*
Five Wounds	[Train]	Five Wounds Church architectural details	Colored concrete	Etched: Large-scale medallion or rail/ties
Fowler Creek	Squirrel	Evergreen-area design details	Concrete bench, colored concrete	TBD*
Guadalupe Creek	Frog	Vineyards	Seat walls	Vertical surface with grape leaf relief, colored concrete with etched historical reference.
Guadalupe River	Egret	Compass	Colored concrete, seat walls, decorative fence	Large-scale compass graphic, seat wall with fractured fin, perforated stainless steel fence with fish icon.
Hetch-Hetchy	Hiking boot	Map (Bay Area to Yosemite)	Colored concrete, embedded non-slip steel	Large-scale representation of pipeline alignment in colored concrete with steel bands.
Highway 237 Bikeway	Bicyclist	Former surface street	Colored concrete, etched surface	"Alviso-Milpitas Road, c. 18___ to 20___"
Highway 237 Bikeway	Bicyclist	Former surface street	Colored concrete, etched surface	"Alviso-Milpitas Road, c. 18___ to 20___"
Highway 87 Bikeway	Bicyclist	Former surface street	Colored concrete, etched surface	"Almaden Road, c. ___ to 1987"

Table 4.3: Trail Systems and Design Themes (continued)

Trail System	Icon	Theme	Forms & Materials (assumes paved trail)	Gateway Feature
Lake Almaden	Turtle	Aquatic life	TBD*	TBD*
Lake Cunningham	Turtle	TBD*	TBD*	TBD*
Los Alamos Creek	Water Bird	TBD*	TBD*	TBD*
Los Gatos Creek	Water Tower	Arts & Crafts architecture, Rail Station	Columns, low walls	Cobble-covered walls and columns
Montgomery Hill	Wildflowers	Flight	TBD*	TBD* [Consider reference to large art work]
Penitencia Creek	Steelhead Trout	California-native Sycamore or fish	Seat Walls, colored concrete, embedded stainless steel, decorative fence	Tree leaves [Platanus racemosa]
River Oaks Parkway	Oak Leaf & Acorn (species?)_	TBD*	Flag stone, colored concrete, seat walls	Stone-clad seat wall, colored concrete
Odette Morrow Trail	Coyote	Remnant Orchard	Timber	Post-Rail-Diagonal Fence
Saratoga Creek	Oak Leaf	Riparian landscape	Basalt Stone	Basalt “benches”
Lower Silver Creek	Boot print	Fish, “cross” icon from Kammerer Bridge	Etched concrete, corten column	TBD*
Silver Creek (Barberry)	Lizard	TBD*	TBD*	TBD*
Silver Creek (Umbarger)	Wildflowers	TBD*	TBD*	TBD*
Silver Creek (Upper)	Frog	TBD*	TBD*	TBD*
Silver Creek Valley	Snake	Stone-architecture	Columns, seat walls, trellis	No gateway, leverage existing architecture
Thompson Creek	Western Screech Owl	Fish	Etched concrete	(Refer to recent proposal)
Three Creeks	Train	Canning/Railway History	Corten, colored/ scored concrete, timber, custom architecture	Water Tank, Fruit Crates, Steel Fence, etched “Canning Labels”
Yerba Buena Creek	Acorn	Riparian landscape	TBD*	TBD*

*TBD - To Be Determined - the trail planner or designer should engage the community to determine design themes, forms and materials, and gateway feature.



PATHWAY UNDER THE SYCAMORES

The sycamore tree is a keystone species in the local ecosystem. Its large, flat leaves provide shade and habitat for many birds and insects. The tree's hollowed-out trunks are home to a variety of birds, including woodpeckers and owls. The tree's seeds, known as samaras, are carried by the wind and can travel long distances.

The sycamore tree is also a source of food for many animals. Squirrels and chipmunks store sycamore nuts for the winter. Many birds, including robins and blue jays, eat sycamore seeds. The tree's bark is also eaten by some insects, such as the sycamore borer.

The sycamore tree is a symbol of resilience and survival. It has been a part of the local landscape for thousands of years and continues to thrive in the face of many challenges.

Penitencia Creek Trail, interpretive sign featuring local ecology.

San José trails are designed with destinations in mind. They can be small or large, and assume the form of decorative gateways, public art pieces, or interpretive stations. Destinations play an important role in the success of a trail system. From roadways, gateways serve to draw attention to a recreational opportunity. From along the trail, a destination can offer a goal to reach or enrich the experience by offering historical or cultural context. A good trail plan and design should always include gateways and incorporate additional features of varying sizes to enrich the trail user experience.

INTERPRETIVE SIGNAGE

Interpretive elements enrich a visit and provide visitors, commuters, and residents with a unique perspective or story that they can share with others. Interpretation can cover a wide range of subjects including interesting facts about the site location, history, culture, or other topics. Interpretive signs can take many forms. The City seeks to engage the trail user through a variety of formats and is open to non-conventional designs if they are high quality, highly durable, result in little to no maintenance and are not easily harmed by vandalism.

Tips for good interpretive sign installations:

- Seek installation of an interpretive sign, as allowed by partner agencies, if a site has design details, history or a special context that provides interest.
- Consider a change in trail surface to expand the scale and context, thereby creating an interpretive station.
- Pursue a broad set of topics, from local history, local environment, nearby attraction or a trail design feature unique to that system.
- Choose subject matter with an audience in mind. A Core Trail that's likely to regularly draw new users warrants a "Did you know?" sign installation. A short, neighborhood serving Edge Trail might include a small sign to identify a unique tree or direct to a special view.
- Think beyond the conventional interpretive panel. Use decorative pavement with scoring, etching and/or color to broaden the impact of the installation.

INTERPRETIVE STATIONS





Interpretive signage can be greatly enriched by adjacent artistic works.
Photos feature sites found along the Guadalupe River Trail

PUBLIC ART AND DESIGN AMENITIES

The City of San José is committed to public art and budgets 1% of its capitol budget towards public art installations. Refer to *Public Art NEXT!, San José's Public Art Master Plan 2007*, and the Trail Network Public Art Work Plan 2008 Final Draft for additional information. Users of this Toolkit should search the City's website for 'San José Public Art Policy and Reports' to locate a listing of applicable documents.

San José trails seek to use public art or design amenities to establish a sense of destination. Good trail design incorporates destinations to encourage exploration or as a reward for walking/biking a long distance. Ideally, the art or amenity is large scale and creates a strong sense of place. Each site and mission will be different, but in all cases, the art or amenity has longevity, is memorable, and visually rewards trail users.

In some instances, a work of art or amenity may already exist and is visibly accessible. In such instances, good wayfinding should be provided or sight lines preserved. The large-scale public art piece “Hands” is a good example of art delivered as part of the San José International Airport project, but available to persons enjoying the Guadalupe River Trail.





*Lupe the Mammoth along the
Guadalupe River Trail.*

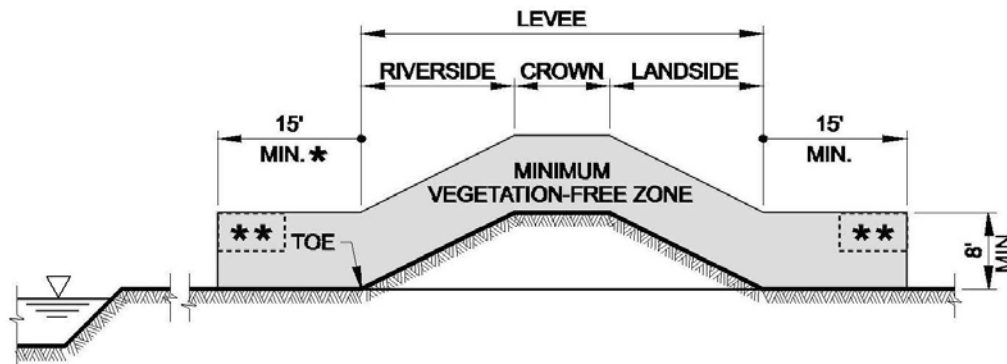
NATURE ON A
SAN JOSÉ TRAIL?



LANDSCAPING

San José trails are developed through a variety of landscapes from natural riparian zones to urban corridors. In all instances, the City seeks to leverage existing landscape, enhance when possible, and mitigate when required. The variety of landscapes and approaches are noted:

1. Riparian corridors: If landscaping is allowed, vegetation should be native (local, ideally watershed specific, not just California), non-invasive, or non-hybridizing species.
2. Levee corridors: Vegetation is typically not allowed on levees, levee side slopes, or within 15' of the levee base. Where allowed, use approved hydroseed mix for levee surface cover.
3. Utility corridors: Underground and overhead utilities may have restrictions that impact species selection and locations where plantings are allowed.
4. Park corridors: Trails passing next to existing parks should leverage irrigation availability. Landscape on the trail should blend seamlessly with that in the park and irrigation should be pulled from the existing park system.
5. Mitigation landscape: As required to address regulatory requirements.



* 15' OR DISTANCE TO EDGE OF NORMAL WATER SURFACE, IF LESS

** IN THIS 4' X 7' TRANSITION ZONE, TEMPORARY OBSTRUCTION BY LIMBS AND CROWN IS ALLOWED DURING DEVELOPMENT OF NEW PLANTINGS, FOR UP TO 10 YEARS

▽ NORMAL WATER SURFACE

Sample Levee Condition

Image Source: Guidelines for Landscape Planting and Vegetation management at Levees, Floodwalls, Embankment Dams, and Appurtenant Structures, ETL 1110-2-583, 30 April 2014, USACE

Tips for good landscaping:

- Favor native (local, ideally watershed specific, not just California for projects within or adjacent to riparian corridors) or climate appropriate plants
- Use lower-maintenance plants
- Select trees to provide shade and visual interest
- Seek to landscape 50% of site area along parkways
- Leverage existing landscapes and determine if supplemental landscape offers value. Along healthy riparian channels, it may be cost-effective to supply water and power for a modest increase in planting
- Place plants and trees based upon mature growth. Avoid roots uplifting trails and shrubs encroaching upon trail.



LANDSCAPING



Landscaping can add to the visual and environmental benefits of trails.



WHAT DESIGN
ELEMENTS ENHANCE
TRAIL USE?

*Los Gatos Creek Trail Pedestrian Bridge at
Guadalupe River Park in Downtown San Jose.*

SITE FURNISHINGS

The enjoyment and usage of trails can be supported by a large number of possible amenities if they are sustainable in terms of materials, durability, and maintenance. The following table identifies common amenities and indicates preference and approach for use with more detail on the following pages.

Table 4.4: Site Furnishings Support	
Site Furnishing	Supported by City (● =yes, ○ =conditional, X=no)
Bike racks	● Yes, at destinations along the trail only
Bike repair stations	X No, not sustainable
Bollards	○ Only if needed to curtail vehicular cut through
Drinking fountains	○ Generally no, potentially at remote locations
Fitness stations	○ Limited to areas with sufficient width
Gates (private)	○ Limited; pedestrian gates allowed along Albertson Parkway, Doerr Parkway, Lower Silver Creek – Silverstone Place (Ocala Avenue to Foxdale Drive), and Three Creeks Trail; not allowed on riparian trail corridors
Lighting	○ Limited to areas of the Guadalupe River Park and at undercrossings; highly-reflective centerline striping is required and preferred
Memorials	○ Potentially, dependent on provisions in applicable joint use agreements or existing policies
Mutt mitts	X No, not sustainable
Parking facilities	X Generally no
Picnic areas	○ Limited to areas with sufficient width
Restrooms	X Generally no
Seating	● Yes
Trash receptacles	● Yes, at trail entry points and as-needed

In all instances, the Trail Planner/Designer should be mindful of the needs of operational agencies or property owners where joint-use arrangements are in place. As one example, SCVWD seeks unobstructed access to creek banks for routing maintenance. Signage, furniture, and other amenities can limit access and add costs to their operational activities. They can also slow the pace of work, which further limits public access when a trail closure is necessary. Careful planning should seek to accommodate signage installations, place seating near existing obstructions (e.g. adjacent to a tree), and limit any barriers to full access.

SEATING

The City encourages a variety of benches along the Trail Network, but seeks to use one style per trail system. The City's goal is to create outdoor living rooms and encourage social interaction. Durable, accessible custom seating, such as chairs, seat walls, artistic benches, or alternative seating options are encouraged, subject to the approval of PRNS. There is a diversity of solutions and unique, creative options are encouraged.

Trails like the Guadalupe River Trail and Coyote Creek Trail have used a Victorian-style bench over the past decade. Extensions to these trail systems or nearby systems should consider use of this same bench to reinforce a design approach. Through the downtown area, these benches often include wooden slats. For durability, all steel construction is desirable.

The preferred seating vendor is DuMor, or an approved equally durable provider. Black is a preferred color to support repair of vandalism/tagging; alternative colors can be considered if there's a strong design condition. All steel construction, surface-mounted is preferred with center-arm rest when available. Concrete seating has also been successful in the City.

General tips for seating:

- Locate where natural surveillance is maximized, such as near trail entry/exit points or within clearings in the landscape.
- Provide space adjacent to seating to meet ADA requirement for universal access. Seating should be clearly accessible by a well-defined side or spur path to minimize the potential for pioneer trails within the environment.
- Locate seating to offer access to a preferred view, encourage social interaction and/or offer resting stops.
- Design in a manner to prevent skateboarding and other damaging activities.
- Select to deter long-term occupancy. Backless benches or mid-point armrests should be considered as well as short 4' benches or arm chair variations.
- Deploy at regular intervals (optimum: ½ mile) to provide opportunities to rest. Need should guide placement and frequency as determined by the Operations Manager for existing trails and the Trail Manager for planning documents.

SEATING: BENCHES, CHAIRS, SEAT WALLS



Examples of customized benches to enhance the trail experience (from left to right: Metal/Wood Bench, San José, CA; Precast “Pebble” Bench, Singapore; Tiled Seat Wall, Catalina Island, CA; Concrete/Wood Seat Wall, San Francisco, CA; Metal Bench, Santa Fe, NM; Concrete Seat Wall, San José, CA). Photos by Yves Zsutty.

- Consider the user experience; locate beneath shade when possible and at a scenic location.
- Orient seating in creative ways to support conversation or a gathering space. Be mindful of community input as there may be concerns with gathering spaces near residential uses.

BIKE RACKS

Bike racks tend not to be included along trail alignments unless there is a point of interest directly accessible at the trail edge. In most circumstances, a destination (public restroom, shopping/restaurant, historic site, etc.) will be found nearby. In those instances, it is preferable to work with the destination’s site manager or owner to consider an on-site installation.

BOLLARDS AND GATES

Bollards can be installed at trail entries from roadways and are intended to prevent or discourage vehicular trespassing upon a trail. The City prefers to see bollards installed only if trespassing is a recurring issue that cannot otherwise be prevented. Clear signage at the trail entrance should reinforce the pedestrian/bicycle nature of a trail and may include signage to reinforce the no vehicles rule.

There are a few instances where bollards are used:

Multi-Agency Bollard

Multi-agency bollards are used where multiple agencies need vehicular access: Columbia Cascade CycLoops 2190-RH-M; aluminum post with dome top; 2 loops; powder coated yellow with retro-reflectivity; installations: lockable aluminum hasp and sleeve.

Multi-agency bollards should:

- use reflective materials for visibility
- be made of aluminum to minimize weight
- have two handles to support better posture while lifting
- include a bayonet footing for further weight reduction
- have a flap to cover the anchor hole when not in use
- accommodate daisy chain system for locks permitting multi-agency access

Swing-Arm Gate

A swing arm gate is preferable when sufficient width exists and there is a regular need to access the trail while preventing illegal entry. It reduces the potential for worker injury and permits more rapid entry for emergency service vehicles.

Removable Aluminum Bollard

San José specifies a custom Cycloops aluminum bollard with two handles. This unit is intended for sites that require frequent access and seek to decrease employee injury from lifting. A removable bollard will be installed with a standard Parks key when no access to other agencies is required.

Removable Steel Bollard

A unique bollard is used along the Guadalupe River Park Trail, from Highway 280 to Highway 880.

BOLLARDS AND GATES

The City prefers to see bollards installed only if trespassing is a recurring issue that cannot otherwise be prevented.



Private Gates

Private gates are allowed along a few San Jose Trails. They tend to be limited as our public agency partners may need to close trails for regular maintenance and must ensure that there is no secondary access that can present risk to the public. For this reason, most gates are not allowed along riparian trail corridors. Pedestrian gates are allowed along the following trail systems:

- Albertson Parkway
- Doerr Parkway
- Lower Silver Creek – Silverstone Place (Ocala Avenue to Foxdale Drive)
- Three Creeks Trail

FITNESS STATIONS

Fitness stations may be considered along trail corridors with sufficient width. In general, parkways are well-suited for this amenity. Stations should be static with no moving parts (hinges, chains, rubber bands, etc.) to reduce routine maintenance. To encourage workout routines, stations should be grouped to offer multiple exercises within a defined and highly-visible space. Stations should be installed upon City property or via developer agreements. Narrow trail corridors could consider a fitness installation upon adjacent parkland if consistent with that park's master plan.

LIGHTING

Lighting tends to be limited to undercrossings to provide illumination day and night. LED fixtures with vandal-proof enclosure and concealed conduit should be used. These installations have previously been agreed to by regulatory agencies. General lighting of trails is discouraged because of its impacts on riparian corridors and may be limited by land owners other than the City. As an exception, Downtown San José's Guadalupe River Park (Highway 280 to Coleman Avenue) does include trail lighting through prior arrangement with multiple agencies.

MEMORIALS

Memorials are discouraged along trail corridors. Persons seeking a memorial site may consider available parkland as governed by the PRNS Memorial Policy. Memorial installations developed upon suitable parkland will be accompanied by a lifetime endowment for maintenance and preservation.

Memorials are typically not allowed on agency lands. Trails developed upon agency lands shall be limited by memorial provisions in applicable joint use agreements. If no language exists, memorials are not to be installed.

PICNIC AREAS

Picnic areas may be considered along trail corridors with sufficient width for off-trail facilities. Narrow trail corridors could consider picnic areas upon adjacent parkland if consistent with that park's master plan. Consider installation of benches or chairs, with a small table as an alternative.

TRASH RECEPTACLES

Trash receptacles are to be installed at trail entry points and as-needed (or as-anticipated). The receptacles are small, pole-mounted units. Consultation with local Park Managers and operations staff is highly encouraged to optimize placement and validate the likely need.

FURNISHINGS NOT TYPICALLY PROVIDED

- **BIKE REPAIR STATIONS**

Bike repair stations appear to be a desirable amenity but are site-specific and do not serve users that have an issue elsewhere along the trail system. Commercially-available stations include cables to secure tools and higher-maintenance pump systems that are subject to vandalism. The City encourages that bike repair stations be offered by private businesses and be well-signed from the trail. The business can manage maintenance and secure the station during off-hours.

- **DRINKING FOUNTAINS**

Drinking fountains are to be installed along trail systems that are remote and not along parks with this common amenity. Drinking fountains along trails tend to be discouraged as a high-maintenance amenity that is better managed within an adjacent park site. The Trail Program website encourages trail users to carry their own water. Wayfinding signage should direct to available drinking fountains. To be installed upon City-owned land or via developer agreements.

- **MUTT MITTS**

Mutt mitts are not supported due to operational and supply costs.

- **PARKING FACILITIES**

The trail network is distributed throughout the City, with trail systems being accessible from most roadways. This decentralized approach permits parking demand to occur along public streets. No trail-specific parking is provided, unless a park site like a regional park serves as an attractive starting point (example: Lake Almaden Regional Park and Los Alamitos Creek Trail). Parking for rural trails may be required if they are a destination which attracts out and back trips. Best practices should be used to determine the parking supply required.

- **RESTROOMS**

Restrooms can be considered along remote trails with no nearby park facilities; restrooms are preferably located in adjacent park sites to leverage existing maintenance. Restrooms are not allowed on SCVWD lands.



WHERE CAN I
LEARN MORE?

5 REFERENCES AND RESOURCES

REFERENCES

The Toolkit supports the planning and design of a trail; its alignment, its amenities, and other aspects. The following documents, while not exhaustive, provide further or more detailed guidance and should be reviewed carefully and adhered to.

City of San José

- *Riparian Guideline Policy Document*
- *Riparian Corridor Policy Guidelines*
- *Public Art along Trails Master Plan*
- *Municipal Code, Section 13.44.030*
- *Department of Public Works – Standard Specifications and Details*
- *Trail Count – Annual Count and Survey of San José Trail Users*

County of Santa Clara

- *Uniform Inter-jurisdictional Trail Design, Use and Management Guidelines*

Santa Clara Valley Water District

- *Coyote Watershed Aesthetic Guidelines*
- *Watershed Trail Design Guidelines*
- *User Manual Guidelines & Standards for Land Use Near Streams*

State of California

- *Caltrans Bikeway Manual, Chapter 1000*
- *Levee Encroachment, Guide for Vegetation on Projects Levees*
- *Interim Guide for Vegetation on Flood Control Levees*
- *Department of Transportation, Specification No. 8010-004 (Specification for Glass Spheres/Beads) pertaining to striping*

FHWA

- *Equestrian Guidelines*

Army Corps of Engineers

- *ETL 1110-2 583 "Guidelines for Landscape Planting and Vegetation Management at Levees, Floodwalls, Embankment Dams, and Appurtenant Structures"*

Federal Guidelines

- *ADA Standards for Accessible Design*
- *Architectural & Transportation Barriers Compliance Outdoor Developed Areas*

RESOURCES**City of San José**

- *Trail Signage Guidelines*
- *Trail Program Strategic Plan, May 2016*
- *Public Art NEXT!, San José's Public Art Master Plan 2007*
- *Trail Network Public Art Work Plan 2008 Final Draft*

Santa Clara County

- *Uniform Interjurisdictional Trail Design, Use, and Management Guidelines*

Santa Clara Valley Transportation Authority (VTA)

- *Bicycle Design Guidelines*

State of California

- *California Manual for Uniform Traffic Control Devices (MUTCD) 2014 Edition (FHWA's MUTCD 2009 Edition, including Revisions 1 & 2, as amended for use in California)*

OTHER REFERENCES

- *HT Harvey Urban Landscape Guide*
- *California Invasive Plant Council:*
<http://cal-ipc.org/>
- *SelecTree: Right Tree Right Place:*
<http://selectree.calpoly.edu/right-tree-right-place>
- *ReScape California: Bay-Friendly Landscaping & Garden Coalition*
- *Guidelines for the Selection of Plants for City Landscape Projects*
- *Water Use Classification of Landscape Species (WUCOLS):*
<http://ucanr.edu/sites/WUCOLS/>
- *PG&E Right Tree, Right Place - Tree Selection Guide for Power Lines*
- *PG&E Guide to Small Trees - Bay Area*

CREDITS

This Toolkit was developed by City staff responsible for San José trail development. The document represents their best practices, lessons learned, and understanding of trail-related guidelines from a variety of sources. The Toolkit has been presented to the City's Parks & Recreation Commission to gain their input and gather public commentary. Excerpts have been presented to the Santa Clara Valley Water District Board and staff to represent their unique conditions for joint use of lands for trail development.

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