

*San Francisco International Airport
Bay Trail Alignment Plan*

Draft Bay Trail Alignment Plan

Submitted to:
Association of Bay Area Governments - Bay Trail Project

Submitted by:
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PREFACE

This Draft Bay Trail Alignment Plan presents a thoughtful proposal for a “Preferred Permanent Alignment” of the San Francisco Bay Trail around the San Francisco International Airport (SFIA). This alignment was chosen by a Technical Advisory Committee that was coordinated by the Association of Bay Area Governments / Bay Trail Project. The viewpoints of this multi-faceted Committee have included representation from the following agencies and interest groups:

- Bay Conservation and Development Commission
- California Department of Fish and Game
- California Department of Transportation
- City of Millbrae
- City of San Bruno
- City of South San Francisco
- Metropolitan Transportation Commission
- Multi-City TSM
- Pacific Gas and Electric Company
- Regional Bicycle Advisory Committee
- San Francisco International Airport
- San Francisco Bay Area Rapid Transit District
- San Mateo County Bicycle and Pedestrian Committee
- San Mateo County Transit District
- San Mateo County Trails Advisory Committee
- San Mateo County Environmental Planning
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service

From the onset, the Technical Advisory Committee agreed that the mission of this assignment was not to identify a “perfect” alignment for the SFIA Bay Trail, because no such perfect alignment exists. Any possible trail alignment leading from north of San Bruno Avenue to south of Millbrae Avenue contains some sort of safety, environmental, land use, or experiential quality that can be considered a “critical flaw” based on a narrow interpretation of the many individual goals, policies, or regulations brought to the table by the diversity of interests on the Technical Advisory Committee.

It was agreed by the Technical Advisory Committee members that the challenge of this assignment was to methodically evaluate and openly debate the pros and cons of alternatives, and then to select an “optimum alignment” for the SFIA Bay Trail. This optimum alignment, though not perfect, is one that can happen over time - but only with ongoing stewardship, cooperation, and sufficient funding.

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INTRODUCTION

PURPOSE: WHAT THIS PLAN IS AND WHAT THIS PLAN IS NOT

This San Francisco International Airport (SFIA) Draft Bay Trail Alignment Plan (BTAP) identifies a Preferred Permanent Alignment for the San Francisco Bay Trail around the airport. This alignment is hereinafter referred to as the SFIA Bay Trail. This alignment connects the intersection of South Airport Boulevard and North Access Road on the north side of the airport with the existing Bay Trail segment located in Bayfront Park to the south. Community parking areas, trail access points, safety and control considerations, trail amenities, habitat preservation techniques, and potential trail links to transportation hubs and the surrounding communities are also identified.

This draft plan is not to be construed as a final detailed design document, a permit application, or a set of construction drawings and specifications.

IMMEDIATE NEXT STEPS

There are a number of sequential review steps that must be taken before this Draft BTAP can be taken forward for implementation. The immediate steps that would refine this plan include:

- Acceptance of the Draft BTAP by San Mateo County, the San Francisco International Airport, and the Bay Conservation and Development Commission as the description for the project for use in the environmental review process;
- Formal review, evaluation, and refinement under the guidelines of the California Environmental Quality Act and National Environmental Policy Act for which San Mateo County will act as the Lead Agency; and
- Acceptance by agencies that either own land required for the SFIA Bay Trail or have land-use regulatory jurisdiction over such lands. These include, but are not limited to: the cities of South San Francisco, San Bruno, and Millbrae; California Department of Transportation; San Francisco Bay Area Rapid Transit District; San Mateo County Transit District; Peninsula Corridor Joint Powers Board; and the Pacific Gas and Electric Company / Public Utilities Commission.

All of the agencies and interest groups represented on the TAC will be involved in the environmental review process.

To be implemented, this project will involve a significant amount of multi-agency cooperation. Additionally, once there is a project that has been adopted and certified by San Mateo County and once funding is in place, formal negotiations and permit

applications will be made to the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, California Department of Fish and Game, and others as necessary.

BACKGROUND

The Bay Trail: The existing plan for the San Francisco Bay Trail was adopted by the Association of Bay Area Governments Board of Directors in July, 1989. It proposes development of regional hiking and bicycling trails around the perimeter of the San Francisco and San Pablo Bays. Pursuant to Senate Bill 100, the Bay Trail is mandated to:

- provide connections to existing park and recreation facilities;
- create links to existing and proposed transportation facilities; and
- be planned in such a way as to avoid adverse effects on environmentally sensitive areas.

The Bay Trail system comprises three types of trails: spine trails, spur trails, and connector trails. Spine trails work together to encircle the Bay, providing a continuous recreational corridor linking all nine Bay Area counties. Spur trails provide access from the spine trail to points of interest along the Bay. Connector trails fall into two categories: existing shoreline trails that connect to the Bay Trail but have not been incorporated as part of the Bay Trail alignment; and trails that provide connections to urban centers inland from the Bay. The SFIA Bay Trail is one piece of this spine trail system around the Bay.

San Francisco International Airport - Bay Trail Extension Project: On September 10, 1996 the San Francisco Bay Conservation and Development Commission (BCDC) approved a permit (Permit No. 2-96) to authorize the SFIA to construct six near-term projects. These projects were part of the SFIA Master Plan and were within the BCDC bay and shoreline band jurisdiction. However, because of public safety concerns and significant use conflicts, the SFIA was unable to provide continuous on-site public access to the Bay shoreline. Therefore, BCDC required SFIA to provide several in-lieu public access benefits. These included the funding to conduct the Bay Trail Alignment Plan study and providing approximately \$755,000 for the design, environmental review, permitting and construction of a preferred SFIA Bay Trail.

Although the SFIA is the permittee, it has engaged San Mateo County to assume program management responsibilities for implementing the Preferred Permanent Bay Trail Alignment including design, environmental review, permitting, construction contracting, and management. In turn, the County contracted with the Association of Bay Area Governments - Bay Trail Project to conduct the BTAP study.

STUDY PROCESS

The project site of the SFIA Bay Trail alignment involves multiple landowners and agency jurisdictions. Therefore the BTAP has been prepared and refined by the Association of Bay Area Governments - Bay Trail Project with the input of a multi-agency Technical Advisory Committee (TAC) composed of local, state and federal agencies and representative trail interest groups. Two field trips and four TAC workshops were conducted over an approximately eight-month period. In addition, comments and suggestions about the SFIA Bay Trail alignment and its design were solicited from the BCDC Design Review Board (October 6, 1997 and January 12, 1998) and from the general public at an open scoping session (October 22, 1997).

This overall BTAP study process involved four basic steps that were linked to individual TAC workshops. Individual interim reports summarizing the first three of these steps are available from the Association of Bay Area Governments - Bay Trail Project staff. These process steps were:

- **Step #1: Evaluation of Study Area Site Conditions** -- A methodical inventory and evaluation of existing and proposed site conditions within the BTAP study area that could significantly determine opportunities for a preferred trail alignment was conducted. The BTAP study area was defined to be bounded as follows:
 - on the north by Interstate 380 east of the Bayshore Freeway (U.S. 101) and by San Bruno Avenue west of the Bayshore Freeway;
 - on the east by South Airport Boulevard;
 - on the south by Millbrae Avenue; and
 - on the west by El Camino Real.

- **Step #2: Identification of Trail Route Options, Segments, and Alternatives** -- The TAC conducted an open-ended discussion of route alternatives within the context of the identified opportunities and constraints within the study area. This discussion resulted in the identification of thirty-three individual trail route 'options' within the study area. When linked in different ways these trail options could produce any number of alignment alternatives. However, there were four points within the study area corridor where individual trail options generally coincided. These points were used to identify five overall trail 'segments'. From north to south the segments were:
 - Segment A -- From the Northern Terminus of the SFIA Bay Trail (South Airport Boulevard @ North Access Road) to the west side of the Bayshore Freeway overcrossing along San Bruno Avenue at Seventh Avenue
 - Segment B -- San Bruno Avenue at Seventh Avenue to the San Bruno CalTrain Station / Lion's Field Park area
 - Segment C -- Lion's Field Park to Center Street in the City of Millbrae
 - Segment D -- Center Street to the Millbrae BART station

- Segment E -- Millbrae BART station to Bayfront Park

The trail route alignment options that were developed are illustrated in Appendix A .

- **Step #3: Development and Application of Evaluation Criteria** -- Eight evaluation criteria organized into three weighted groups of importance were identified by the TAC. Trail evaluation criteria included:

GROUP 1

- Sensitivity to the natural environment and habitat conditions
- Trail usefulness
- Public safety

GROUP 2

- Quality of the trail experience
- Operational considerations

GROUP 3

- Compatibility of the trail with adjoining property
- Land / easement acquisition complexity
- Financial considerations

Individual variables that were considered within each criterion are listed in Appendix B. The evaluation criteria were used to identify an “optimum” route for the SFIA Bay Trail. The use of the term “optimum” recognized that no alternative trail route would be perfect in all respects and that any trail route being evaluated could be viewed as having “critical flaws” associated with it if a limited perspective from any number of technical disciplines were taken.

The evaluation process focused on identifying trail opportunities that would best serve the purpose and needs of the Bay Trail while being cognizant of how individual options related to the criteria. The purpose of the evaluation was to compare and contrast alternative trail opportunities and, based on the criteria, understand the concerns that might exist about individual segments and the type of mitigation that would likely be involved. This analysis directed the design guidelines for the SFIA Bay Trail.

- **Step #4: Selection and Refinement of the Preferred Permanent SFIA Bay Trail Alignment** -- After application of the criteria, the resulting SFIA Bay Trail alignment was reviewed and accepted by the TAC. A series of detailed design guidelines were developed to characterize the features of the alignment and how the alignment will physically be developed and managed. These guidelines were reviewed by the TAC, the BCDC Design Review Board, and the general public and were revised based on comments received.

REPORT ORGANIZATION

Because of the number of maps and figures supporting the Draft BTAP, this report is organized with text first followed by all of the graphic figures. Figure 1, the Preferred Permanent Bay Trail Alignment map illustrates the individual segments within the alignment and is keyed to Table 1 which overviews the features of the individual trail segments.

RELATED DOCUMENTS

The following related reports were prepared as part of the BTAP study process and supplement this Draft BTAP. They are available for review through the Association of Bay Area Governments - Bay Trail Project:

- **Site Survey Report** -- summarizing existing conditions within the BTAP study area.
- **Trail Alignment Options and Evaluation Criteria Report** -- illustrating trail alignment options and summarizing criteria evaluations made about each option.
- **Summary: Land/Easement Acquisition Needs and Development Cost Projections** -- summarizing land ownership information along the SFIA Bay Trail, existing easements and utilities that must be considered during the detailed design and implementation of the trail, and development cost projections (by trail segment).
- **Management Recommendations Report** -- outlining recommendations for policing, operating and maintaining the trail, assumptions of liability for trail use, and implementation and funding responsibilities.

In addition, the following documents that relate to the implementation of the Draft BTAP are also available for review through the Association of Bay Area Governments - Bay Trail Project:

- Association of Bay Area Governments, The Bay Trail - Planning for a Recreational Ring Around San Francisco Bay, July, 1989. This document presents an overview of the San Francisco Bay Trail, its characteristics, and associated ABAG policies about the implementation of the Bay Trail system.
- San Francisco Bay Conservation and Development Commission, Permit No. 2-96 San Francisco International Airport, City and County of San Francisco, September 10, 1996. A permit that, among other items, outlines the intent, roles, responsibilities, terms, and conditions placed on the San Francisco International Airport with regard to providing public access facilities as a BCDC permit condition to implementing the SFIA Master Plan.
- San Francisco International Airport, Planning and Environmental Affairs, McDonnell Road

(R-2/R-3) Bicycle Lane Feasibility Study, March 14, 1997. A report evaluating the variables involved with developing a bicycle lane through the study area east of the Bayshore Freeway.

- Bay Area Rapid Transit District and San Mateo County Transit District, Second Amendment to Comprehensive Agreement Pertaining to BART System Extension (June 19, 1996). An agreement that, among other items, outlines the intent, terms and conditions to implement a "Bike Path Project" that would extend from the Colma to Millbrae BART stations.
- Board of Directors - San Mateo County Transit District, Resolutions # 1995-45 and #1995-96. Resolutions that, among other items, state the importance the Board places on a continuous bikeway as an integral component of the BART SFO extension and request that the final BART design include a bikeway element.

1.0 PREFERRED PERMANENT SFIA BAY TRAIL ALIGNMENT

1.1 General Alignment

The preferred alignment of the SFIA Bay Trail is illustrated on Figure 1. The alignment is approximately 4.2 miles in length and connects the intersection of South Airport Boulevard and North Access Road on the north with an existing segment of the Bay Trail located in the City of Millbrae's Bayfront Park to the south. The SFIA Bay Trail alignment is located in the Cities of South San Francisco, San Bruno, and Millbrae, and in unincorporated lands of San Mateo County. Table 1 is keyed to Figure 1 and provides a descriptive overview of each segment and other trail amenities to be incorporated into the alignment design. Key designations (A2, B3, etc.) refer to those alternative segments that were evaluated and were eventually selected as the SFIA Bay Trail alignment. Appendix A illustrates all of the trail options evaluated.

1.2 Potential Connecting Trails

Spur trails provide access from the spine trail to points of interest along the Bay. Connector trails are trails that provide connections to urban centers inland from the Bay. Potential trail linkages that could connect to the SFIA Bay Trail are illustrated on Figure 1. These trails would not be developed under the auspices of the SFIA permit conditions. They are:

- **Spur Trail** --A trail connecting the SFIA Bay Trail alignment to Marine Vista Park. This trail could be developed along the northern edge of the street right-of-way and include new fencing, native shade trees, and interpretive exhibits.
- **Connector Trails** -- Along the SFIA Bay Trail alignment these include: a potential bicycle path along the BART alignment (where BART is underground) leading north from the Lion's Field Area and south from the PG&E substation; and existing pedestrian / bicycle crossings of the CalTrain tracks at Meadow Glen Avenue in the City of Millbrae.

1.3 Relationship to Listed Species Habitat

Construction of the SFIA Bay Trail will involve utilizing portions of the area commonly known as the "West-of-Bayshore property". The West-of-Bayshore property consist of the generally undeveloped lands west of the Bayshore Freeway (U.S. 101) that are owned by SFIA and others. All of the lands within the West-of-Bayshore property are considered by the U.S. Fish and Wildlife Service and the California Department of Fish and Game as habitat for two listed animal species that are known to exist there. These species are:

- **San Francisco garter snake (*Thamnophis sirtalis tetrataenia*)** -- that is listed as endangered under the Federal Endangered Species Act (Federal Register, 1967) and is also state-listed as endangered (CDF&G, 1989) ; and

- **California red-legged frog (*Rana aurora draytonii*)** -- that is listed as threatened under the Federal Endangered Species Act (Federal Register, May 23, 1996) and is a California “Species of Special Concern”.

The design of the SFIA Bay Trail on the West-of-Bayshore property will take the form of a paved “causeway”. The causeway segments of the trail, like a boardwalk, will be elevated off the ground surface but will use more permanent materials (concrete, steel) that require less maintenance than does the wood typically associated with boardwalks. The SFIA Bay Trail as a causeway along portions of the West-of-Bayshore property minimizes permanent impacts to both wetlands and upland habitats and permits free movement of surface water and wildlife through the West-of-Bayshore property. This design approach will also involve railings along the trail to assist in managing trail use and controlling trespass to adjacent lands. These railings should be curved and painted blue to reflect the color and movement patterns of the San Francisco garter snake while also lending an air of the Bay Trail experience to the inland route.

Table 2 summarizes the permanent displacement of upland and wetland habitats that, as a worst-case circumstance, could result from the construction of the SFIA Bay Trail causeway on the West-of-Bayshore property.

TABLE 1: Preferred Permanent Bay Trail Alignment (see also Figure 1)

FIGURE KEY	STARTING POINT	ENDING POINT	ALIGNMENT / DESIGN COMMENTS
A1	Corner of South Airport Boulevard @ North Access Road	West side of South Airport Boulevard between I-380 ramps	<ul style="list-style-type: none"> Route uses new crosswalk across South Airport Boulevard to west side of road and entrance point for bike path Other design features: curb cuts; identity signs; control gate; pedestrian/bicycle-activated traffic control signals; lighting <p><u>See also:</u> Figure 2</p>
A2	West side of South Airport Boulevard between I-380 freeway ramps	Lot DD	<ul style="list-style-type: none"> Class 1 bicycle path at-grade following existing access routes and levee road under I-380 Other design features: fencing; shade trees / landscaping; interpretive displays <p><u>See also:</u> Figure 3</p>
A7	Northwest corner of undeveloped portion of Lot DD	Signalized intersection - San Bruno Ave. @ ramps on east side of Bayshore Freeway	<ul style="list-style-type: none"> Class 1 bicycle path at-grade following perimeter of Lot DD in upland landscape Other design features: fencing; shade trees / landscaping; control gate at San Bruno Avenue <p><u>See also:</u> Figures 3 and 4</p>
A8	Signalized intersection - San Bruno Ave. @ ramps on east side of Bayshore Freeway	Signalized intersection - San Bruno Ave. @ ramps on west side of Bayshore Freeway	<ul style="list-style-type: none"> Striped bicycle lanes and sidewalks on both sides of San Bruno Avenue Other design features: curb cuts; identity signs; trail and road safety signs; pedestrian/bicycle-activated traffic control signals; safety lighting <p><u>See also:</u> Figure 4</p>
B3 / B4	Signalized intersection - San Bruno Ave. @ ramps on west side of Bayshore Freeway	Southwest corner of SFIA property adjacent to Cupid Row Canal	<ul style="list-style-type: none"> Class 1 Bike Path / Causeway through SFIA West-of-Bayshore property near western property line then at-grade through eastern sections of Lion's Field Park and back to SFIA property north of Cupid Row Canal Connections to 7th Avenue Park and Belle Air Elem. School Provision for maintenance access to SFIA property from 7th Street and Lion's Field Park Other design features: bridge over San Bruno Canal; causeway through habitat areas; identity signs; interpretive points; control gates On-site mitigation parallel to trail corridor <p><u>See also:</u> Figures 5, 6, 7, 8, and 9</p>

TABLE 1: Preferred Permanent Bay Trail Alignment (see also Figure 1)

FIGURE KEY	STARTING POINT	ENDING POINT	ALIGNMENT / DESIGN COMMENTS
C2	1st Avenue extension south of Lion's Field Park	Madrone Street @ Monterey Street (near Center Street)	<ul style="list-style-type: none"> • Class 1 Bike Path at-grade over "cut and cover" portions of BART alignment; Class 1 Bike Path / Causeway adjacent to east side of proposed BART retaining wall • Potential connections to northbound BART bicycle path • Three safety pull-out / interpretive points along upland portions the trail causeway for vistas and ADA considerations • Potential spur trail connection to Marine Vista Park • Other design features: bridge over San Bruno Canal; causeway through habitat areas; identity signs; barrier vegetation; shade trees; fencing/railings; control gates at either end of habitat areas • On-site mitigation parallel to trail corridor • <u>See also:</u> Figures 3, 9, 10, 11, and 12
D2 / D6	Madrone Street @ Monterey Street (near Center Street)	Southwest corner of PG&E Substation	<ul style="list-style-type: none"> • Class 1 Bike Path at-grade over "cut and cover" portions of BART alignment • Potential connections to local bicycle path network • Other design features: identity signs; trail and road safety signs; curb cuts; shade trees / landscaping; vista point / interpretive displays; benches; fencing; lighting; painted trail crossing/crosswalk and safety signs at Center Street <p><u>See also:</u> Figures 3 and 12</p>
D8	Southwest corner of PG&E Substation	Southeast corner of PG&E Substation	<ul style="list-style-type: none"> • Class 1 Bike Path at-grade along south side of PG&E lands • coordinate trail with PG&E pull-box location (or relocate pull-box) • Other design features: identity and safety signs; control gate; shade trees / landscaping; safety wall / fencing <p><u>See also:</u> Figure 13</p>
D9	Southeast corner of PG&E Substation	SFIA property line north of Aviador Ave.	<ul style="list-style-type: none"> • Class 1 Bike Path / Causeway along north side of Bayside Manor residential area on PG&E lands and then on SFIA West-of-Bayshore property following north and east sides of Bayside Manor residential area and through Bayside Manor Park • Design coordinated with SFIA noise buffer project • Other design features: buffer vegetation / landscaping; railings / fencing; interpretive points; control gates at Bayside Manor Park

TABLE 1: Preferred Permanent Bay Trail Alignment (see also Figure 1)

FIGURE KEY	STARTING POINT	ENDING POINT	ALIGNMENT / DESIGN COMMENTS
			and at SFIA Property line near Aviator Avenue • On-site mitigation parallel to trail corridor See also: Figures 5 ,6, and 14
D10	SFIA property line north of Aviator Ave.	Millbrae Canal	• Class 1 Bike Path at-grade along PG&E easement through Bayside Manor Park • Provision for maintenance access to SFIA property • Other design features: identity signs; buffer vegetation / landscaping; fencing; painted trail crossing / crosswalk and safety signs at Aviator Avenue See also: Figures 3 and 15
D11	Millbrae Canal	Millbrae Canal @ Aviator Avenue	• Class 1 Bike Path at-grade located along north side of Millbrae Canal; multiple-use for City access to storage yard • Other design features: curb cuts; identity signs; landscaping; fencing; control gates at entrance to BART; painted trail crossing/crosswalk and safety signs at Aviator Avenue See also: Figure 16
E1 / E3	Millbrae Canal @ Aviator Avenue	Millbrae Avenue @ Bayfront Park	• Class 1 Bike Path at-grade on edge of SFIA West-of-Bayshore property; two-way bicycle path ramp from Aviator Ave. to the north side / center of the Bayshore Freeway overcrossing structure; cantilevered bike path to signalized northbound ramp; at-grade path from overcrossing to Old Bayshore Highway • Provision for maintenance access to SFIA property • Potential connection to Millbrae BART station • Other design features: identity signs; landscaping / shade trees; fencing; control gates; safety lighting; identity signs; trail and road safety signs; painted trail crossing/crosswalk at Old Bayshore Highway; pedestrian/bicycle-activated traffic control signals at freeway ramps and at Old Bayshore Highway See also: Figures 3, 15 and 16

TABLE 2: PERMANENT IMPACTS ON HABITAT AREAS IN THE WEST-OF-BAYSHORE PROPERTY⁽¹⁾

Trail Segment (See Figure 1)	Length		Area Permanently Displaced	
	(l.f.)	(miles)	(sq. ft.)	(acre)
B3	2,421	0.46	714.20	0.016
C2	5,442	1.03	1605.39	0.037
D9 - north of park	3,182	0.60	938.69	0.022
D9 - south of park	553	0.10	163.14	0.004
E1	597	0.11	176.12	0.004
Total	12,195	2.31	3597.53	0.083

Trail Segment (See Figure 1)	Upland		Wetland	
	(sq. ft.)	(acre)	(sq. ft.)	(acre)
B3	561.98	0.013	152.22	0.003
C2	1,233.40	0.028	372.00	0.009
D9 - north of park	768.18	0.018	170.51	0.004
D9 - south of park	163.14	0.004	0.00	0.000
E1	176.12	0.004	0.00	0.000
Total	2,902.80	0.067	694.73	0.016

l.f. = linear feet
 sq. ft. = square feet

(1) Assumptions include:

- entire trail developed as a causeway on paired 18" diameter posts spaced at 12' on-center intervals
- wetland delineation by BART and on file with U.S. Army Corps of Engineers (File NO. 19669S91 dated 6/94)
- wetland mitigation will be on-site unless the U.S. Fish and Wildlife Services proposes a comparable alternative action

Source: 2M Associates / BKF Consulting Engineers

2.0 SFIA BAY TRAIL FEATURES AND AMENITIES

2.1 Trail Design

2.1.1 General Trail Characteristics

Pedestrian and bicycle access is accommodated through the entire project area. However, because of the need to cross the Bayshore Freeway at two locations and the special requirements involved with siting a trail through habitat areas of the San Francisco garter snake, the basic design characteristics of the route could vary significantly through the project area. These characteristics include:

- A 10-foot-wide asphalt path with 2-foot-wide shoulders and adjacent native landscaping outside of the West-of-Bayshore habitat areas.
- A 12-foot-wide, elevated causeway with native buffer vegetation through the West-of-Bayshore habitat areas of the San Francisco garter snake. The causeway could be either freestanding, attached on one side to the proposed BART retaining wall, or cantilevered from it. It will consist of a red-tinted, broom-finished concrete surface with blue curved railings to reflect the colors and image of the San Francisco garter snake.
- Signed bicycle lanes and pedestrian sidewalks along the San Bruno Avenue overcrossing of the Bayshore Freeway.
- A 12-foot-wide ramp and bridge attached to the north side of the Millbrae Avenue overcrossing of the Bayshore Freeway.

2.1.2 Vegetation

Designed plantings along the trail route will provide a number of benefits including:

- enhanced physical and psychological quality for the trail user's experience;
- privacy screening for adjacent residences;
- access control and security protection for adjacent property owners; and
- enhanced habitat values on the West-of-Bayshore property.

Tree and low shrub plantings will consist entirely of native species and will include, but not be limited to:

<u>Botanic Name</u>	<u>Common Name</u>
<i>Alnus rubra</i>	Red Alder
<i>Heteromeles arbutifolia</i>	Toyon
<i>Quercus agrifolia</i>	Coast Live Oak
<i>Rosa californica</i>	California Wild Rose*
<i>Salix laevigata</i>	Red Willow*
<i>Salix lucida lasiandra</i>	Shining Willow*
<i>Salix lasiolepis</i>	Arroyo Willow*

Sambucus mexicana
Rubus ursinus

Blue Elderberry*
California Blackberry*

* Plants suitable for general use in habitat on the West-of-Bayshore property. List does not include plants that may be used in mitigation of wetland impacts associated with the project.

All lands disturbed by trail construction will be seeded prior to the annual rains with a native erosion control mix. All plants used on the West-of-Bayshore property will be specified in consultation with the U.S. Fish and Wildlife Service and the California Department of Fish and Game.

2.1.3 Lighting

Trail security/safety lighting will be located at all street intersections, along the overcrossings of the Bayshore Freeway at San Bruno Avenue and at Millbrae Avenue, and at the two community parking areas.

2.2 Community Parking Areas

Two community-oriented parking areas are identified on Figure 1. They are approximately 1 mile apart from each other. One is adjacent to Lion's Field Park on SFIA property in the City of San Bruno and the other is just north of Center Street in the City of Millbrae on a "cut and cover" portion of the BART alignment, where BART is underground. The two community parking areas would provide residents of the two Cities an opportunity to access the trail by automobile without disrupting existing neighborhoods or neighborhood parks. Facilities at the community parking areas will include:

- parking for ten cars;
- identity and directional signs;
- interpretive exhibits about the habitats of the San Francisco garter snake and California red-legged frog on nearby lands;
- native shrubs and trees;
- drinking fountains;
- telephones;
- vehicular access control gates;
- six-foot-high trail-control gates adjacent to the West-of-Bayshore property that can be locked at night and will be posted regarding hours of operation; and
- safety/security lighting.

In order not to invite trespass onto the West-of-Bayshore property, the community parking areas will not be constructed and made available until the West-of-Bayshore portions of the trail are complete.

2.3 Conformance with the Americans with Disabilities Act (ADA)

There are no topographic or other constraints that would prohibit universal access. All sections of the trail and trail features will be designed to be in conformance with ADA requirements and the design guidelines for universal access to outdoor recreation facilities.

3.0 SFIA BAY TRAIL SIGN PROGRAM

3.1 Identity and Use Signs

Trail identity signs, as illustrated in Figure 17, will be scaled so that they can be observed from the local road system. These signs will be located at the two community parking areas and at major street crossings of the trail. Trail marker and use signs, as illustrated in Figure 18, will be directed towards the trail user and will consist of entrance bollards with the Bay Trail logo, bicycle, pedestrian, and wheelchair access symbols. At entrances to the trail causeway segments that traverse the West-of-Bayshore property, an additional “dogs-on-leash” symbol will be added to the trail marker and use sign bollards.

Should San Mateo County adopt the SFIA Bay Trail as the recreation route for the Juan Bautista de Anza National Historic Trail, that trail logo could also be placed on the trail marker and use sign bollards.

3.2 Traffic Safety Signs

Standard traffic safety signs will be used throughout the trail. These are illustrated in Figure 19 and will include:

- stop signs located along the trail to warn users to stop at all street intersections;
- trail crossing, warning, and yield signs for motorists at all trail crossings; and
- “no right turn on red” signs at selected intersections

3.3 Habitat Information and Regulatory Signs

At the two community parking areas, information about the habitat of the San Francisco garter snake and the California red-legged frog will be presented at entry kiosks. Information will address the impacts of pets on the special-status species and the problems associated with releasing unwanted animals into the habitat. Additionally, signs at all entrances to the West-of-Bayshore habitat areas and at regular intervals along the causeway portions of the trail will be posted, as appropriate, to include: hours of operation signs; no trespassing signs; no smoking signs; signs instructing causeway trail users to remain on the trail at all times; and information signs regarding the penalties for disturbing and/or taking snakes or frogs.

4.0 IMPLEMENTATION PROGRAM

4.1 Coordination with Other Projects

There is not now sufficient funding available to construct the SFIA Bay Trail. Where possible, the alignment of the SFIA Bay Trail should be incorporated into the planning and design of other planned projects located within the trail corridor as they take place. This would both reduce physical impacts and, potentially, construction costs such that when funding for the SFIA Bay Trail is secured, the trail could be constructed efficiently and economically. These projects include, but are not necessarily limited to:

- SFIA Lot DD Development (Segments A1, A2 and A7) -- including Lot DD and surrounding lands as indicated in the SFIA Master Plan.
- BART SFO Extension (Segments C2, D2 and D6) -- in the early stages of detailed design. Integrated design and construction of BART and these segments of trail could minimize trail costs, reduce potential disturbance of habitat areas in the West-of-Bayshore property, and avoid duplicative habitat mitigation and monitoring programs.
- Millbrae Avenue / Bayshore Freeway Interchange Improvements (Segment E1) -- a current project of the City of Millbrae. Geometric Approval Drawings have been completed. Final design is anticipated to be complete in the late spring of 1998 with project construction being targeted for later in the summer of 1998.
- SFIA Sound Screening Project (Segment D9) -- a project of the SFIA that is only at the conceptual level at this time. The project will involve providing a buffer between the airport and residents adjacent to the West-of-Bayshore property in the City of Millbrae. Coordination with the planning and design of this project would theoretically reduce any potential disturbance of habitat areas in the West-of-Bayshore property, and could avoid duplicative habitat mitigation and monitoring programs.

4.2 Construction Techniques

Standard construction practices will be used for the trail in all areas except the habitat areas located in the West-of-Bayshore property (Segments B3, portions of B4, portions of C2, and D9). Here, the trail will be constructed as an elevated causeway to minimize temporary disturbance on both upland and wetland habitats.

The causeway system will consist of concrete pier foundations to support a superstructure that minimizes the footprint on the landscape. The superstructure will be made of steel frame and deck, with a concrete deck finish. Such a system will be able to be panelized as a modular system off-site and bolted or welded together on location to further reduce habitat impacts as compared to conventional construction procedures. Pre-fabricated units for the trail causeway will be stockpiled at construction staging areas located outside the habitat areas of the West-of-Bayshore property. The trail will be constructed one section at

a time in a linear fashion. Each section could be built in front of the previously constructed causeway trail bed. Construction access could use the already-completed portions of the trail. Should Segment C2 be constructed in tandem with BART construction, BART construction access easements required for building the retaining wall structures might also be used.

4.3 Construction Staging Areas

General areas that will be used for construction staging are illustrated on Figure 20 and characterized in Table 3. No construction staging will occur in the habitat areas located on the West-of-Bayshore property.

4.4 Maintenance and Management Options

4.4.1 Typical Management Activities

Typical management and maintenance activities for the SFIA Bay Trail and associated community parking areas will include the following:

- daytime patrols (on the trail);
- evening security patrols (from the local road system);
- monthly sweeping of the trail surface;
- monthly inspection and minor repairs; and
- annual inspection and major repair.

4.4.2 Trail Use Management in West-of-Bayshore Habitat Areas

Because the SFIA Bay Trail passes through the habitat of the San Francisco garter snake and the California red-legged frog, portions of the SFIA Bay Trail will need to receive special management attention that is atypical of public, multi-use trails. Furthermore, because the San Francisco garter snake is a fully protected species, the California Department of Fish and Game can not issue a permit for trail construction and use unless the Department is assured that no “take” of the species will occur (See Appendix C for a definition of “take” and Fish and Game Code Section 5050).

4.4.3 Access Management

The SFIA Bay Trail alignment will be divided into two use zones. These are:

- **Open Use:** where trail use will generally be unrestricted at all times. These will involve either end of the SFIA Bay Trail alignment from: (1) the intersection of South Airport Boulevard and North Access Road to San Bruno Avenue and over the Bayshore Freeway, and: (2) from the Millbrae BART station over the Bayshore Freeway to Bayfront Park.
- **Managed Use:** applying to those portions of the SFIA Bay Trail alignment located within the West-of-Bayshore property. Here trail use will be managed

to protect the San Francisco garter snake and provide an additional degree of security to neighboring residences. This will involve closing the trail at night (10 pm to 5 am) but would accommodate recreational day-use and bicycle commuting during reasonable hours.

Figure 21 illustrates the locations of gates that will be used to control access to the trail on the West-of-Bayshore property. The potential benefits of such closures include: increased security against inadvertent, inappropriate, or illegal activities that may impact the San Francisco garter snake and its habitat; and an increased sense of security for adjacent residences.

TABLE 3: POTENTIAL CONSTRUCTION STAGING AREAS (See also Figure 20)

Map Key	Location and Current / Projected Use	Approximate Area	Related Trail Segment
1	<ul style="list-style-type: none"> Caltrans ROW under I-380 interchange ramps currently vacant with freeway landscaping on ramp slopes 	1.25 acres	<ul style="list-style-type: none"> North Terminus to southwest corner of San Bruno Avenue overcrossing (Segments A1, A2, A7 and A8)
2	<ul style="list-style-type: none"> Caltrans ROW within San Bruno Avenue /Bayshore Freeway interchange after construction of new interchange will be excess interchange lands 	0.4 acres	<ul style="list-style-type: none"> North Terminus to southwest corner of San Bruno Avenue overcrossing (Segments A1, A2, A7 and A8) Southwest corner of San Bruno Avenue overcrossing to Lion's Field Park (Segments B3 and B4)
3	<ul style="list-style-type: none"> SFIA lands west of Lion's Field Park currently vacant with some stockpiled materials 	1.0 acre w/ potential for expansion	<ul style="list-style-type: none"> Southwest corner of San Bruno Avenue overcrossing to Lion's Field Park (Segments B3 and B4) Lion's Field Park to Center Street (Segment C2) Community Parking Areas
4	<ul style="list-style-type: none"> future BART ROW between Monterey Avenue and CalTrain tracks currently open; proposed as open over BART "cut and cover" section 	0.75 acres w/ potential for expansion	<ul style="list-style-type: none"> Lion's Field Park to Center Street (Segment C2) Center Street to PG&E / West-of-Bayshore parcel (Segments D2 and D3) Community Parking Areas (Segment D2)
5	<ul style="list-style-type: none"> future BART ROW between PG&E substation and CalTrain tracks currently open; proposed as open over BART "cut and cover" section 	0.75 acres w/ potential for expansion	<ul style="list-style-type: none"> Center Street to PG&E / West Bayshore Parcel (Segments D2 and D3) PG&E / West-of-Bayshore parcel to Aviator (Segments D8 and D9)
6	<ul style="list-style-type: none"> SFIA lands east of Aviator Avenue currently open 	1.0 acre w/ potential for expansion	<ul style="list-style-type: none"> PG&E / West-of-Bayshore parcel to Aviator (Segments D8 and D9) Aviator to Bayfront Park (Segments E1 and E3)

4.4.4 Management Reports

Regular maintenance / monitoring reports will be filed with the SFIA and San Mateo County. For those trail segments located on the West-of-Bayshore property, quarterly monitoring reports (based on weekly observations) about trail use will be filed with SFIA, San Mateo County, the U.S. Fish and Wildlife Service (USF&WS) and the California Department of Fish and Game (CDF&G) during the first year of operation. These monitoring reports will include, but not be limited to, the following information about use on the West-of-Bayshore property:

- estimated levels of trail use
- number of individuals observed not on the trail
- number of calls for assistance (requiring emergency or police response)

After a one-year period and in consultation with USF&WS and CDF&G , an evaluation will be made about the necessity of quarterly reports, with consideration given to reporting on a yearly basis.

4.4.5 Staffing Levels

For the portions of the SFIA Bay Trail located on the West-of-Bayshore property, sufficient management presence will be required to guarantee that only legal trail activities take place on the trail. In addition to the design and signing elements of the SFIA Bay Trail that discourage trail users from going off the trail, trail use will need to be regularly observed / managed such that the following conditions are achieved:

- the general public stays on the trail at all times such that no take or harassment of the San Francisco garter snake will occur;
- trail behavior of the general public is such that the San Francisco garter snake is not harassed in any way if observed; and
- no illegal access to the West-of-Bayshore property originates from the trail at any time.

Prior to trail construction, two permits that will need to be secured are: a Section 404 wetlands permit that will involve the U.S. Army Corps of Engineer and the U.S. Fish and Wildlife Service; and a 2090 or 2081 permit from the California Department of Fish and Game. Precise trail management schedules, staffing needs, and secured funding levels for operations and management will be developed in cooperation with these agencies and included as part of permit conditions for the project.

5.0 HABITAT ENHANCEMENT, COMPENSATION, AND MANAGEMENT

5.1 Habitat Management

The SFIA and San Mateo County will compensate as outlined below for any activities, with the exception of fire and flood control activities, that result in habitat loss related to the SFIA Bay Trail at the ratios described below. Prior to construction of any portion of the SFIA Bay Trail, letters of commitment to fund mitigation requirements for project impacts on the West-of-Bayshore property will be secured.

The following compensation ratios are guidelines for the SFIA Bay Trail and are derived from the USF&WS Biological Opinion for the Bay Area Rapid Transit (BART) Extension Project. The actual ratios applied should depend on final trail design documents, timing of construction, and coordination with other projects.

For impacts to wetland habitat:

- Off-site creation or preservation of up to five acres of wetlands for every one acre of wetland permanently impacted (5:1); or on-site preservation of up to three acres of wetlands for every one acre of wetland permanently impacted (3:1); and
- Off-site creation or preservation of up to three acres of wetlands for every one acre of wetland temporarily impacted (3:1); or on-site preservation of up to two acres of wetlands for every one acre of wetland temporarily impacted (2:1).

For impacts to upland habitat:

- Off-site preservation of up to five acres of upland habitat for every one acre of upland permanently impacted (5:1); or on-site preservation of up to three acres of upland habitat for every one acre of upland permanently impacted (3:1); and
- Off-site preservation of up to three acres of upland habitat for every one acre of upland temporarily impacted (3:1); or on-site preservation of up to two acres of upland habitat for every one acre of upland temporarily impacted (2:1).

In addition, when compensating for wetlands, the SFIA and San Mateo County will preserve a ratio of up to three acres of surrounding uplands for every one acre of compensation wetlands (3:1). On-site creation is defined as any creation that occurs on or adjacent to the West-of-Bayshore property. Final design of any wetlands created and location of areas used as compensation for project impacts as a result of the SFIA Bay Trail must be approved by CDF&G and USF&WS. A funding mechanism for long-term maintenance of this habitat will be established in coordination with CDF&G and USF&WS.

Construction of the SFIA Bay Trail will permanently displace up to 0.016 acres of wetland and up to 0.067 acres of upland habitat located in the West-of-Bayshore property. Using the above guidelines, the development of the SFIA Bay Trail includes the following:

- the creation or preservation of up to 0.080 acres of wetlands if located off-site or up to 0.05 acres of wetlands if located on-site;
- the preservation of up to 0.33 acres of upland habitat if located off-site or up to 0.20 acres of upland habitat if located on-site; and
- the preservation of up to between 0.24 acres and 0.14 acres of upland habitat associated with the creation of wetlands depending on whether the wetlands are located off-site or on-site.

5.2 Construction Techniques and Construction Management

In order to avoid take of the San Francisco garter snake, construction of the SFIA Bay Trail in Segments B3, B4, C2, and D9 will be conducted from within the trail alignment itself or from adjacent, already developed lands. Construction will occur between late summer and fall (July to October and possibly into November). Construction sites will be fenced for at least a six-week period prior to any construction activity. Fencing will remain in place throughout the construction period.

A knowledgeable, experienced biologist retained by the SFIA shall be present during all construction activities in areas of Listed Species habitat to help avoid the take of individual animals and to minimize disturbance to the habitat. The construction site will be surveyed by the monitoring biologist(s). The monitoring biologist will insure that all construction-related mitigation measures are in place and effective and will remove all San Francisco garter snakes found in the construction area before construction activities will be allowed to proceed. The monitoring biologist shall be present during all construction activities and shall ensure compliance. The biological monitor shall inspect each activity area daily immediately before activities begin and continually monitor in advance of the work crews. If a snake is found, no activities shall occur within 100 feet of the snake or until the biological monitor determines the snake is no longer present. The biological monitor shall have authority to stop immediately any activity that is not in compliance, and to order any reasonable measure to avoid the take of an individual of a Listed Species. The contractor will be required to have an on-site supervisor to assure directions of the monitoring biologist are followed. Neither the biological monitor, CDF&G, or USF&WS shall be liable for any costs incurred in complying with these measures, including any cease-work orders.

The biological monitor shall inspect underneath any parked vehicle used in construction activity that is parked for more than 30 minutes immediately prior to moving the vehicles to ensure that no San Francisco garter snakes or California red-legged frogs are under the vehicles. Any San Francisco garter snakes detected will be moved from under the vehicles with a snake stick. The snake stick used will be a single piece of non-mechanical material

with no clasping features. Any California red-legged frogs will be hand captured and moved to the nearest available wetland on the West-of-Bayshore property. Vehicles shall not be left standing in grassy areas except for loading and unloading of materials (i.e. vehicles are to be left only on the road during lunch breaks, etc.)

SFIA shall conduct an orientation program for all persons who will work on-site during construction activities (e.g. supervisors and crew members). The program shall consist of a brief presentation from a person knowledgeable about the biology of the Listed Species. The monitoring biologist will also educate the crews on the sensitivity and identification of the San Francisco garter snake and the California red-legged frog and the penalties for taking the snake. The education program shall include a discussion of the biology of the Listed Species, and their habitat needs. A fact sheet containing this information shall also be prepared and distributed. In addition, visual materials will be provided to assist in identifying the species. Upon completion of the orientation, employees shall sign a form stating that they attended the program and understand all protection measures. These forms shall be filed at SFIA offices and shall be made available to CDF&G and USF&WS upon request.

Personnel who detect a San Francisco garter snake on site will immediately report the snake's location to the monitoring biologist.

5.3 Revegetation

A plan approved by CDF&G and USF&WS also will be developed and implemented to include a revegetation program and suitable soil erosion control measures.

5.4 Related Habitat Enhancement Programs

Construction and management of the SFIA Bay Trail will be coordinated as much as practical with other projects in the West-of-Bayshore property.

5.5 Additional Habitat Protection Measures to Avoid Take of the San Francisco Garter Snake

The SFIA Bay Trail should be sited and constructed adhering to the following measures:

- Measure #1: to avoid the likelihood of direct loss (take) of San Francisco garter snakes.
- Measure #2: to avoid the likelihood of harming San Francisco garter snakes.
- Measure #3: to avoid and minimize impacts of habitat modification or loss to the San Francisco garter snake.

Detailed information about how these measures should be implemented during trail construction are provided in Appendix D. This appendix also outlines SFIA, San Mateo County, contractor, and resource agency roles and responsibilities, and identifies the

required monitoring observations and reporting needed to ensure that these Reasonable and Prudent Measures are carried out as intended.

6.0 TRAIL DEVELOPMENT COST PROJECTIONS

Total development costs for the SFIA Bay Trail are projected to be between approximately \$7,750,000 and \$9,700,000. Table 4 allocates these cost projections into segments that present logical units for construction in terms of the underlying land ownership patterns, potential agency partnerships, and trail use dynamics. In order to obtain final approval by the U.S. Fish and Wildlife Service and California Department of Fish and Game for constructing the SFIA Bay Trail, secured funding will be obtained for the portion of the trail where it passes through the West-of-Bayshore property.

Cost projections provided in Table 5 include, but are not limited to, the following items:

- engineering / property line surveys;
- grading;
- trail bed (at-grade, causeway, and bridge sections);
- signs (use, management, and safety signs);
- trail landscaping and irrigation (general landscaping and West-of-Bayshore habitat areas);
- fencing and gates;
- trail / road intersection modifications;
- specialty trail features (interpretive displays, BART portal safety fencing, and pull-outs, benches, and emergency telephones along BART causeway section);
- habitat area management (including construction requirements and construction monitoring);
- on-site wetland mitigation;
- community parking areas (signs, asphalt drive and parking, trail connections, perimeter control fencing and gates, signs, lights, information kiosk, telephone, drinking water, and landscaping); and
- engineering / design, design review, and construction management.

There are a number of variables that will affect final development costs. These include, but are not limited to: final habitat mitigation program requirements; coordination with other projects, such as the construction of the Millbrae Avenue / Bayshore Freeway interchange or of BART; and regional fluctuations in the construction industry in terms of labor availability and labor rates.

TABLE 4: PROJECTED TRAIL DEVELOPMENT COSTS (1)

Trail Segment	Projected Development Costs	
	Low	High
• North Terminus to southwest corner of San Bruno Avenue overcrossing (Segments A1, A2, A7, and A8)	\$ 445,000.00	\$ 550,000.00
• Southwest corner of San Bruno Avenue overcrossing to Lion's Field Park (2) (Segments B3 and B4)	\$ 1,465,000.00	\$ 1,831,250.00
• Lion's Field Park to Center Street(2) (Segment C2)	\$ 2,240,000.00	\$ 2,800,000.00
• Center Street to PG&E / West-of-Bayshore parcel (Segments D2 and D6)	\$ 250,000.00	\$ 312,500.00
• PG&E / West-of-Bayshore parcel to Aviador(2) (Segments D8 and D9)	\$ 1,035,000.00	\$ 1,293,750.00
• Aviador to Aviador (Segment D10)	\$ 165,000.00	\$ 206,250.00
• Aviador to Bayfront Park (Segments D11, E1, and E3)	\$ 1,850,000.00	\$ 2,312,500.00
• Wetland Mitigation: on-site (2)	\$ 75,000.00	\$ 93,750.00
• Community Parking Areas: two locations (Segments B4/C2 and D2)	\$ 222,000.00	\$ 277,500.00

(1) All projections reflect November, 1997 costs

(2) Cost projections assume wetland mitigation will be on-site unless the U. S. Fish and Wildlife Services proposes a comparable alternative action

Source: 2M Associates

FIGURES

Figure 1

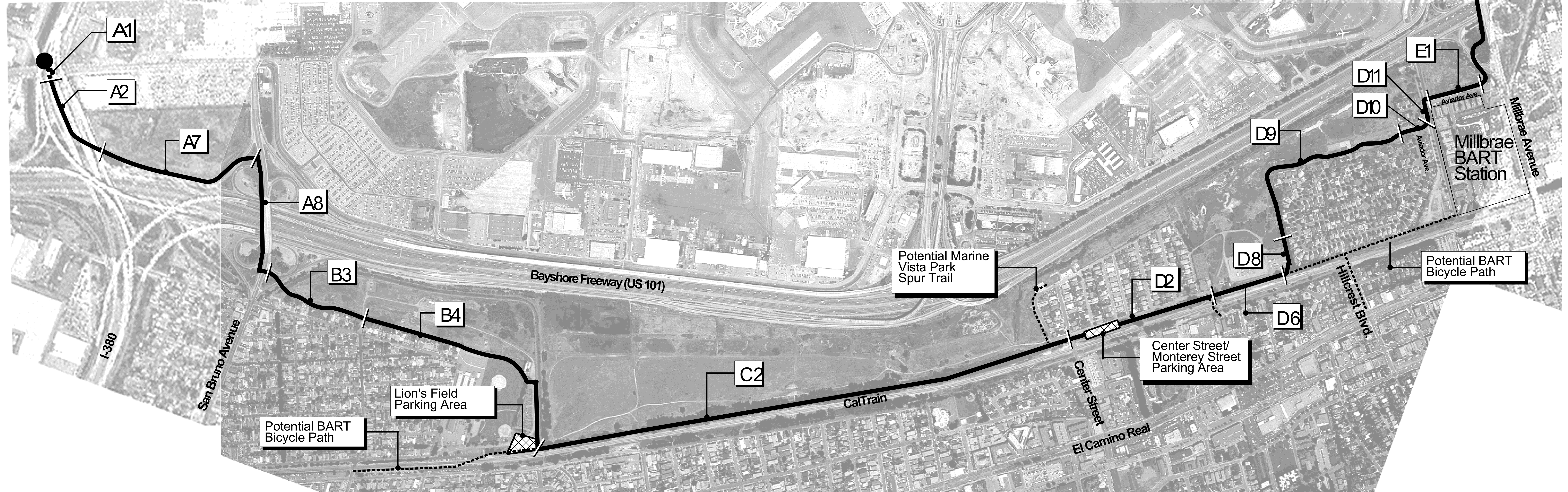
PREFERRED PERMANENT BAY TRAIL ALIGNMENT

(see text for explanation)

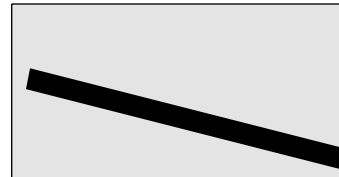
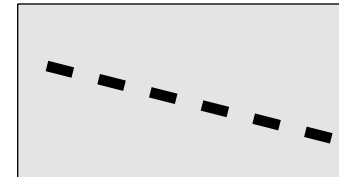
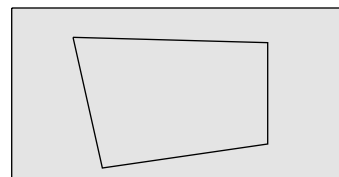
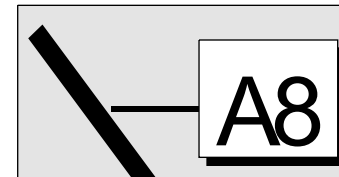
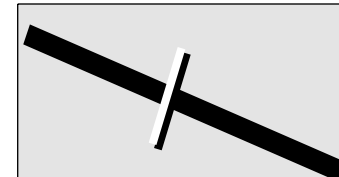
THIS MAP IS NOT A TRAIL GUIDE
This map is conceptual and for general planning purposes only. Map information, location of existing and alternative trails and other program information shown are subject to change. **This map does not convey any rights to the public to use any trail routes shown on this drawing; nor does this map exempt any person from trespassing charges.**

Southern BTAP Terminus:
Bayfront Park

Northern BTAP Terminus:
South Airport Boulevard @ North Access Road



Legend

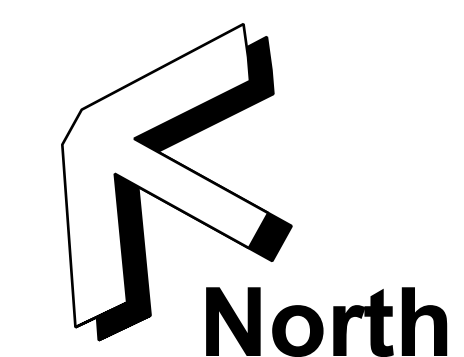
-  SFIA Bay Trail Alignment
-  Spur or Connector Trail
-  Community Parking Area
-  Trail Segment Key
-  Trail Segment Boundary

- NOTES**
- Trail Segment Key numbers derived from the Trail Route Segments and Options map by 2M Associates dated 7/14/97.
 - Route alignment for Segment A7, A8, and B3 reflects the configuration of a redesigned Highway 101 / San Bruno Avenue interchange as illustrated on the SFIA Pavement Delineation Plan dated April 17, 1997.
 - Route alignment for Segment E3 reflects the configuration of a redesigned Highway 101 / Millbrae Avenue interchange being prepared by the City of Millbrae.



Bay Trail Alignment Plan

San Francisco International Airport
Bay Trail Extension Project
Association of Bay Area Governments
Bay Trail Project



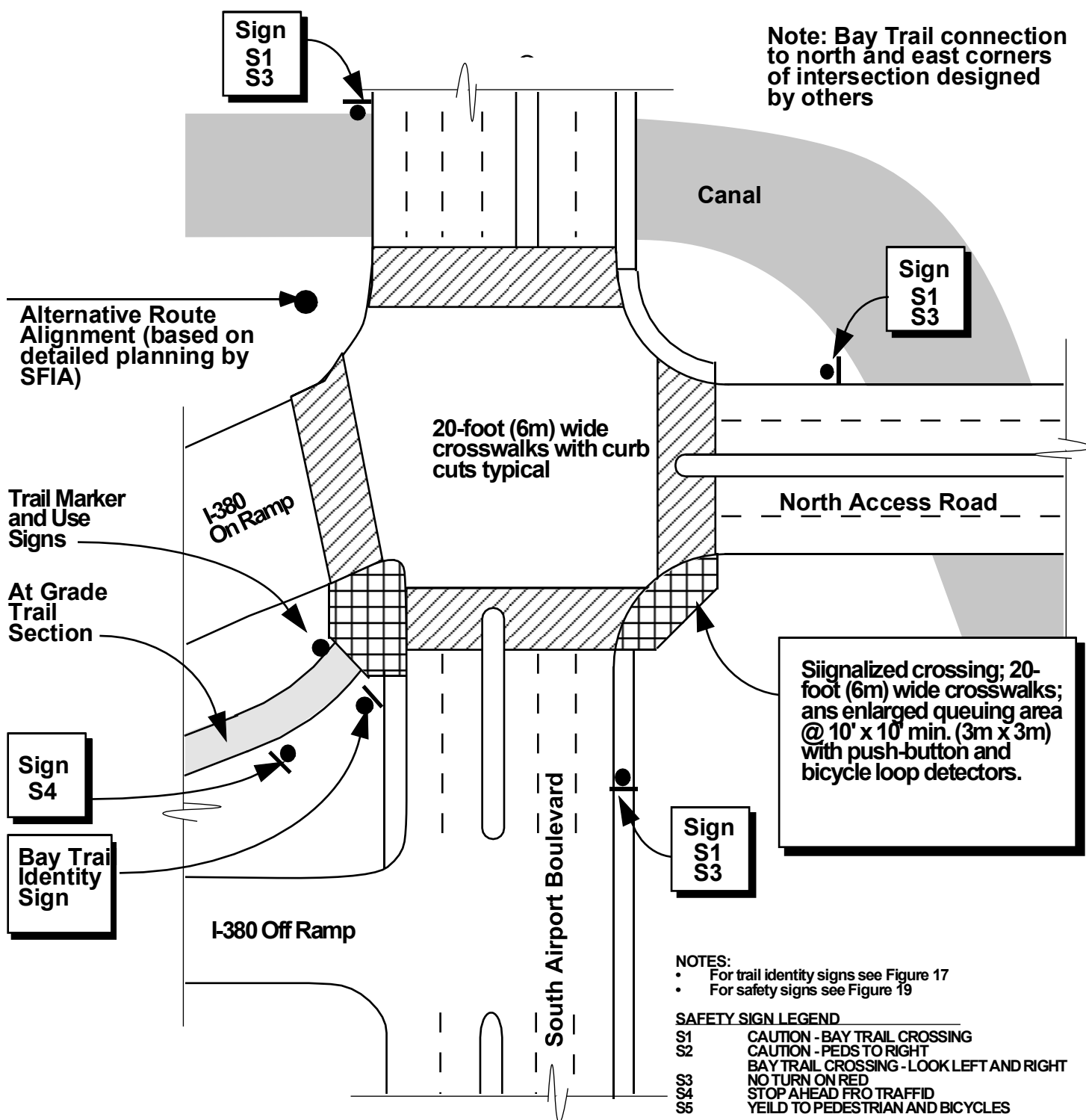
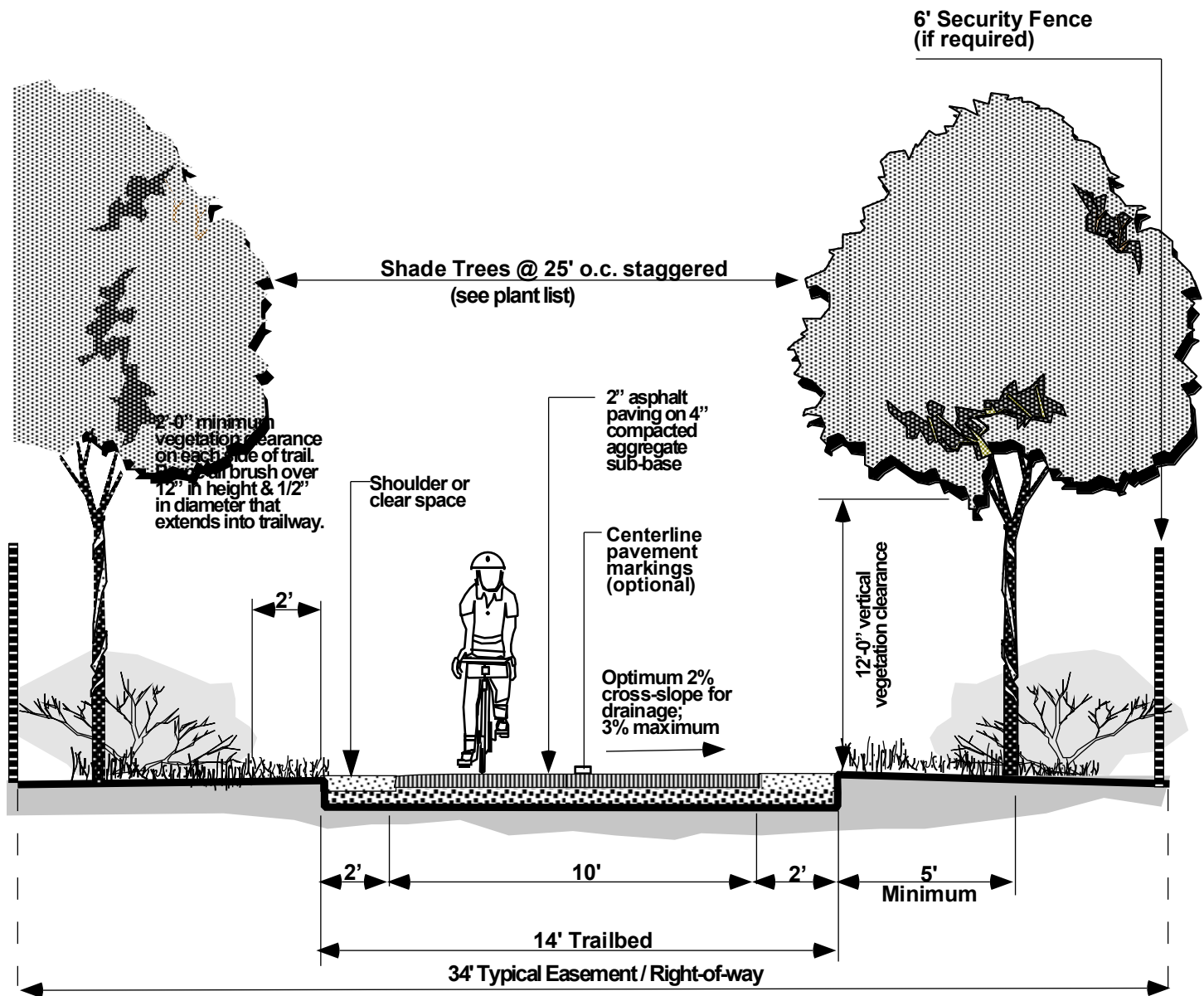


Figure 2: South Airport Boulevard at North Access Road (Segment A1)



NOTE: This drawing is conceptual and for general planning purposes only. Map information, location of proposed trail and other program information shown are subject to change.



- Notes:
- 5% maximum grade
 - Reference *Guide for the Development of Bicycle Facilities* prepared by the AASHTO Task Force on Geometric Design for details about horizontal alignment, sight distances, signing and marking, drainage, intersections, pavement structure, and grade-separation structures.

Figure 3: Typical At-Grade Section
 (Segments A2, A7, B4 @ Lions Field, C2 portion on top of BART ROW, D2, D6, D10, E1)

San Francisco Bay Trail **Bay Trail Alignment Plan**

San Francisco International Airport
 Bay Trail Extension Project

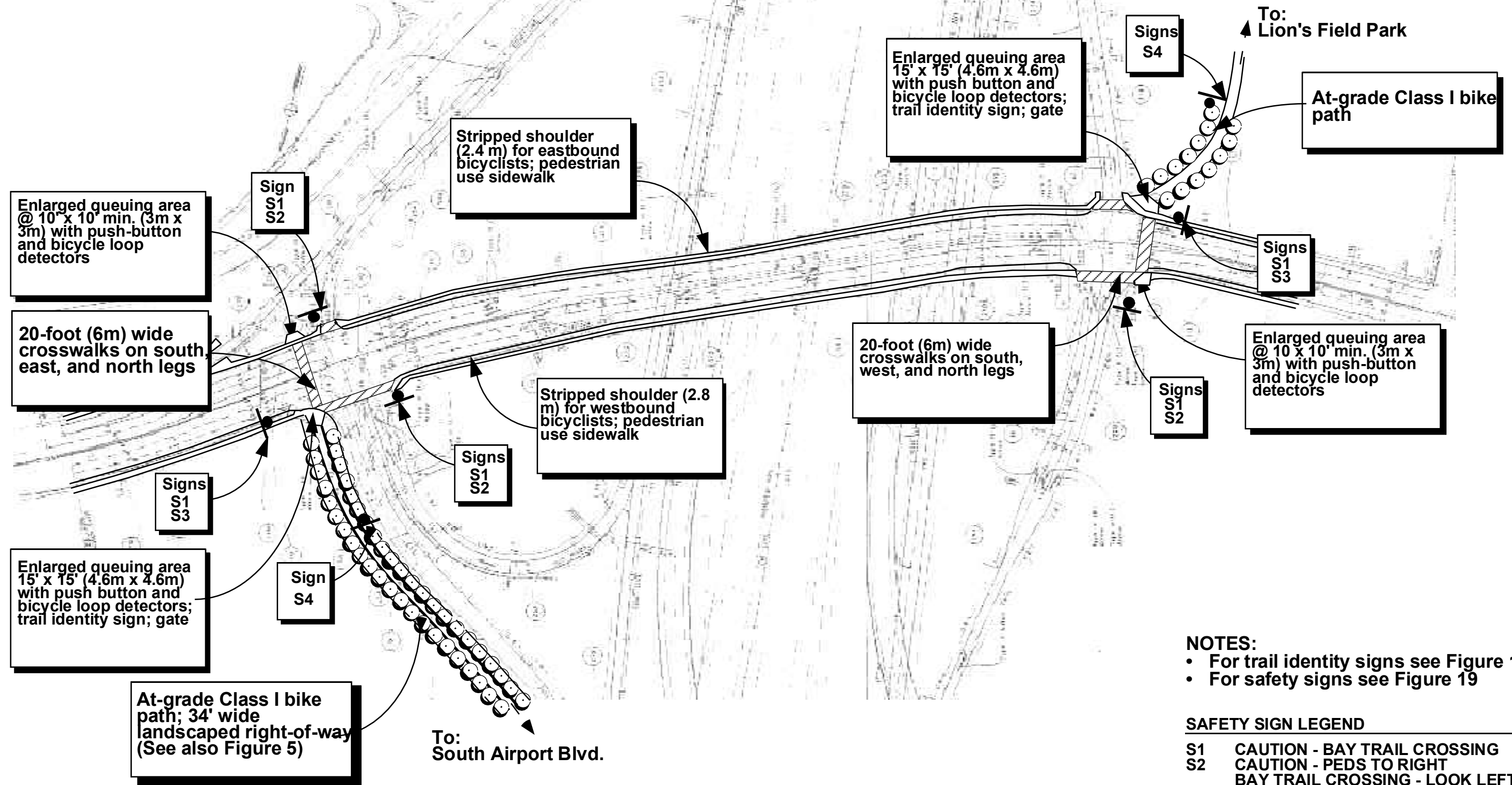
Association of Bay Area Governments
 Bay Trail Project

NOTE: This drawing is conceptual and for general planning purposes only. Map information, location of proposed trail and other program information shown are subject to change.

Figure 4

San Bruno Avenue / Bayshore Freeway Interchange

(see text for explanation)



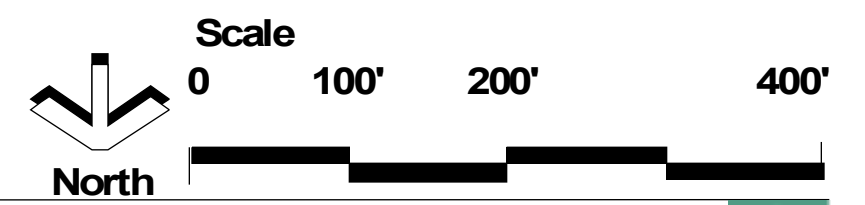
- NOTES:**
- For trail identity signs see Figure 17
 - For safety signs see Figure 19

SAFETY SIGN LEGEND

S1	CAUTION - BAY TRAIL CROSSING
S2	CAUTION - PEDS TO RIGHT BAY TRAIL CROSSING - LOOK LEFT AND RIGHT
S3	NO TURN ON RED
S4	STOP AHEAD FRO TRAFFID
S5	YEILD TO PEDESTRIAN AND BICYCLES



Bay Trail Alignment Plan
 San Francisco International Airport
 Bay Trail Extension Project
 Association of Bay Area Governments
 Bay Trail Project



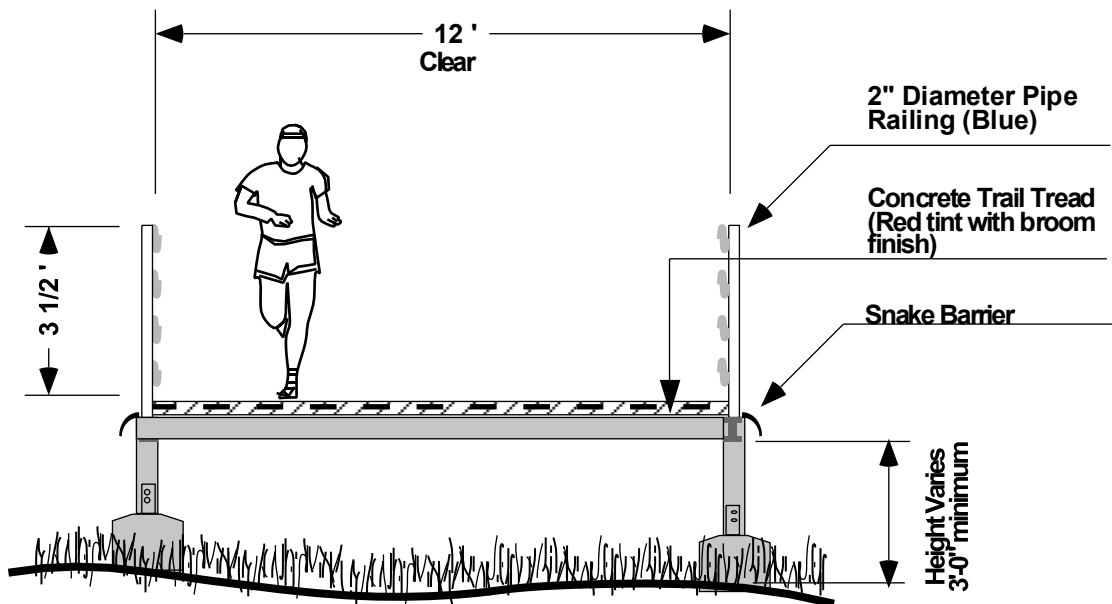
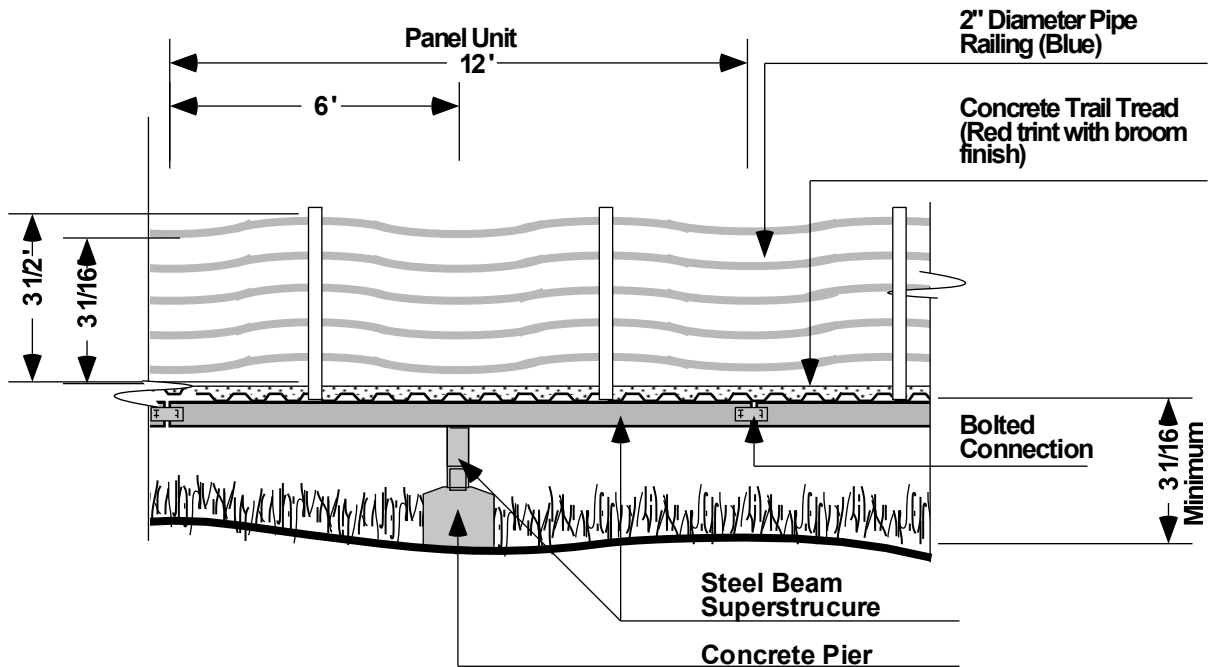


Figure 5: Typical Causeway Trail in Habitat Areas (Segments B3, B4, C2, D9)



Bay Trail Alignment Plan

San Francisco International Airport
Bay Trail Extension Project

Association of Bay Area Governments
Bay Trail Project

NOTE: This drawing is conceptual and for general planning purposes only. Map information, location of proposed trail and other program information shown are subject to change.

Draft: February, 1998

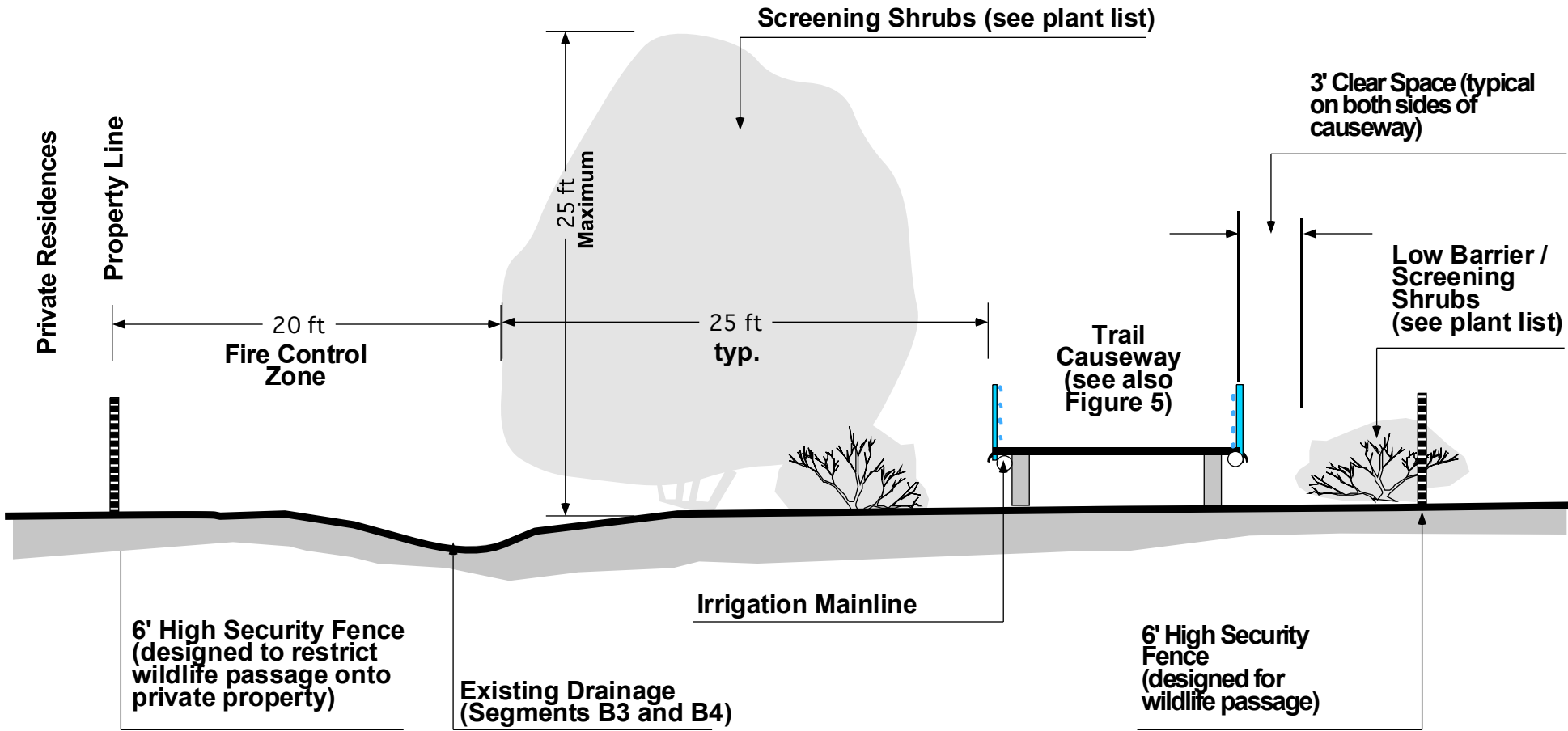


Figure 6: Typical Causeway Placement in Habitat Areas
(Segments B3, B4, and D9)



Bay Trail Alignment Plan

San Francisco International Airport
Bay Trail Extension Project

Association of Bay Area Governments
Bay Trail Project

NOTE: This drawing is conceptual and for general planning purposes only. Map information, location of proposed trail and other program information shown are subject to change.

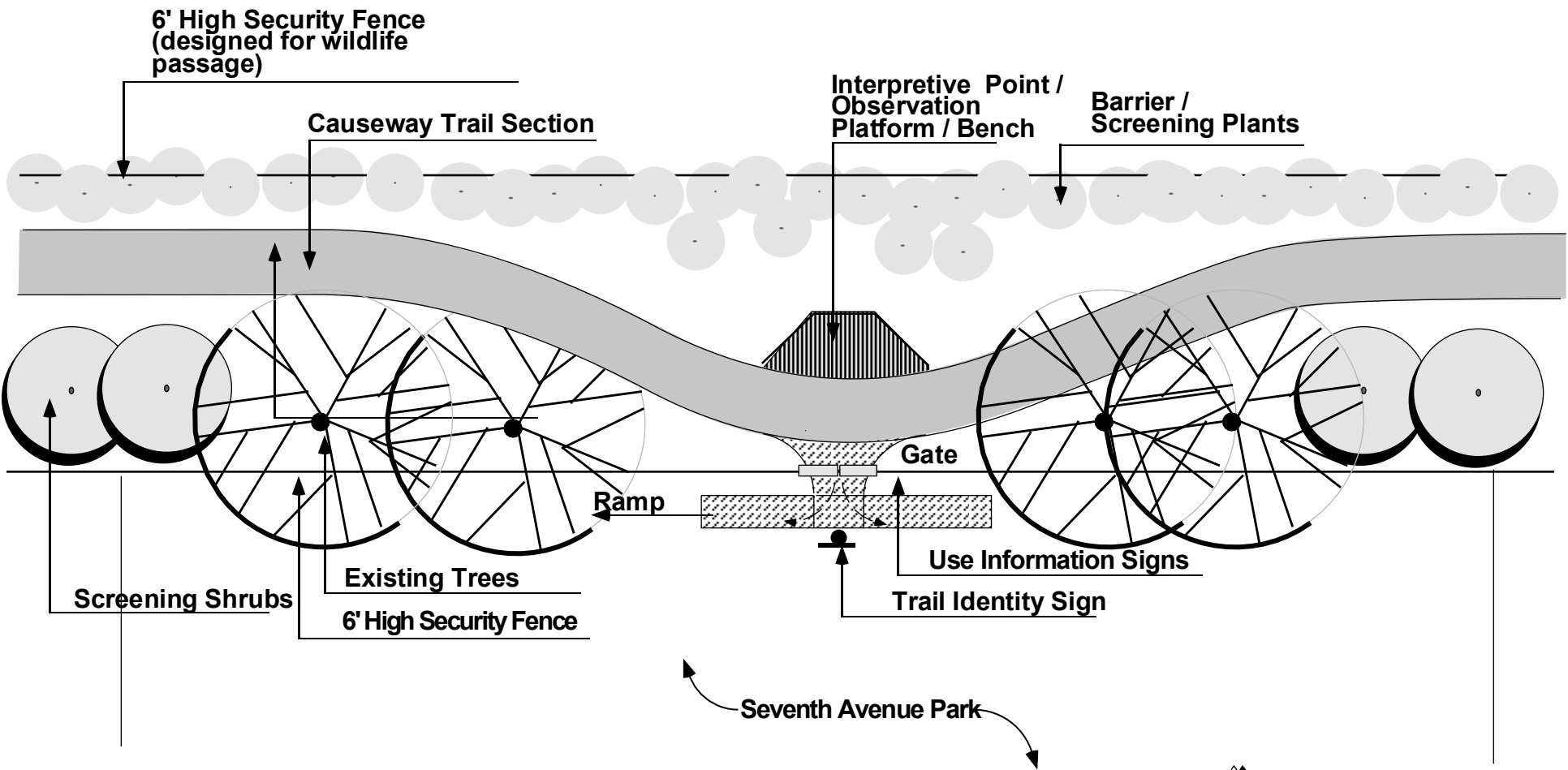
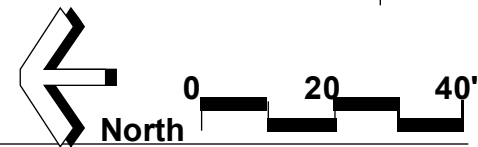


Figure 7: Conceptual Plan / Seventh Avenue Park
 (Segment D9)



Bay Trail Alignment Plan

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 Bay Trail Project

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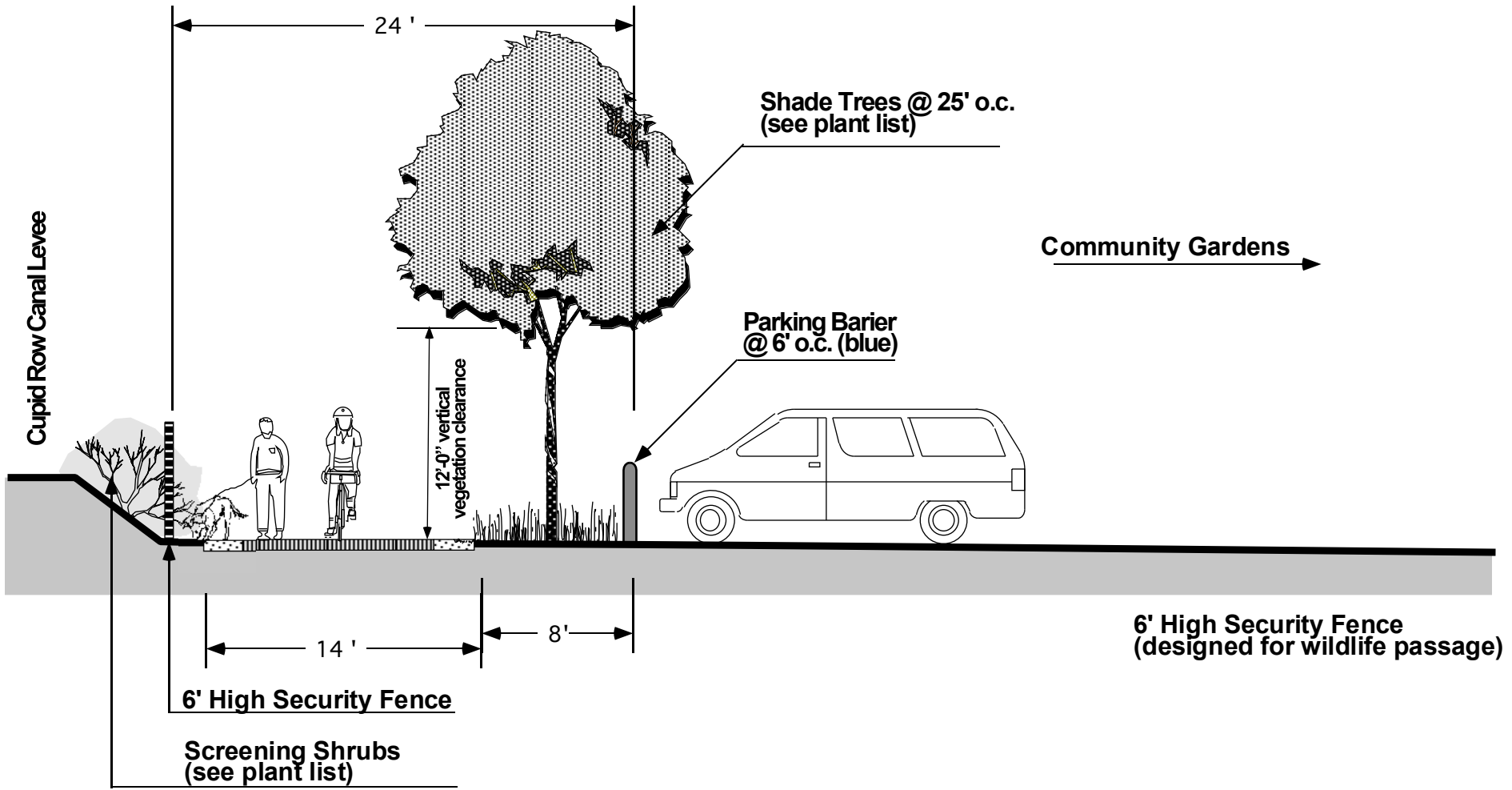


Figure 8: Lions Field / Community Gardens Parking Area (Segment B4)



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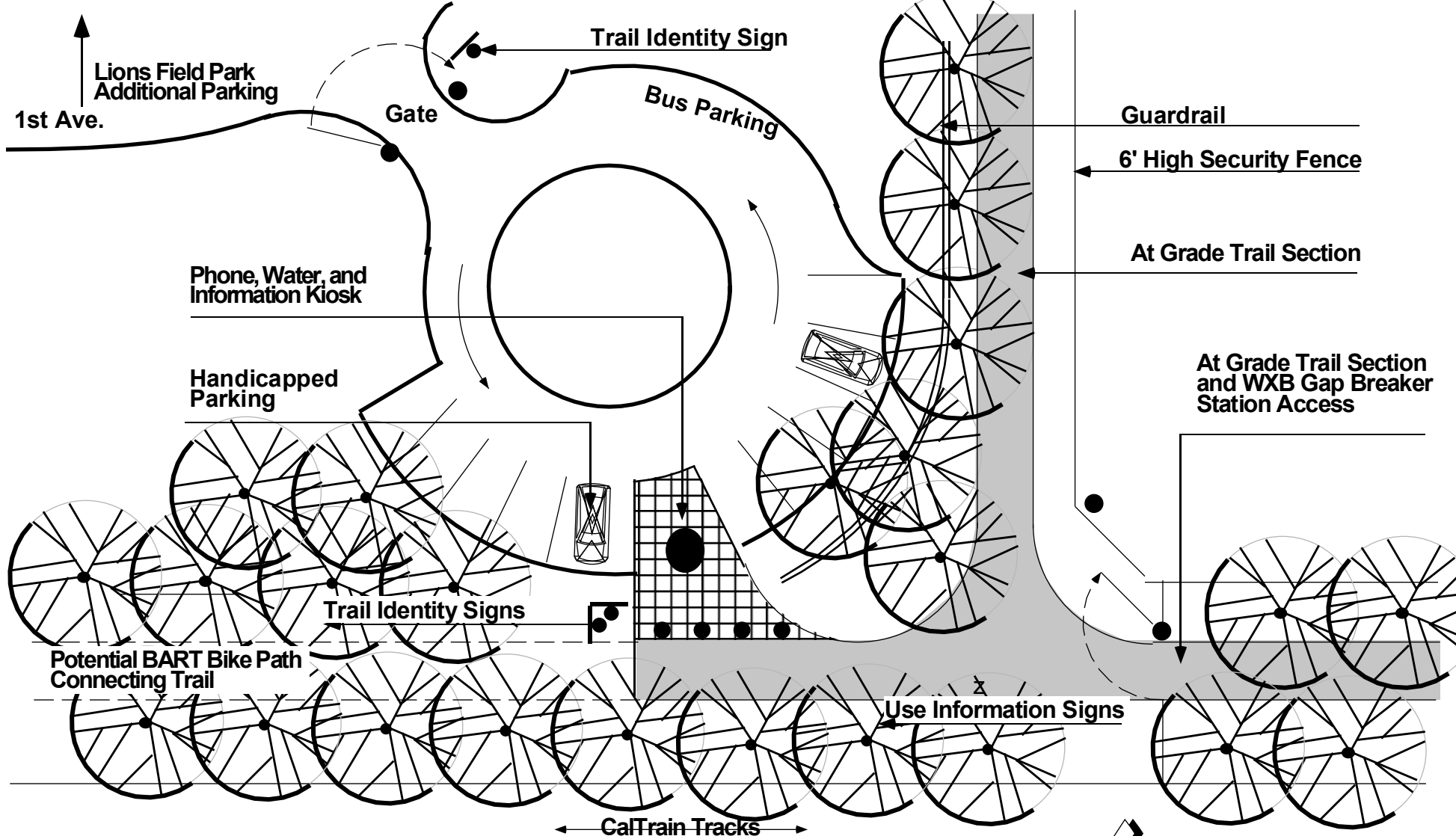
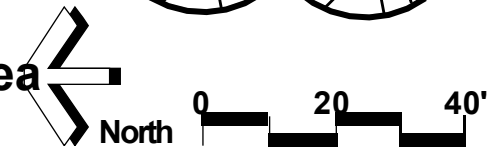


Figure 9: Conceptual Plan / Lions Field Community Parking Area
 (Segments C2 / D2)



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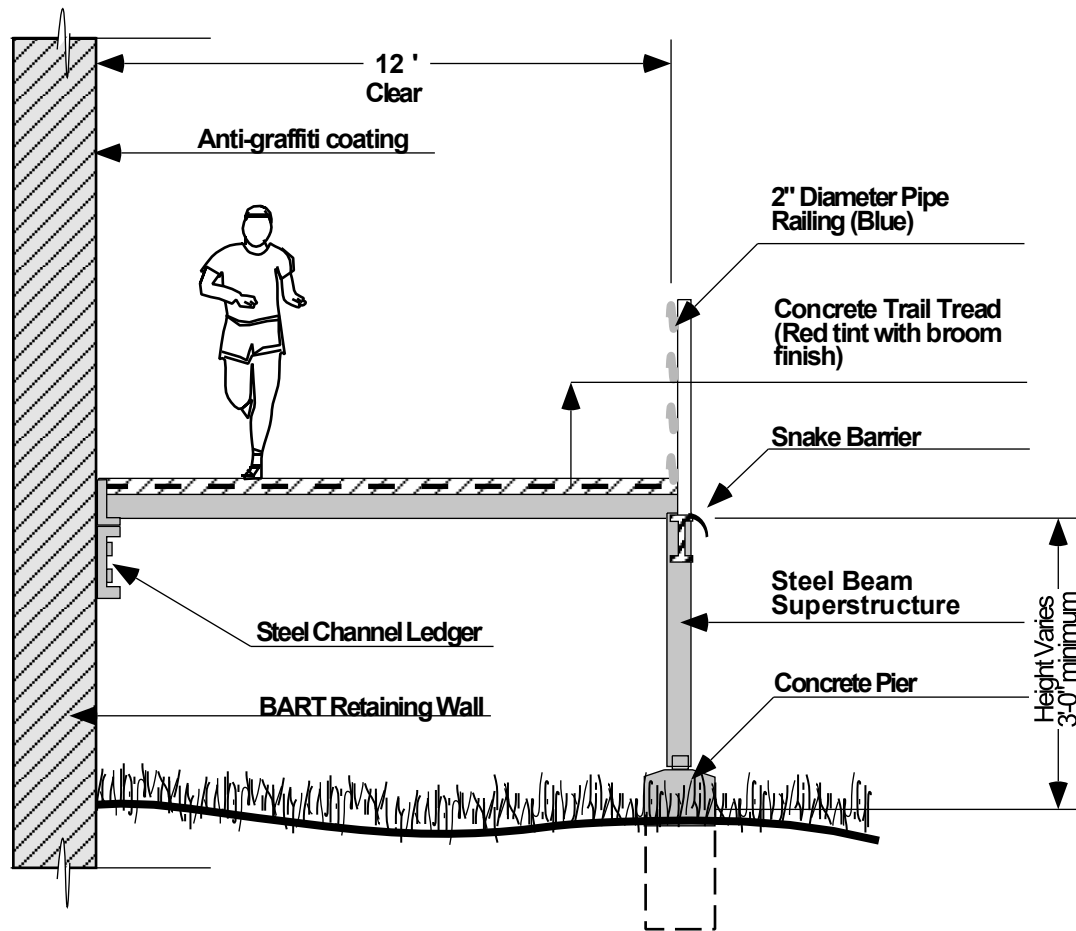
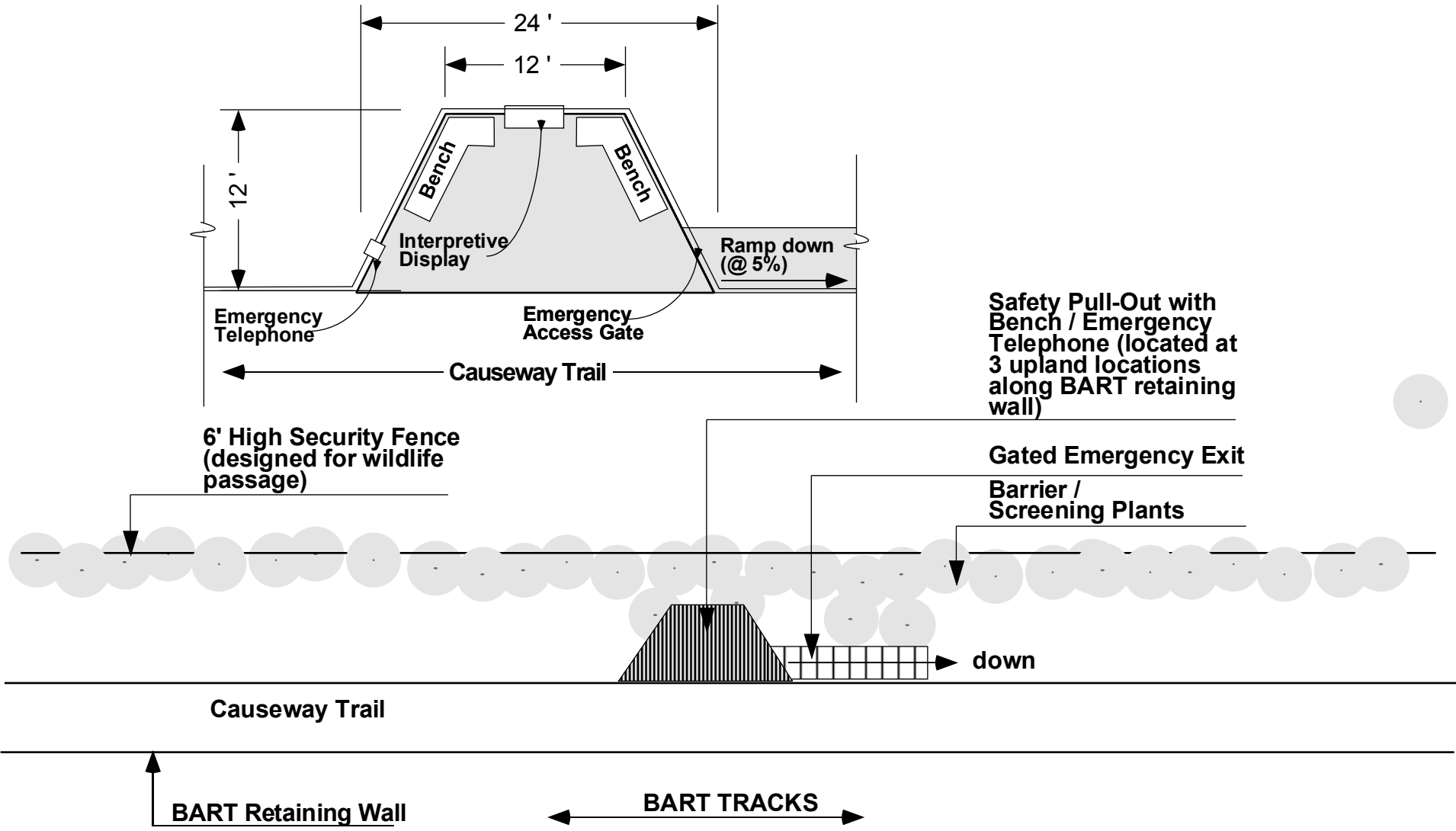


Figure 10: Trail Causeway adjacent to BART Retained Fill Section (Segment C2)



Safety Pull-Out with Bench / Emergency Telephone (located at 3 upland locations along BART retaining wall)

6' High Security Fence (designed for wildlife passage)

Gated Emergency Exit
Barrier / Screening Plants

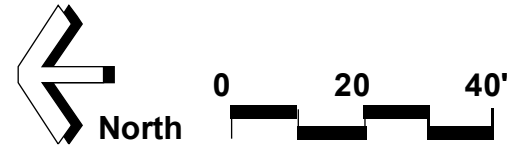
Causeway Trail

BART Retaining Wall

BART TRACKS

down

Figure 11: Conceptual Plan / Trail Safety Pull-Out along BART Retaining Wall (Segment C2)



NOTE: This drawing is conceptual and for general planning purposes only. Map information, location of proposed trail and other program information shown are subject to change.

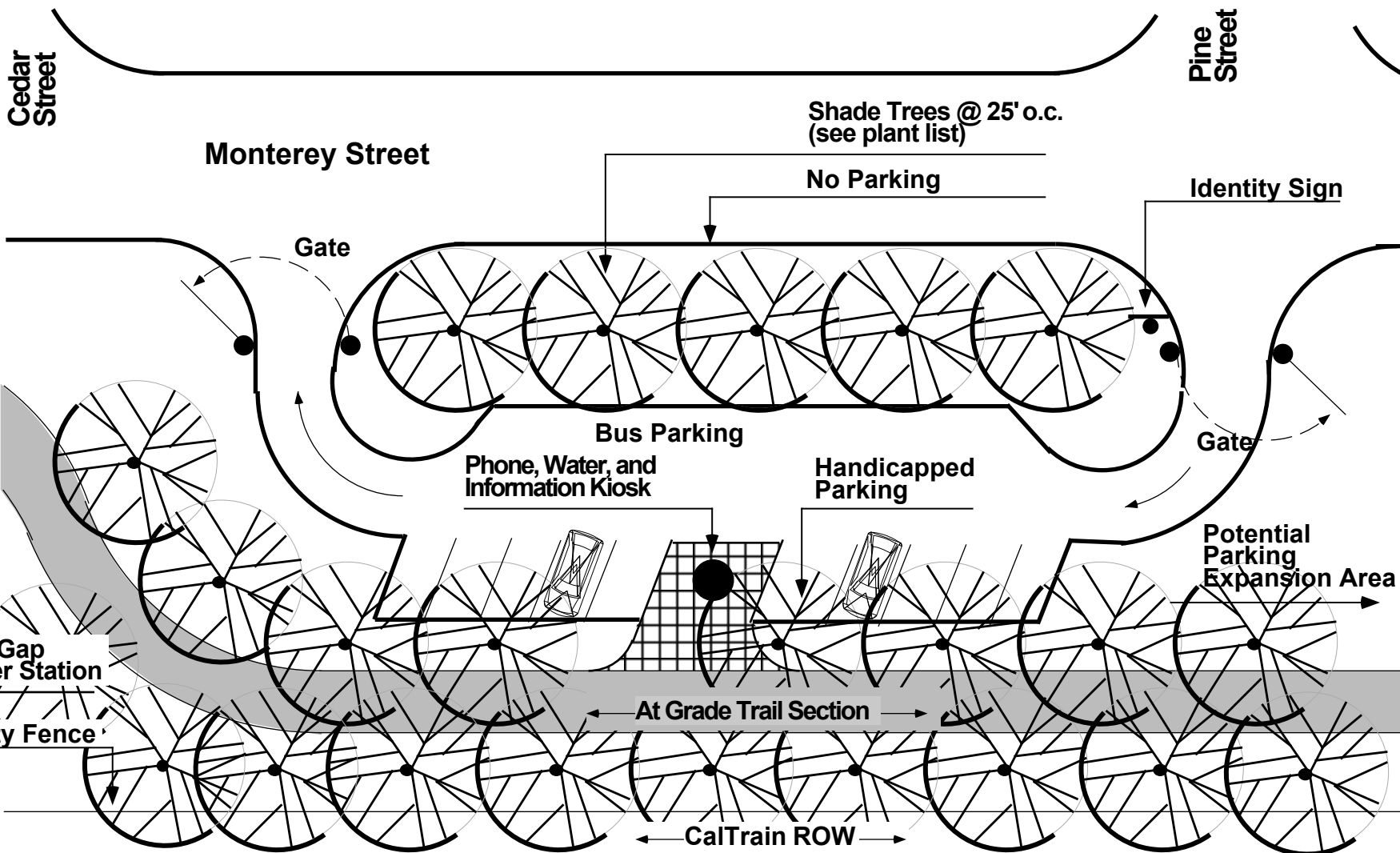
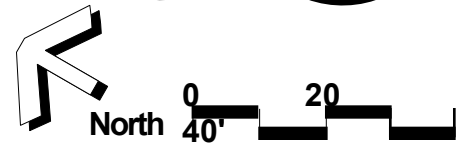


Figure 12: Conceptual Plan / Center Street - Monterey Street Community Parking Area (Segment D2)

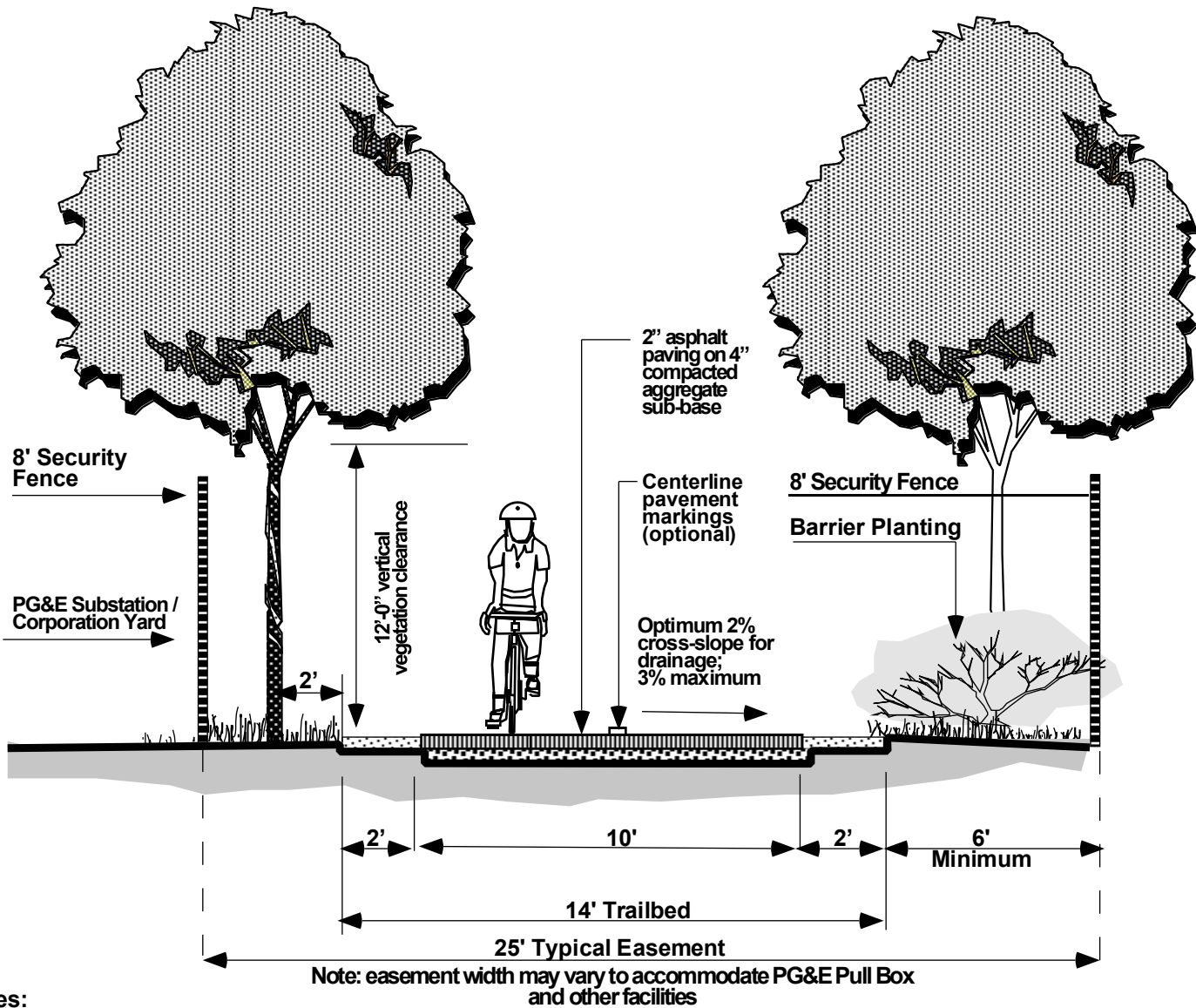


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- Notes:
- 5% maximum grade
 - Reference *Guide for the Development of Bicycle Facilities* prepared by the AASHTO Task Force on Geometric Design for details about horizontal alignment, sight distances, signing and marking, drainage, intersections, pavement structure, and grade-separation structures.

Figure 13: PG&E Substation (Segment D8)



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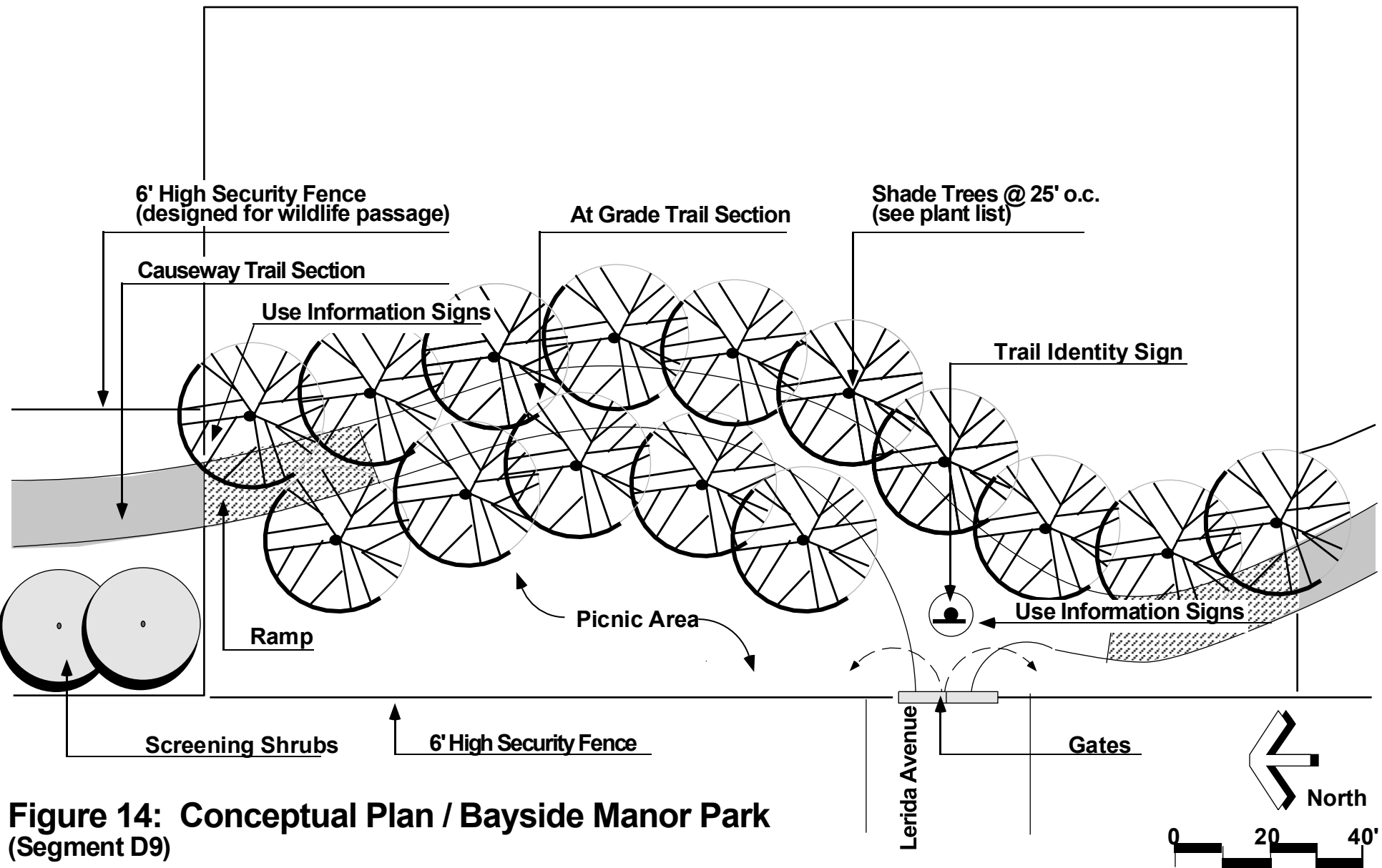


Figure 14: Conceptual Plan / Bayside Manor Park (Segment D9)



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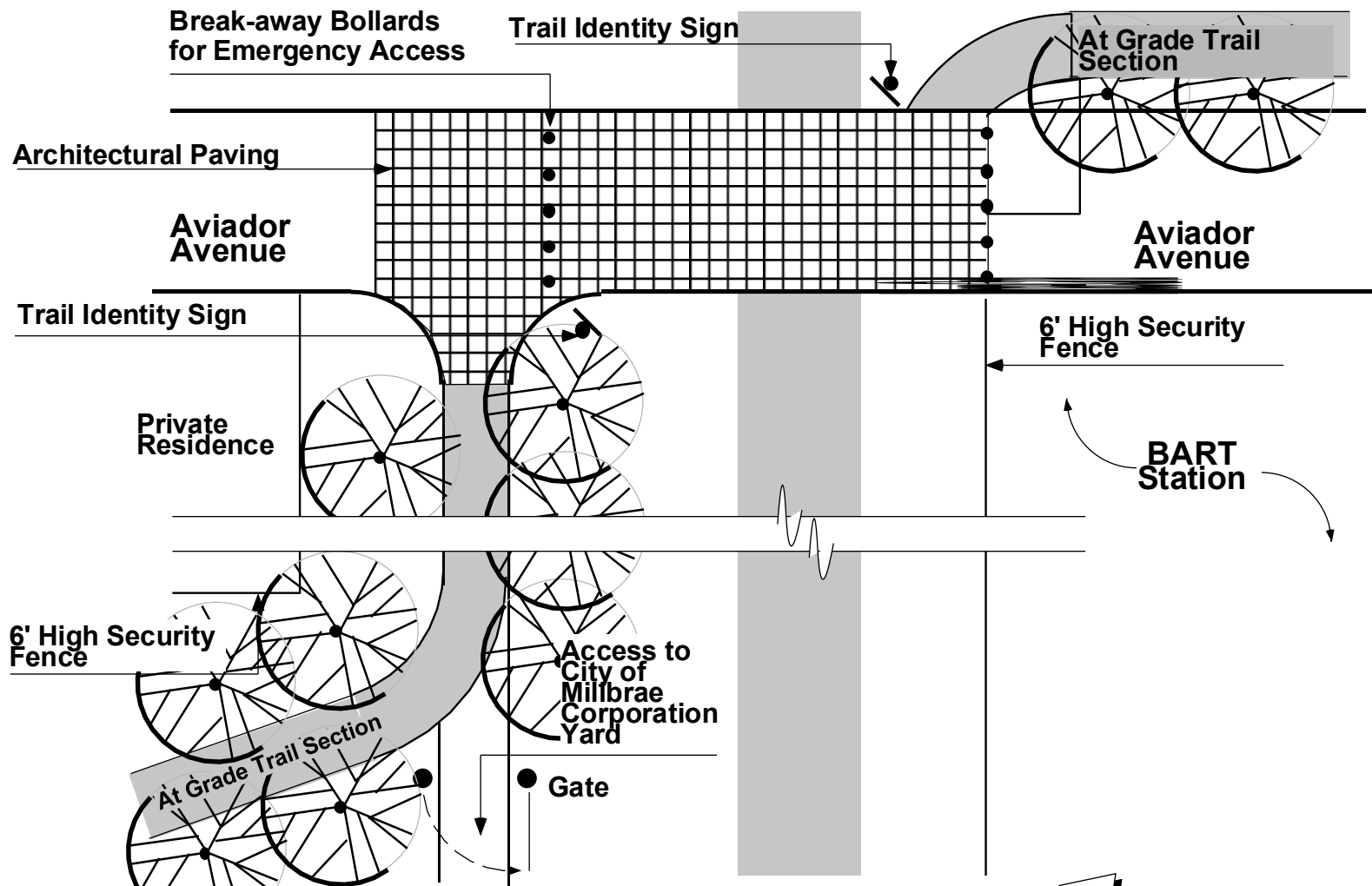


Figure 15: Conceptual Plan / Aviator Avenue @ Millbrae Canal
 (Segments D11 / E1)



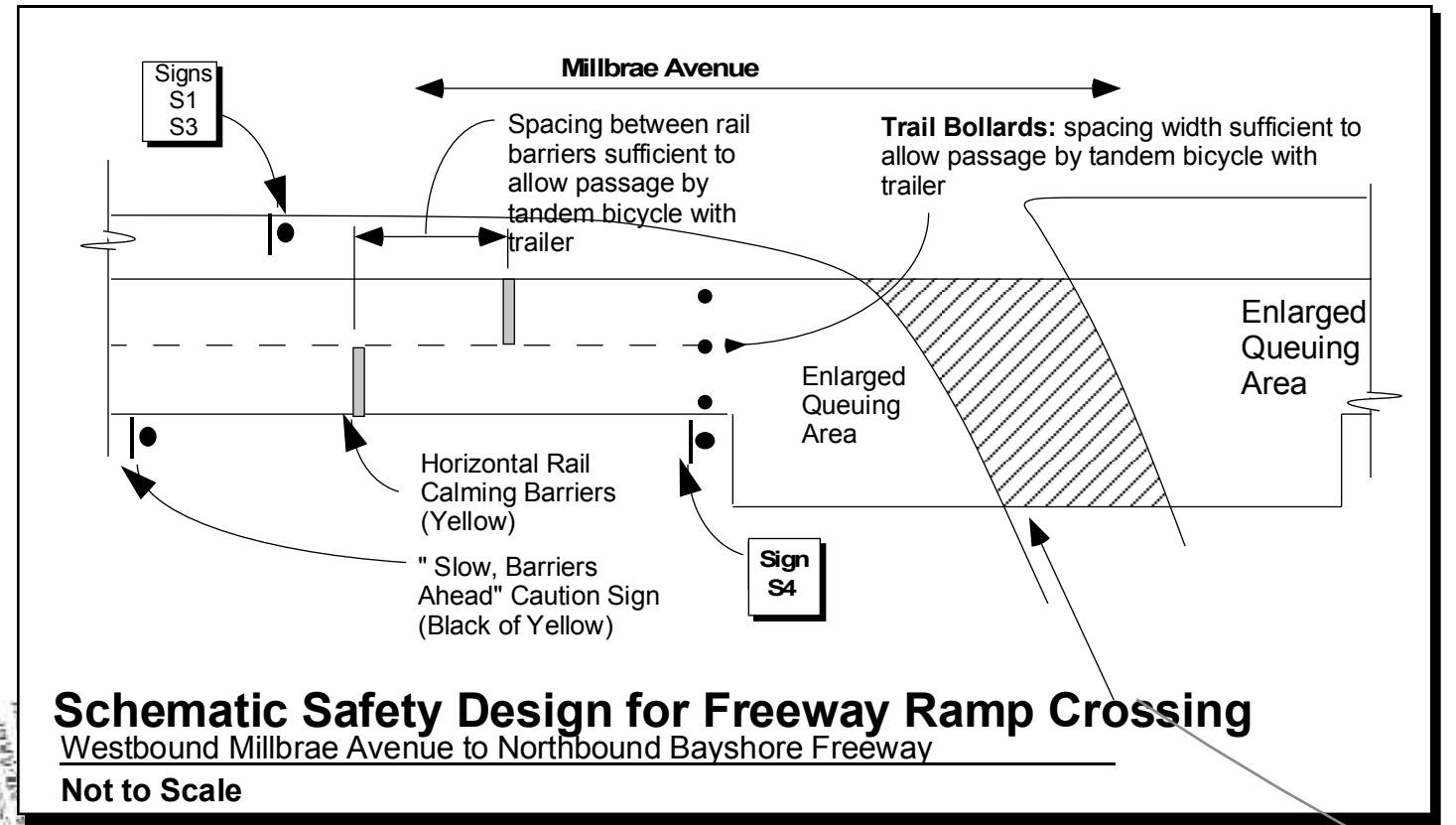
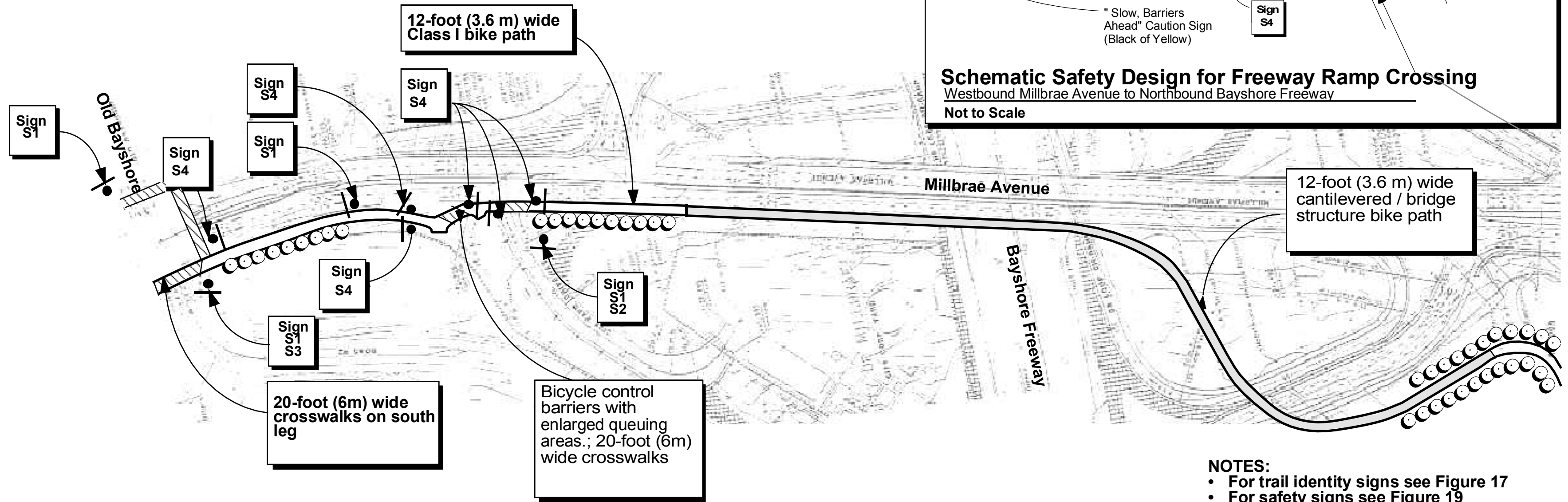
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Figure 16
**Millbrae Avenue /
 Bayshore Freeway Interchange**
 (see text for explanation)



- NOTES:**
- For trail identity signs see Figure 17
 - For safety signs see Figure 19
- SAFETY SIGN LEGEND**
- | | |
|----|---|
| S1 | CAUTION - BAY TRAIL CROSSING |
| S2 | CAUTION - PEDS TO RIGHT
BAY TRAIL CROSSING - LOOK LEFT AND RIGHT |
| S3 | NO TURN ON RED |
| S4 | STOP AHEAD FRO TRAFFID |
| S5 | YEILD TO PEDESTRIAN AND BICYCLES |



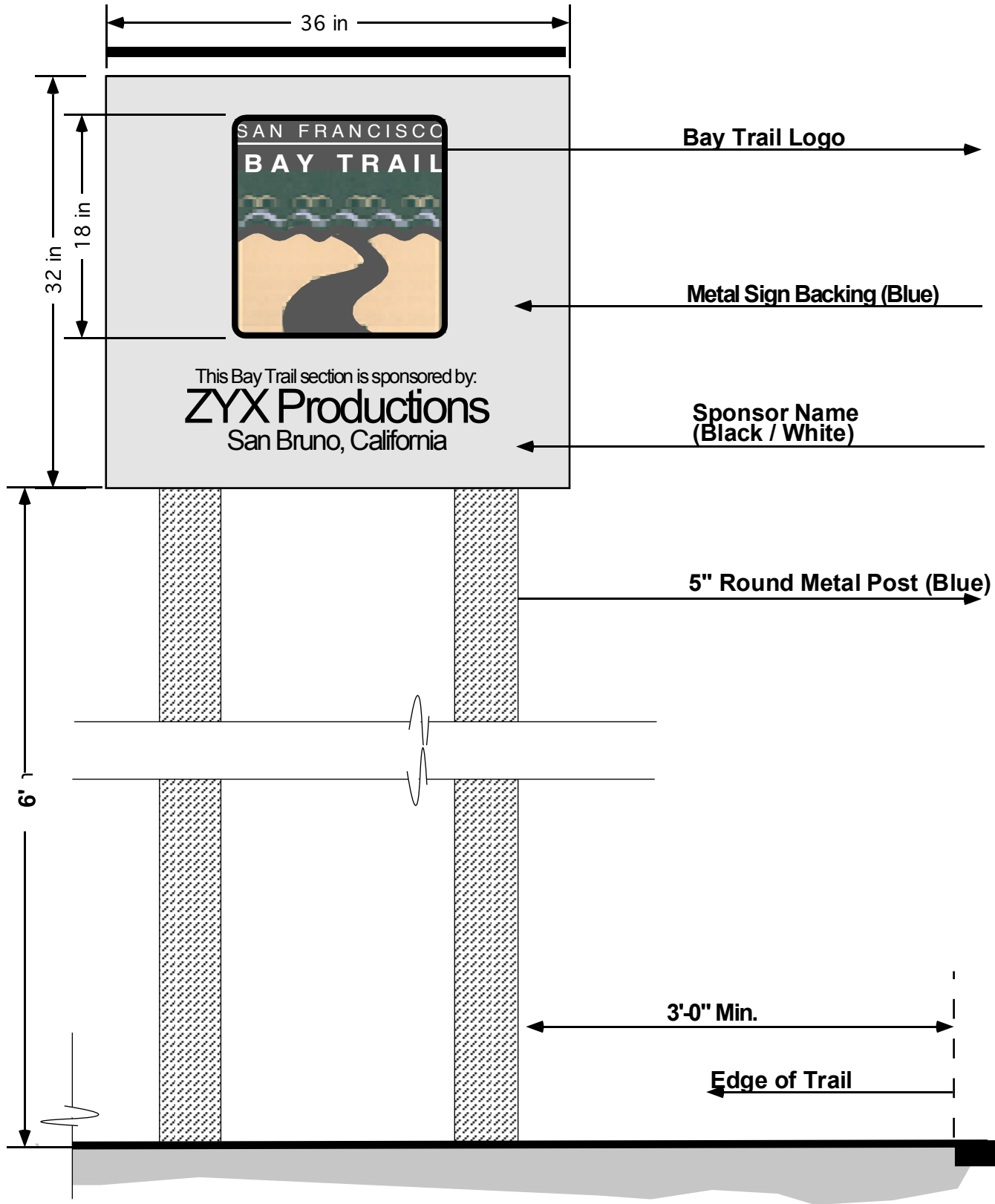


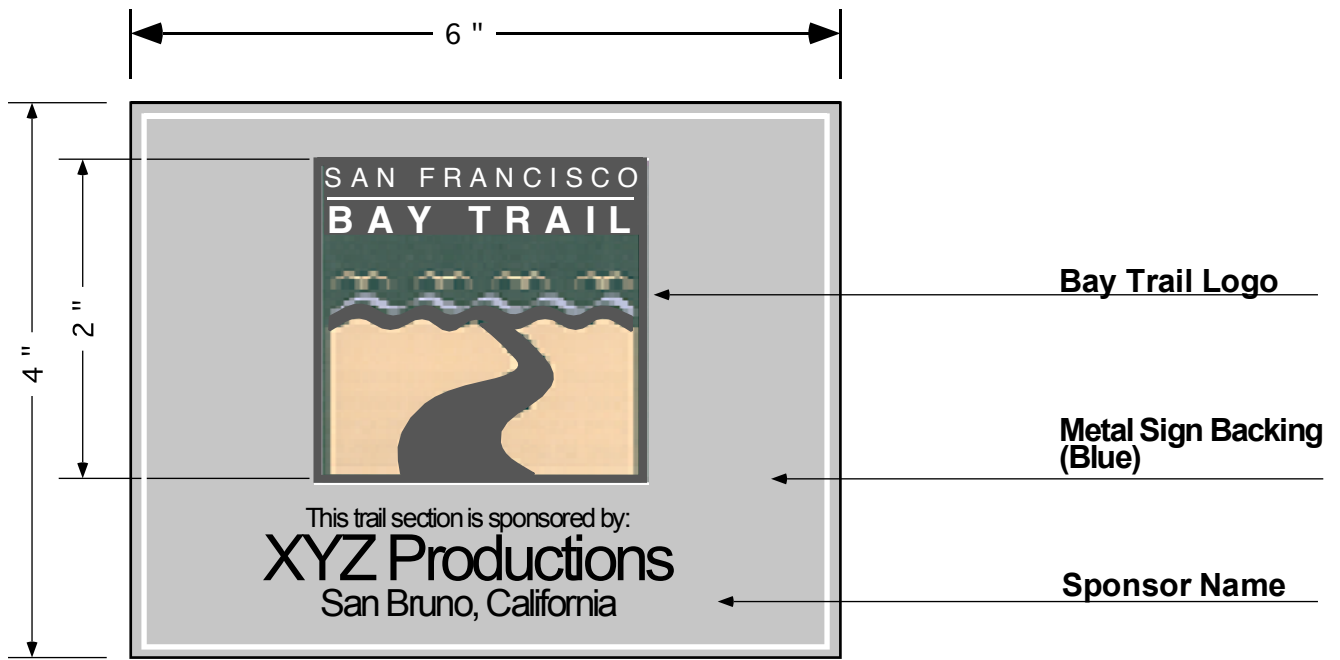
Figure 17: Trail Identity Sign

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Trail Identity Sign

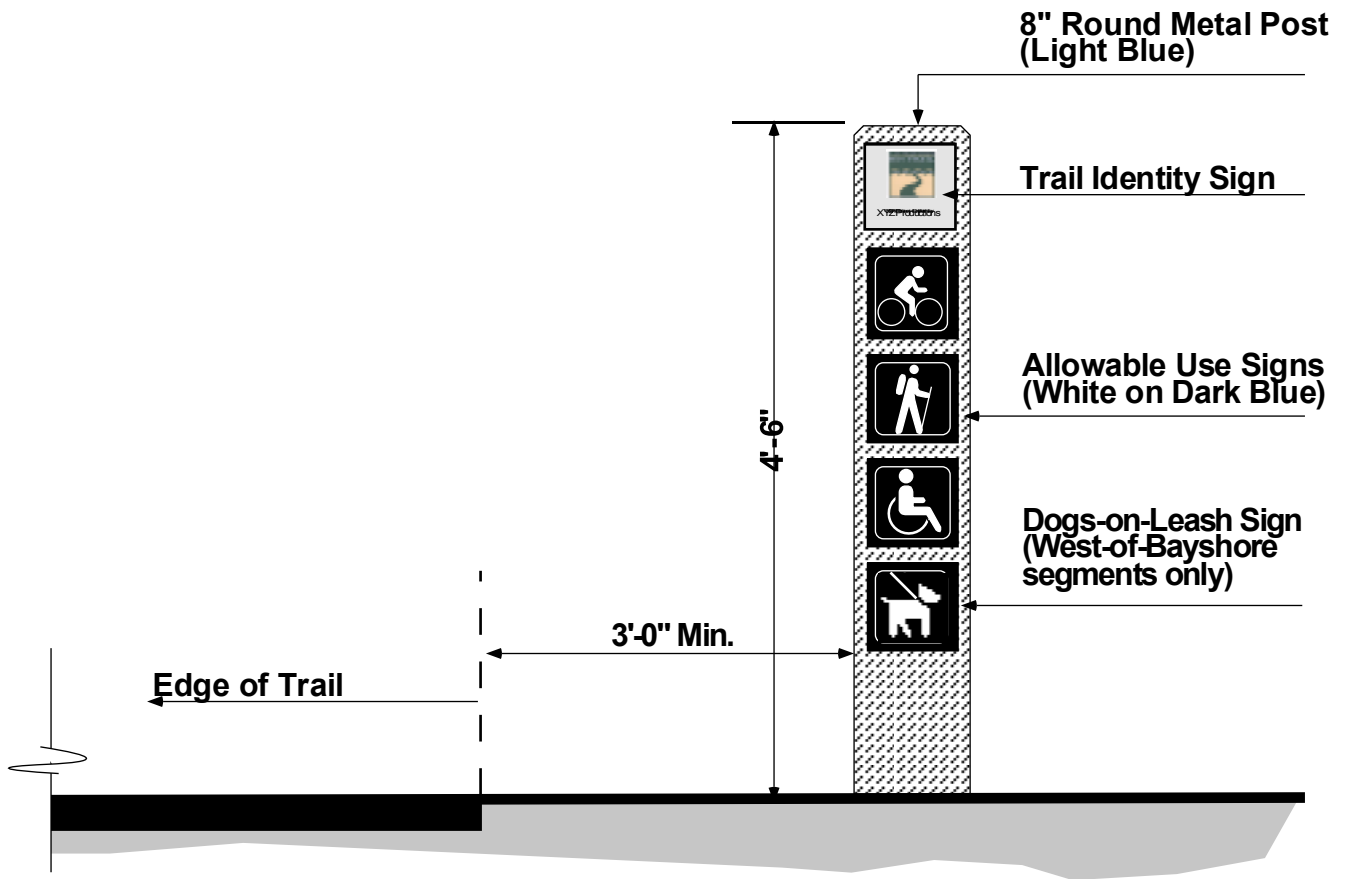


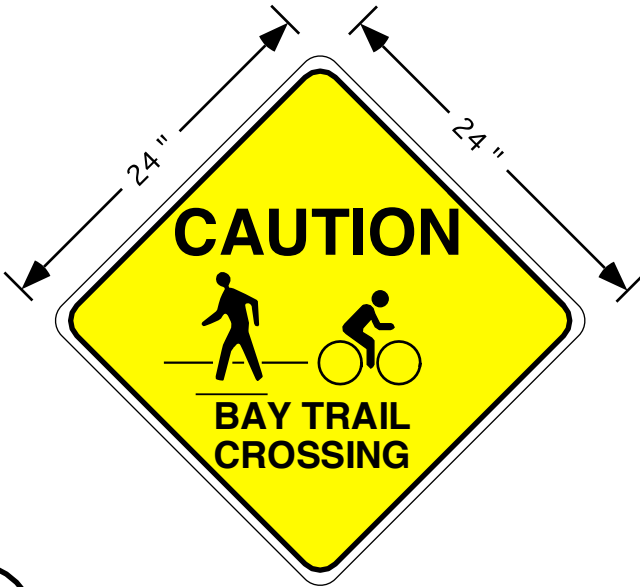
Figure 18: Trail Marker and Use Signs



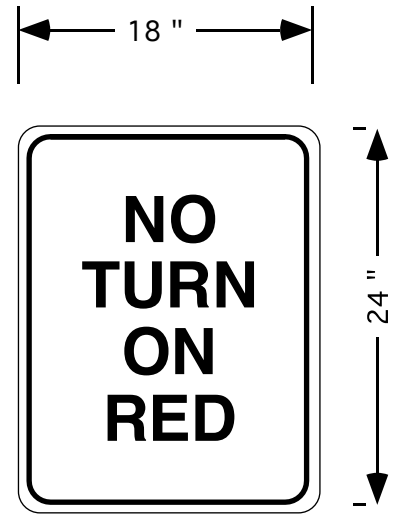
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S1 Caution Sign
Black On Yellow



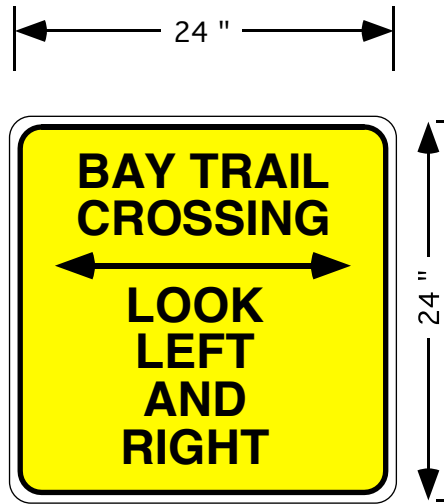
S3 Caution Sign
Black On White



S4 Trail Stop Sign
White On Red



S5 Trail Stop Sign
Black on White



S2 Caution Sign
Black On Yellow

Figure 19: Safety Signs

Figure 20

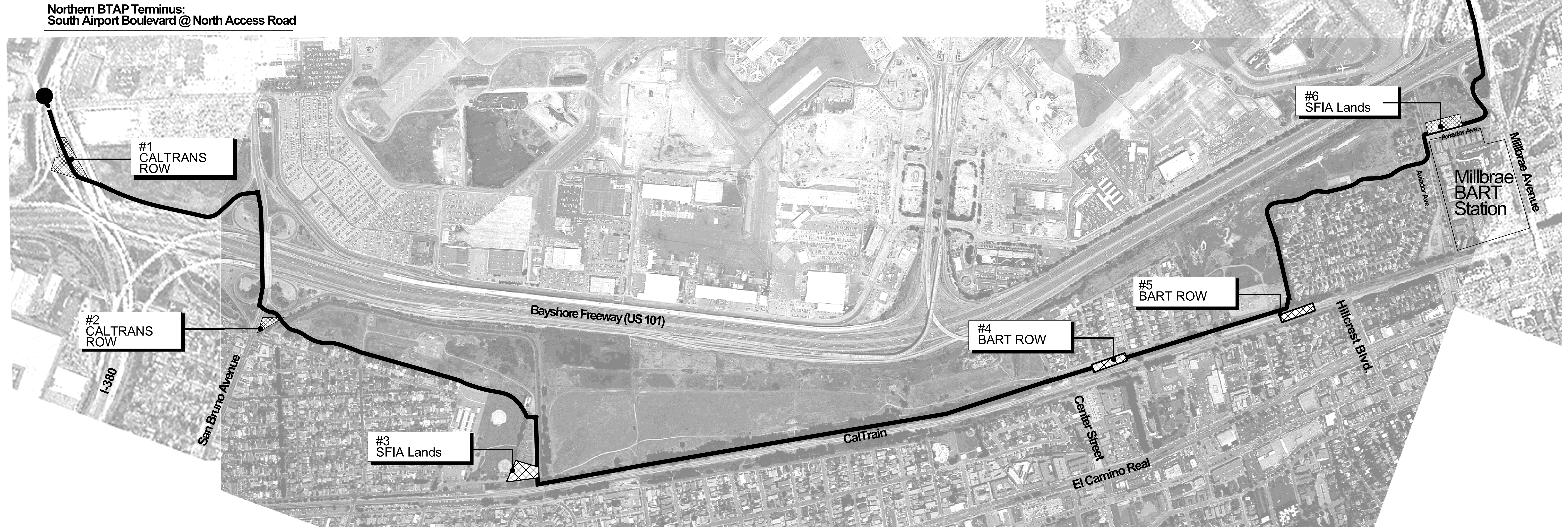
PREFERRED PERMANENT BAY TRAIL ALIGNMENT

(see text for explanation)

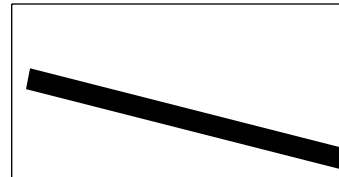
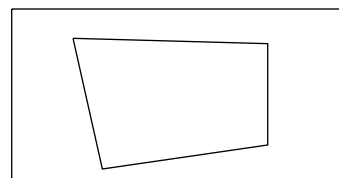
Construction Staging Areas

THIS MAP IS NOT A TRAIL GUIDE
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Southern BTAP Terminus:
Bayfront Park

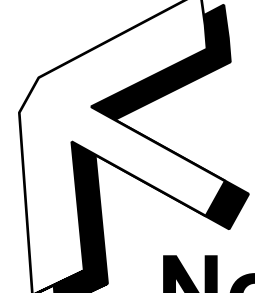


Legend

-  SFIA Bay Trail Extension
-  Construction Staging Area



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 San Francisco International Airport
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 **North**

Scale
 0 1/8 1/4 1/2 miles



Figure 21

PREFERRED PERMANENT ALIGNMENT

(see text for explanation)

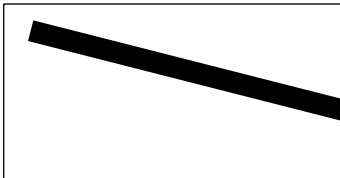
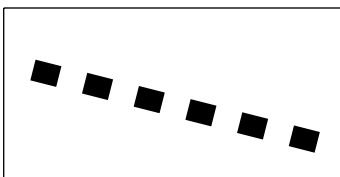
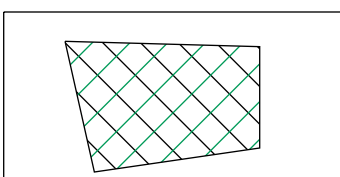
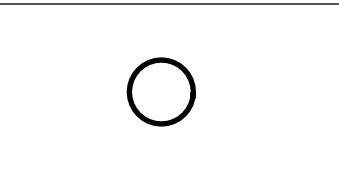
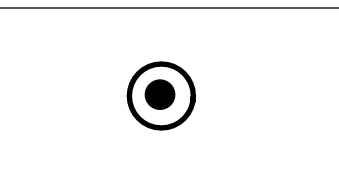
Access Controls

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Southern BTAP Terminus:
Bayfront Park

Northern BTAP Terminus:
South Airport Boulevard @ North Access Road

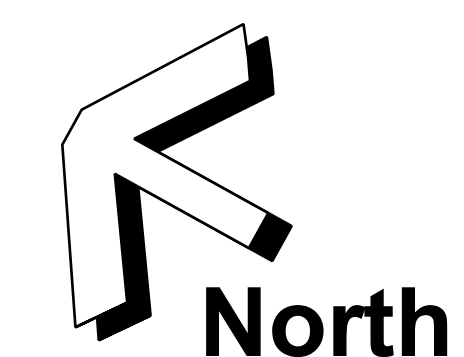


-  SFIA Bay Trail Alignment / Open Use: fencing and other access controls for user safety and/or security of adjacent land uses
-  SFIA Bay Trail Alignment/ Potential Restricted use: fencing and other access controls for user safety and/or habitat protection
-  Community Parking Area
-  Access control gate: required for intermittent SFIA operational closures
-  Access control gate: capability for locking at night



Bay Trail Alignment Plan

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APPENDIX A
TRAIL ALIGNMENT OPTIONS MAP

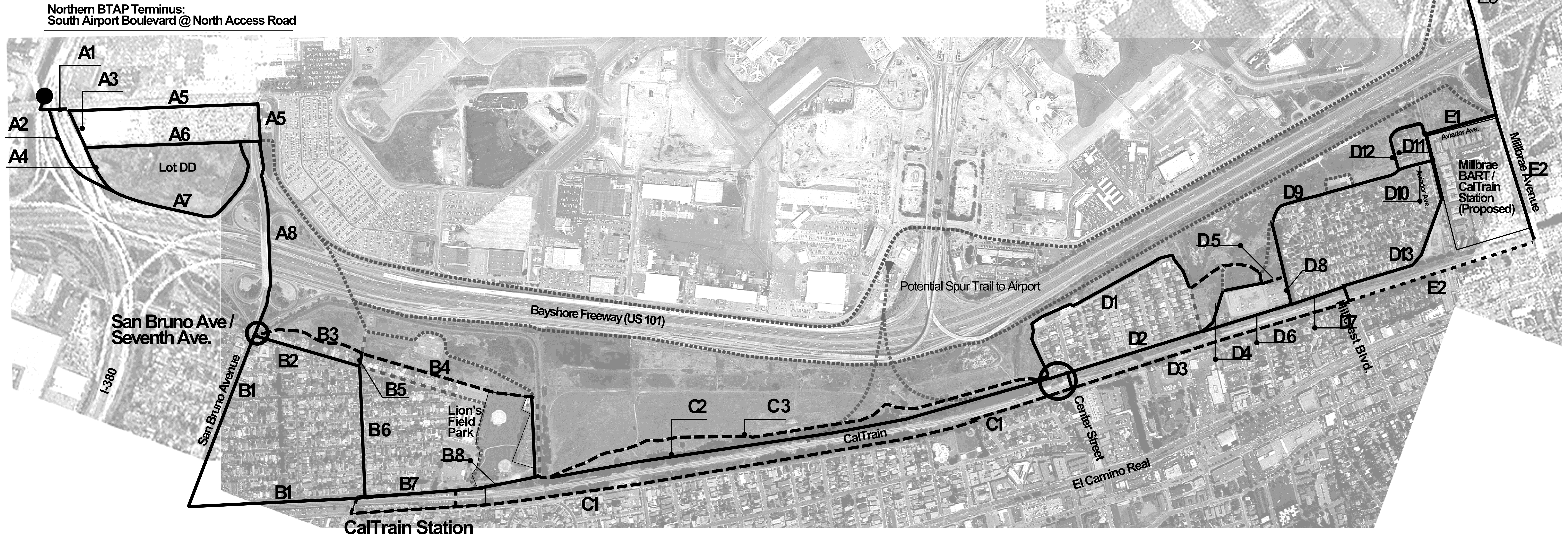
Figure 1

TRAIL ALIGNMENT OPTIONS

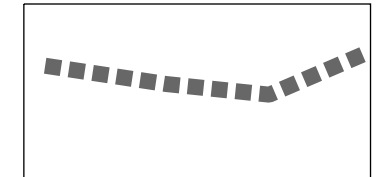
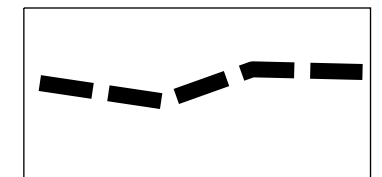
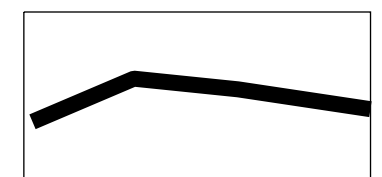
(see text for explanation)

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Bayfront Park

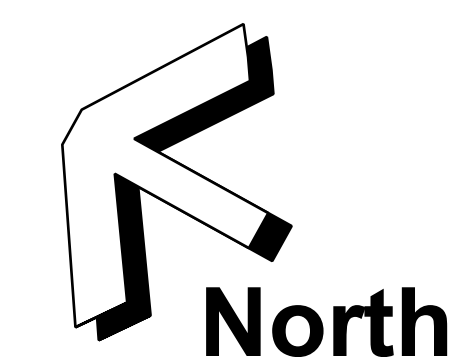


Legend

-  Trail route options eliminated by TAC from further evaluation - 6/2/97
-  Trail route options to be evaluated but identified by TAC with potential fatal-flaw constraints - 6/2/97
-  Trail route options to be evaluated



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APPENDIX B
TRAIL EVALUATION CRITERIA

TABLE 2: EVALUATION CRITERIA

Group	Sub - Criteria	RANKING		
		LOW	MODERATE	HIGH
Habitat Values	Segmentation of habitat	<ul style="list-style-type: none"> trail divides two high value habitat areas 	<ul style="list-style-type: none"> trail along edge of high value habitat area 	<ul style="list-style-type: none"> trail outside of high value habitat area
	Effects of Construction	<ul style="list-style-type: none"> fill is required in wetland landscapes fill is required in wetland and/or endangered species landscapes 	<ul style="list-style-type: none"> construction activities occur in undisturbed upland landscapes woody vegetation is required to be removed 	<ul style="list-style-type: none"> all construction activities occur on existing disturbed lands no or little woody vegetation removal required for trail tread
	Types of trail use and potential disturbance on wildlife	<ul style="list-style-type: none"> all types of trail use (at grade in habitat areas) dogs permitted 	<ul style="list-style-type: none"> hiking only (at grade in habitat areas) no dogs 	<ul style="list-style-type: none"> hiking and biking (grade separation in habitat areas) no dogs
	Seasonal considerations	<ul style="list-style-type: none"> all trail uses can occur all year 		<ul style="list-style-type: none"> trail use limited or controlled October through March
	Ease of Implementation	Dependency on other projects	<ul style="list-style-type: none"> trail implementation would be dependent on concurrent construction or another project 	<ul style="list-style-type: none"> design coordination of projects would be required but construction could occur independently at little additional costs to either project
	Approval by other agencies	<ul style="list-style-type: none"> approval required by SFIA, local city, other landowner agency and COE, USF&WS, CDF&G 	<ul style="list-style-type: none"> approval required by SFIA and local city <u>and</u> other landowner agency (e.g. PG&E, Caltrans, BART, CalTrain, etc) 	<ul style="list-style-type: none"> only SFIA and local city approval required
	Consistency with current plans	<ul style="list-style-type: none"> adopted plans expressly prohibit trail construction 	<ul style="list-style-type: none"> current plans would require amendment for trail development 	<ul style="list-style-type: none"> consistent with current plans

TABLE 2: EVALUATION CRITERIA

Group	Sub - Criteria	RANKING		
		LOW	MODERATE	HIGH
Public Safety	Relationship to motorized traffic	<ul style="list-style-type: none"> Class III Bike Route - pedestrians would use local sidewalk system 	<ul style="list-style-type: none"> Class II Bike Lane - pedestrians would use local sidewalk system 	<ul style="list-style-type: none"> Class I Bike Path - trail would separate bicycles / pedestrians from vehicular traffic
	Effects of highway circulation / traffic patterns on trail	<ul style="list-style-type: none"> freeway interchange ramp crossings required traffic control devices needed 	<ul style="list-style-type: none"> at-grade street crossings required traffic calming 	<ul style="list-style-type: none"> no direct relationship no traffic control devices needed
Public Safety (continued)	Relationship to rail traffic	<ul style="list-style-type: none"> at-grade rail crossing required 	<ul style="list-style-type: none"> trail directly parallels rail line 	<ul style="list-style-type: none"> no direct relationship
	Relationship to known high-pressure underground utilities	<ul style="list-style-type: none"> trail directly over utility line 	<ul style="list-style-type: none"> trail within 100' of utility line 	<ul style="list-style-type: none"> no known underground utilities present
	Relationship to overhead electric transmission lines	<ul style="list-style-type: none"> trail in ROW 		<ul style="list-style-type: none"> no direct relationship
	Availability of emergency services	<ul style="list-style-type: none"> trail not accessible by emergency motor vehicle 		<ul style="list-style-type: none"> trail accessible by emergency motor vehicle
	Visibility of trail from local road system	<ul style="list-style-type: none"> trail segment not easily seen 		<ul style="list-style-type: none"> trail segment easily seen
Trail Usefulness / Quality of Trail Experience	Connections to existing and proposed school, park and recreation facilities, employment centers, or transportation facilities	<ul style="list-style-type: none"> no connections 		<ul style="list-style-type: none"> direct connection
	Compatibility with trails plans	<ul style="list-style-type: none"> no relationship 	<ul style="list-style-type: none"> parallels but does not follow existing planned route 	<ul style="list-style-type: none"> follows existing planned route
	Co-use of trail for resource / land management programs	<ul style="list-style-type: none"> no relationship 		<ul style="list-style-type: none"> provides monitoring and service access
	Travel time through project area	<ul style="list-style-type: none"> slow - many stops, turns, and delays 		<ul style="list-style-type: none"> fast - few stops, turns, and delays

TABLE 2: EVALUATION CRITERIA

Group	Sub - Criteria	RANKING		
		LOW	MODERATE	HIGH
	Views to bay / water / wetlands / open space lands / watchable wildlife	<ul style="list-style-type: none"> • either not seen or in background view • no opportunity or no ability to safely stop for observation 	<ul style="list-style-type: none"> • intermittently seen or in middleground view 	<ul style="list-style-type: none"> • seen within foreground views • open water / marshlands visible and opportunity exists to safely stop for observation
	Opportunity for a sense of removal from the sights and sounds of automobiles / trains	<ul style="list-style-type: none"> • trail segment immediately adjacent to major traffic route and sound of traffic dominates experience 	<ul style="list-style-type: none"> • majority of trail segment immediately adjacent to rail route or within view of major traffic • sound of traffic not dominant 	<ul style="list-style-type: none"> • majority of trail segment visibly separated from major traffic / rail routes and sound of traffic not dominant
Operational Considerations	Ease of access / management	<ul style="list-style-type: none"> • not visible from major roadway • not directly accessible from paved road 		<ul style="list-style-type: none"> • visible from major roadway • directly accessible from paved road
Compatibility of Trail with Adjoining Property	Disruption of existing land uses	<ul style="list-style-type: none"> • trail would preclude existing land use that could not be relocated easily 	<ul style="list-style-type: none"> • trail would require relocation of existing land use 	<ul style="list-style-type: none"> • trail separated from active land uses
	Disruption of potential SFIA (as identified in SFIA Master Plan)	<ul style="list-style-type: none"> • trail would preclude using potentially developable lands 	<ul style="list-style-type: none"> • trail would bisect potentially developable lands 	<ul style="list-style-type: none"> • trail along perimeter or separated from potentially developable lands
	Privacy	<ul style="list-style-type: none"> • trail segment passes immediately adjacent to residence 	<ul style="list-style-type: none"> • trail segment allows for buffer planting adjacent to residences 	<ul style="list-style-type: none"> • trail segment not near any residences
Land / Easement Acquisition	Type and number of property owners	<ul style="list-style-type: none"> • private property / easement acquisition 	<ul style="list-style-type: none"> • public property (SFIA and other agencies) 	<ul style="list-style-type: none"> • predominantly SFIA ownership

TABLE 2: EVALUATION CRITERIA

Group	Sub - Criteria	RANKING		
		LOW	MODERATE	HIGH
Complexity		<ul style="list-style-type: none"> multiple owners involved 	<ul style="list-style-type: none"> multiple owners involved 	
Financial Considerations	Construction costs	<ul style="list-style-type: none"> other extraordinary trail construction costs could be anticipated dedicated trail overcrossings required for U.S. Highway 101 and/or BART / CalTrain 		<ul style="list-style-type: none"> normal trail development costs could be anticipated no dedicated trail overcrossings required for U.S. Highway 101 and/or BART / CalTrain
	Long-term maintenance requirements	<ul style="list-style-type: none"> extraordinary trail maintenance /monitoring costs could be anticipated 		<ul style="list-style-type: none"> normal trail maintenance costs could be anticipated

APPENDIX C

CALIFORNIA DEPARTMENT OF FISH AND GAME CODE SECTIONS

86. "Take" means hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.

5050. Fully protected reptiles and amphibians or parts thereof may not be taken or possessed at any time and no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected reptile or amphibian and no such permits or licenses heretofore issued shall have any force or effect for any such purpose; except that the commission may authorize the collecting of such species for necessary scientific research. Legally imported fully protected reptiles or amphibians or parts thereof may be possessed under a permit issued by the department.

The following are fully protected reptiles and amphibians:

- (a) Blunt-nosed leopard lizard (*Crotaphytus wislizenii silus*)
- (b) San Francisco garter snake (*Thamnophis sirtalis tetrataenia*)
- (c) Santa Cruz long-toed salamander (*Ambystoma macrodactylum croceum*)
- (d) Limestone salamander (*Hydromantes brunus*)
- (e) Black toad (*Bufo boreas exsul*)

APPENDIX D

ADDITIONAL HABITAT PROTECTION MEASURES: REASONABLE CONSTRUCTION METHODS

This Appendix outlines SFIA, San Mateo County, contractor, and resource agency roles and responsibilities, and identifies monitoring observations and reporting methods that will ensure that the measures outlined below are carried out as intended. Project specific conditions (for example site access, time restrictions, construction methods, etc.) shall be formulated in consultation with the U.S. Fish and Wildlife Service and the California Department of Fish and Game once the project design and implementation is finalized.

The purpose of these measures is to avoid and minimize any impact of the SFIA Bay Trail on the San Francisco garter snake and the California red-legged frog. The SFIA Bay Trail should be sited and constructed adhering to the following Reasonable and Prudent Measures:

- Measure #1: to avoid the likelihood of direct loss of San Francisco garter snakes.
- Measure #2: to avoid the likelihood of harming San Francisco garter snakes.
- Measure #3: to avoid and minimize impacts of habitat modification or loss to the San Francisco garter snake.

The siting and construction of the SFIA Bay Trail should ensure compliance with the following terms and conditions that implement the measures described above.

- To implement Measure #1:
 - (a) Exclusion fencing shall be constructed in accordance with CDF&G and USF&WS-approved protocol.
 - (b) Exclusion fences around the construction areas shall be placed in such a manner as to exclude entry by snakes.
 - (c) Exclusion fences shall be inspected daily and if needed, repairs are performed.
 - (d) Exclusion fences shall be placed around any construction areas, including mitigation areas, for a six-week period prior to any construction action.
 - (e) Once exclusion fencing is in place, it shall be maintained until completion of construction within the enclosure.
 - (f) Any surface construction that is to occur between October 1 and March 15 of any year will have snake exclusion fencing in place no later than September 1. This will be maintained from the time of placement of the enclosure fencing until completion of construction within the enclosure.

- (g) CDF&G and USF&WS shall be contacted in the event of any repairs to exclusion fences, and the six-week exclusionary period will be reinvoked, if it is determined by CDF&G and USF&WS that the exclusion fence was not functioning prior to repairs.
 - (h) Any San Francisco garter snakes or California red-legged frogs detected within the construction activity area will be relocated to a location approved by CDF&G and USF&WS on the West-of-Bayshore property.
 - (i) USF&WS's Sacramento Field Office Division of Endangered Species shall be contacted at (916) 979-2725 within 30 minutes of capture of a San Francisco garter snake. If contact of this office cannot be made within 60 minutes of capture, then a Special Agent with USF&WS's Law Enforcement Division shall be contacted at (415) 876-9078.
 - (j) If SFIA, its employees, contractors or agents kills or injures an individual of the Listed Species, or finds any such animal dead or injured, project activities shall immediately cease and CDF&G and USF&WS shall immediately be notified. If an individual of the Listed Species is found trapped, SFIA shall immediately notify CDF&G and USF&WS and make reasonable efforts to allow an uninjured entrapped animal to escape. Any dead or injured animal shall be turned over to CDF&G. A written report detailing the date, time, locations and general circumstances under which it was found must be submitted to CDF&G and USF&WS no later than three (3) business days following the incident.
 - (k) Vegetation cutting shall be done with hand tools only; no power tools shall be used.
 - (l) Vegetation may only be cut to a minimum height of 6 inches.
 - (m) Cut vegetation that will not permanently remain on-site shall be removed the same day it is cut. All bags of cut vegetation shall be stored on the established roads for daily removal.
 - (n) All other methods for vegetation removal, including but not limited to disking and herbicide application, are prohibited.
 - (o) All food-related trash items will be removed from the site daily.
 - (p) No smoking is allowed on the project site.
- To implement Measure #2:
 - (a) SFIA shall restrict activity areas to the minimum area necessary to conduct the permitted activities. SFIA shall clearly delineate the boundaries of the project site by posting stakes, flags, and/or rope or cord, as directed by CDF&G and USF&WS, and shall post signs and place fencing as necessary to exclude vehicle traffic unrelated to the project.

Construction activity areas will be clearly marked and SFIA will ensure that activities occur only within these defined areas.

- (b) All project-related parking and equipment storage shall be confined to off-site areas. Undisturbed areas and off-site Listed Species habitat shall not be used for parking or equipment storage.
- (c) Except as noted in (d) below, project-related vehicle traffic and access for construction equipment shall be restricted to established roads, the Bay Trail alignment, or within proposed construction areas and staging areas. SFIA shall post signs and shall erect traffic restraints to avoid and minimize the disturbance of the Listed Species.
- (d) No off-road travel or access will be allowed without prior review and approval by the CDF&G and USF&WS. Driving off-road will be kept to a minimum and will use specific CDF&G and USF&WS-approved off-road travel routes. When driving vehicles on grass or other vegetated areas, one person will walk in front of the vehicle to watch for and move any San Francisco garter snakes or California red-legged frogs.
- (e) Vehicle speed limits of 5 miles per hour shall be observed on unpaved, grassy or vegetated areas on and adjacent to the West-of-Bayshore property. A speed limit of 5 miles per hour shall be observed on paved areas on the West-of-Bayshore property.
- (f) All entry gates to the West-of-Bayshore property not used for construction access will be locked at all times and gates used for construction access will be locked during non-construction hours. All gates must be closed after entering or leaving the construction site.
- (g) Materials used to construct mitigation ponds shall be free of contaminants.
- (h) No refueling of vehicles will occur on or adjacent to the West-of-Bayshore property. Refueling and servicing of large vehicles, such as cranes and pile drivers, will occur within areas from which the San Francisco garter snake or California red-legged frog have been excluded by exclusion fencing. However, a heavy-gauge tarp made of chemically resistant polypropylene or other impervious material, with vertical containment sides, must be placed beneath the equipment prior to servicing or refueling to fully contain the spillage. Once the servicing or refueling is completed, the tarp and its contents must be immediately removed from the project site and all contaminants must be properly disposed of off-site.
- (i) All excavated material will be removed and disposed of off-site. No temporary stockpiling of excavated material will be allowed on the West-of-Bayshore property.
- (j) All vehicles will carry a suitable fire extinguisher.

- (k) Steel plates (used to access wetlands) will be temporarily removed to allow sunlight to reach the wetland vegetation during non-construction periods (e.g. weekends).
 - (l) The on-site mitigation measures shall be performed, monitored, and maintained by a designated agent approved by CDF&G and USF&WS. At least 30 days before initiating ground-disturbing activities, SFIA and San Mateo County shall designate a representative responsible for communications with CDF&G and USF&WS and for overseeing compliance. CDF&G and USF&WS shall be notified in writing of the representative's name, business address and telephone number, and shall be notified in writing if a substitute representative is designated. SFIA shall notify CDF&G and USF&WS 14 days before initiating ground-disturbing activities.
- To implement Measure #3:
 - (a) CDF&G and USF&WS personnel will be given access to all construction, easement, and mitigation areas. SFIA shall allow CDF&G and USF&WS representatives access to the project site to monitor compliance, subject to such reasonable restrictions as SFIA requests.
 - (b) CDF&G and USF&WS will be allowed to release California red-legged frogs and San Francisco garter snakes within the habitat creation and/or preservation areas.
 - (c) All lands provided as mitigation for impacts to the San Francisco garter snake and California red-legged frog shall be maintained and protected in perpetuity. Any land manager designated to manage these lands, or hold them under protective easements, shall be approved by CDF&G and USF&WS.
 - (d) During the period of construction for any component of the project on or immediately adjacent to the West-of-Bayshore property, a written and photographic record of the work will be maintained. This record will be provided to CDF&G and USF&WS upon completion of the construction activity or upon request.
 - (e) Annual reports shall be provided to the CDF&G and USF&WS for the first five years for the program of altering seasonal wetlands. The first report will be due 12 months after construction begins with subsequent reports following every 12 months.
 - (f) SFIA shall conduct compliance inspections once a week during construction, and shall provide a monthly compliance report to CDF&G and USF&WS. The inspections shall assess compliance with all measures outlined in this appendix specifically including the creation and

maintenance of the exclusion zones. Within forty-five (45) days of completing the project, SFIA shall provide CDF&G and USF&WS a final, post-construction compliance report. The report shall be prepared by a knowledgeable, experienced biologist and shall include the following: (1) construction dates; (2) verification that measures in this appendix were fully implemented; (3) identification of measures, if any, that were not fully implemented; (4) description of effects on Listed Species and Listed Species habitat; and (5) any other pertinent information.

- (g) A pre-activity site meeting will be held with the applicant, project representative, CDF&G, and USF&WS within one month prior to beginning each activity to discuss the activity and any concerns, and to receive final approval from CDF&G and USF&WS for the specific activity.
- (h) Mid-activity site meetings will be held as necessary with the applicant, project representative, CDF&G, and USF&WS at 3-month intervals during the construction period for each activity to review progress and discuss any concerns.
- (i) A post-activity site meeting will be held with the applicant, project representative, CDF&G, and USF&WS within two weeks after the completion of each activity to assess the results of those activities and address specific concerns.