CHAPTER 2 - AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES AND AVOIDANCE, MINIMIZATION AND/OR MITIGATION MEASURES

This chapter provides the analysis of the potential impacts to the environment that would occur with development of the Golden Gate Bridge Physical Suicide Deterrent System Project (project). Sections 2.1 through 2.4 of this chapter each address a different environmental issue area of those identified as relevant to the project (land use and recreation, visual/aesthetics, and cultural resources). Each of these sections describes the affected environment and relevant regulatory policies, and considers the effects of implementing the project alternatives.

Section 2.5, Non-Relevant Topics, provides a brief discussion of environmental considerations that would not be affected by project development and do not require extensive evaluation in the environmental document. Potential short-term impacts that could occur during project construction are addressed in Section 2.6, Construction Impacts. The chapter concludes with an evaluation of potential contribution of the project to any cumulative impacts that could occur through development of this project in conjunction with other nearby or related projects.

2.1 LAND USE

This section discusses land use effects related to the project. Existing land uses in the project area are generally recreational and the project is adjacent to or near three separate park areas, all of which are subject to individual management plans. Because the Golden Gate Bridge (Bridge) is an historic and scenic icon, these management plans address the Bridge, but the Bridge is generally not directly regulated by them.

The project is also in close proximity to two ongoing development activities: (1) improvements to Doyle Drive, a roadway that provides vehicular access to the Bridge; and (2) development related to implementation of the Fort Baker Reuse Plan.

2.1.1 EXISTING AND FUTURE LAND USE

Existing Land Use

Land uses in the project area are comprised almost entirely of recreational park lands. Golden Gate National Recreation Area (GGNRA) lands surround the project site on both sides of the Bridge. The GGNRA is a part of the National Parks System, and is under the primary management of the National Park Service (NPS). Land uses in the GGNRA include many open space recreational resources and several historic properties. Other properties adjacent to or within the Bridge project site (project site) include Doyle Drive and other roadways that provide access to and from the Bridge, and the Roundhouse Gift Center. Within one-half mile of the project site, other recreational areas and historic properties include facilities that are part of the Presidio of San Francisco and Fort Baker. -Figures 2.1-1 and 2.1-2 show the location of these properties relative to the project site.

Table 2.1-1 provides a list of historic and recreational properties in the project area. Listed recreational resources are discussed in Section 2.1.3, Parks and Recreation, and in Appendix B, Section 4(f) Evaluation. Further discussion of historic properties can be found in Section 2.3, Cultural Resources, and in Appendix B, Section 4(f) Evaluation.

Development Trends in Project Vicinity

Two ongoing projects are under development in the project vicinity. Table 2.1-2 shows the two relevant projects and provides information on their current status. All of the alternatives under consideration are compatible with these projects.

Fort Baker Reuse Plan

A comprehensive reuse concept, the Fort Baker Reuse Plan, is currently being implemented with a goal of enhancing the recreational opportunities available to the public and adding additional visitor serving resources. The reuse plan was developed following the transfer of Fort Baker from the Army to the NPS.

NPS coordinated with private, public and non-profit organizations to develop the plan and contracted with a development firm to create a 142-room retreat and conference center called “Cavallo Point, The Lodge at the Golden Gate,” which opened to the public in 2008.

FIGURE 2.1-1

EXISTING AND FUTURE LAND USES: SAN FRANCISCO APPROACH

Source: GEOGRAFIKA, 2008; Imagery - NAIP 2005/2006; NPS Website; GGNRA Website

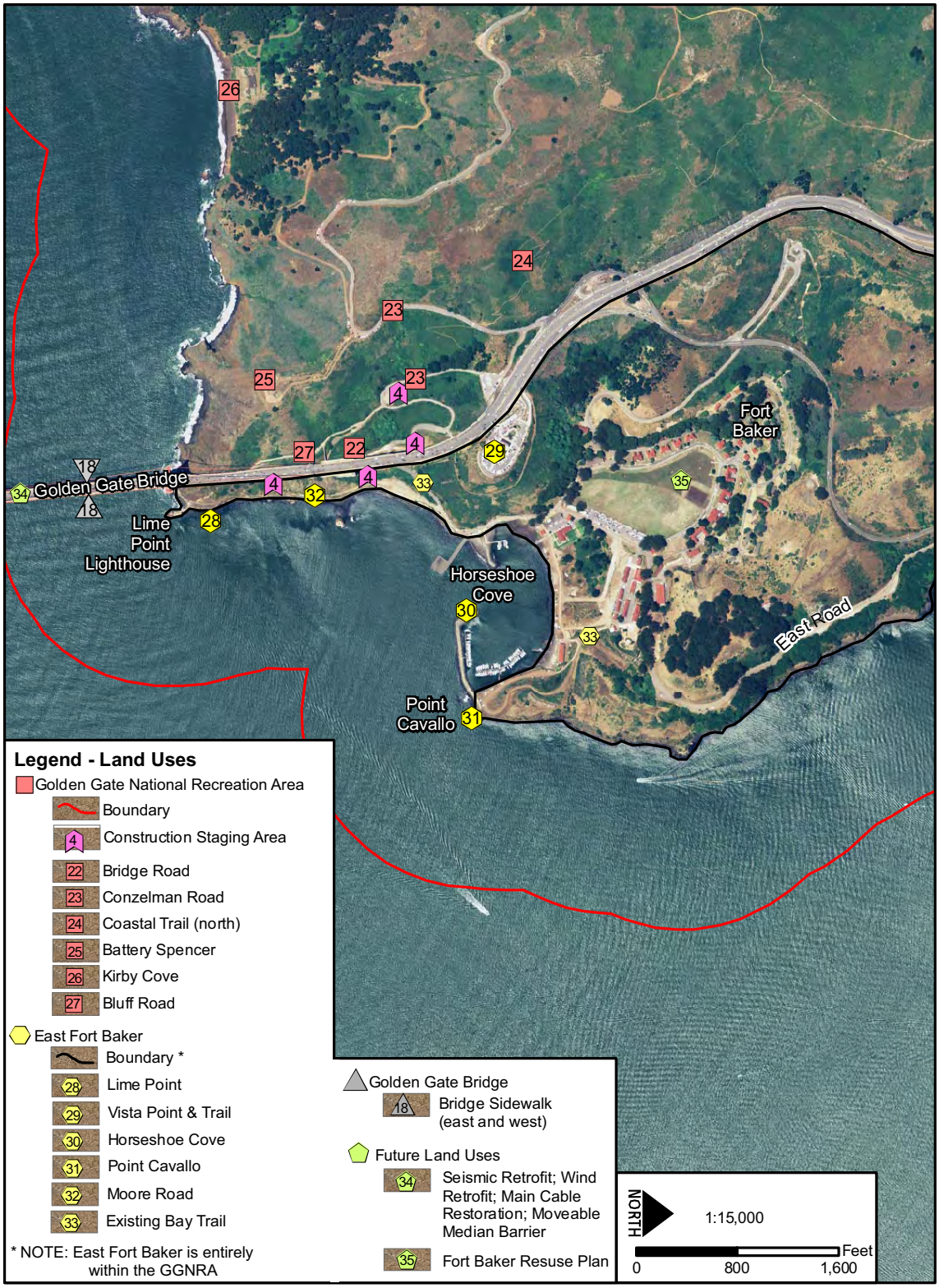


FIGURE 2.1-2

EXISTING AND FUTURE LAND USES: MARIN APPROACH

Source: GEOGRAFIKA, 2008; Imagery - NAIP 2005/2006; NPS Website; GGNRA Website

Table 2.1-1 Existing Land Uses

Property	Type of Land Use
Golden Gate Bridge	Historic Resource, Public Road, Recreational Resource
Roundhouse Gift Center	Historic Resource
Toll Plaza Undercrossing	Historic Resource
Fort Point National Historic Site	Historic Resource, Recreational Resource
Battery East Road and Bike Turnouts	Historic Resource, Recreational Resource
Marine Drive	Historic Resource, Public Road, Recreational Resource
Doyle Drive	Historic Resource, Public Road
Crissy Field	Historic Resource, Recreational Resource
Coastal Trail	Recreational Resource
Bay Trail	Recreational Resource
Golden Gate Promenade / SF Bay Trail	Recreational Resource
Overlook at Fort Scott (off Coastal Trail)	Recreational Resource
Bluff Road	Public Road (currently closed for security purposes)
Bridge Road	Public Road (currently closed for security purposes)
Conzelman Road	Public Road, Recreational Resource
Battery Spencer	Historic Resource, Recreational Resource
Vista Point and Trail	Historic Resource, Recreational Resource
Lime Point	Historic Resource
Moore Road (Lime Point Trail)	Historic Resource, Public Road, Recreational Resource
Horseshoe Cove	Historic Resource, Recreational Resource
Point Cavallo	Historic Resource, Recreational Resource
Fort Baker	Historic Resource, Recreational Resource

Table 2.1-2 Future Development in Project Vicinity

Name	Jurisdiction	Proposed Use	Status	Figure
Doyle Drive - South Access to the Golden Gate Bridge	Federal Highway Administration, California Department of Transportation and the San Francisco County Transportation Authority	Improve seismic, structural and traffic safety; transportation	Geotechnical Investigation through May 2008; FEIS/R released September 2008	Figure 2.1-1

As part of the reuse of the site, historic buildings are being rehabilitated to national historic preservation standards to ensure that the significant historic features are maintained. Landscape improvements, such as the restoration of the main parade ground to its historic period, are also part of the project.

The centerpiece of the Fort Baker Reuse Plan is the Institute at the Golden Gate, which hosts lectures and provides a forum for environmentalists, researchers and policymakers to address environmental issues. The Golden Gate National Parks Conservancy developed and manages the institute. Cars are largely banished from the area and guests urged to walk, ride bikes or take a shuttle.

The Fort Baker Reuse Plan also calls for the creation of a waterfront park that will provide panoramic views of the Bridge, San Francisco Bay, San Francisco skyline and Alcatraz. Under the proposed plan, Fort Baker's waterfront and other open space will be transformed to create a multitude of opportunities for visitors to enjoy the area's scenic beauty, hike, bike, sail, kayak, picnic and explore. The U.S. Coast Guard Station and the Bay Area Discovery Museum will remain at Fort Baker.

South Access to the Golden Gate Bridge: Doyle Drive Project

Doyle Drive, located within the Presidio of San Francisco, winds 1.5 miles along the southern edge of San Francisco Bay and connects the San Francisco peninsula to the Bridge and on to the North Bay. Originally built in 1936 with narrow lanes, no median, and no shoulder, Doyle Drive is approaching the end of its useful life. Currently, it is used by nearly 120,000 vehicles every weekday.

The Doyle Drive Project considered several alternatives to improve the seismic, structural and traffic safety of Doyle Drive within the setting and context of the Presidio of San Francisco and its purpose as a National Park. The Draft EIS/R Section 4(f) Evaluation was released on December 30, 2005 and considered a No Build Alternative, Replace and Widen Alternative, and Presidio Parkway Alternative.

The Final EIS/R for the Doyle Drive Project, which was released in September 2008, identified the Refined Presidio Parkway as the Preferred Alternative. The Refined Presidio Parkway design replaces the existing road structures with a new parkway-type roadway that includes short tunnels, new access and improved views from within the Presidio.

2.1.2 CONSISTENCY WITH STATE, REGIONAL AND LOCAL PLANS

GGNRA General Management Plan

Although the project would be located entirely on the Bridge, the Bridge itself is geographically within the GGNRA. The Bridge functions as an important transportation corridor, connecting southern and northern GGNRA properties and facilities. Additionally, the Bridge currently provides pedestrian and bicycle paths which are part of the Bay Trail. Therefore, any policies that address vehicular or pedestrian access within the GGNRA are relevant to the project.

The GGNRA General Management Plan (GMP) 1980 is the most current plan containing policies and goals for GGNRA lands. The GMP discusses the provision of shuttles and improved public transportation for both short and long-range transportation needs. Any existing or future shuttle service and public transportation would necessarily rely on use of the Bridge. The GMP is currently being updated; the update process is expected to be completed in the winter of 2010.

Applicable Policies

The GMP contains several goals that are applicable to the project, including:

To pursue the extensions of transit service between the park and transit dependent neighborhoods.

…

To develop a trail system for the use of hikers, bicyclists, and equestrians.

…

To alleviate traffic impacts on adjacent communities and on park resources by the use of transit systems.

(Management Objectives: Golden Gate National Recreation Area, GMP. 1980)

Consistency with Applicable Policies

None of the project alternatives would interfere with the goals of the GMP to provide improved transit to GGNRA lands. The project would not alter the existing use of the Bridge as a connector between north and south portions of the GGNRA, and planning for pedestrian pathways, shuttles,

bicycles or other vehicles would not be affected by development of any of the alternatives. The project is therefore consistent with the GMP.

Presidio Trust Management Plan, Land Use Policies for Area B of the Presidio of San Francisco

The NPS retains jurisdiction over Area A of the Presidio and policies that relate to Area A are discussed in the GGNRA GMP. This area is generally located north of Lincoln Boulevard and is shown in Figure 2.1-1. The Presidio Trust Management Plan addresses Area B of the Presidio. Because the project would not affect Area B, this plan is not applicable to the project area.

San Francisco Bay Plan

The Coastal Zone Management Act of 1972 (CZMA) is the primary federal law enacted to preserve and protect coastal resources. The CZMA sets up a program under which coastal states are encouraged to develop coastal management programs. States with an approved coastal management plan are able to review federal permits and activities to determine if they are consistent with the state's management plan.

California has developed a coastal zone management plan and has enacted its own law, the California Coastal Act of 1976, to protect the coastline. The policies established by the California Coastal Act are similar to those for the CZMA; they include the protection and expansion of public access and recreation, the protection, enhancement and restoration of environmentally sensitive areas, protection of agricultural lands, the protection of scenic beauty, and the protection of property and life from coastal hazards. The California Coastal Commission is responsible for implementation and oversight under the California Coastal Act.

The Bay Conservation and Development Commission (BCDC), created prior to the California Coastal Act, retains oversight and planning responsibilities for development and conservation of coastal resources in the Bay Area. The regulatory authority for BCDC is the McAteer-Petris Act and the Suisun Marsh Protection Act.

BCDC's jurisdiction includes all areas below Mean High Water, or the inland edge of marsh vegetation or 5 feet above mean sea level in marshlands, or within the 100-foot shoreline band (100 feet inland from Mean High Water or the inland edge of marsh vegetation). A portion of the project (construction staging areas) may be located within BCDC's jurisdiction and could, therefore, require a permit from BCDC. The project would be constructed entirely on the Bridge; the only use of land would be for the construction staging areas (see Section 2.5 Construction Impacts).

The project does not involve any changes to the use of the Bridge or the use of lands surrounding the Bridge.

Applicable Policies

The San Francisco Bay Plan (SF Bay Plan) was developed to implement the McAteer-Petris Act on Bay lands. Policies from the SF Bay Plan applicable to the project include:

Part IV– Development of the Bay and Shoreline: Findings and Policies

Transportation

4. Transportation projects on the Bay shoreline and bridges over the Bay or certain waterways should include pedestrian and bicycle paths that will either be a part of the Bay Trail or connect the Bay Trail with other regional and community trails. Transportation projects should be designed to maintain and enhance visual and physical access to the Bay and along the Bay shoreline.

Public Access

6. Public access improvements provided as a condition of any approval should be consistent with the project and the physical environment, including protection of Bay natural resources, such as aquatic life, wildlife and plant communities, and provide for the public's safety and convenience. The improvements should be designed and built to encourage diverse Bay related activities and movement to and along the shoreline, should permit barrier free access for the physically handicapped to the maximum feasible extent, should include an ongoing maintenance program, and should be identified with appropriate signs.

Appearance, Design and Scenic Views

6. Additional bridges over the Bay should be avoided, to the extent possible, to preserve the visual impact of the large expanse of the Bay. The design of new crossings deemed necessary should relate to others nearby and should be located between promontories or other land forms that naturally suggest themselves as connections reaching across the Bay (but without destroying the obvious character of the promontory). New or remodeled bridges across the Bay should be designed to permit maximum viewing of the Bay and its surroundings by both motorist and pedestrians. Guard rails and bridge supports should be designed with views in mind.

(Chapter IV: Development of the Bay and Shoreline: Findings and Policies, SF Bay Plan, 2008)

Project Consistency

The existing use of the Bridge and the land surrounding the Bridge will not change as a result of implementing any of the build alternatives. Currently the Bridge includes pedestrian and bicycle paths which are part of the Bay Trail alignment (Bay Trail Project, 2007) and provide visual access to the Bay. The construction of any of the build alternatives will maintain the existing paths and visual access. There will be no change to the paths. There would be a change in the visual environment under Alternatives 1A, 1B, 2A and 2B (see Section 2.2, Visual/Aesthetics), but the inclusion of transparent panels at the belvederes along the Bridge paths will maintain visual access. Visual access will not change with the construction of Alternative 3 (Preferred Alternative). Therefore the build alternatives would maintain visual access, consistent with Policy 4, Transportation.

The Bridge currently provides public access with views of the Bay and provides a great degree of barrier-free access. The project does not propose any additional public access improvements as visual access is already provided. This level of public access would continue with implementation of any of the alternatives under consideration and the use of transparent panels at the belvederes. Transparency would be preserved through ongoing maintenance of the panels. The project would also not affect the natural environment or reduce public safety or convenience. Therefore, the build alternatives would be consistent with Policy 6, Public Access.

All build alternatives seek to preserve views of the Bay and shoreline through the inclusion of transparent panels at the belvederes along the Bridge path in the designs for Alternatives 1A, 1B, 2A and 2B and maintaining open views in the design of Alternative 3 (Preferred Alternative). The project does not include the construction of any additional bridges, but it does modify the appearance of the existing Bridge through the addition of a physical suicide deterrent system. Alternatives 1A, 1B, 2A and 2B have all been designed with views to the Bay in mind. Alternative 3 would not affect views to the Bay. Therefore, the build alternatives would be consistent with Policy 6, Appearance, Design and Scenic Views.

Bay Trail Plan

The Bay Trail Plan, prepared by the Association of Bay Area Governments (ABAG) pursuant to SB 100, guides the development of a regional hiking and bicycling trail around the perimeter of the San Francisco and San Pablo

Bays. The Bridge currently provides pedestrian and bicycle paths which are part of the Bay Trail.

Applicable Policies

The following Bay Trail Plan policies are applicable to the project:

30. Bridges and roads will be important connections in the Bay Trail system, providing not only commute routes, but enhancing the recreational use of the Trail by creating loops which will allow a greater number of people to enjoy the Trail.

31. In the short term, attention should be focused on improving safe access to the bridges, possible expansion of bicycle shuttle services and public transit accommodations of bicycles to allow cross-bay access.

32. In the long term, unconstrained access on bridge structures is preferred. This can more easily be accomplished in planning future facilities, as long as public access is a requirement for new structures. Legislative action which would require bicycle and pedestrian access on new facilities should be actively sought.

Project Consistency

As noted previously, the Bridge currently provides pedestrian and bicycle access via the east and west side paved walkways. These walkways provide safe access to the Bay Trail from either the north or southbound approaches and are an important link between the San Francisco and Marin segments of the trail. Access to the Bridge is largely unconstrained, except as is necessary for security, as is preferred by the plan policies. Public access would not change with the implementation of any of the alternatives. Therefore, the project would be consistent with the policies of this plan.

Marin County Unincorporated Area Bicycle and Pedestrian Master Plan

The Marin County Unincorporated Area Bicycle and Pedestrian Master Plan intends to coordinate and guide the provisions of pedestrian and bicycle plans, programs and projects in Marin County.

Applicable Policies

The following policies are applicable to the project:

Objective F Policy Actions:

1. Support and promote bicycle use of Golden Gate Bridge, Highway, and Transportation, Transit, and ferry and bus services in Marin County.

Project Consistency

As noted, the Bridge currently provides pedestrian and bicycle access via the east and west side paved walkways. Public access would not change with the implementation of any of the alternatives and would not hinder the County's ability to encourage and implement its use. Therefore, the project would be consistent with the policy F-1 of this plan.

2.1.3 PARKS AND RECREATIONAL FACILITIES

The project is located in proximity to several publicly owned parks and recreational facilities of national and international prominence and local value. The resources listed in Table 2.1-3 are shown in relation to the project in Figure 2.1-1 and 2.1-2. A Section 4(f) Evaluation has been prepared for the project and is included as Appendix B of this document. Individual descriptions of the parks and facilities in Table 2.1-3 are provided in the Section 4(f) evaluation.

The Golden Gate Bridge

The Bridge is a publicly owned historic resource and a recreation resource with uses occurring on and around it. It is a multi-component historic structure that has been determined eligible for listing in the National Register of Historic Places (NRHP), is California State Historic Landmark No. 974 and is on the California Register of Historical Resources. It is also designated as San Francisco City Landmark No. 222. The Bridge provides recreational function through visitor serving facilities, lookout areas, and use of the span sidewalks by bicyclists, joggers and sightseers. It is one of the most well-known, frequently visited and internationally recognized suspension bridges in the world, spanning the Golden Gate Strait at the mouth of the San Francisco Bay and connecting San Francisco and Marin counties.

The Presidio of San Francisco

The Presidio of San Francisco (the Presidio) is a publicly owned recreation area and historic property and a unit of the GGNRA national park (see Figure 2.1-1). It is also listed in the NRHP (register # 66000232) and is a National Historic Landmark District (NHLD). It is located in the northwestern most point of the San Francisco peninsula, bordered in the

north and the west by the San Francisco Bay and the Pacific Ocean, respectively.

The property is approximately 600-hectacres (1,480 acres) in size and includes several significant recreation areas. In 1998, management of the Presidio was divided between two federal agencies: the Presidio Trust and the NPS. The Trust's mission is to preserve and enhance the natural, cultural, scenic and recreation resources of the Presidio for public use in perpetuity, and to achieve long-term financial sustainability.

The Presidio's diverse points of interest include historic military forts and batteries, forests, beaches and spectacular vistas. Along the approximately 37 miles of trails within the Presidio, recreational activities include walking, jogging, biking, camping, sightseeing and bird watching. On the waterfront, visitors can surf and windsurf, sail, fish and swim. The Presidio Trails and Bikeways Plan is the guide for directing a network of trails and bikeways that would enhance the public's exploration and experience of the Presidio, while also protecting its natural and cultural resources.

Golden Gate National Recreation Area

The GGNRA is a publicly owned national park. It is the world's largest urban national park and covers a total area of 73,398 acres of land and water, including approximately 28 miles of coastline. It is used extensively by the public for a variety of recreational uses and has numerous trails and vista points on the Marin and San Francisco portions bordering the Bay. The area also includes several historically significant sites.

All land immediately surrounding the Bridge and its approaches (including the Presidio and East Fort Baker) is part of the GGNRA. The Golden Gate Bridge, Highway and Transportation District (District) was granted a permit across the Presidio of San Francisco and Fort Baker Military Reservation in 1931 for construction, operation and maintenance of the Bridge (Payne, 1931). This right still exists and is administered by the GGNRA. The proposed construction staging areas are located on GGNRA lands (see Number 4, Figure 2.1-1 and 2.1-2).

Table 2.1-3 Parks and Recreational Facilities in Project Vicinity

Property	Parks and Recreational Facilities in Proximity to the Project	Figure Reference Number
Golden Gate Bridge	Roundhouse Gift Center	Figure 2.1-1, Number 19
	Toll Plaza Undercrossing	Figure 2.1-1, Number 20
Presidio of San Francisco	Fort Point National Historic Site	Figure 2.1-1, Number 5
	Battery East Road and Bike Turnouts (formerly Battery East Area)	Figure 2.1-1, Number 6
	Marine Drive	Figure 2.1-1, Number 7
	Doyle Drive	Figure 2.1-1, Number 8
	Crissy Field	Figure 2.1-1, Number 14
	Coastal Trail (south)	Figure 2.1-1, Number 3
	Golden Gate Promenade / SF Bay Trail	Figure 2.1-1, Number 17
	Overlook at Fort Scott (off Coastal Trail)	Figure 2,1-1, Number 12
GGNRA	Bluff Road	Figure 2.1-2, Number 27
	Bridge Road	Figure 2.1-2, Number 22
	Conzelman Road	Figure 2.1-2, Number 23
	Coastal Trail (north)	Figure 2.1-2, Number 24
	Battery Spencer	Figure 2.1-2, Number 25
	Kirby Cove	Figure 2.1-2, Number 26
	Bay Trail	Figure 2.1-2, Number 33
Fort Baker	Vista Point and Trail	Figure 2.1-2, Number 29
	Lime Point	Figure 2.1-2, Number 28
	Moore Road (Lime Point Trail)	Figure 2.1-2, Number 32
	Horseshoe Cove	Figure 2.1-2, Number 30
	Point Cavallo	Figure 2.1-2, Number 31
	Bay Trail	Figure 2.1-2, Number 33

East Fort Baker

East Fort Baker is a publicly owned historic and recreation resource that is part of the GGNRA national park and listed on the NRHP. It is a 335-acre property at the center of the GGNRA system, located in Marin County at the northeast foot of the Bridge (see Figure 2.1-2). It includes the Horseshoe Cove waterfront area with over a mile of rocky bay shoreline, Lime Point, Cavallo Point, many historic army buildings and several historic batteries. The Army acquired Fort Baker in 1866. Forts Baker, Barry, and Cronkhite Military Reservations, dating back to the mid-1800s, functioned as important coastal defense elements. The NRHP lists the forts together (USNPS 1992a:12/12/73, #73000255) due to their significant architecture, landscape architecture and history of the U.S. Army for the period 1850-1960. The forts are also included on the California Register of Historical Resources (CAL/OHP 1976:150,185).

As previously discussed, the Fort Baker Reuse Plan has recently been implemented and the fort's historic buildings are now open to the public as a retreat and conference center.

2.1.4 ENVIRONMENTAL CONSEQUENCES

Land Use

Installation of the proposed physical suicide deterrent system would not impact existing land uses of the Bridge or in the project area. The project would be constructed entirely on the Bridge, and therefore primarily affect the Bridge and not surrounding properties. It would not change the use of the Bridge, limit vehicle access, or affect vehicular travel across the Bridge.

Parks and Recreation Facilities

None of the build alternatives would affect land that is presently being used for recreation in the project vicinity. During construction there would be five staging areas located on GGNRA lands. All areas on GGNRA lands proposed for potential use as construction staging areas are currently being used for similar staging and maintenance activities or surface parking and are physically separated from recreational uses on surrounding properties. Therefore, use of the areas by the project for staging purposes would not have an adverse effect on recreational resources. Construction activities and staging areas are discussed further in Section 2.6, Construction Impacts.

Alternatives 1A, 1B, 2A and 2B modify existing Bridge components, specifically the outside handrails, and introduce new elements to the Bridge that may affect the recreational experience of its users. The addition of the 10 to 12 foot high barrier system would alter the recreational experience of pedestrians and bicyclists using the Bridge sidewalks by interfering with views from the Bridge.

Alternative 3 (Preferred Alternative) would also modify existing Bridge components, specifically the main truss, and introduce new elements to the Bridge that may affect the recreational experience of its users. The addition of a horizontal net system approximately 20 feet below that sidewalk extending horizontally 20 feet from the Bridge would alter the experience of pedestrians and bicyclists when looking down from the sidewalk. Views looking across the railings from bicyclists and pedestrians would not be altered except at the North Anchorage Housing.

The construction staging area along Merchant Road at the south side of the Bridge may be used under all build alternatives. This staging area is currently a District parking lot that includes 24 publicly available stalls.

Although these parking stalls would not be available to the public during construction of the project, there are several other areas near the Bridge that offer public parking, including the District's east parking lot below the Roundhouse Gift center and the NPS parking lot off Lincoln Boulevard and Battery East Road. On weekends and after 3:30 p.m. during the week, the District's west parking lot adjacent to the Toll Plaza is also available for public use. The available parking supply should be sufficient to compensate for the temporary loss of 25 stalls.

2.2 VISUAL / AESTHETICS

2.2.1 REGULATORY SETTING

The National Environmental Policy Act of 1969 as amended (NEPA) establishes that the federal government use all practicable means to ensure all Americans safe, healthful, productive and *aesthetically* (emphasis added) and culturally pleasing surroundings (42 U.S.C. 4331[b][2]). To further emphasize this point, the Federal Highway Administration (FHWA), in its implementation of NEPA (23 U.S.C. 109[h]), directs that final decisions regarding projects are to be made in the best overall public interest taking into account adverse environmental impacts, including among others, the destruction or disruption of aesthetic values.

Likewise, the California Environmental Quality Act (CEQA) establishes that it is the policy of the state to take all action necessary to provide the people of the state "with…enjoyment of *aesthetic*, natural, scenic and historic environmental qualities." (CA Public Resources Code Section 21001[b])

2.2.2 AFFECTED ENVIRONMENT

Methodology

This analysis summarizes the information contained in the Visual Impact Assessment (May 2008) and Addendum to the Visual Impact Assessment (October 2009) prepared for the project. The process used in the visual impact assessment generally followed the guidelines outlined in the publication *Visual Impact Assessment for Highway Projects*, FHWA, March 1981. Six principal steps required to assess visual impacts were carried out as identified below.

- Define the project setting and viewshed
- Identify key views for visual assessment
- Analyze existing visual resources and viewer response

- Depict the visual appearance of project alternatives
- Assess the visual impacts of project alternatives
- Propose methods to mitigate adverse visual impacts

The existing visual conditions in the project area are comprised of actual visual resources (described in terms of visual character and quality), the characteristics of viewers – namely, viewer exposure (the ability to see the project area) – and viewer sensitivity. The visual resources were analyzed in terms of landscape types and distinct visual features within the region and from key viewpoints. The evaluation of viewer characteristics considers the project's visual influence zone (the overall area from which the project would be potentially visible); the important views and viewing conditions; and viewer numbers, types and activities. Figure 2.2-1 illustrates the process of assessing the existing visual conditions.

The visual impact assessment process, shown in Figure 2.2-2, incorporates and combines the two principal visual impact components: visual resource change and viewer response to that change. Visual resource change is analyzed in terms of visual dominance and other specific visual effects of alternatives, together with change in visual quality. The viewer response to changes resulting from the project is the sum of viewer exposure and viewer sensitivity to the project identified as part of the existing visual conditions.

The visual impacts of project alternatives were determined by assessing the visual resource change due to the project and by predicting viewer response to that change. The first step in determining visual resource change was to assess the compatibility of the proposed project with the visual character of the existing landscape. The second step was to compare the visual quality of the existing resources with projected visual quality after the project is constructed. The resulting level of visual impact was determined by combining the severity of resource changes with the degree to which people are likely to oppose the change.

Impact Documentation

In order to assist in the analysis and documentation of visual resource change, a series of 14 representative viewpoints were identified. For each viewpoint, "before" and "after" photographs were prepared to simulate the proposed project alternatives. Once the viewpoints were established, photographs were taken in the field from each viewpoint and documented. A representative photograph was chosen from each viewpoint to be developed as a computer simulation. The selected photographs are meant to exemplify existing conditions at the viewpoints, but it is important to

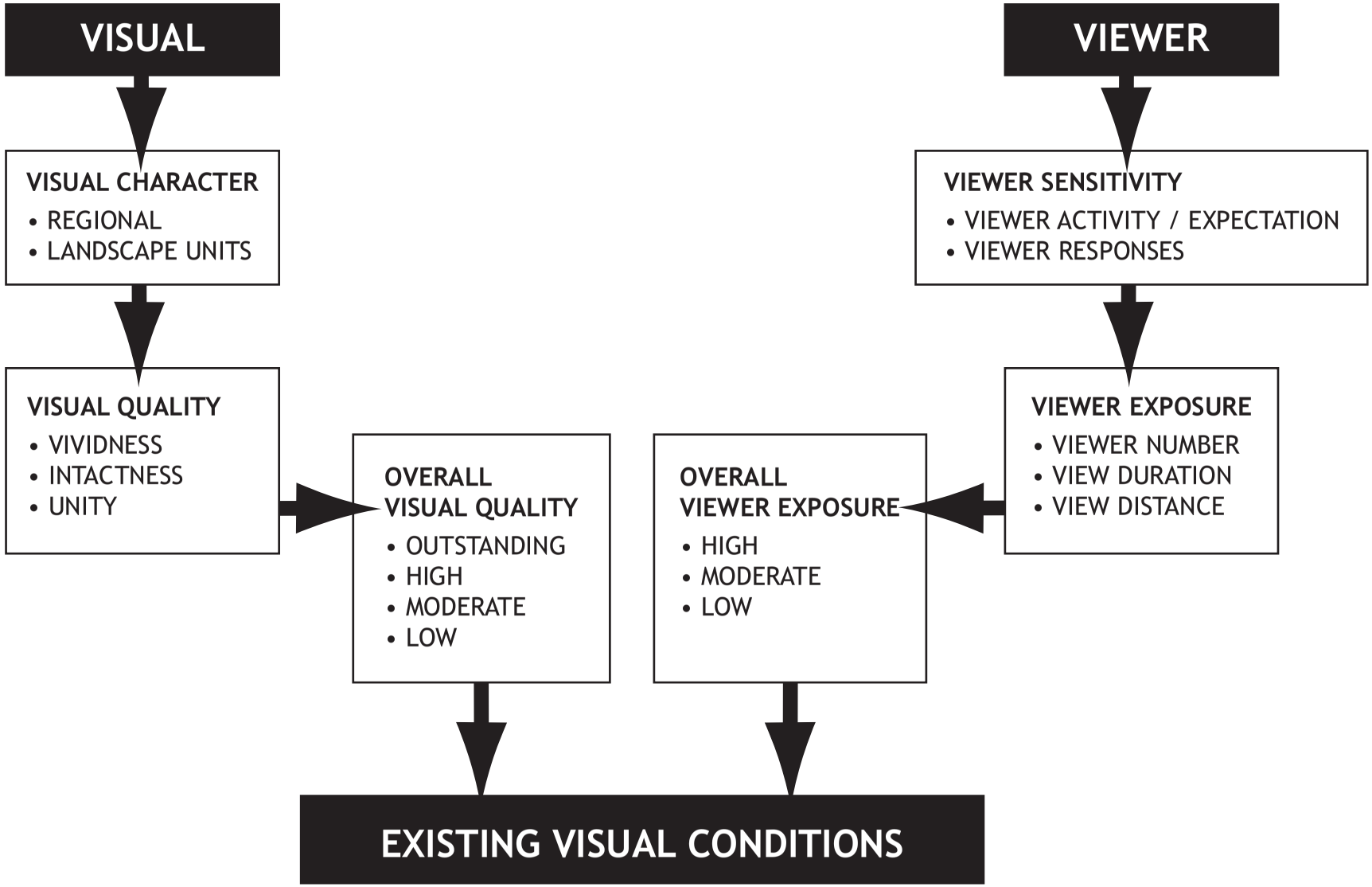


FIGURE 2.2-1
ASSESSMENT OF EXISTING VISUAL CONDITIONS

Source: CirclePoint, 2008

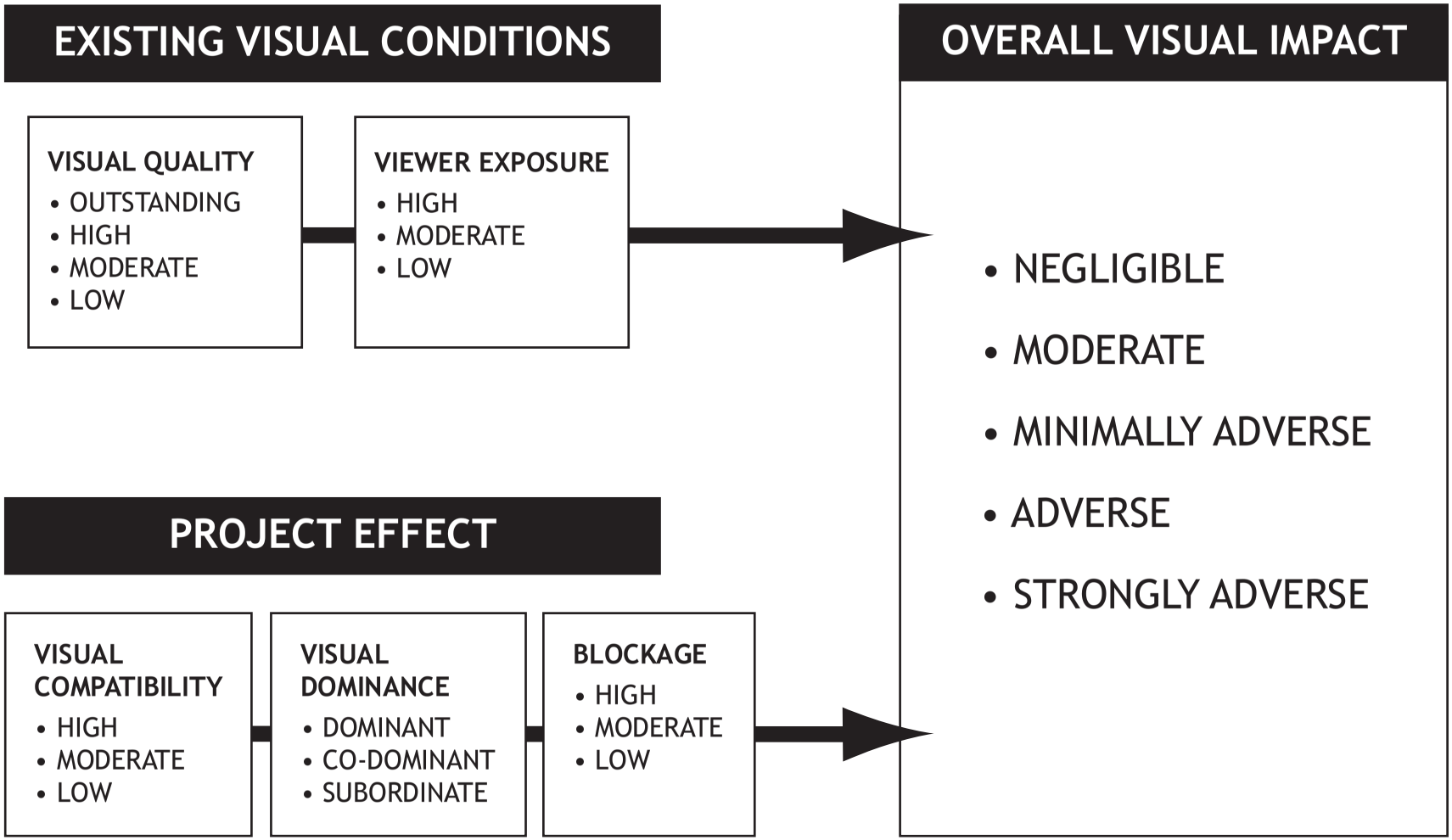


FIGURE 2.2-2
ASSESSMENT OF VISUAL IMPACTS EFFECTS ON VIEWERS

Source: CirclePoint, 2008

recognize that these conditions may differ over the course of the day, due to meteorological conditions and the movement of the sun.

A computer database was developed for each viewpoint to correspond to key reference points (existing landscape characteristics) and proposed project components to be shown in the photograph. Proposed changes were displayed for each viewpoint by overlaying a three-dimensional computer model on the photograph and rendering it (applying paint) to reflect the project's expected appearance in full detail, including colors, shadows and lighting. Photo simulations accurately represent the location, scale and mass of potential new facilities.

Project Study Area

The study area for the visual impact analysis includes several recreational areas from which views towards the Bridge are available. Because these areas each contain distinct spatial characteristics, the study area has been subdivided into four landscape units. Landscape units are geographically discrete areas that often are separated by natural features such as bodies of water, ridges or changes in vegetation. Each landscape unit has a certain visual character based upon the land uses and features that comprise it. Figure 2.2-3 depicts the boundaries of the landscape units that make up the project study area. Table 2.2-1 summarizes the features within each landscape unit.

The Presidio

The Presidio is located directly south of the Bridge toll plaza. Formerly a military base, the Presidio provides its own unique scenic character. The Presidio is situated along a densely vegetated coastal bluff. This landscape unit is vegetated with eucalyptus, cypress, Monterey pine trees and shrubs. It provides an aesthetic of a relatively natural area or park-like setting with roadways, such as Doyle Drive, traversing through the area. Crissy Field, located on the eastern side of the Presidio, adds to the park-like setting with its open, green field bordered by the San Francisco Bay shoreline to the north. Baker Beach, to the west of the Presidio along the coast of the Pacific Ocean, exemplifies the natural aesthetic character of this landscape unit as well.

There are also residences and historic structures located within this landscape unit. Structures within the Presidio vary in architectural structure, size and use, but seem to share a common style and, most noticeably, a consistent color and material scheme (cream and brick-color buildings with red roofs). Many of the Presidio buildings are included in the National Register of Historic Places database. Fort Point, a brick structure formerly used by the U.S. military, is located beneath the Bridge

at the northern tip of the Presidio and represents a historical visual image type.

Table 2.2-1 Landscape Units

Landscape Unit	Description
The Presidio	■ Located directly south of the Bridge toll plaza ■ Image types include beaches; open bluff areas vegetated with coastal scrub; woodland areas vegetated with eucalyptus, cypress and Monterey pine trees; medium-density residential; commercial and educational facilities; and historic buildings ■ Overall aesthetic is of a relatively natural area with interspersed developed visual image types and roadways
Toll Plaza Area	■ Located at the southern end of the Bridge and the northernmost part of the Presidio on a high bluff over looking the Pacific Ocean, Bridge and San Francisco Bay ■ Heavily used by tourists as a vantage point to view the Bridge, as an access point to the pedestrian walkway on the east side of the Bridge, and for motor vehicle traffic heading both north and south ■ Image types include the toll plaza buildings and structures, trees and wooded areas, and recreational uses ■ Overall aesthetic is of a busy institutional and historic place
San Francisco Bay	■ The Bridge is suspended above the mouth of the San Francisco Bay ■ Image types include coastal areas and recreational uses, such as boating and fishing ■ Overall aesthetic is of expansive blue-green waters surrounded by urban, industrial and natural landscapes
Marin Headlands	■ Located to the northwest of the north end of the Bridge within Marin County ■ Primarily used for recreation, including by pedestrians and bicyclists along the ridges and trails, and by tourists as a vantage point to view the Bridge and the San Francisco Bay Area ■ Image types include open space, historic military elements and recreational uses
Fort Baker	■ Located to the northeast of the Bridge at the base of the Marin Headlands ■ Image types include historic/landmark, institutional/military, recreational, educational and commercial uses ■ Overall aesthetic character is of low-density development surrounded by natural landscape features

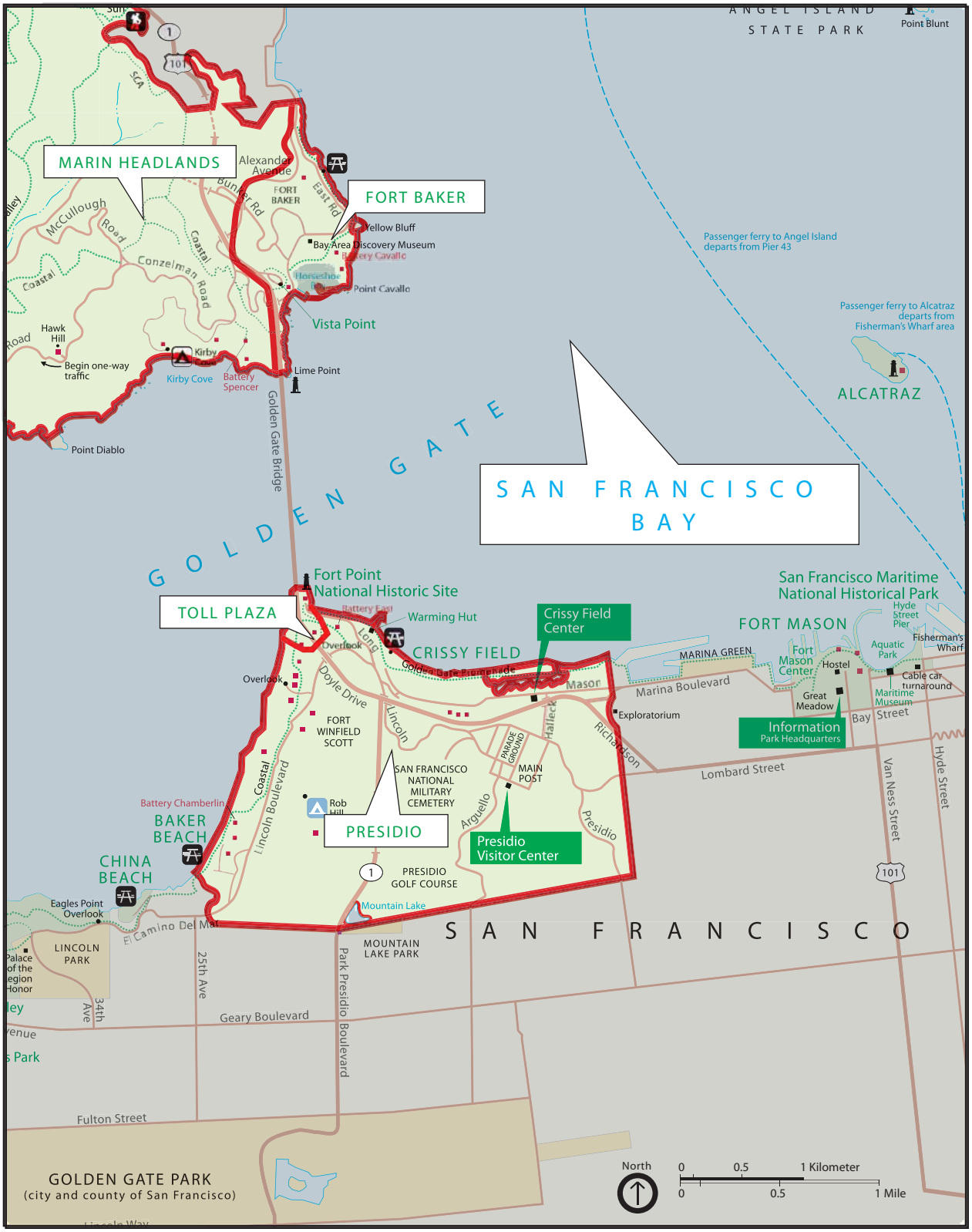


FIGURE 2.2-3
LANDSCAPE UNIT LOCATION

Source: National Park Service, 2008

Toll Plaza Area

The Bridge toll plaza is located at the southern end of the Bridge on a high bluff overlooking the Pacific Ocean and San Francisco Bay. There are several image types located in this landscape unit including the toll plaza buildings, trees and wooded areas, and recreational uses. The area is heavily used by tourists as a vantage point to view the Bridge and San Francisco and greater Bay Area. Tourists also stop at the parking lots in this landscape unit to access the pedestrian sidewalk along the east side of the Bridge. The toll plaza is filled with vehicles as they pay tolls in the southbound direction and pass through in the northbound direction. The overall aesthetic of this landscape unit is of a busy institutional and historic place. It represents a primary entry point onto the Bridge for motorists traveling north.

San Francisco Bay

The San Francisco Bay consists of a large body of water situated between the San Francisco Peninsula, the East Bay hills, and the northern shore of the greater Bay Area region. The San Francisco Bay represents a coastal area visual image type, as the waters meet with the natural coastline at the base of the Marin Headlands and the urbanized shoreline around the City and County of San Francisco. The waters of the Bay are typically active, as the Bay serves as a major commercial and industrial shipping route. The Bay also serves a recreational purpose, as seen with year-round fishing, boating and windsurfing. The overall aesthetic of this landscape unit is of expansive blue-green waters surrounded by urban and industrial uses and natural landscapes.

The Bridge is suspended above the mouth of the San Francisco Bay connecting San Francisco and Marin counties. It is one of the most well-known, frequently visited and internationally recognized suspension bridges in the world, and widely considered one of the most beautiful examples of bridge engineering, both as a structural design challenge and for its aesthetic appeal. It was the largest suspension bridge in the world when it was completed in 1937 and has become an internationally recognized symbol of San Francisco with its unique and distinguishing architectural qualities and characteristics that combined Art Deco and Streamline Modern design with advanced engineering technologies. The Bridge is constructed of concrete and steel; the foundations, anchorage housings and pylons are concrete and the Bridge spans are steel.

The Bridge has been described as an environmental sculpture and is widely noted for its harmonious blending of the natural and built environment. The extraordinary setting intensifies the visual power of the Bridge. From its north-south alignment, the Bridge provides panoramic views of the

rugged beauty and urban diversity that surround it, encompassing the Marin hills, the Presidio of San Francisco Historic Landmark District, the skyline of San Francisco, Alcatraz and Angel Islands of San Francisco Bay, and the wide expanse of the Pacific Ocean and coastline. It is one of the most photographed places in the world, with views of the Bridge typically taken from GGNRA beaches and trails southwest of the Bridge, San Francisco Bay, the Presidio, Fort Point, Fort Baker, the Marin Headlands and from the air. The setting and the views contribute to the popularity of the sidewalks and to people's affection toward the structure.

Marin Headlands

The Marin Headlands are an undeveloped, mountainous area located at the southernmost tip of Marin County. The northern approach of the Bridge travels horizontally across the eastern edge of the hills. The Marin Headlands consist of high bluffs overlooking the Pacific Ocean, the Bridge, and the San Francisco Bay. Typical image types in this landscape unit include open space, historic batteries and recreational trails. The area is used by pedestrians, recreational users and tourists as a vantage point to the panoramic vistas of the northern San Francisco Bay Area and the Bridge. The recreational trails for hikers and the narrow winding roads and parking lots for motorists and bicyclists allow public access to the landscape unit. The overall aesthetic character of this landscape unit is of generally undisturbed open space with few manmade features and steep, rocky hills sloping down to the San Francisco Bay and the Pacific Ocean.

Fort Baker

Fort Baker is located to the northeast of the Bridge at the base of the Marin Headlands. The area is located on GGNRA land and is classified as a historic district on the National Register of Historic Places. Fort Baker consists of historic army buildings clustered around the main parade ground, the Discovery Museum, Conference Center, the Horseshoe Cove waterfront area and several historic batteries. Typical image types in this landscape unit include historic/landmark, such as the low-density, red-roofed, white, rectangular army-built buildings; institutional/military, including an active United States Coast Guard station; educational and recreational uses. The overall aesthetic character of this landscape unit is of low-density development surrounded by natural landscape features, such as vegetation, the water of the San Francisco Bay and the Marin Headlands.

Visual Setting

The Bridge is located within the San Francisco Bay Area between the northernmost tip of the San Francisco Peninsula and the Marin Headlands at the far southern end of Marin County. This area of northern California is

one of the most scenic areas in the world, where the blue waters of the Bay and Pacific Ocean combine with islands, bridges, mountains, and urban skylines to create both picturesque and impressive vistas. The International Orange-colored Bridge and towers stand out against the blue skies and waters of the San Francisco Bay and the Pacific Ocean.

The Bridge is a suspension bridge that extends over the mouth of the San Francisco Bay and links the City and County of San Francisco to Marin County. The Bridge is located in the GGNRA and is an iconic symbol of San Francisco and northern California, attracting visitors from around the world. The Bridge is surrounded by both natural and manmade landscape features, including the densely vegetated Presidio and the undeveloped Marin Headlands and the urbanized cityscape of San Francisco and historical military structures of Fort Point and Fort Baker.

The Bridge is also a primary transportation corridor within the area, as it connects Highway 101 between Marin and San Francisco. Automobile occupants, bicyclists and pedestrians traveling on the Bridge have a wide variety of visual experiences. To the east, the blue water of the San Francisco Bay, the densely urbanized cityscape of San Francisco, Angel Island, Alcatraz, the developed yet vegetated East Bay hills and the San Francisco-Oakland Bay Bridge are the primary visual features. When looking west, the viewer experiences the natural landscape of the undeveloped slopes of the Marin Headlands and the open water of the Pacific Ocean.

Viewshed

The viewshed for the proposed project incorporates a series of publicly accessible areas from which viewers can see the Bridge and could potentially notice a change in the height of the outside handrail. The viewpoints were chosen on the basis of a variety of factors, including high visibility/close proximity to sensitive viewers and a range of view types available to the public (close proximity to long-distance views). Figures 2.2-4 and 2.2-5 identify the locations of these viewpoints. The viewshed varies according to the location of the viewpoint.

For users of nearby public facilities such as Baker Beach, pedestrians and recreational users, such as those in the Marin Headlands, and boaters on the San Francisco Bay, the viewshed includes views of the Bridge. For motorists, pedestrians and bicyclists on the Bridge, the viewshed includes the Bridge deck, outside handrails, light posts and suspender ropes in the foreground, and views of the San Francisco Bay Area and Pacific Ocean in the distance.

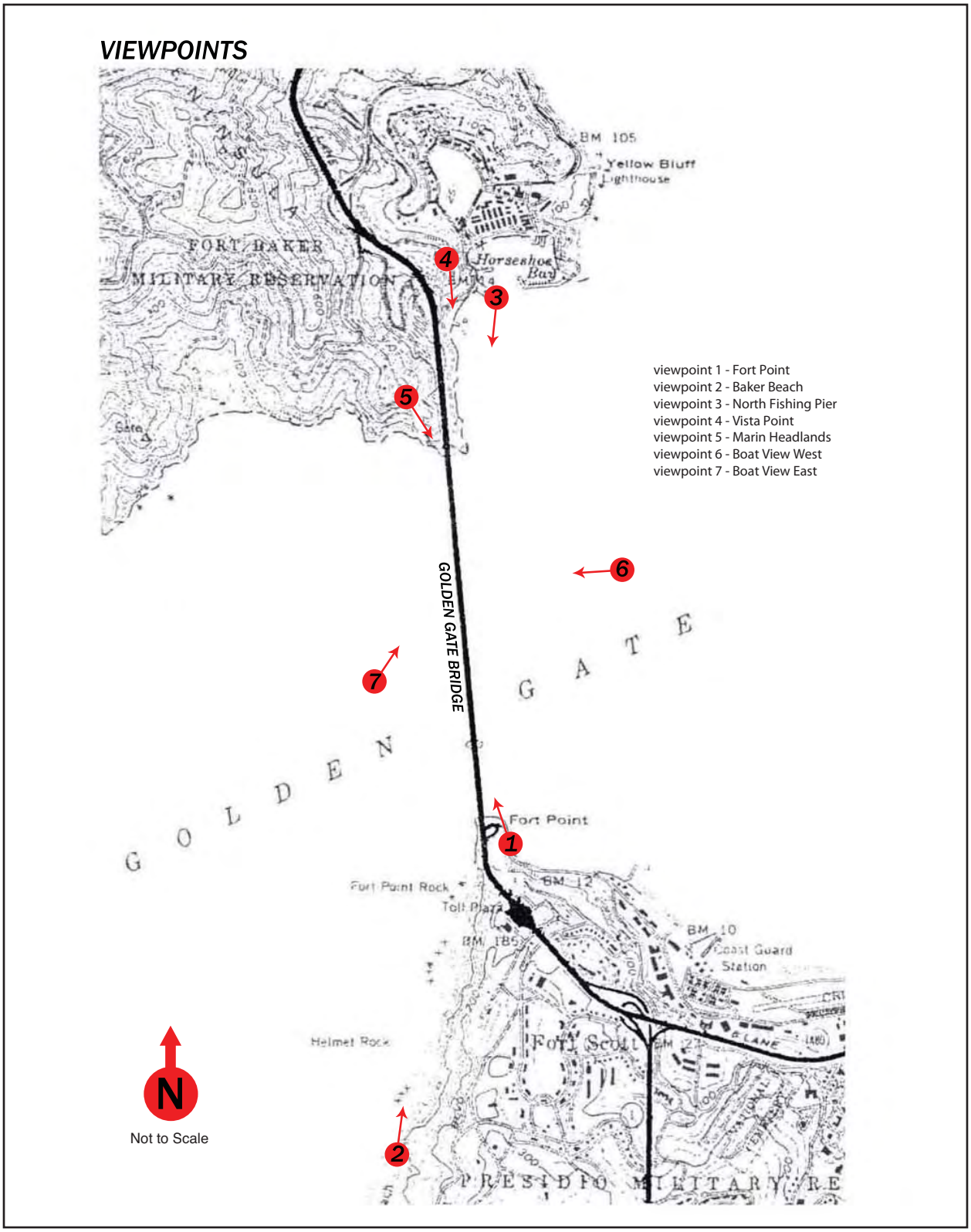


FIGURE 2.2-4
KEY TO VIEWPOINTS OF THE GOLDEN GATE BRIDGE

Source: macdonald architects, 2008

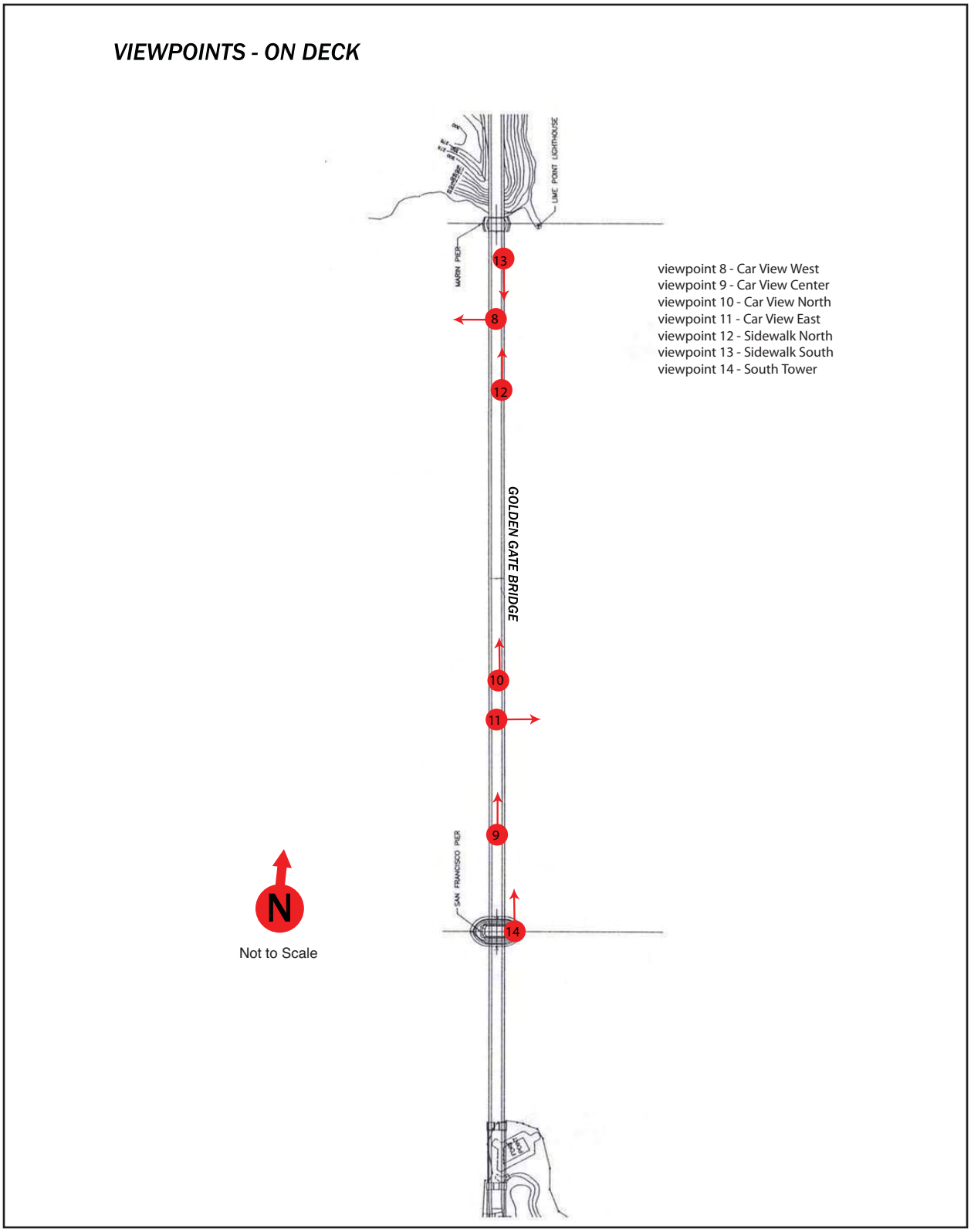


FIGURE 2.2-5
KEY TO VIEWPOINTS FROM THE GOLDEN GATE BRIDGE

Source: macdonald architects, 2008

The viewpoints of the Bridge are located at Fort Point, Baker Beach, the North Fishing Pier, Vista Point, the Marin Headlands, and also include a boat view from beneath the Bridge to the east and west. Views from the Bridge include a car view facing west, car view from the center traffic lane, car view facing north, car view facing east, sidewalk view facing north, sidewalk view facing south, and a view from the south Bridge tower. Figures 2.2-6 through 2.2-57 illustrate existing views and future views with the proposed alternatives from these 14 viewpoints.

Viewer Sensitivity

Viewer sensitivity is defined both as the viewer's concern for scenic quality and the viewer's response to change in the visual resources that make up the view. For the proposed project, primary factors affecting viewer sensitivity are the architectural and cultural significance of the Bridge. The Bridge is widely considered one of the most beautiful examples of bridge engineering, both as a structural design challenge and for its aesthetic appeal. It was the largest suspension bridge in the world when it was completed in 1937 and has become an internationally recognized symbol of San Francisco. The Bridge's setting and the views contribute to the popularity of the Bridge sidewalks and public viewpoints towards the Bridge.

The predominant viewer groups associated with the Bridge are those with views from the Bridge (automobile occupants, cyclists and pedestrians) and those with views of the Bridge (tourists, recreational users, residents, boaters, hikers, etc.). Viewer activity can affect their sensitivity to the views available to and from the Bridge. A person's experience of the Bridge also varies based upon location, the duration of the view, and the frequency of exposure to views of the Bridge.

The Bridge receives approximately 10 million visitors each year, and approximately 120,000 vehicles cross the Bridge daily. Viewer sensitivity would generally be categorized as high, because of the architectural and cultural significance of the Bridge, its proximity to recreational areas and the large numbers of visitors to the Bridge.

Existing Visual Quality

Visual quality is evaluated by identifying the vividness, intactness and unity present in the viewshed. Vividness is the visual power or memorability of landscape components as they combine in striking and distinctive visual patterns. An example within the study area is the distinctive relationship of land and water observed from the Bridge. Intactness is the visual integrity of the natural and manmade landscape of the immediate environs and its freedom from encroaching elements. An example within the study area is

the Marin Headlands, which is a natural area with few manmade features. Unity is the visual coherence and compositional harmony of the landscape considered as a whole. An example is the way manmade elements such as the Bridge combine with natural features such as the San Francisco Bay and the Marin Headlands to provide a coherent visage unique to the Bay Area.

The existing visual quality at each of the 14 viewpoints was evaluated using the criteria identified above and rated as outstanding, high, moderate or low based on the following considerations.

- Outstanding visual quality is a rating reserved for landscapes with exceptionally high scenic value. These landscapes are significant regionally and/or nationally. They usually contain exceptional natural or cultural features that contribute to this rating. They are what we think of as "picture postcard" landscapes. People are attracted to these landscapes just to be able to view them.
- High visual quality encompasses landscapes that have a high-quality scenic value. This may be due to cultural or natural features contained in the landscape or to the arrangement of spaces contained in the landscape that causes the landscape to be visually interesting or a particularly comfortable place for people. These are often landscapes that have a high potential for recreational activities or in which the visual experience is important.
- Moderate visual quality represents landscapes that have average scenic value. They usually lack significant manmade or natural features. Their scenic value is primarily a result of the arrangement of spaces contained in the landscape and the two-dimensional visual attributes of the landscape.
- Low visual quality refers to landscapes with low scenic value. The landscape is often dominated by visually discordant manmade alterations, or they are landscapes that do not include places that people find inviting and lack interest in terms of two-dimensional visual attributes.

The results of these evaluations at the 14 viewpoints are presented in Table 2.2-2. Viewpoints 1 through 7 represent views of the Bridge, while viewpoints 8 through 14 represent views from the Bridge.

Table 2.2-2 Overall Visual Quality

Viewpoint Number	Viewpoint Location	Vividness	Intactness	Unity	Overall Visual Quality
1	Fort Point	High	Moderate	High	High
2	Baker Beach	Outstanding	Outstanding	Outstanding	Outstanding
3	North Fishing Pier	High	Moderate	High	High
4	Vista Point	High	High	High	High
5	Marin Headlands	Outstanding	Outstanding	Outstanding	Outstanding
6	Boat View East	High	Moderate	High	High
7	Boat View West	High	Moderate	High	High
8	Car View West	High	Moderate	Moderate	Moderate
9	Car View Center	Low	Low	Low	Low
10	Car View North	Low	Low	Low	Low
11	Car View East	High	High	High	High
12	Sidewalk North	Moderate	High	High	High
13	Sidewalk South	Outstanding	High	Outstanding	Outstanding
14	Bridge Tower	High	High	High	High

Viewer Exposure

Viewer exposure refers to the visibility of the project from surrounding viewpoints as well as the viewing sequence from the Bridge user's viewpoint. Use patterns that determine viewpoints can be categorized by location, viewer volume, and duration of views, as well as by viewer type. Viewer exposure relates to duration and frequency of views and whether the viewer is located at a given site or is moving. The direction and speed of travel can profoundly influence the exposure to views. View position refers to the observer's height in relation to what is being viewed. This relationship is important in determining scenic quality and potential visual impact. This relationship applies to both viewers of the Bridge and viewers from the Bridge.

Viewing angle is also an important factor in evaluating viewer exposure. In general, a 45-degree viewing angle is preferable because it allows the viewer to see depth, architectural features and length of the feature being viewed. Highly acute viewing angles are less preferable because architectural details

are often reduced as well as the depth of the feature being viewed. Perpendicular angles are also less preferable than a 45-degree viewing angle because depth of the feature is often lost, while architectural details are more visible.

Viewing distance affects the degree of visibility of landscape features. Close viewpoints, typically within 0 to 0.3 miles (0 to 0.5 kilometers), permit perception of landscape detail and small-scale features. An intermediate viewpoint, typically from 0.3 to 3.0 miles (0.5 to 5.0 kilometers), permits the viewer to perceive the relationship of landscape features, although detailed perception is considerably reduced. Distant viewpoints, typically beyond 3.0 miles (5.0 kilometers) from the viewer, allow only perception of large-scale features (e.g., ridges, the Bay and urban settlements), with little detail and considerable loss of color contrast.

Viewing distance also exerts a considerable influence on the viewer's visual experience. Typically, a person can readily perceive objects within an approximately 40-degree range directly in front of him/her, in the horizontal plain, without moving his/her head or eyes (this is called the "normal view range" or the "normal view cone," and is replicated in a 50-millimeter lens using a 35 mm camera). From close viewpoints, the Bridge will encompass the entire view cone of a viewer facing it, and changes to it will be prominent. But from distant viewpoints, the Bridge will encompass only a portion of the view cone of a person facing it, making it possible that changes to the Bridge will be less prominent.

A person's experience of the Bridge varies based upon location, the duration of the view, and the frequency of exposure to views of the Bridge. Viewer exposure was evaluated at each of the 14 viewpoints. Table 2.2-3 summarizes the conclusions of this evaluation. Viewpoints 1 through 7 represent views of the Bridge, while viewpoints 8 through 14 represent views from the Bridge.

Table 2.2-3 Overall Viewer Exposure

Viewpoint Number	Viewpoint Location	View Distance	Number of Viewers	Duration of View	Overall Viewer Exposure
1	Fort Point	Foreground	High	Extended	High
2	Baker Beach	Middle ground	Moderate	Extended	Moderate
3	North Fishing Pier	Foreground	Moderate	Extended	High
4	Vista Point	Foreground	High	Extended	High
5	Marin Headlands	Foreground	High	Extended	High
6	Boat View East	Foreground	Low	Moderate	Moderate
7	Boat View West	Foreground	Low	Moderate	Moderate
8	Car View West	Foreground	High	Moderate	Moderate
9	Car View Center	Background	High	Extended	High
10	Car View North	Background	High	Extended	High
11	Car View East	Foreground	High	Moderate	Moderate
12	Sidewalk North	Foreground	High	Extended	High
13	Sidewalk South	Foreground	High	Extended	High
14	Bridge Tower	Foreground	High	Extended	High

2.2.3 ENVIRONMENTAL CONSEQUENCES

The visual impacts of project alternatives are determined by assessing the visual resource change due to the project and by predicting viewer response to that change. The first step in determining visual resource change is to assess the compatibility of the proposed project with the visual character of the existing landscape. The second step is to compare the visual quality of the existing resources with projected visual quality after the project is constructed. The resulting level of visual impact is determined by combining the severity of resource changes with the degree to which people are likely to oppose the change.

The criteria used to determine visual impacts include visual compatibility, visual dominance of the project, and view blockage or view expansion. Visual compatibility describes the degree to which the project's visual elements (consisting of form, line, color and texture) differ from the same visual elements established in the existing landscape. The presence of

forms, lines, colors and textures in the existing landscape similar to those of the project indicates a landscape more capable of accepting the project elements than a landscape where those elements are absent. The degree of visual contrast is rated as low, moderate or high.

Visual dominance refers to the contrast between the proposed improvements and their setting described in terms of vegetation, landform and structural changes. Visual elements of scale, form, line and position, as seen from representative sensitive viewing locations, determine the degree of contrast and dominance. Dominance is a function of how potentially noticeable the project is to the viewer, ranging from inevident, subordinate, co-dominant and dominant. View blockage describes the extent to which any previously visible landscape features are blocked from view by the project. Blockage of higher quality landscape features by lower quality features causes adverse effects. The degree of view blockage is rated as low, moderate or high.

To evaluate the environmental consequences and visual changes by alternative, a series of public views towards and from the Bridge were identified and simulated for each alternative. Viewpoints 1 through 7 represent the views of the Bridge, while Viewpoints 8 through 14 represent views from of the Bridge by automobile occupants, bicyclists and pedestrians. Generally, views towards the Bridge would not be substantially affected by installation of the physical suicide deterrent system, with visual impacts ranging from negligible to minimally adverse. Views from the Bridge would be most noticeably impacted, with visual impacts ranging from adverse to strongly adverse.

Alternative 1A – Add Vertical System to Outside Handrail

Alternative 1A would construct a new barrier on top of the outside handrail (and concrete rail at the north anchorage housing and north pylon). The barrier would extend 8 feet vertically from the top of the 4-foot-high outside handrail for a total of 12 feet. The vertical addition to the outside handrail would maintain the same International Orange coloring and vertical line form established by the outside handrail, light posts and suspender ropes. The vertical addition to the outside handrail would remain consistent with the strong vertical elements of the Bridge and would maintain the existing visual rhythm of the Bridge structure. Additionally, transparent panels would be installed at the belvederes and towers on both sides of the Bridge. These transparent features would introduce a new visual element to the Bridge. Refer to Chapter 1.0, Proposed Project, for a detailed description of Alternative 1A.

Views of the Bridge

In regards to the views towards the Bridge, Alternative 1A would primarily have minimally adverse visual impacts, with the exception of an adverse visual impact from Viewpoint 4 (Vista Point). Table 2.2-4 summarizes the overall visual impact of Alternative 1A to the view of the Bridge. Figures 2.2-6 through 2.2-11 illustrates Alternative 1A from the views towards the Bridge (Viewpoints 1 though 7). Because Viewpoints 6 and 7 (Boat View West and Boat View East) represent a similar location and angle of view, simulations were prepared only for Viewpoint 6. Visual impacts to boat views are evaluated under Viewpoint 6.

Although Alternative 1A would primarily have minimally adverse visual impacts, Alternative 1A would have an adverse visual impact from Viewpoint 4 (Vista Point) because the physical suicide deterrent system would be a co-dominant visual feature in a landscape with high viewer sensitivity, altering views of the Bridge and interfering with views of the larger landscape. Conversely, visual impacts from Viewpoint 2 (Baker Beach) would be negligible for Alternative 1A due to the distant viewing location, which affords low view blockage and high visual compatibility with the Bridge features and surrounding environment.

Due to the viewing distance from the views of the Bridge and the International Orange coloring of Alternative 1A, the vertical rods would blend into the Bridge span and the existing vertical line form created by the suspender ropes and light posts. While the addition of the vertical system would slightly elevate the horizontal line of the outside handrail across the entire Bridge span, the overall appearance of the Bridge would not noticeably change from the views of the Bridge.

Overall, the primary visual change associated with Alternative 1A to views towards the Bridge would be the appearance of a higher outside railing on the Bridge with corresponding increased International Orange coloring added to the landscape.

Table 2.2-4 Alternative 1A: Overall Visual Impact to Views of the Bridge

Viewpoint		Existing Condition		Proposed Condition			Visual Impact
No.	Location	Visual Quality	Viewer Exposure	Visual Compatibility	Visual Dominance	View Blockage	
1	Fort Point	High	High	Moderate	Subordinate	Moderate	Minimally Adverse
2	Baker Beach	Outstanding	Moderate	High	Subordinate	Moderate	Minimally Adverse
3	North Fishing Pier	Moderate	High	Moderate	Subordinate	Low	Minimally Adverse
4	Vista Point	High	High	Moderate	Co-Dominant	Moderate	Adverse
5	Marin Headlands	Outstanding	High	Moderate	Subordinate	Moderate	Minimally Adverse
6	Boat View West	High	Moderate	Moderate	Subordinate	Moderate	Minimally Adverse
7	Boat View East	High	Moderate	Moderate	Subordinate	Moderate	Minimally Adverse

EXISTING

ALTERNATIVE 1A

FIGURE 2.2-6
VIEWPOINT 1: FORT POINT - ALTERNATIVE 1A

Source: macdonald architects, 2008

EXISTING

ALTERNATIVE 1A

FIGURE 2.2-7
VIEWPOINT 2: BAKER BEACH - ALTERNATIVE 1A

Source: macdonald architects, 2008

EXISTING

ALTERNATIVE 1A

FIGURE 2.2-8
VIEWPOINT 3: NORTH FISHING PIER - ALTERNATIVE 1A

Source: macdonald architects, 2008

EXISTING

ALTERNATIVE 1A

FIGURE 2.2-9
VIEWPOINT 4: VISTA POINT - ALTERNATIVE 1A

Source: macdonald architects, 2008

EXISTING

ALTERNATIVE 1A

FIGURE 2.2-10
VIEWPOINT 5: MARIN HEADLANDS - ALTERNATIVE 1A

Source: macdonald architects, 2008

EXISTING

ALTERNATIVE 1A

FIGURE 2.2-11
VIEWPOINT 6: BOAT VIEW WEST - ALTERNATIVE 1A

Source: macdonald architects, 2008

Views from the Bridge

Alternative 1A would have adverse to strongly adverse visual impacts to views from the Bridge, in particular, to the sidewalk and car views. Table 2.2-5 summarizes the visual impacts of Alternative 1A to views from the Bridge. Figures 2.2-12 through 2.2-16 illustrate Alternative 1A from the views from the Bridge (Viewpoints 8 though 13). Because Viewpoints 9 and 10 (Car View Center and Car View North) represent a similar location and angle of view, simulations were prepared only for Viewpoint 9. Visual impacts to an automobile occupant's view from the Bridge are evaluated under Viewpoint 9.

Primary visual changes associated to Alternative 1A views from the Bridge include raising the height of the outside Bridge railing such that it would extend across a viewer's total field of view. The addition of the vertical system to the outside handrail would be seen in the immediate foreground, representing a co-dominant to dominant visual feature in the landscape.

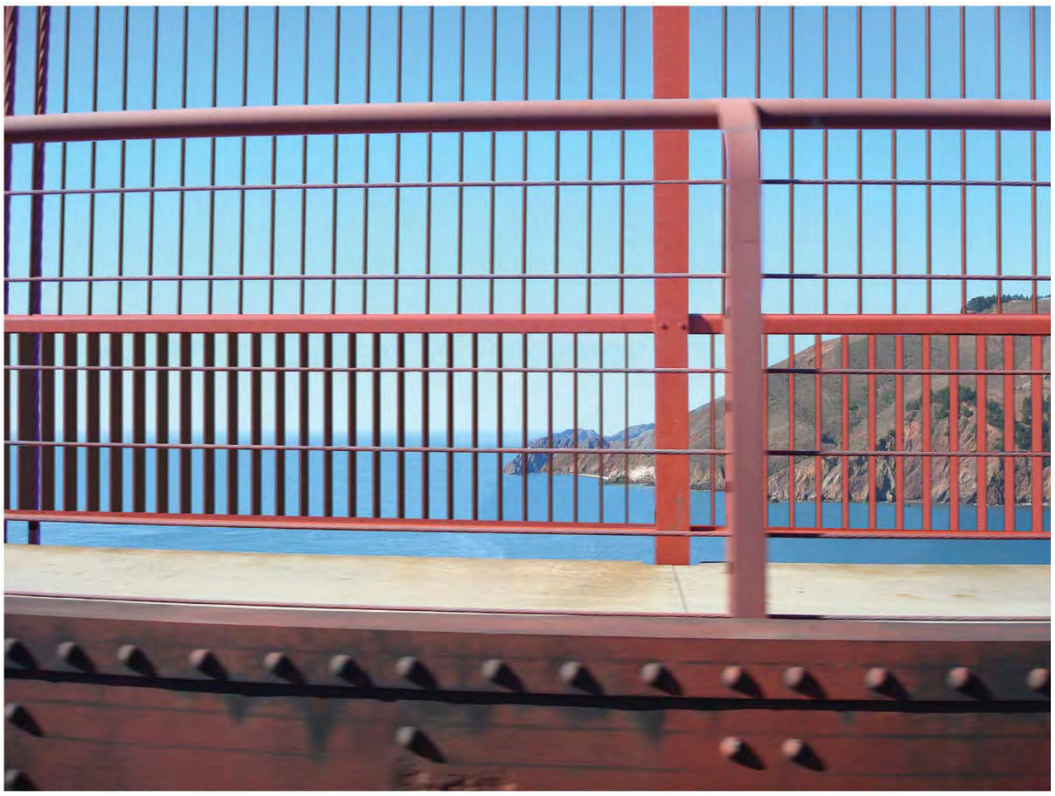
Alternative 1A would have moderate view blockage and low visual compatibility with the existing landscape, with the exception of moderate compatibility at Viewpoints 12 and 13 (Sidewalk North and Sidewalk South). The transparent panels at the belvederes (24 widened areas located on both the east and west sidewalks) would also be visible at views from the Bridge and would contrast with the color and materials of the Bridge.

While the vertical addition maintains consistency with the strong verticality of the Bridge features, such as the suspender ropes, light posts, and Bridge towers, the vertical rods contrast with the horizontal line form established by the natural and built environment seen from the Bridge, such as the blue-green waters of the San Francisco Bay and the cityscape of San Francisco.

Table 2.2-5 Alternative 1A: Overall Visual Impact to Views from the Bridge

Viewpoint		Existing Condition		Proposed Condition			Visual Impact
No.	Location	Visual Quality	Viewer Exposure	Visual Compatibility	Visual Dominance	View Blockage	
8	Car View West	Moderate	Moderate	Low	Co-Dominant	Moderate	Adverse
9	Car View Center	High	High	Low	Co-Dominant	Moderate	Adverse
10	Car View North	High	High	Low	Co-Dominant	Moderate	Adverse
11	Car View East	High	High	Low	Dominant	Moderate	Strongly Adverse
12	Sidewalk North	High	High	Moderate	Dominant	Moderate	Adverse
13	Sidewalk South	Outstanding	High	Moderate	Dominant	Moderate	Adverse

EXISTING



ALTERNATIVE 1A

FIGURE 2.2-12
VIEWPOINT 8: CAR VIEW WEST - ALTERNATIVE 1A

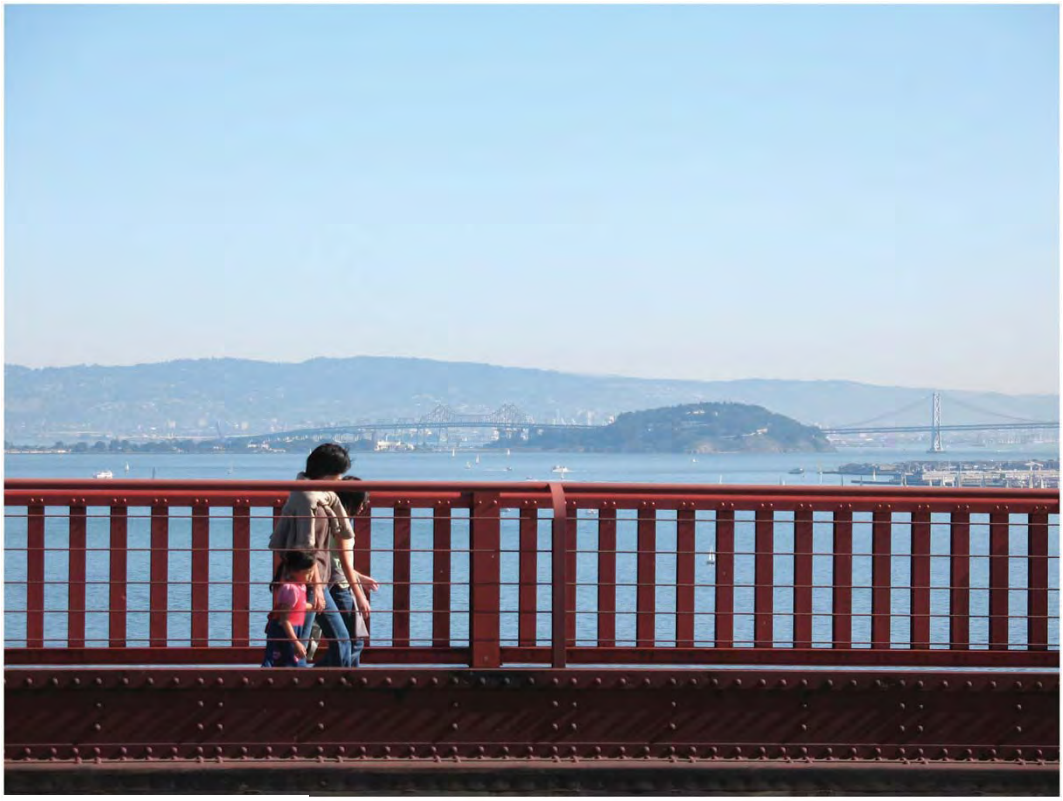
Source: macdonald architects, 2008

EXISTING

ALTERNATIVE 1A

FIGURE 2.2-13
VIEWPOINT 9: CAR VIEW CENTER - ALTERNATIVE 1A

Source: macdonald architects, 2008



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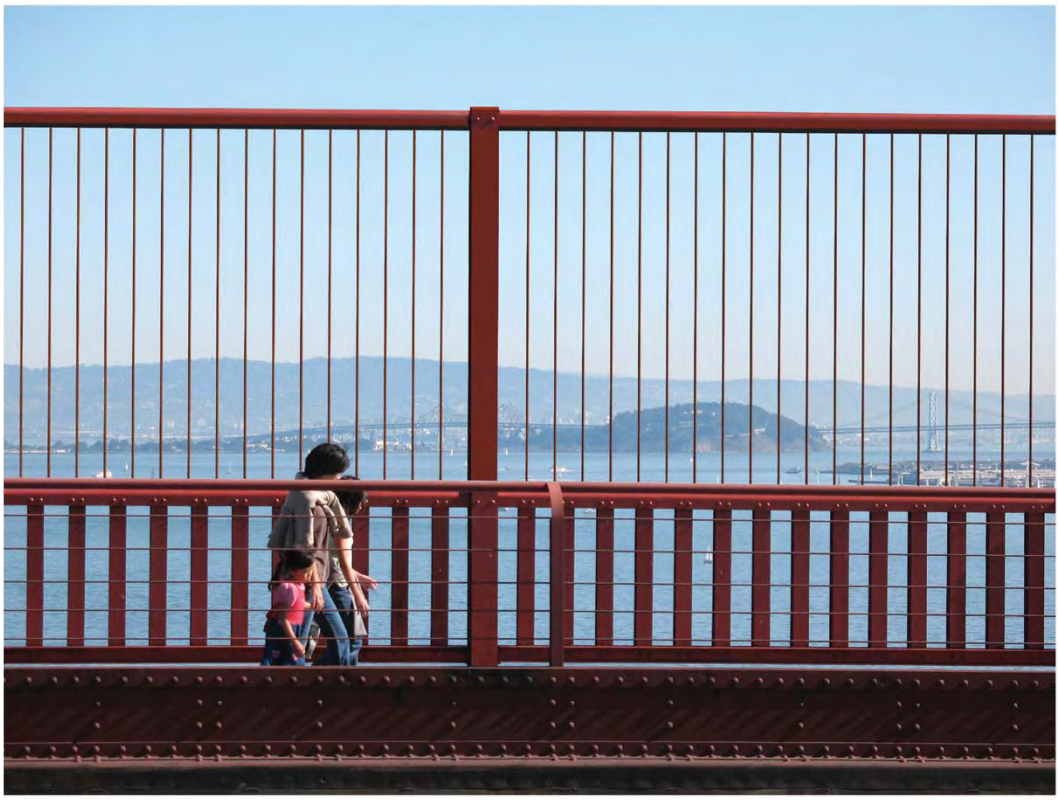
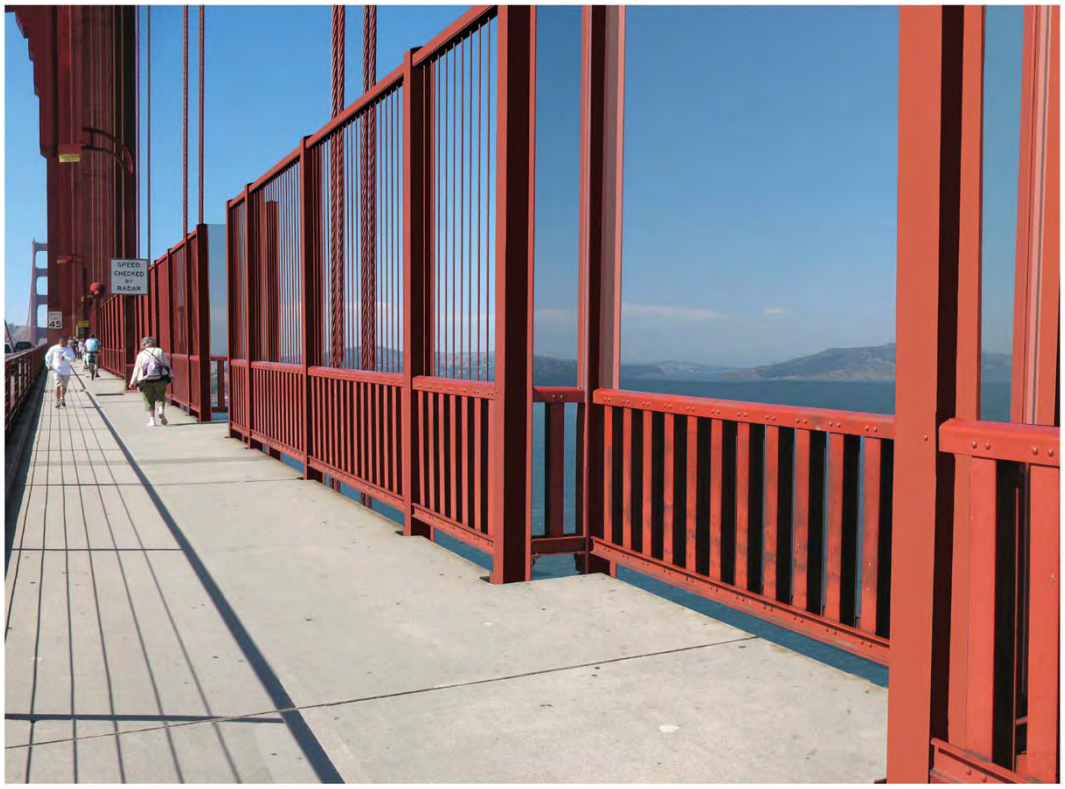


ALTERNATIVE 1A

FIGURE 2.2-14
VIEWPOINT 11: CAR VIEW EAST - ALTERNATIVE 1A

Source: macdonald architects, 2008

EXISTING

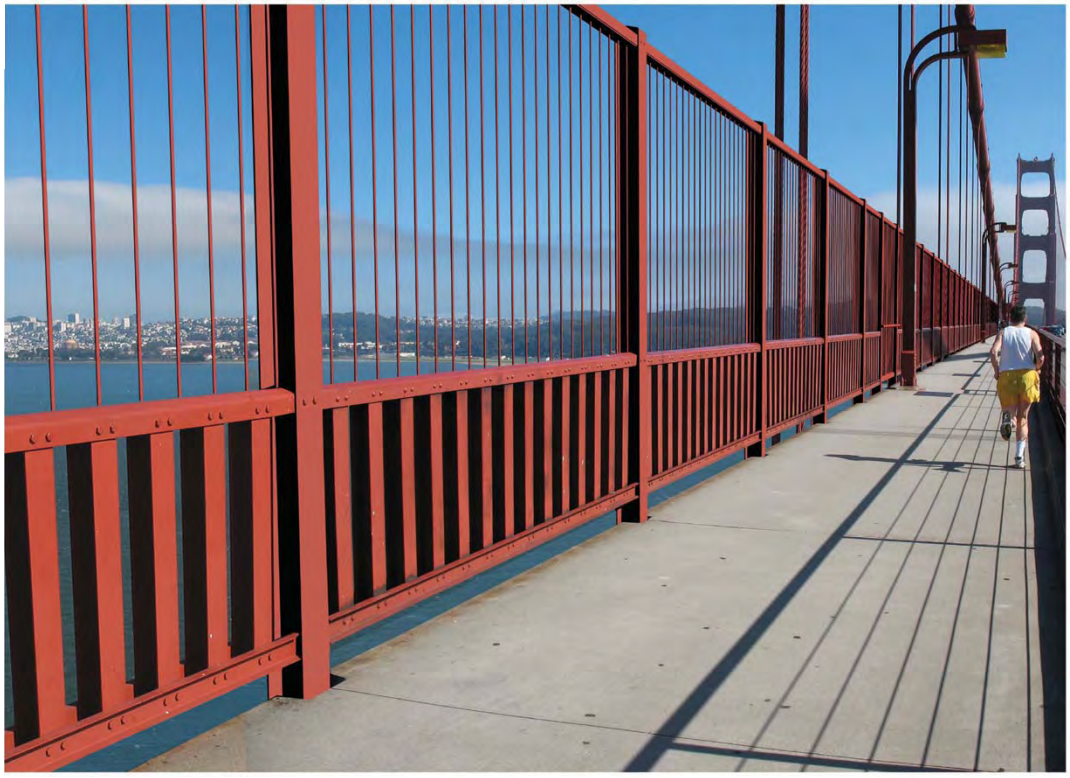


ALTERNATIVE 1A

FIGURE 2.2-15
VIEWPOINT 12: SIDEWALK VIEW NORTH - ALTERNATIVE 1A

Source: macdonald architects, 2008

EXISTING



ALTERNATIVE 1A

FIGURE 2.2-16
VIEWPOINT 13: SIDEWALK VIEW SOUTH - ALTERNATIVE 1A

Source: macdonald architects, 2008

Alternative 1B – Add Horizontal System to Outside Handrail

Alternative 1B would construct a new barrier on top of the outside handrail (and concrete rail at the North Anchorage Housing and north pylon) consisting of 3/8-inch diameter horizontal steel cables. The new barrier would extend 8 feet above the top of the outside handrail for a total height of 12 feet. The thin horizontal cables are situated between thicker, evenly spaced vertical rail posts on top of the outside handrail. While the horizontal addition to the outside handrail maintains the horizontal line form established by the public safety railing, the horizontal cables contrast with the strong verticality of the Bridge structures, such as the suspender ropes, light posts and Bridge towers. Additionally, transparent panels would be installed at the belvederes on both sides of the Bridge. A transparent winglet would be placed on top of the rail posts, with a slight concave curvature extending across the length of the suicide deterrent barrier. This addition of the transparent panels and winglet would introduce a new visual element to the Bridge. Refer to Chapter 1, Proposed Project, for a detailed description of Alternative 1B.

Views of the Bridge

In regards to the views towards the Bridge, Alternative 1B would primarily have minimally adverse visual impacts. Table 2.2-6 summarizes the overall visual impact of Alternative 1B to views of the Bridge. Figures 2.2-17 through 2.2-22 illustrate Alternative 1B from the views of the Bridge (Viewpoints 1 though 7). However, Alternative 1B would have an adverse visual impact from Viewpoint 4 (Vista Point) because the physical suicide deterrent system would be a co-dominant visual feature in a landscape with high viewer sensitivity, altering views of the Bridge and interfering with views of the larger landscape. Conversely, visual impacts from Viewpoint 2 (Baker Beach) would be negligible for Alternative 1B due to the distant viewing location, which affords low view blockage and high visual compatibility with the Bridge features and surrounding environment.

Due to the viewing distance from the views of the Bridge and the International Orange coloring of Alternative 1B, the horizontal cables would blend into the Bridge span and the existing vertical line form created by the suspender ropes and light posts. While the addition of the horizontal system would slightly elevate the horizontal line of the outside handrail across the entire Bridge span, the overall appearance of the Bridge would not noticeably change from the views of the Bridge. The transparent panels and winglet introduce some reflectivity to views of the Bridge; however, the transparency of these features substantially reduces their visibility at views of the Bridge.

Overall, the primary visual change associated with Alternative 1B to views towards the Bridge would be the appearance of a higher outside railing on the Bridge with the commensurate increased International Orange coloring to the landscape, representing a minimally adverse visual impact.

Table 2.2-6 Alternative 1B: Overall Visual Impact to Views of the Bridge

Viewpoint		Existing Condition		Proposed Condition			Visual Impact
No.	Location	Visual Quality	Viewer Exposure	Visual Compatibility	Visual Dominance	View Blockage	
1	Fort Point	High	High	Moderate	Subordinate	Moderate	Minimally Adverse
2	Baker Beach	Outstanding	Moderate	High	Subordinate	Moderate	Minimally Adverse
3	North Fishing Pier	Moderate	High	Moderate	Subordinate	Low	Minimally Adverse
4	Vista Point	High	High	Moderate	Co-Dominant	Moderate	Adverse
5	Marin Headlands	Outstanding	High	Moderate	Subordinate	Moderate	Minimally Adverse
6	Boat View West	High	Moderate	Moderate	Subordinate	Moderate	Minimally Adverse
7	Boat View East	High	Moderate	Moderate	Subordinate	Moderate	Minimally Adverse

EXISTING

ALTERNATIVE 1B

FIGURE 2.2-17
VIEWPOINT 1: FORT POINT - ALTERNATIVE 1B

Source: macdonald architects, 2008

EXISTING

ALTERNATIVE 1B

FIGURE 2.2-18
VIEWPOINT 2: BAKER BEACH - ALTERNATIVE 1B

Source: macdonald architects, 2008

EXISTING

ALTERNATIVE 1B

FIGURE 2.2-19
VIEWPOINT 3: NORTH FISHING PIER - ALTERNATIVE 1B

Source: macdonald architects, 2008

EXISTING

ALTERNATIVE 1B

FIGURE 2.2-20
VIEWPOINT 4: VISTA POINT - ALTERNATIVE 1B

Source: macdonald architects, 2008

EXISTING

ALTERNATIVE 1B

FIGURE 2.2-21
VIEWPOINT 5: MARIN HEADLANDS - ALTERNATIVE 1B

Source: macdonald architects, 2008

EXISTING

ALTERNATIVE 1B

FIGURE 2.2-22
VIEWPOINT 6: BOAT VIEW EAST - ALTERNATIVE 1B

Source: macdonald architects, 2008

Views from the Bridge

Alternative 1B would primarily have adverse visual impacts to views from the Bridge, with the exception of a strongly adverse visual impact from Viewpoint 11 (Car View East) where the horizontal addition to the outside handrail would introduce the transparent winglet into the view and comprise a larger portion of the field of view than the existing elements. Table 2.2-7 summarizes the visual impacts of Alternative 1B to views from the Bridge. Figures 2.2-23 through 2.2-27 illustrate the visual impacts of Alternative 1B at views from the Bridge (Viewpoints 8 though 13).

Primary visual changes associated with Alternative 1B to views from the Bridge include raising the height of the Bridge railing such that it would extend across a viewer's total field of view. The addition of the horizontal system to the outside handrail would be seen in the immediate foreground, representing a co-dominant to dominant visual feature in the landscape, depending on the viewing angle. Overall, Alternative 1B would have moderate view blockage and low visual compatibility with the existing landscape, with the exception of moderate compatibility at Viewpoints 12 and 13 (Sidewalk North and Sidewalk South).

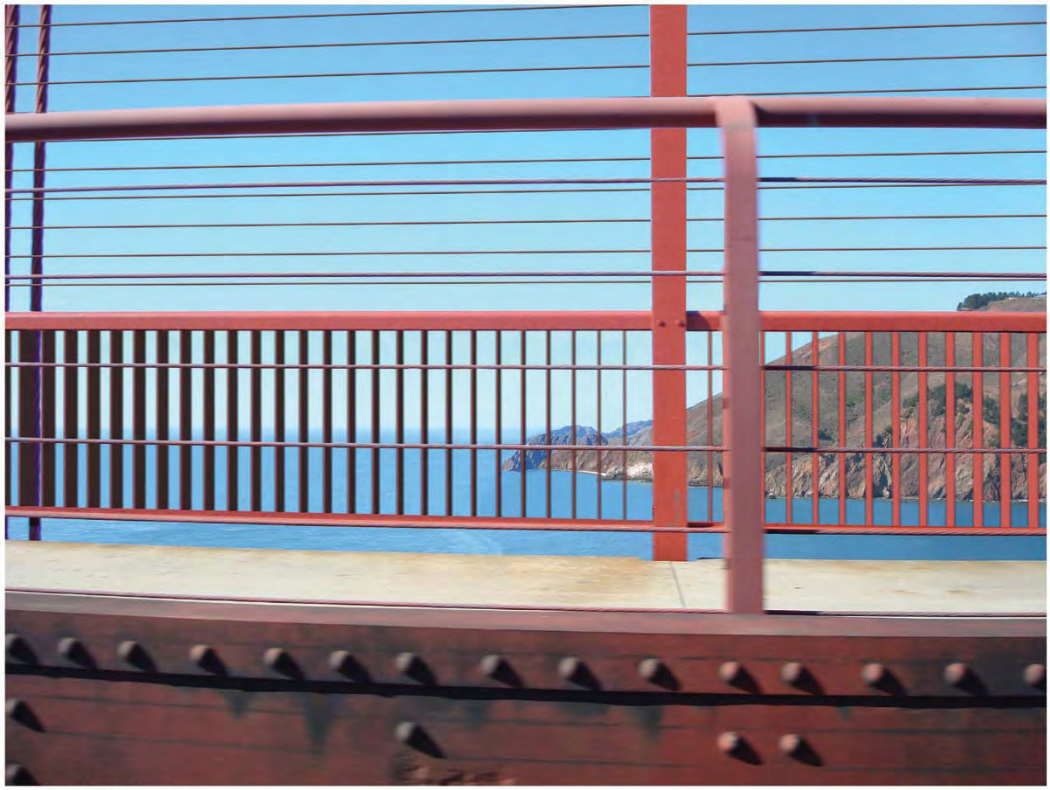
The transparent winglets and transparent panels around the Bridge tower and at the belvederes (24 widened areas located on both the east and west sidewalks) would be visible at views from the Bridge and would contrast with the color and materials of the Bridge. While the horizontal cables are consistent with the horizontal line form established by the natural environment, such as the horizon of the blue green waters of the San Francisco Bay and Pacific Ocean, the horizontal cables contrast with the vertical Bridge towers, suspender ropes and light posts on the Bridge.

Although the horizontal addition to the outside handrail would extend across the an expanded field of view, the natural landscape features, such as the open water of San Francisco Bay and the Marin hills would still be visible through the horizontal addition. The thin horizontal cables, transparent winglet and transparent panels would allow the viewer to see through Alternative 1B.

Table 2.2-7 Alternative 1B: Overall Visual Impact to Views from the Bridge

Viewpoint		Existing Condition		Proposed Condition			Visual Impact
No.	Location	Visual Quality	Viewer Exposure	Visual Compatibility	Visual Dominance	View Blockage	
8	Car View West	Moderate	Moderate	Low	Co-Dominant	Moderate	Adverse
9	Car View Center	High	High	Low	Co-Dominant	Moderate	Adverse
10	Car View North	High	High	Low	Co-Dominant	Moderate	Adverse
11	Car View East	High	High	Low	Dominant	Moderate	Strongly Adverse
12	Sidewalk North	High	High	Moderate	Dominant	Moderate	Adverse
13	Sidewalk South	Outstanding	High	Moderate	Dominant	Moderate	Adverse

EXISTING



ALTERNATIVE 1B

FIGURE 2.2-23
VIEWPOINT 8: CAR VIEW WEST - ALTERNATIVE 1B

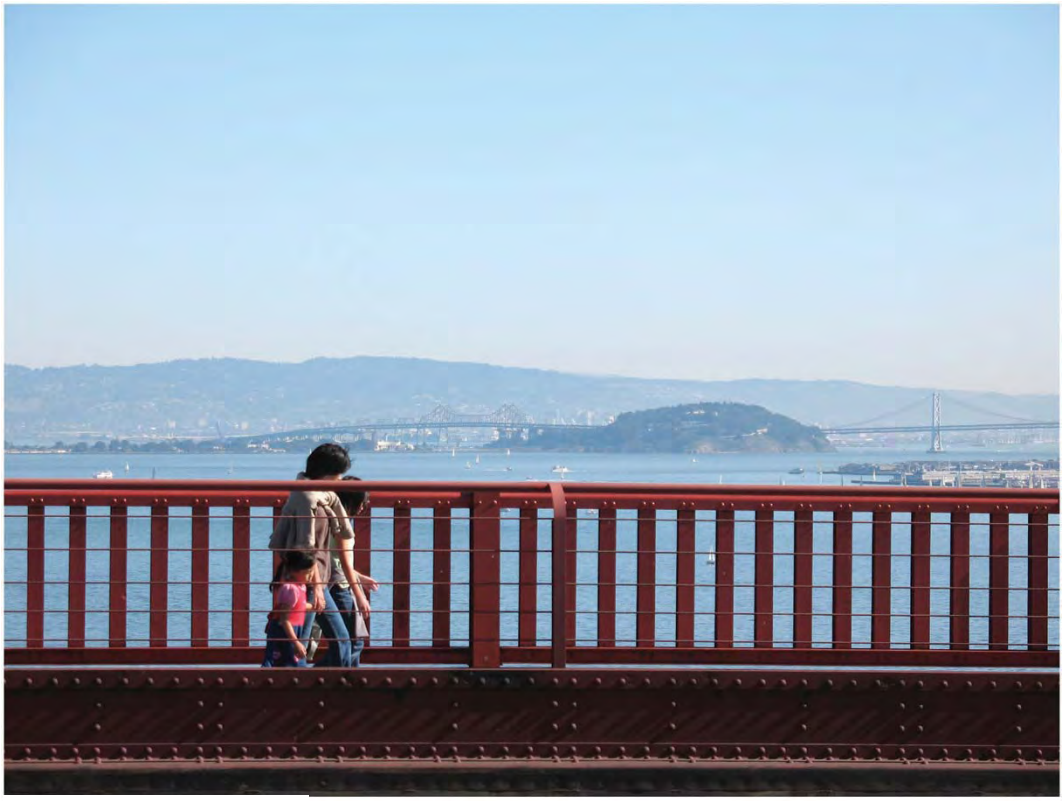
Source: macdonald architects, 2008

EXISTING

ALTERNATIVE 1B

FIGURE 2.2-24
VIEWPOINT 9: CAR VIEW CENTER - ALTERNATIVE 1B

Source: macdonald architects, 2008



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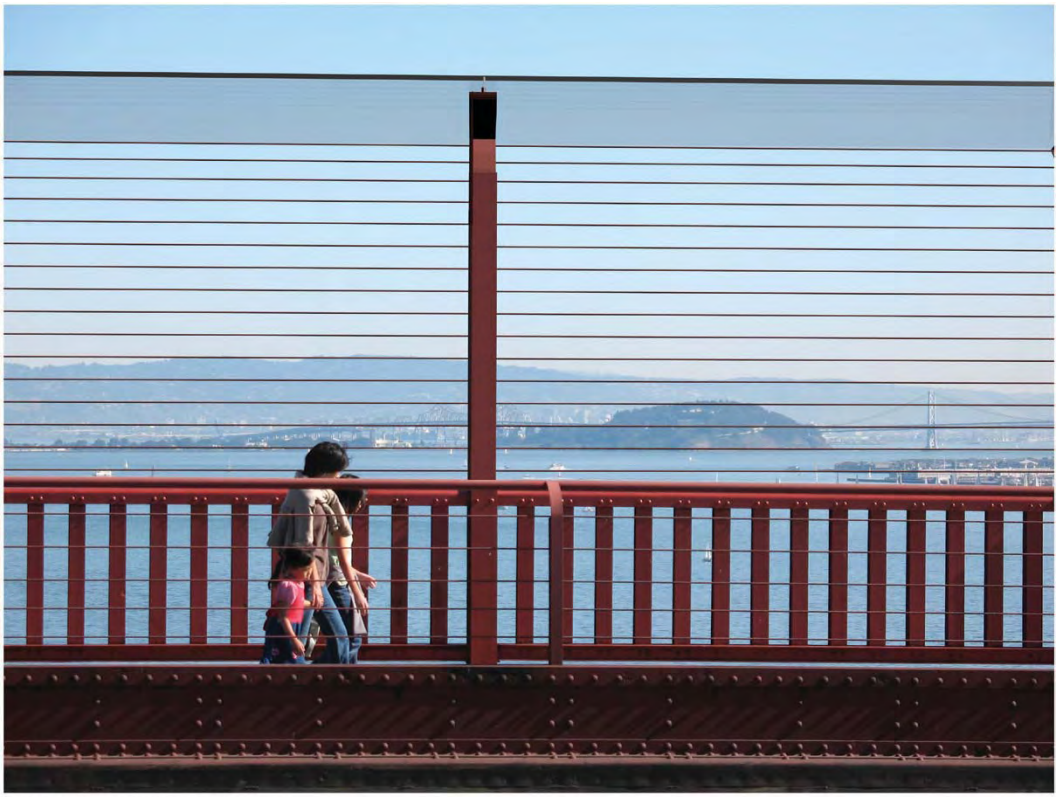
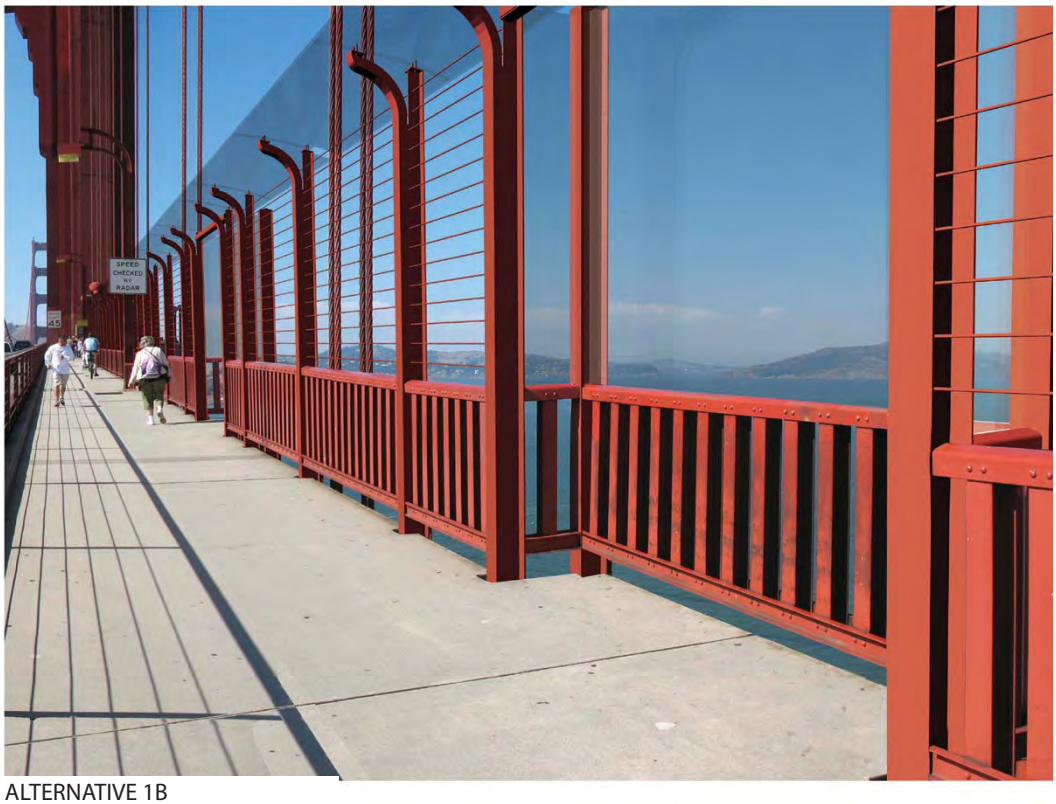


ALTERNATIVE 1B

FIGURE 2.2-25
VIEWPOINT 11: CAR VIEW EAST - ALTERNATIVE 1B

Source: macdonald architects, 2008

EXISTING

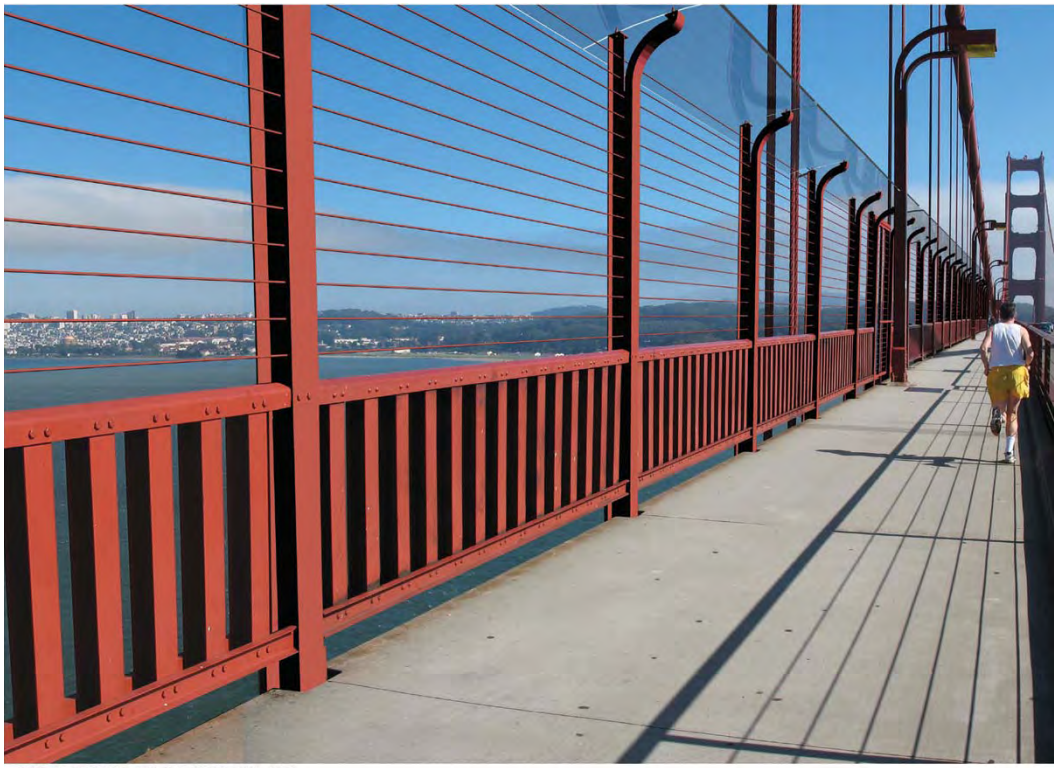


ALTERNATIVE 1B

FIGURE 2.2-26
VIEWPOINT 12: SIDEWALK VIEW NORTH - ALTERNATIVE 1B

Source: macdonald architects, 2008

EXISTING



ALTERNATIVE 1B

FIGURE 2.2-27
VIEWPOINT 13: SIDEWALK VIEW SOUTH - ALTERNATIVE 1B

Source: macdonald architects, 2008

Alternative 2A – Replace Outside Handrail with Vertical System

Alternative 2A would construct a new vertical 12-foot-high barrier consisting of ½-inch diameter vertical steel rods painted International Orange. The replacement of the outside handrail with the vertical system visually thickens the height of the Bridge span across the San Francisco Bay. However, Alternative 2A remains consistent with the strong vertical line form created by the Bridge towers, suspender ropes and light posts on the Bridge. Transparent panels would also be installed along the upper 8 feet at the belvederes and towers on both sides of the Bridge, which would introduce a new visual element to the Bridge. Refer to Chapter 1 - Proposed Project, for a detailed description of Alternative 2A.

Views of the Bridge

In regards to the views towards the Bridge, Alternative 2A would primarily have minimally adverse visual impacts. However, Alternative 2A would have an adverse visual impact from Viewpoint 4 (Vista Point) because the physical suicide deterrent system would be a co-dominant visual feature in a landscape with high viewer sensitivity, altering views of the Bridge and interfering with views of the larger landscape.

Conversely, visual impacts from Viewpoint 2 (Baker Beach) would be negligible for Alternative 2A due to the distant viewing location, which affords low view blockage and high visual compatibility with the Bridge features and surrounding environment. Table 2.2-8 summarizes the overall visual impact of Alternative 2A to views of the Bridge. Figures 2.2-28 through 2.2-33 illustrate the visual impacts of Alternative 2A from views of the Bridge (Viewpoints 1 through 7).

Due to the viewing distance at the views of the Bridge and the International Orange coloring of Alternative 2A, the vertical replacement system would blend into the Bridge span and the existing vertical line form created by the suspender ropes and light posts. While the vertical replacement system would slightly elevate the horizontal line of the outside handrail across the entire Bridge span, the overall appearance of the Bridge would not substantially change.

Overall, the primary visual change associated with Alternative 2A to views towards the Bridge would be the appearance of a higher outside railing on the Bridge with the commensurate increased International Orange coloring to the landscape.

Table 2.2-8 Alternative 2A: Overall Visual Impact to Views of the Bridge

Viewpoint		Existing Condition		Proposed Condition			Visual Impact
No.	Location	Visual Quality	Viewer Exposure	Visual Compatibility	Visual Dominance	View Blockage	
1	Fort Point	High	High	Moderate	Subordinate	Moderate	Minimally Adverse
2	Baker Beach	Outstanding	Moderate	High	Subordinate	Moderate	Minimally Adverse
3	North Fishing Pier	Moderate	High	Moderate	Subordinate	Low	Minimally Adverse
4	Vista Point	High	High	Moderate	Co-Dominant	Moderate	Adverse
5	Marin Headlands	Outstanding	High	Moderate	Subordinate	Moderate	Minimally Adverse
6	Boat View West	High	Moderate	Moderate	Subordinate	Moderate	Minimally Adverse
7	Boat View East	High	Moderate	Moderate	Subordinate	Moderate	Minimally Adverse

EXISTING

ALTERNATIVE 2A

FIGURE 2.2-28
VIEWPOINT 1: FORT POINT - ALTERNATIVE 2A

Source: macdonald architects, 2008

EXISTING

ALTERNATIVE 2A

FIGURE 2.2-29
VIEWPOINT 2: BAKER BEACH - ALTERNATIVE 2A

Source: macdonald architects, 2008

EXISTING

ALTERNATIVE 2A

FIGURE 2.2-30
VIEWPOINT 3: NORTH FISHING PIER - ALTERNATIVE 2A

Source: macdonald architects, 2008

EXISTING

ALTERNATIVE 2A

FIGURE 2.2-31
VIEWPOINT 4: VISTA POINT - ALTERNATIVE 2A

Source: macdonald architects, 2008

EXISTING

ALTERNATIVE 2A

FIGURE 2.2-32
VIEWPOINT 5: MARIN HEADLANDS - ALTERNATIVE 2A

Source: macdonald architects, 2008

EXISTING

ALTERNATIVE 2A

FIGURE 2.2-33
VIEWPOINT 6: BOAT VIEW WEST - ALTERNATIVE 2A

Source: macdonald architects, 2008