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.

Alternative 3 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.

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) 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.

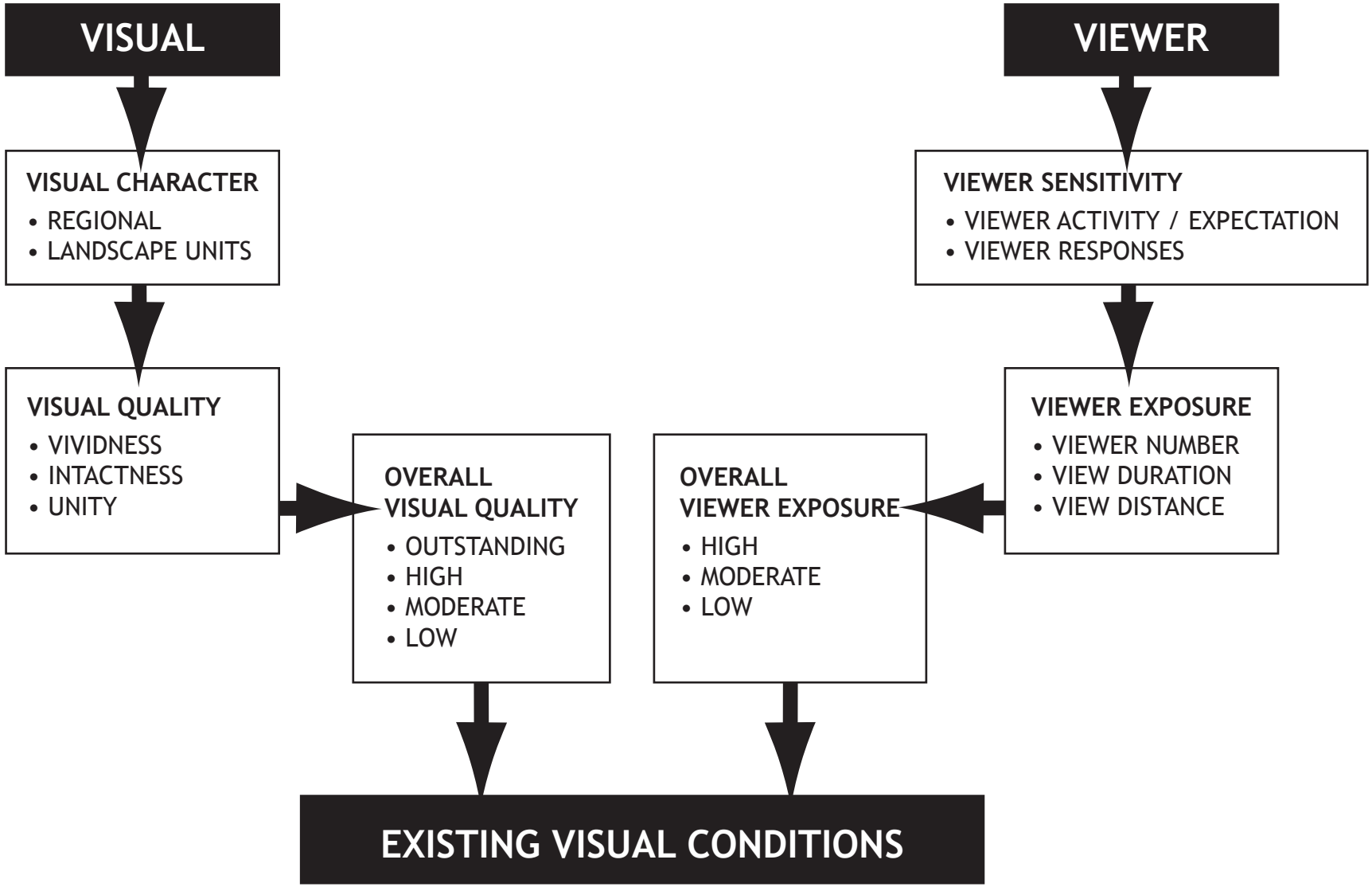

FIGURE 2.2-1
ASSESSMENT OF EXISTING VISUAL CONDITIONS

Source: CirclePoint, 2008

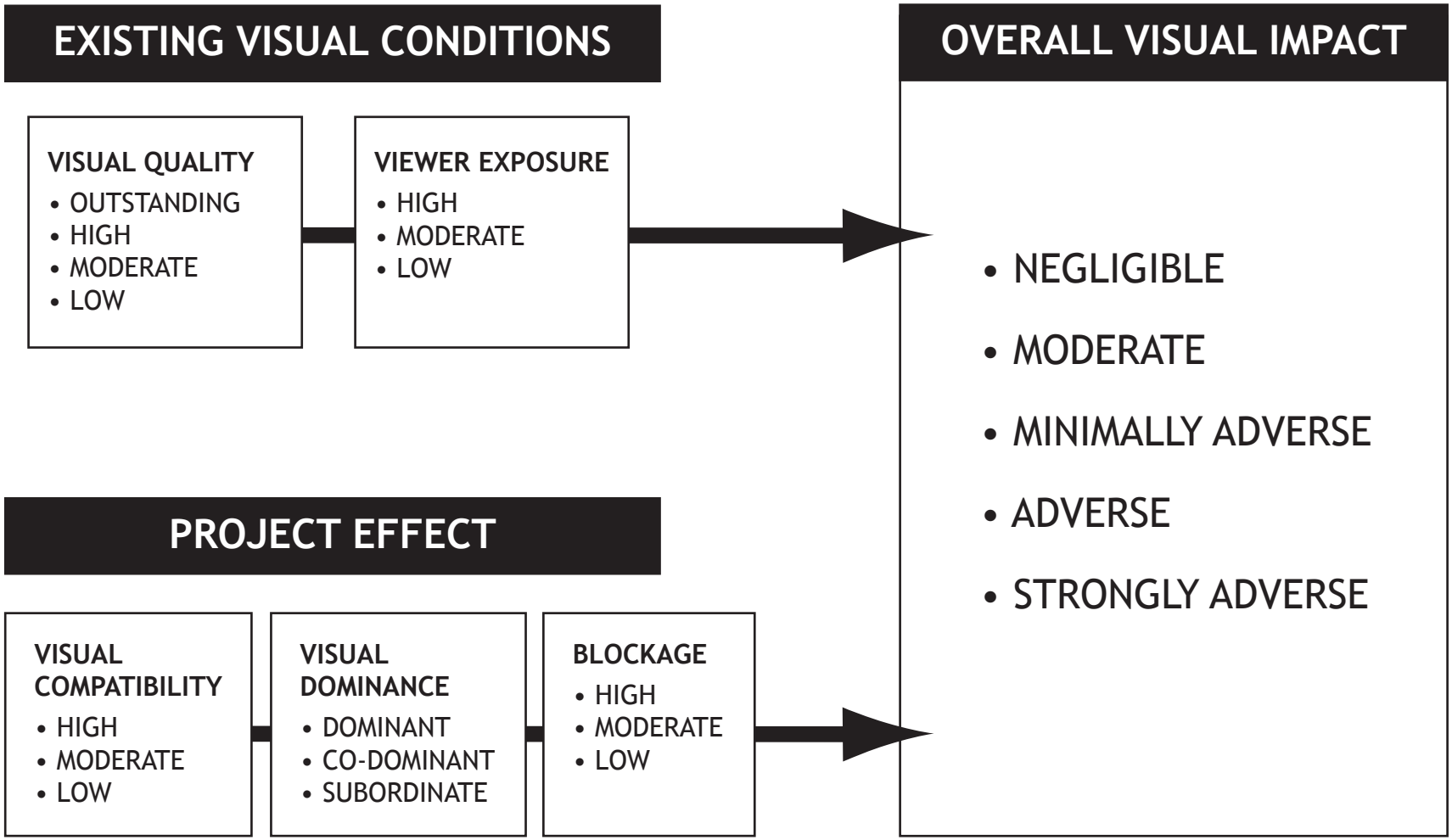

FIGURE 2.2-2
ASSESSMENT OF VISUAL IMPACTS EFFECTS ON VIEWERS

Source: CirclePoint, 2008

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 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. However, as shown, the architectural character and certain engineering characteristics of the visual simulations of the build alternatives are for illustrative purposes only.

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.

Table 2.2-1 Landscape Units

Landscape Unit	Description
The Presidio	■ Located directly south of the Bridge toll plaza ■ Image types include beaches; 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 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

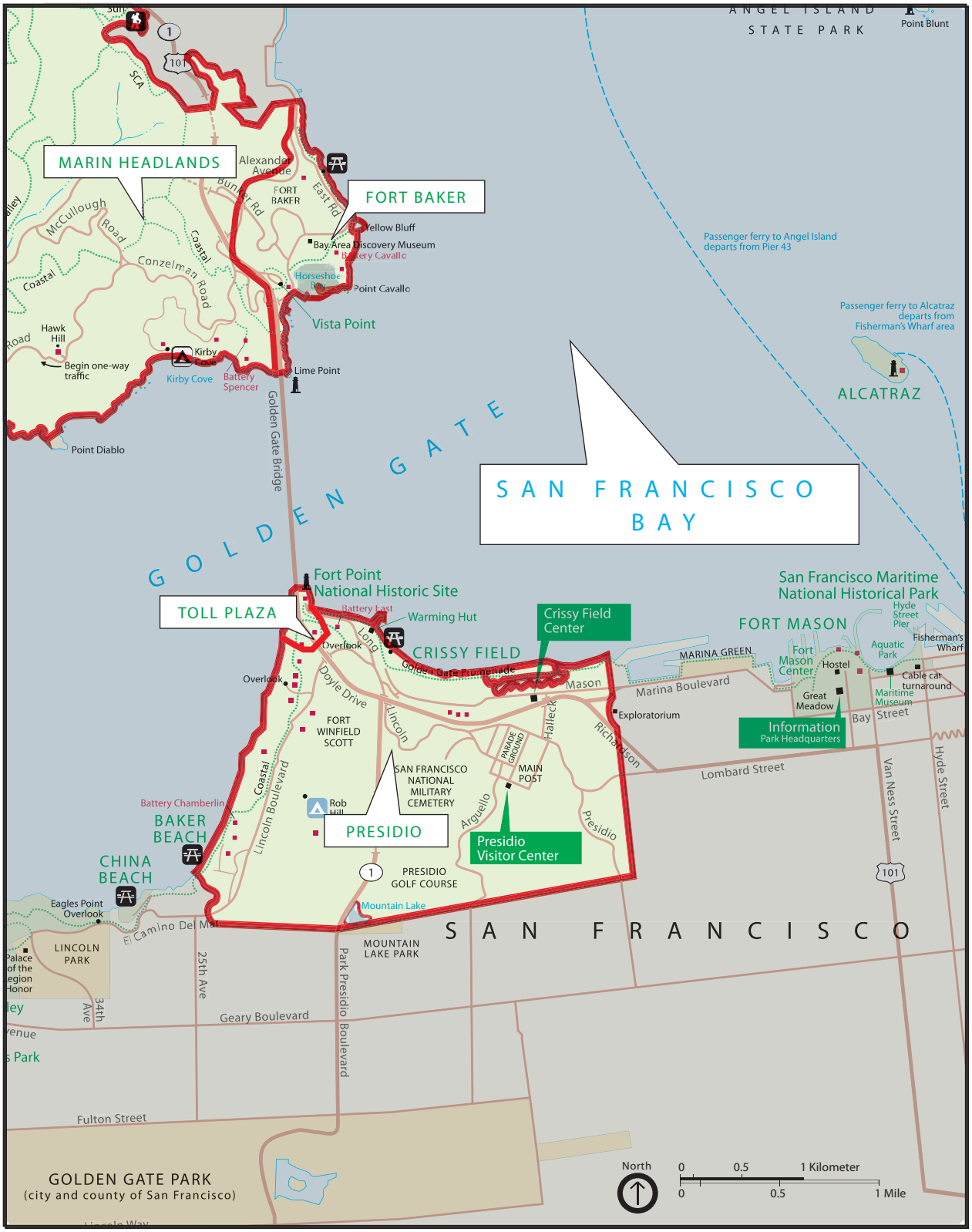

FIGURE 2.2-3
LANDSCAPE UNIT LOCATION

Source: National Park Service, 2008

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.

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.

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.

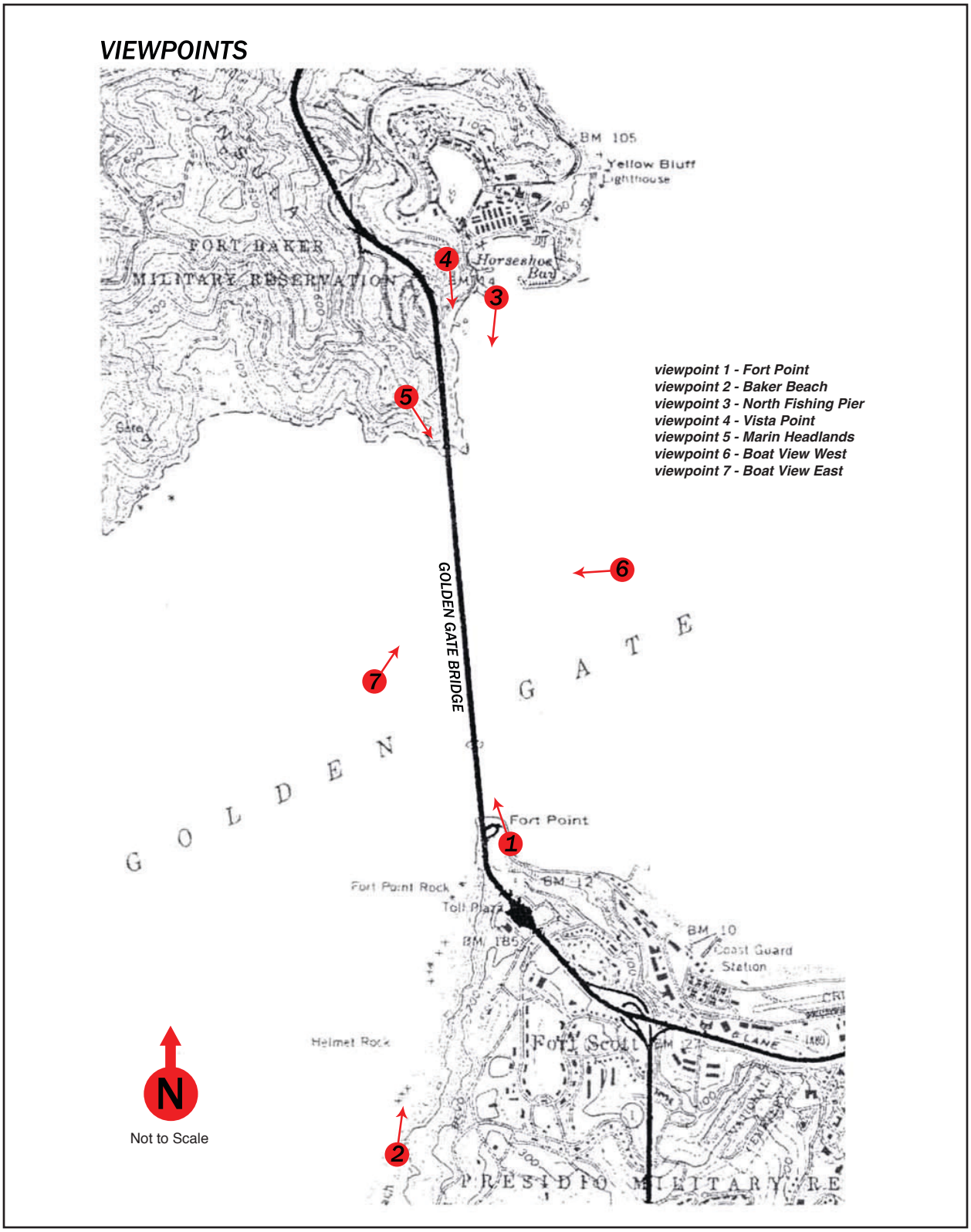

FIGURE 2.2-4
KEY TO VIEWPOINTS OF THE GOLDEN GATE BRIDGE

Source: macdonald architects, 2008

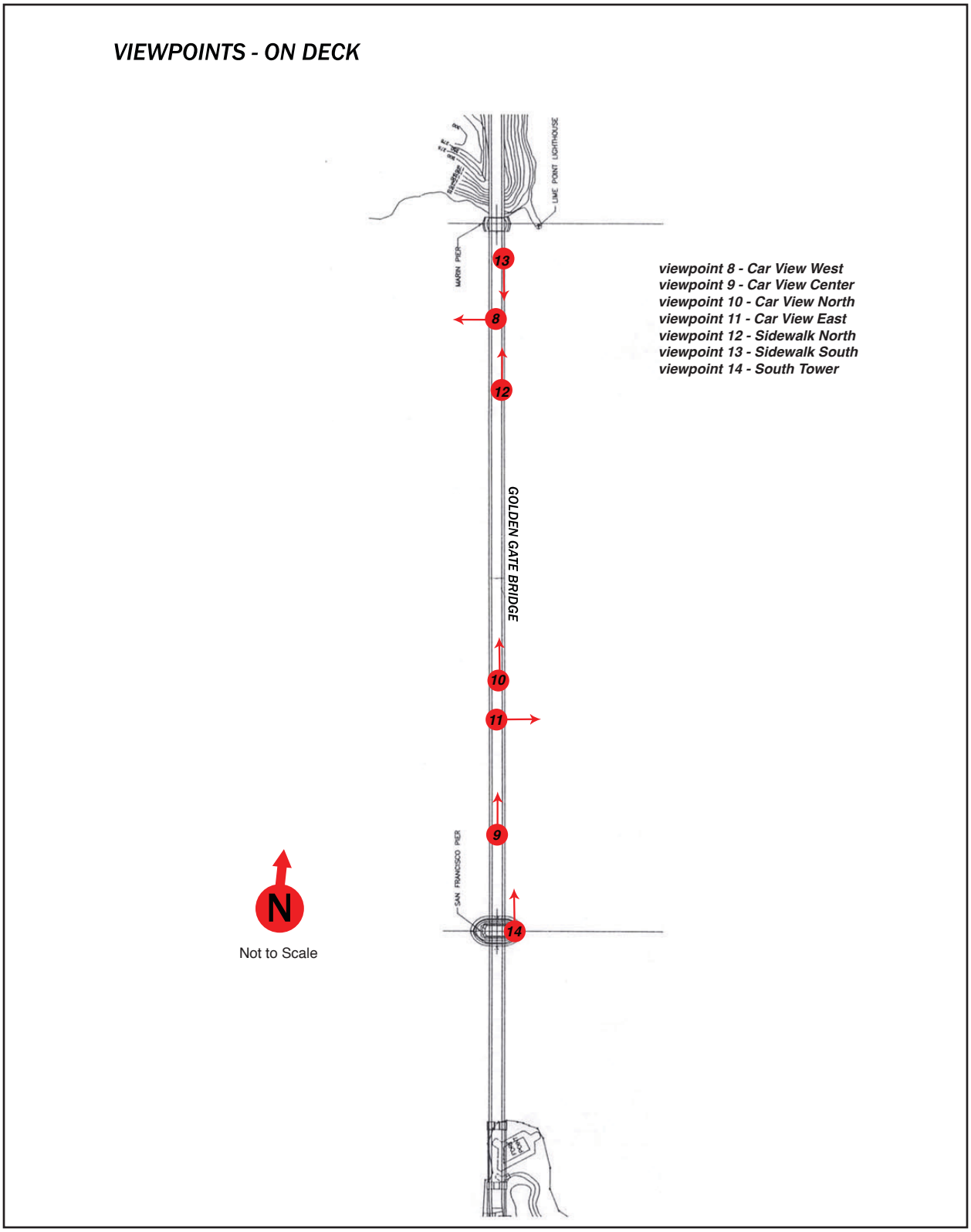

FIGURE 2.2-5
KEY TO VIEWPOINTS FROM THE GOLDEN GATE BRIDGE

Source: macdonald architects, 2008

The 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.