APPENDIX B

SECTION 4(F)

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APPENDIX B

Draft

SECTION 4(F) EVALUATION

Yerba Buena Ramps Improvement Project

San Francisco, California

District 04-SF-80-KP 12.3/13.2 (PM 7.6/8.1)
Federal Project #: BRLS-6272(023) EA-04-3A640K

The environmental review, consultation, and any other action required in accordance with applicable federal laws for this project is being, or has been, carried out by Caltrans under its assumption of responsibility pursuant to 23 U.S.C. 327.

February 2011

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1.0 INTRODUCTION

1.1 Section 4(f)

Section 4(f) of the Department of Transportation Act of 1966, codified in federal law at 49 U.S.C. 303, declares that “it is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites.”

Section 4(f) specifies that the Secretary [of Transportation] may approve a transportation program or project . . . requiring the use of publicly owned land or a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance, or land of an historic site of national, state, or local significance (as determined by the federal, state, or local officials having jurisdiction over the park, area, refuge, or site) only if:

- There is no prudent and feasible alternative to the use of the land from the Section 4(f) property; and

- The program or project includes all possible planning to minimize harm to the Section 4(f) property resulting from the use.

Section 4(f) further requires consultation with the Department of the Interior and, as appropriate, the involved offices of the Departments of Agriculture and Housing and Urban Development in developing transportation projects and programs that use lands protected by Section 4(f). If historic sites are involved, then coordination with the State Historic Preservation Officer is also needed.

Consultation with the U.S. Department of Agriculture (USDA) would occur whenever a project uses Section 4(f) land from the National Forest System. Consultation with the U.S. Department of Housing and Urban Development (HUD) would occur whenever a project uses Section 4(f) land for/on which certain HUD funding had been utilized. Since neither of these conditions applies to the proposed project, consultation with USDA and HUD is not required.

In general, a Section 4(f) "use" occurs when: 1) Section 4(f) land is permanently incorporated into a transportation facility; 2) there is a temporary occupancy of Section 4(f) land that is adverse in terms of the Section 4(f) preservationist purposes as determined by specified criteria (23 CFR §774.13[d]; and 3) Section 4(f) land is not incorporated into the transportation project, but the project’s proximity impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired (constructive use) (23 CFR §774.15[a]).

1.2 Section 4(f) and Section 106

The consideration of historic properties under Section 4(f) differs from their consideration under Section 106. The results of the Section 106 process produces a list of resources determined to be significant, and the potential impacts that the proposed project would have on those resources. Those resources are then considered in the Section 4(f) evaluation. One key difference between the two regulations and processes is that Section106 requires a consultation process between the federal agency and the State Historic Preservation Office (SHPO) in order to identify cultural resources, evaluate significance, evaluate effects, and then consult on ways to avoid, minimize or mitigate those effects. The Section 4(f) process requires federal agencies

to avoid the "use" of significant cultural resources unless there is no "prudent or feasible" alternative. Thus the Section 106 process is more consultative, while the Section 4(f) process is much stronger.

Section 4(f) applies only to programs and projects undertaken by the U.S. Department of Transportation and only to publicly owned public parks, recreation areas, and wildlife refuges, and to historic sites listed on or eligible for the National Register of Historic Places (NRHP). For protected historic sites, Section 4(f) is triggered by the "use" or occupancy of an historic site by a proposed project. There is also the situation in which a project does not permanently incorporate land from a historic site, but because of proximity impacts to the historic site, is determined by the U.S. Department of Transportation to substantially impair the qualities that made the historic site eligible for the NRHP. This is referred to as a "constructive use."

Section 106 of the National Historic Preservation Act (NHPA) is a separate federal regulation that requires any federal agency undertaking a federal action (either by funding or permitting) to consider the effects of their project on significant cultural resources. Section 106 addresses direct and indirect "effects" of an action on historic properties. Section 106 evaluates "effects" on a historic site, while Section 4(f) protects a historic site from "use" by a project. Therefore, even though there may be an "adverse effect" under Section 106 because of the effects upon the site, the provisions of Section 4(f) are not triggered if the project would not result in an "actual use" (permanent or certain temporary occupancy of land) or a "constructive use" (substantial impairment of the features or attributes which qualified the site for the NRHP).

With regard to archaeological sites, Section 4(f) applies to all archaeological sites listed on or eligible for inclusion on the NRHP, except those that are important chiefly because of what can be learned by data recovery and have minimal value for preservation in place (23 CFR 774.13(b)(1)).

Most importantly, except in the case of *de minimis* uses, Section 4(f) requires avoidance of a protected site unless there are no feasible and prudent alternatives, and, if avoidance is not feasible and prudent, requires "all planning to minimize harm." Section 106 does not include a specific avoidance or minimization of harm requirement, but consultation agreements under Section 106 often involve extensive mitigation activities when adverse effects to historic properties cannot be avoided or minimized.

Finally, Section 4(f) has a requirement that when there are no "prudent and feasible" avoidance alternatives to the "use" of Section 4(f) properties, the lead federal agency must choose the alternative that causes the "least overall harm" based on the criteria listed in Section 774.3(c). Section 774.3(c)(1) requires a balancing of seven factors when determining which alternative causes the "least overall harm."

The least overall harm is determined by balancing the following factors:

i. The ability to mitigate adverse impacts to each Section 4(f) property (including any measures that result in benefits to the property);

ii. The relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection;

iii. The relative significance of each Section 4(f) property;

iv. The views of the official(s) with jurisdiction over each Section 4(f) property;

v. The degree to which each alternative meets the purpose and need for the project;

vi. After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f); and

vii. Substantial differences in costs among the alternatives.

Section 106 does not require this “least harm analysis” as does Section 4(f).

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2.0 DESCRIPTION OF THE PROPOSED PROJECT

The San Francisco County Transportation Authority (SFCTA) and the California Department of Transportation (Caltrans) are proposing to improve the traffic safety of the westbound on- and off-ramps located on the east side of Yerba Buena Island (YBI). The SFCTA is the lead agency under the California Environmental Quality Act (CEQA) and Caltrans is the lead agency under the National Environmental Policy Act (NEPA). In cooperation with Caltrans, the SFCTA has prepared this Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) pursuant to the NEPA and CEQA for the proposed YBI Ramps Improvement Project.

The YBI Ramps, built in the early 1960s, provide access to YBI and Treasure Island (TI) for motorists traveling to and from the San Francisco-Oakland Bay Bridge (SFOBB) portion of Interstate 80 (I-80). The ramps need to be upgraded to meet current safety standards. The nonstandard features of the ramps, current accident safety records, and the projected build-out growth have increased the need to reconstruct the ramps. The project is located along I-80 and extends 0.8 kilometer (0.5 mile) from the east end of the YBI Tunnel to the beginning of the self-anchored suspension (SAS) structure of the new SFOBB East Span. Figures 1 and 2 in Attachment A show the project location and vicinity maps. The project is included in the Metropolitan Transportation Commission's (MTC's) 2009 Regional Transportation Plan as project reference number 230555, *Transportation 2035 Plan for the San Francisco Bay Area* (MTC 2009).

The project calls for the replacement of the westbound on- and off-ramps of the SFOBB stretch of I-80. YBI is located in the San Francisco Bay approximately halfway between Oakland and San Francisco, and is only accessible to vehicular traffic via the SFOBB (**Figure 1: Regional Location Map**, located in Attachment A). It provides the only vehicle access to YBI, the active U.S. Coast Guard (USCG) facilities located on the south side of the island, and Treasure Island, located immediately north of YBI (**Figure 2: Project Vicinity**, located in Attachment A).

2.1 Purpose and Need for Project

Purpose and Need

The purpose of the proposed project is to improve:

- Traffic safety for drivers using the westbound on- and off-ramps
- Geometric design of the westbound on- and off-ramps on the east side of YBI to and from I-80
- Traffic operation levels of service (LOS) on the westbound on- and off-ramps.

The proposed project is needed for the reasons listed below and explained in subsequent paragraphs:

- **Safety:** The accident rate for the on- and off-ramps is higher than the statewide rate for similar facilities.
- **Geometric Design:** The westbound on-ramp merge lengths and off-ramp deceleration lengths on the east side of YBI do not meet current Caltrans standards.

- **Operations:** Projections of 2035 traffic volumes indicate ramp operations at a failing LOS F on both the on- and off-ramps in both the morning and evening peak hours.

Safety: The accident rate for the existing on- and off-ramps is higher than the statewide rate for similar facilities. The accident rate based on data collected over a 3-year period between April 1, 2003 and March 31, 2006 on YBI exceeded the statewide average rate (per million vehicle miles) for total collisions (sum of fatalities, injuries, and property damage) (TASAS Selective Accident Retrieval, Table B).[1] This 3-year period is the latest data available for the existing on- and off-ramps because these ramps have been closed for the construction of the SFOBB ESSSP project. The Actual Accident Rate for the existing westbound on-ramp is 0.75 per million vehicle miles compared to a rate of 0.60 for similar facilities statewide. For the existing westbound off-ramp, the accident rate is 1.4 rate per million vehicle miles compared to a 1.15 for similar facilities statewide. The distance available for westbound on-ramp traffic to merge with mainline traffic is very short and results in abrupt maneuvers of westbound on-ramp and mainline traffic. These factors affect the traffic operations of the facilities and motorists traveling on the freeway mainline and on-ramp. The proposed ramps have been designed to accommodate future traffic operations for the 20-year design horizon as required by Caltrans standards HDM Section 103.2. This would improve the LOS and is anticipated to decrease the accident rate potential. In particular, the potential for rear end collisions on the westbound on-ramp are expected to decrease under the proposed project, which has been the predominant type of accident that has occurred at in the past.

Geometric Design: The existing westbound on-ramp merge lengths and off-ramp deceleration lengths on the east side of YBI do not meet current Caltrans standards. The existing westbound on-ramp on the east side of YBI has a very short merge distance of approximately 43 meters (141 feet) which calculates to a 1:11 transition rate. It has a steep entrance grade of approximately 10 percent leading to a 122-meter (400 feet) long crest vertical curve, resulting in a 30 km/h (18.6 mph) design speed. Therefore, traffic cannot accelerate to a proper mainline speed of 80 km/h (50 mph) to merge with through traffic. The existing westbound off-ramp diverges from the left-side freeway lane. The left-side exit lane is nonstandard (Highway Design Manual Section 504.2) and is signed for 48 km/h (20 mph). Its geometry includes a short deceleration length and sharp curve upon exiting the mainline, and presents challenges for motorists and large vehicles to maneuver. The proposed ramps would meet Caltrans standards by providing standard lane and shoulder widths and other geometric features such as the divergence angle, acceleration length, and turning radius that would improve the LOS and safety of the ramp. LOS is a qualitative description of a ramp segment or intersection performance based on the criteria outlined in the Highway Capacity Manual (HCM). LOS ranges from A, which indicates free flow or excellent conditions with short delays, to F, which indicates congested or overloaded conditions with extremely long delays. Caltrans criteria are used to establish a goal of LOS C, when possible.

Operations: The existing westbound off-ramp diverges from the left lane of I-80. This left-lane exit requires exiting vehicles to travel in and across the “fast” lanes to exit the freeway. These maneuvers negatively affect the flow of mainline traffic. The distance available for westbound on-ramp traffic to merge with mainline traffic is very short and results in abrupt maneuvers of westbound on-ramp and mainline traffic. These factors negatively affect the traffic operations of the facilities and they compromise the safety of motorists traveling on the freeway mainline and on-ramp. Projections of 2035 traffic volumes indicate ramp operations at a failing LOS F on both the on- and off-ramps in both the morning and evening peak hours. Currently, the

westbound left-lane off-ramp operates at LOS D in the morning peak hour and at LOS C in the evening peak hour. The existing westbound, on-ramp operates at LOS D in both the morning and the evening peak hours. In the future (2035) no build condition, both the westbound off-ramp and on-ramp would operate at LOS F in both the morning and the evening peak hours. Under the 2035 build condition without ramp meters for, the westbound off-ramp would operate at LOS F in both peak hours, and the westbound on-ramp would operate at LOS F in the morning peak hour and LOS E in the evening peak hour. In the 2035 build condition with ramp meters, the proposed westbound on-ramp would operate at LOS C in both peak hours. The proposed westbound off-ramp without meters would operate at LOS E in both peak hours.

2.2 Project Description

The proposed project is located between Kilometer Post (KP) 12.3/13.2 (Post Mile [PM] 7.6 and 8.1) beginning at the east portal of the existing YBI tunnel, east to the west end of the SAS (**Figure 3: Alternative 2b and Section 4(f) Properties** and **Figure 4: Alternative 4 and Section 4(f) Properties**, located in Attachment A). The proposed SFOBB Transition Structure is an elevated structure that would connect the waterside portion of the new bridge with the landside approaches to the tunnel. The SFOBB Transition Structure would be located between KP 12.7/13.2 (PM 7.9/8.2). The SFOBB Transition Structure would connect the bridge to YBI and provide the transition between the bridge's side-by-side road decks and the upper and lower decks of the YBI tunnel and landside approaches.

Connections between existing roadways on YBI and the existing I-80 bridge and tunnel system are made via Hillcrest Road and Macalla Road, located very close to the tunnel portal (**EIR/EIS Figure 1-3 Existing Ramp Layout**). The tunnel portal is located at a high elevation on YBI. The topography of the island slopes dramatically toward the water, resulting in existing land uses on either side of the corridor at varying elevations. The development and evaluation of new ramp alternatives necessitated consideration of many factors including: the high elevation of the bridge and tunnel; the existing roadway network on the island; design requirements for structures, traffic operations, safety; existing land uses and natural environment resources; right-of-way requirements; and project cost.

As described in Chapter 2 of the YBI Ramps Improvement Project EIR/EIS, as well as in Section 6.5 of this document, a variety of alternatives were considered during project development to provide better westbound on-ramp and off-ramp interconnections between YBI and the I-80 system.

The performance of each alternative was assessed in light of the foregoing factors, resulting in the rejection of some as nonviable and, ultimately, the retention of two potentially viable build alternatives and the No-Build Alternative. The three alternatives include the No-Build, Alternative 2b, and Alternative 4, which are briefly described below. **Figures 3 and 4**, located in Attachment A, show the alignments of Alternatives 2b and 4. More detail regarding the alternatives may be found in Chapter 2 of the YBI Ramps Improvement Project EIR/EIS.

2.2.1 Build Alternatives

The No-Build Alternative assumes that the existing westbound on- and off-ramps would remain in place and no further action or improvements would occur. The No-Build Alternative would not address any of the elements of the project Purpose and Need.

Alternative 2b

Alternative 2b would include removal of the existing westbound on- and off-ramps on the east side of YBI, construction of a new westbound loop on-ramp from Macalla Road on the east side of YBI, and construction of a new westbound off-ramp to Macalla Road on the east side of YBI (**Figure 3: Alternative 2b and Section 4(f) Properties**, located in Attachment A).

Alternative 2b proposes to reconstruct two of the existing six on- and off-ramps at the I-80/YBI interchange. The proposed on- and off-ramps in Alternative 2b would provide standard shoulder widths, and would include the following features:

- Westbound on-ramp on the east side of YBI - The ramp would begin at a "T" intersection at Macalla Road, loop east (right) with a tight radius, and merge onto the north side of the Bay Bridge. The length of the ramp would be approximately 267 meters (876 feet). The ramp would have two traffic lanes, merging into one as it connects to the SFOBB. One lane would be a high occupancy vehicle (HOV) lane and the other a mixed-flow lane (a mixed-flow lane is a general purpose travel lane with no traffic restrictions).

- Westbound off-ramp on the east side of YBI - The ramp would diverge from the new SFOBB Transition Structure between bents W3 and W4 and terminate at a "T" intersection at Macalla Road. The length of this ramp would be approximately 340 meters (1,115 feet). A stop sign is proposed at the ramp terminus at Macalla Road.

- The north side of the upper section of Macalla Road would be widened for approximately 202 meters (660 feet) adjacent to the terminus of the westbound on- and off-ramps. The existing roadway is about 6 meters (20 feet) wide near the ramp terminus. The roadway widening is required to accommodate a 3.7 meter wide (12-foot-wide) multi-use pedestrian/bike path and two 3.7 meter wide (12-foot-wide) lanes within the Caltrans right-of-way. A retaining wall would be constructed along the south side of Macalla Road to provide the required width. The height of the retaining wall would vary from 1.2 to 4.9 meters (4 to 16 feet) and would retain the hillside above Macalla Road. The stairway adjacent to the Caltrans Substation would be relocated to the west side of the building to make room for the new retaining wall. The roadway width would vary around the curve at South Gate Road to provide proper width for truck turning movements.

- The westbound on- and off-ramps would terminate at Macalla Road where two structures known as Quarters 10 and Building 267 are currently located. Quarters 10 and Building 267 would be removed by Alternative 2b. Quarters 10/Building 267 will be relocated to a new location on YBI as part of the mitigation of effects on historic properties. The relocation will occur prior to the construction of the ramps at Macalla Road. The relocation site for these buildings will be on YBI and will be determined under the Section 106 mitigation development process and specified in the project's Memorandum of Agreement (MOA).

Alternative 4

Alternative 4 would remove the existing westbound on- and off-ramps on the east side of YBI, construct a new westbound on-ramp from South Gate Road, and construct a new westbound off-ramp to Macalla Road on the east side of YBI. (**Figure 4: Alternative 4 and Section 4(f) Properties**, located in Attachment A).

This alternative proposes to reconstruct two of the existing six on- and off-ramps at the I-80/YBI interchange. The proposed on- and off-ramps would provide standard lane and shoulder widths, and would include the following features:

- Westbound on-ramp on the east side of YBI - The ramp would begin at South Gate Road, proceed east paralleling the eastbound on-ramp, and loop under the new SFOBB Transition Structure near its eastern end to provide adequate merging distances. The ramp would then cross over the westbound off-ramp along the north side of the SFOBB. The length of this ramp would be approximately 879 meters (2,883 feet). An HOV lane would not be provided under Alternative 4.

- Westbound off-ramp on the east side of YBI - The ramp would diverge from the new SFOBB Transition Structure between bents W2 and W3, parallel the Transition Structure, cross under the westbound on-ramp and terminate at a "T" intersection at North Gate Road. The length of the ramp would be approximately 356 meters (1,168 feet). A stop sign is proposed at the ramp terminus.

- Pavement reconstruction on Macalla Road and South Gate Road at the ramp intersections is proposed to ensure a proper pavement conformity and truck turning movements.

- Quarters 10 and Building 267 and its associated landscaping would not be impacted and would remain in place.

2.2.2 No-Build Alternative

The No-Build Alternative represents an alternative and existing conditions for future year conditions if no other actions are taken in the study area beyond what is already in place. The exception is the eastbound on-ramps, the replacement of which is part of the SFOBB ESSSP.

2.2.3 Construction Activities

Both build alternatives would involve standard construction techniques and require large-scale construction equipment and labor-intensive activities. General activities would include demolition, excavation, grading, vegetation removal, utility relocation, false work erection, roadway/structure construction, landscaping, and demobilization.

The contractor will determine the means and methods of construction but typical construction equipment would include drill rigs, backhoes, cranes, concrete trucks, forklifts, paving vehicles, and delivery trucks.

Construction of any of the alternatives would be performed in stages. The staging areas for both Alternative 2b and Alternative 4 would be the same. Both alternatives would utilize the staging areas used for the SFOBB ESSSP. The primary staging area is located east of the Officer's Quarters Historic District and north of the SFOBB. Each alternative would use a secondary staging area south of the SFOBB and north of the USCG facilities. Storage of equipment and materials on-site would be limited to the staging and construction areas to minimize ground disturbance. Access for construction vehicles and equipment would be via Macalla Road, South Gate Road, and North Gate Road.

The overall construction duration for Alternative 2b would be three years. The overall construction duration for Alternative 4 would be three and one-half years.

2.2.4 Temporary Detours on Yerba Buena Island

Temporary detours would be required on YBI to carry traffic during construction of either build alternative. It is anticipated that all detours would utilize existing roads and no new detour roads or structures would be constructed. Implementation of the build alternatives would result in temporary detours and single-lane road closures. These impacts would be minimized through coordination with the USCG and emergency service providers. Access to the islands would be maintained throughout project construction.

During project construction, efforts would be made to concentrate the majority of road closures and construction activity during off-peak hours to reduce traffic impacts. During the lane closure on Macalla Road, two-way traffic would be diverted to one side of the road and traffic would be controlled by flaggers stationed at both ends of the closure. Similar traffic handling is currently being used on Macalla Road with the ongoing SFOBB construction by Caltrans. It is also anticipated that there would be a full closure of the existing westbound on-ramp on the east side of the tunnel. Traffic would be diverted to the westbound on-ramp on the west side of YBI. The duration of this closure would be determined as construction plans develop further. Construction on Macalla Road would also require shifting traffic from one side of the road to the other.

For Alternative 4, it is anticipated that the westbound on-ramp would require temporary closure, similar to Alternative 2b. There are no other anticipated full closures. The purpose of these temporary closures would be to reroute traffic around the construction areas, maintain access to the SFOBB, while allowing the construction of the new ramps. The temporary detours would have no impact or require the use of any Section 4(f) properties.

3.0 LIST AND DESCRIPTION OF SECTION 4(f) PROPERTIES

Studies were undertaken during the environmental process for this project to identify all known publicly owned parks, recreational facilities, wildlife and waterfowl refuges, and historic sites within the project limits (see Chapter 3 of the YBI Ramps Improvement Project EIR/EIS). No publicly owned parks, recreational facilities, wildlife or waterfowl refuges were identified in this area.

There are three Section 4(f) properties within the project area (**Figures 3 and 4**, located in Attachment A): Senior Officers' Quarters Historic District; Quarters 1/Nimitz House (individually listed on the National Register of Historic Places (NRHP) and also a contributing resource within the Senior Officers' Quarters Historic District); and Quarters 10 (which includes Building 267). The Senior Officers' Quarters Historic District, Quarters 1/Nimitz House, and Quarters 10, are listed in the NRHP and the California Register of Historical Resources (CRHR).

All of the historic properties are located in close proximity to one another, on the east side of YBI. The Senior Officers' Quarters Historic District, Quarters 1/Nimitz House, and Quarters 10 are located immediately to the northwest of the SFOBB. The Navy constructed all of the buildings between 1900 and 1948 as part of its YBI installation. The completion of the SFOBB in 1936 bisected YBI and the buildings on the east side of the island, and today the bridge provides an accepted division of the north and south side of the island. Concurrence letters regarding these resources can be found in Attachment B. The documentation of these resources can be found in the Historic Property Survey Report (Caltrans 2009).

3.1 Senior Officers' Quarters Historic District

Address
North Gate Drive, Whiting Way, Yerba Buena Island, San Francisco, California 94130

Ownership
US Navy, Base Realignment and Closure, Program Management Office West, 1455 Frazee Road, Suite 900, San Diego, CA 92108-4310

Description
The Senior Officers' Quarters Historic District is listed in the NRHP (listed 2/26/2008). The district includes eleven contributing elements: seven residences (Quarters 1/Nimitz House through Quarters 7), two apartments/garages (Buildings 83 and 230), a five-car garage (Building 205), and the landscape that surrounds the district. The district is generally bounded by North Gate Road on the west and north, the greensward on the east, the SFOBB and hillside on the south, and the southern edge of the informal landscaping south of Building 230 and directly west of Quarters 1/Nimitz House.

The majority of these wood frame buildings were constructed around the turn of the twentieth century, with the exception of Buildings 83, 230, and 205, which were built in 1918, 1936, and 1944, respectively. The three-story Classical Revival-style officer's quarters (Quarters 1/Nimitz House through Quarters 7) were built between 1901-1903 and have square or rectangular footprints, concrete or brick foundations, clapboard or weatherboard wood siding, hip roofs with dormers and double-hung wood windows. Buildings 83 and 230 are two–story, wood frame buildings with concrete foundations, gable roofs and double hung wood windows. Both Buildings 83 and 230 consists of garages on the first floor and a second-story residence. Building 83 has weatherboard wood siding, open eaves and triangular knee braces, while Building 230 has drop

wood siding and roof dormers. Building 205, a five-bay garage, is the only one–story building within the district. It has a rectangular footprint, sits on a concrete foundation with lap wood siding and gable roof. All of the buildings are surrounded by different landscape features: greensward on the west of Quarters 1-6, formal terraced garden west of Quarters 1-5, formal terraced garden west of Quarters 1/Nimitz House, and a terraced garden west of Quarters 2-5).

The property is significant at the local level under Criterion A (association with significant historic events and broad patterns of history), for its association with the early development of military facilities on the West Coast, and under Criterion C (architectural, design, or artistic significance), as significant examples of Classical Revival/Colonial Revival residential architecture. The character-defining features of the district include its setting: relationship between each contributing building, size and massing of buildings, landscaping (greensward in front of Quarters 1-3, formal terraced garden behind Quarters 1/Nimitz House, central terraced garden behind Quarters 2-5, planting beds adjacent to each building, and hardscape, such as walkways, patios, masonry walls, and roadways; historic integrity of individual contributors (Quarters 1/Nimitz House through Quarters 7, Quarters 10, Buildings 267, 83, 205 and 230, and the landscape within the district boundary); the Classical Revival/Colonial Revival architecture; and the viewshed from Quarters 1-5.

Since 1936, when the original eastern span of the SFOBB was built, both the district and the individual buildings have been in close proximity to a large highway bridge structure.

National Register Boundary
The Senior Officers' Quarters Historic District is located on the north side of I-80 and roughly forms a triangular-shaped district on the northeast side of Yerba Buena Island. Beginning at the intersection of Whiting Way and North Gate Road, the district boundary follows North Gate Road northwest just past Whiting Way, where the greensward, which extends southwest to the San Francisco-Oakland Bay Bridge, forms the easternmost boundary of the district. The southeastern boundary is located on the south side of Building 230 and encompasses informal landscaping located on the south side of the building (**Figure 5: Location of Senior Officers' Quarters Historic District and Quarters 1**, located in Attachment A).

3.2 Quarters 1/Nimitz House

Address
North Gate Road, Whiting Way, Yerba Buena Island, San Francisco, California 94130

Ownership
US Navy, Base Realignment and Closure, Program Management Office West, 1455 Frazee Road, Suite 900, San Diego, CA 92108-4310

Description
Quarters 1, known as the "Nimitz House," is the largest and most architecturally detailed of the Officers' Quarters. It is a contributing resource within the Senior Officers' Quarters Historic District, but is also listed in the NRHP as an individual property (listed 9/10/1991). The building was built in 1900 as part of the initial wave of building construction that established the Naval Training Station as an active base between 1900 and 1925. Quarters 1/Nimitz House is significant under Criterion A for its association with the development of West Coast military facilities, and under Criterion C, as an important example of Classical Revival architecture. The SFOBB has been a visual presence in this general location since its construction in 1936.

National Register Boundary
Quarters 1/Nimitz House is located on the north side of I-80 on the northeast side of Yerba Buena Island (**Figure 5: Location of Senior Officers' Quarters Historic District and Quarters 1**, located in Attachment A). There is no individual NRHP boundary for this building, but it is included within the larger Senior Officers' Quarters Historic District. The property is described in the documentation as being "placed on the hillside at the southern edge of the district, facing east toward the bay. A greensward sweeps down the hill in front of the house, and formal gardens are built into the hillside behind the house." It can be inferred that these elements would be specifically contributing elements to this individual property.

3.3 Quarters 10 (and Building 267)

Address
Macalla Road, Yerba Buena Island, San Francisco, California 94130

Ownership
US Navy, Base Realignment and Closure, Program Management Office West, 1455 Frazee Road, Suite 900, San Diego, CA 92108-4310

Description
Quarters 10 was constructed in 1948 and is a mixture of three modern architectural styles: Moderne, International, and Bay Region. Quarters 10, and its contributing garage (Building 267) are listed on the NRHP (listed 2/26/2008). The property is significant at the local level under Criterion C, as a significant example of mid twentieth century residential architecture. The property boundary includes Quarters 10, Building 267 and the landscape immediately adjacent to these buildings including lawn, garden, driveway and the northern retaining wall. Character-defining features of Quarters 10 include its setting and landscape, and those distinctive architectural characteristics of the International, Moderne and Bay (Regional) Tradition styles: flat roof with overhanging eaves supported by slender pipe columns; exposed rafters; corner windows; casement windows with horizontal muntins; curved east wall; board formed concrete wall surface; and lap wood siding. Character defining features of Building 267 are similar to Quarters 10 and include the lap wood siding, board formed concrete wall surface, flat roof with overhanging eaves, and exposed rafter tails. The SFOBB has been a visual presence in this general location since its construction in 1936.

National Register Boundary
The boundary for this property includes Quarters 10, Building 267, as well the immediate grounds, including the adjacent lawns and garden areas, the driveway and retaining wall on the north side of the property (**Figure 6: Location of Quarters 10 and Building 267**, located in Attachment A). This area is roughly triangular in shape, bounded by retaining walls on three sides, two along Macalla Road and one at the west side of the property.

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4.0 IMPACTS TO SECTION 4(f) PROPERTIES BY ALTERNATIVE

The Section 106 Finding of Effect Report (FOE) prepared for this project concluded that Alternative 2b would result in direct and indirect adverse effects to the Senior Officer's Quarters Historic District, Quarters 1/Nimitz House, and Quarters 10/Building 267 under 36 CFR 800.5.

Alternative 4 would result in indirect adverse effects to Quarters 10; the Senior Officers' Quarters Historic District and Quarters 1/ Nimitz House under 36 CFR 800.5. There was no Section 106 finding for the No-Build Alternative. The FOE has been reviewed and the Adverse Effect finding was concurred with by SHPO on February 8th, 2010.

Potential Section 4(f) uses by the project are discussed below as they relate to the Yerba Buena Island Ramps Improvement Project.

4.1 No-Build Alternative

The No-Build Alternative was determined to have no effect on historic properties in the FOE because it represents the existing YBI interchange condition with no project-related activities. Effects analysis resulted in a finding of no historic properties affected.

4.2 Alternative 2b

Project actions for Alternative 2b would include the construction of elevated westbound on-ramp and off-ramps in the immediate vicinity of the three historic properties (the Senior Officers' Quarters Historic District, Quarters 1/Nimitz House, and Quarters 10 (including Building 267). Under Alternative 2b, Macalla Road would be widened and a retaining wall would be constructed along the south side of the road. The structure would require approximately 13 support columns. One column will be located within the boundary of two resources: Senior Officers' Quarters Historic District and Quarters 1/Nimitz House. Visual simulations and renderings of Alternative 2b illustrating the appearance of the alternative from all view points are provided in Attachment C.

According to the FOE, Alternative 2b would result in indirect and direct adverse effects to the Senior Officers' Quarters Historic District, Quarters 1/Nimitz House, and Quarters 10 (including Building 267). As a result, use of Section 4(f) properties have been identified and are described below.

4.2.1 Senior Officers' Quarters Historic District

Section 106 Finding of Effect

Alternative 2b would cause a direct and indirect adverse effect to the Senior Officers' Quarters Historic District by physically destroying or damaging contributing elements and character-defining features of the district. **Figure 3** (located in Attachment A) shows the overall relationship between the Senior Officers' Quarters Historic District and Alternative 2b. **Figure 7: Alternative 2b in Relation to the Senior Officers' Quarters Historic District and the Individually Listed Quarters 1** (located in Attachment A) shows the specific relationship between the ramps, piers, and the resource.

The westbound off-ramp proposed for Alternative 2b is located southwest of the historic district (and Quarters 1/Nimitz House), and its construction would cause a direct and indirect adverse effect. A structural pier (Bent W7) would be constructed immediately southeast of the Quarters 1/Nimitz House (a contributing resource within the historic district) and would remove and/or damage a portion of the district's historic landscape, including grass and border hedge of the greensward in front of Quarters 1-3, and paved driveway and curbing southeast of Quarters 1/Nimitz House. A structural pier (Bent W8) would be constructed within the formal terraced garden behind Quarters 1/Nimitz House and would destroy much of the third level of the terrace garden. Alternative 2b could include removing or altering plantings and trees, the gradual upward slope of the land, and brick retaining walls, planters, and stairs that lead to this third garden tier.

Construction activities for the westbound on-ramp under Alternative 2b would be conducted outside of the boundaries of the historic district. Therefore, there would be no direct adverse effects from the on-ramp.

Alternative 2b may also cause an indirect effect on the historic district by introducing a potential risk of damage to the historic properties significant features from construction vibration. For the off-ramp structure, construction activities for structural piers (Bents W7 and W8) would be approximately 4.5 meters (15 feet) and 11.5 meters (35 feet), respectively, from Quarters 1/Nimitz House. Construction activities for structural pier (Bent W9) would be located approximately 22 meters (75 feet) from Building 230. Similarly, two on-ramp piers (Bents W8 and W7) would be approximately 30 meters (100 feet) and 25 meters (82 feet), respectively, from Quarters 1/Nimitz House and two piers (Bents W6 and W7) would be approximately 30 meters (100 feet) from Building 230. Because the ramp structural members would be located less than 30 meters (100 feet) from Quarters 1/Nimitz House and Building 230, as well as the historic landscape, all of which contribute to the historic district's significance, Alternative 2b has the potential to cause damage to those buildings and structures. It should be noted that Caltrans provides construction staff and contractors to follow specific guidance regarding on-site monitoring of vibrations caused by construction, which includes special provisions for historic structures and buildings. This monitoring procedure allows Caltrans (or the contractor) to respond to any potential damage caused by construction vibrations by modifying work methods or using different equipment, in order to minimize and/or avoid adverse effects.

Alternative 2b would also cause an indirect adverse effect on the historic district by the introduction of visual or atmospheric elements that diminish the integrity of the property's significant historic features. The construction of the ramps, which would rise between approximately 16.7 and 30.5 meters (55 and 100 feet) above the historic district, and its structural members that would be built immediately adjacent to contributing features, would alter the view of the historic property (see Visual Simulation Nos. 3 and 4, located in Attachment C). The size, scale, and massing of such a structure is not consistent with historic design, setting, location, feeling, or setting of the historic district and would diminish the historic integrity of the historic property. The viewshed from Quarters 1-5 would be minimally adversely affected by the construction of Alternative 2b as the view from these buildings has already been changed by the current construction of the new SFOBB East Span project (see Visual Simulation No. 2, located in Attachment C). The views from these resources would not be materially altered.

Additionally, because the on- and off-ramps would be elevated above the historic district, Alternative 2b has the potential to cause new shade and shadows in those areas beneath and adjacent to the new ramp structures. This would include Quarters 1/Nimitz House (a contributing resource within the historic district) and its adjacent planting beds, the formal terraced garden

behind the building, and the greensward. This potential new shade may cause damage to, or alter the plantings, and may alter the use of the historic landscape areas, diminishing the integrity of these contributing features.

Section 4(f) Evaluation

Alternative 2b would require the use of a portion of land 0.089 hectare (0.22 acres) from within the Senior Officers' Quarters Historic District by constructing a portion of the project within the boundary of the property. The 0.089 hectare (0.22 acres) of land includes Bent W8 (0.036 hectare [0.09 acres]) as well as the footprint of the off-ramp structure above the historic district (0.053 hectare [0.13 acres]). Right of way beneath the ramp north of the SFOBB is currently owned by the Navy and is in the process of being transferred to the City of San Francisco. Property rights for the YBI Ramps interchange would then be transferred to Caltrans in fee title. Alternative 2b would incorporate a portion of the property into the transportation facility. In addition, Alternative 2b would impact the Senior Officers' Quarters Historic District by permanently affecting viewsheds and introducing shading.

Due to the identification of potential vibration impacts to the historic resource, the construction technique for excavation in this area (Bents 7 and 8). The cast-in-drilled-hole piles would involve auguring rather than pile-driving, eliminating the vast majority of the vibration during construction. The only vibration would come from the equipment being operated at the site, and the large auger moving soil up and out of the hole. Based upon this change in technology, there will be no vibration impacts to the nearby historic resource. Caltrans will follow standard procedures regarding the monitoring of vibration during construction to avoid or minimize any potential impacts.

4.2.2 Quarters 1/Nimitz House

Section 106 Finding of Effect

Alternative 2b would cause a direct and indirect adverse effect to Quarters 1/Nimitz House by physically destroying or damaging contributing elements and character-defining features of the resource. **Figure 3** (located in Attachment A) shows the overall relationship between Quarters 1/Nimitz House and Alternative 2b. **Figure 7** (located in Attachment A) shows the specific relationship between the ramps, piers, and the resource.

The westbound off-ramp proposed for Alternative 2b would be constructed directly through the southeastern boundary of the historic resource. A structural pier (Bent W7) would be constructed immediately southeast of Quarters 1/Nimitz House and would remove and/or damage a portion of the historic landscape, including grass and border hedge of the greensward in front of Quarters 1/Nimitz House, and paved driveway and curbing southeast of Quarters 1/Nimitz House. Another structural pier (Bent W8) would be constructed within the formal terraced garden behind Quarters 1/Nimitz House and would destroy much of the third level of the terrace garden. Alternative 2b could include removing or altering plantings and trees, the gradual upward slope of the land, and brick retaining walls, planters, and stairs that lead to this third garden tier.

Construction activities for the westbound on-ramp under Alternative 2b would be conducted outside of the boundaries of the historic district. Therefore, there would be no direct adverse effects from its construction.

Alternative 2b may also cause an indirect effect on Quarters 1/Nimitz House by potentially causing damage to the historic property's significant features from construction vibration. For the off-ramp structure, construction activities for two piers (Bents W7 and W8) would be approximately 4.5 meters (15 feet) and 11.5 meters (35 feet), respectively, from Quarters 1/Nimitz House. Similarly, on-ramp piers (Bents W8 and W7) would be approximately 30 meters (100 feet) and 25 meters (82 feet), respectively, from Quarters 1/Nimitz House. Because the ramp structural members would be located less than 30 meters (100 feet) from Quarters 1/Nimitz House, Alternative 2b has the potential to cause damage to this building from vibration during construction. It should be noted that Caltrans provides construction staff and requires contractors to follow specific guidance regarding on-site monitoring of vibrations caused by construction, which includes special provisions for historic structures and buildings. This monitoring procedure allows Caltrans (or the contractor) to respond to any potential damage caused by construction vibrations by modifying work methods or using different equipment, in order to minimize and/or avoid adverse effects.

Alternative 2b would also cause an indirect adverse effect on Quarters 1/Nimitz House by the introduction of visual or atmospheric elements that diminish the integrity of the property's significant historic features. The construction of the ramps, which would rise between approximately 16.7 and 30.5 meters (55 and 100 feet) above Quarters 1/Nimitz House, and its structural members that would be built immediately adjacent to contributing features, would alter the view of the historic property (see Visual Simulation Nos. 3 and 4, Attachment C). The size, scale, and massing of such a structure is not consistent with historic design, setting, location, feeling, or setting of the historic property and would diminish its historic integrity.

The viewshed from Quarters 1/Nimitz House would not be adversely affected by the construction of Alternative 2b as the view from this building has already been changed by the current construction of the new SFOBB East Span project (see Visual Simulation No. 2, located in Attachment C). The views from this resource would not be materially altered. Because the on- and off-ramps would be elevated above the resource, Alternative 2b has the potential to cause new shade and shadows in those areas beneath and adjacent to the new ramp structures. This would include Quarters 1/Nimitz House and its adjacent planting beds, the formal terraced garden behind Quarters 1/Nimitz House, and the greensward. This potential new shade may cause damage to, or alter the plantings, and may alter the use of the historic landscape areas, diminishing the integrity of these contributing features.

Section 4(f) Evaluation

Alternative 2b would cause a Section 4(f) use of Quarters 1/Nimitz House by constructing a portion of the project within the boundary of the property (acquiring approximately 0.089 hectare; 0.22 acres from within the boundary). The 0.089 hectare (0.22 acres) of land includes BentW8 (0.036 hectare [0.09 acres]) as well as the footprint of the off-ramp structure above the resource (0.053 hectare [0.13 acres]). The right of way north of the SFOBB, beneath the ramp, is currently owned by the Navy and is in the process of being transferred to the City of San Francisco. Property rights for the YBI Ramps interchange would then be transferred to Caltrans in fee title and incorporated into the project. In addition, Alternative 2b would also impact Quarters 1/Nimitz House by permanently affecting the viewsheds and introducing shading.

Due to potential vibration impacts to the historic resource, the construction technique for the cast-in-drilled-hole piles in this area (Bents W7 and W8) would involve auguring rather than pile-driving, eliminating the vast majority of the vibration during construction. The only vibration would come from the equipment being operated at the site, and the large auger moving soil up

and out of the hole. Based upon this change in technology, there will be no vibration impacts to the nearby historic resource. Caltrans will follow standard procedures regarding the monitoring of vibration during construction to avoid or minimize any potential impacts.

4.2.3 Quarters 10 (including Building 267)

Section 106 Finding of Effect

Alternative 2b would cause a direct adverse effect by the removal of two buildings (Quarters 10 and its associated garage [Building 267]) on the property from their historic location. **Figure 3** (located in Attachment A) shows the overall relationship between the Quarters 10 (and Building 267) and Alternative 2b. **Figure 8: Alternative 2b in Relation to Quarters 10 and Building 267** (located in Attachment A) shows the specific relationship between the ramps, piers, and the resource.

Quarters 10 (and Building 267) would be removed to accommodate the construction of both on- and off-ramps and an abutment along the south side of Macalla Road. As mitigation under Section 106, the buildings would be moved to an appropriate site on YBI in the vicinity of its current location. Alternative 2b would require the use of all of the Quarters 10 (including Building 267) property by incorporating all of the land into the transportation facility and removing the historic buildings from the property.

Section 4(f) Evaluation

Alternative 2b would cause a Section 4(f) use of Quarters 10 (and Building 267) by using the property 0.182 hectare (0.45 acres) and removing the two buildings. Right of way beneath the ramp north of the SFOBB is currently owned by the Navy and is in the process of being transferred to the City of San Francisco. Property rights for the YBI Ramps interchange would then be transferred to Caltrans in fee title.

4.3 Alternative 4

Alternative 4 includes the removal of the existing westbound on- and off-ramps on the east side of YBI, construction of a new westbound on-ramp from South Gate Road, and construction of a new westbound off-ramp to Macalla Road on the east side of YBI. Visual Simulations and renderings of Alternative 4 illustrating the appearance of the alternative from all points of view are provided in Attachment C. According to the FOE, Alternative 4 would result in indirect adverse effects to to Quarters 10, the Senior Officers' Quarters Historic District, and Quarters 1/Nimitz House. The structure would require approximately 23 support columns. Two columns will be located within the boundary of two resources: Senior Officers' Quarters Historic District and Quarters 1/Nimitz House. Alternative 4 introduces a massive visual intrusion into the viewshed in this area in front of both the Senior Officers' Quarters Historic District as well as Quarters 1/Nimitz House, and also acquires land from within the boundaries of both of those resources.

4.3.1 Senior Officers' Quarters Historic District

Section 106 Finding of Effect

Alternative 4 would cause indirect adverse effects to the Senior Officers' Quarters Historic District because of the construction of the ramp over a portion of the district. The ramp proposed for Alternative 4 would be constructed directly over the southern edge of the historic district, and

the land beneath the ramp, within the resource, would be acquired by Caltrans. Alternative 4 would cause damage and alteration to the physical features that contribute to the resource's significance. **Figure 4** (located in Attachment A) shows the overall relationship between the Senior Officers' Quarters Historic District and Alternative 4. **Figure 9: Alternative 4 in Relation to the Senior Officers' Quarters Historic District and the Individually Listed Quarters 1** (located in Attachment A) shows the specific relationship between the ramps, piers, and the resource.

Alternative 4 may cause an indirect adverse effects on the historic district by causing potential damage to the historic properties' significant features through construction vibration. For the off-ramp structure, one pier (Bent 1) would be constructed approximately 20 meters (65 feet) southeast of Quarters 1/Nimitz House. Potential construction activities that may occur in this area (pavement breaking or extensive pile driving) have the potential to cause damage to historic buildings or structures. It should be noted that Caltrans requires construction staff and contractors to follow specific guidance regarding on-site monitoring of vibrations caused by construction, which includes special provisions for historic structures and buildings. This monitoring procedure allows Caltrans (or the contractor) to respond to any potential damage caused by construction vibrations by modifying work methods or using different equipment, in order to minimize and/or avoid adverse effects.

Alternative 4 would also cause an indirect adverse effect on the historic district by the introduction of visual elements that diminish the integrity of the property's significant historic features (see Simulations 2, 3, and 4, located in Attachment C). The westbound on-ramp structure would be parallel to and west of the new SFOBB Transition Structure. It would be 30 meters (131 feet) wide at its widest location (near Bent 4) and would be elevated approximately 10 meters (32 feet) above Quarters 1/Nimitz House and approximately 150 feet above the greensward. The size, scale, and massing of the structure would not be consistent with the historic design, setting, location, feeling or setting, of the historic district and would constitute the introduction of a new visual element.

Additionally, the ramp deck and bents would obstruct the eastward view from Quarters 1/Nimitz House (a contributing resource within the Senior Officers' Quarters Historic District) and, because the view from this building is a character-defining feature, Alternative 4 would diminish the integrity of this contributing resource within the historic district. The introduction of the ramp structures would cause an adverse effect to the Senior Officers' Quarters Historic District.

Section 4(f) Evaluation

Alternative 4 would cause a Section 4(f) use of the Senior Officers' Quarters Historic District by constructing a portion of the project within the boundary of the property (acquiring approximately 0.089 hectare [0.22 acres] from within the boundary). The 0.089 hectare (0.22 acres) of land includes 0.045 hectare (0.11 acres) of physical impact from the construction of two columns, as well as 0.045 hectare (0.11 acres) of easement beneath the footprint of the off-ramp structure above the historic district. Right of way beneath the ramp north of the SFOBB is currently owned by the Navy and is in the process of being transferred to the City of San Francisco. Right of way south of the SFOBB is generally owned by the USCG. Property rights for the YBI Ramps interchange north of the SFOBB would be transferred to Caltrans in fee title, while the property rights south of the SFOBB would consist of an aerial easement over USCG property. In addition, Alternative 4 would also impact the historic district by permanently affecting the viewsheds (which are character-defining features), and introducing shading.

Due to potential vibration impacts to the historic resource, the construction technique for excavation in this area (Bent 1) cast-in-drilled-hole piles would involve auguring rather than pile-driving, eliminating the vast majority of the vibration during construction. The only vibration would come from the equipment being operated at the site, and the large auger moving soil up and out of the hole. Based upon this change in technology, there will be no vibration impacts to the nearby historic resource. Caltrans will follow standard BMP procedures regarding the monitoring of vibration during construction to avoid or minimize any potential impacts.

4.3.2 Quarters 1/Nimitz House

Section 106 Finding of Effect

Alternative 4 would cause indirect adverse effects to Quarters 1/Nimitz House because of the construction of the ramp over a portion of the resource. The ramp proposed for Alternative 4 would be constructed directly over the southern edge of the resource, and the land beneath the ramp would be acquired by Caltrans. Alternative 4 would cause damage and alteration to the physical features that contribute to the resource's significance. **Figure 4** (located in Attachment A) shows the overall relationship between Quarters 1/Nimitz House and Alternative 4. **Figure 9** (located in Attachment A) shows the specific relationship between the ramps, piers, and the resource.

Alternative 4 may cause an indirect adverse effect on Quarters 1/Nimitz House by causing potential damage to the historic property's significant features through construction vibration. For the off-ramp structure, one pier (Bent 1) would be constructed approximately 20 meters (65 feet) southeast of Quarters 1/Nimitz House. Potential construction activities that may occur in this area (pavement breaking or extensive pile driving) have the potential to cause damage to historic buildings or structures. It should be noted that Caltrans provides construction staff and requires contractors to follow specific guidance regarding on-site monitoring of vibrations caused by construction, which includes special provisions for historic structures and buildings. This monitoring procedure allows Caltrans (or the contractor) to respond to any potential damage caused by construction vibrations by modifying work methods or using different equipment, in order to minimize and/or avoid adverse effects.

Alternative 4 would also cause an indirect adverse effect on Quarters 1/Nimitz House by the introduction of visual elements that diminish the integrity of the property's significant historic features (see Simulations 2, 3 and 4, located in Attachment C). The on-ramp structure would extend northwest approximately 20 meters (65 feet) from the new east span of SFOBB at Bent 2 (which is located just west of Quarters 1/Nimitz House). It would be 30 meters (131 feet) wide at its widest location (near Bent 4) and would be elevated approximately 10 meters (32 feet) above Quarters 1/Nimitz House and approximately 150 feet above the greensward. The size, scale, and massing of such a structure is not consistent with the historic design, setting, location, feeling or setting, of Quarters 1/Nimitz House and would constitute the introduction of a new visual element.

Additionally, the ramp deck and bents would obstruct the primary view from the front façade and porch of Quarters 1/Nimitz House. As this view from Quarters 1/Nimitz House is a character-defining feature, Alternative 4 would diminish the integrity of this historic resource. The introduction of the ramp structures would thus cause an adverse effect to Quarters 1/Nimitz House.

Section 4(f) Evaluation

Alternative 4 would cause a Section 4(f) use of Quarters 1/Nimitz House by constructing a portion of the project within the boundary of the property (acquiring approximately 0.089 hectare; 0.22 acres from within the boundary). The 0.089 hectare (0.22 acres) of land includes 0.045 hectare (0.11 acres) of physical impact from the construction of two columns as well as 0.045 hectare (0.11 acres) of easement beneath the footprint of the off-ramp structure above the resource. Right of way beneath the ramp north of the SFOBB is currently owned by the Navy and is in the process of being transferred to the City of San Francisco. Right of way south of the SFOBB is generally owned by the USCG. Property rights for the YBI Ramps interchange north of the SFOBB would be transferred to Caltrans in fee title, while the property rights south of the SFOBB would consist of an aerial easement over USCG property. In addition, Alternative 4 would impact the resource by permanently affecting the viewsheds (character-defining features of this resource), and introducing shading.

Due to potential vibration impacts to the historic resource, the construction technique for excavation in this area (Bent 1) cast-in-drilled-hole piles would involve auguring rather than pile-driving, eliminating the vast majority of the vibration during construction. The only vibration would come from the equipment being operated at the site, and the large auger moving soil up and out of the hole. Based upon this change in technology, there will be no vibration impacts to the nearby historic resource. Caltrans will follow standard procedures regarding the monitoring of vibration during construction to avoid or minimize any potential impacts.

4.3.3 Quarters 10 (and Building 267)

Section 106 Finding of Effect

Alternative 4 would not cause any direct adverse effects to Quarters 10 because all construction activities for the on- and off- ramps would be conducted at a distance greater than approximately 20 meters (65 feet) from the National Register boundary of the historic property. All Macalla Road improvements would be restricted to the south side of the road and at a distance of more than 6 meters (20 feet) from the historic property boundary. Once constructed, the new ramp will be over 25 meters (85 feet) from the resource. Neither the ramps nor the widening of Macalla Road would cause any damage or alteration to the physical features that contribute to the property's significance, nor would it change the property's use or setting. **Figure 4** (located in Attachment A) shows the overall relationship between Quarters 10 (and Building 267) and Alternative 4. **Figure 10: Alternative 4 in Relation to Quarters 10 and Building 267** (located in Attachment A) shows the specific relationship between the ramps, piers, and the resource.

Alternative 4 may cause an indirect adverse effect to Quarters 10 and Building 267 by potentially causing damage to the historic properties' significant features through construction vibration. Because construction of the ramps project will involve widening of the Transition Structure where the new ramps connect, approximately 25 meters (85 feet) from Building 267, it would have the potential to damage that historic property and/or damage hardscape features (driveway, concrete planters, retaining wall, etc.) within the property boundary. It should be noted that Caltrans requires construction staff and contractors to follow specific guidance regarding on-site monitoring of vibrations caused by construction, which includes special provisions for historic structures and buildings. This monitoring procedure allows Caltrans (or the contractor) to respond to any potential damage caused by construction vibrations by

modifying work methods or using different equipment, in order to minimize and/or avoid adverse effects.

Quarters 10 (and Building 267) are oriented with the main views toward the southeast, primarily from Quarters 10 and its windowed overlook. This key character defining view is currently obscured by the existing bridge, as well as by mature trees on the property. Views to the north and to the east from these buildings are obscured by mature trees as well. The view to the west is open across Macalla Road, toward the substation, with little visual quality. There would be no anticipated indirect adverse effects to this historic property from the introduction of new visual elements. The historic property is generally surrounded on all sides by dense shrubs and trees which would block the view of the on- and off-ramps when looking south from the historic property. There would be relatively little change in the quality of the view looking east and south, respectively (see Simulations 3 and 6, located in Attachment C).

Section 4(f) Evaluation

Alternative 4 would not result in a constructive use of Quarters 10 (and Building 267). No property from within the National Register boundary of the resource would be incorporated into the transportation facility. Although construction activities will occur in the vicinity of the property, it is not anticipated that the proximity impacts would be "so severe that the protected activities, features, or attributes that qualify the property for protection under Section 4(f) are substantially impaired. Substantial impairment occurs only when the protected activities, features, or attributes of the property are substantially diminished (23 CFR 774.15 (a))." Quarters 10 (and Building 267) will remain on the property and will retain their architectural qualities that contribute to the resource's significance. Caltrans will follow standard procedures regarding the monitoring of vibration during construction to avoid or minimize any potential impacts to the property.

4.4 Summary of Project Uses of Section 4(f) Resources, by Alternative

The No-Build Alternative would not use any Section 4(f) resources. Both build alternatives would result in a Section 4(f) use, though each build alternative would not result in the use of the same number of Section 4(f) properties. **Table 4-1** below summarizes the Section 4(f) properties that would be used by the project alternatives. There are two definitions of "use" within the Section 4(f) regulation. A permanent use involves the incorporation of land and/or a resource into a transportation structure or system. A constructive use is one that can involve substantial visual and/or other impacts that rise to the level of causing substantial impairment of the qualities that make the resource significant.

Table 4-1: Section 4(f) Use by Alternative

Section 4(f) Properties	No-Build	Alternative 2b	Alternative 4
Senior Officers' Quarters Historic District	-	Permanent	Permanent
Quarters 1/Nimitz House	-	Permanent	Permanent
Quarters 10 (and Building 267)	-	Permanent	No Use
TOTAL SECTION 4(f) IMPACTS	**0**	**3**	**2**

4.4.1 No Build Alternative

The No-Build Alternative would not use any Section 4(f) properties.

4.4.2 Alternative 2b

Alternative 2b would result in the permanent use of three Section 4(f) properties: the Senior Officers' Quarters Historic District, Quarters 1/Nimitz House, and Quarters 10 (and Building 267). The land from within the boundaries of these resources is currently owned by the Navy and is in the process of being transferred to the City of San Francisco. Property rights for this land will then be transferred to Caltrans in fee title. Alternative 2b would require the permanent incorporation of 0.089 hectare (0.22 acre) of the Senior Officers' Quarters Historic District into the transportation facility. It is assumed that the same amount of land would be required from within the boundary of Quarters 1/Nimitz House. Alternative 2b would require the permanent incorporation of 0.182 hectare (0.450 acre) of Quarters 10 (including Building 267) as it requires the removal of both buildings.

4.4.3 Alternative 4

Alternative 4 would result in the permanent use of two Section 4(f) properties: the Senior Officers' Quarters Historic District, and Quarters 1/Nimitz House. The land from within the boundaries of these two resources is currently owned by the Navy and is in the process of being transferred to the City of San Francisco. Property rights for this land will then be transferred to Caltrans in fee title. Alternative 4 would require the permanent incorporation of 0.089 hectare (.22 acre) of the Senior Officers' Quarters Historic District and from Quarters 1/Nimitz House into the transportation facility. This land will be acquired beneath the ramps from within the resource boundaries.

Construction activities for Alternative 4 would take place over 25 meters (82 feet) from the closest boundary of the resource, at its eastern edge. There will be no construction activities or staging within the boundary of the resource, nor would access or use be restricted. Construction activities in the vicinity of Quarters 10 (and Building 267) will be mitigated and monitored during the construction phase to avoid any impacts to the historic resource. Caltrans, SHPO, and ACHP are currently developing a MOA that would outline the requirements for relocation as well as methods to mitigate these effects. 23 C.F.R. Part 774.15 (f)(8) states that "The Administration… determined that a constructive use does not occur when: Vibration levels from project construction activities are mitigated, through advance planning and monitoring of the activities, to levels that do not cause a substantial impairment of protected activities, features, or attributes of the Section 4(f) property." The significance of this resource, its architectural merit as a significant example of mid twentieth century residential architecture, will not be "substantially impaired" by the construction of Alternative 4. Alternative 4 would not have a constructive use of Quarters 10 (and Building 267).

5.0 AVOIDANCE ALTERNATIVES

This analysis of avoidance alternatives used the feasible and prudent standards of Section 4(f). This assessment is based on the definition of "feasible and prudent avoidance alternative" in Section 774.17 of the regulations. The regulations state that an avoidance alternative is feasible and prudent if it "does not cause other severe problems of a magnitude that substantially outweighs the importance of protecting the Section 4(f) property. An alternative is not feasible "if it cannot be built as a matter of sound engineering judgment."

The regulations do not provide a single clear definition of "prudence." Instead, they list a series of findings that can support a finding that an alternative is imprudent. This approach allows a wide range of factors to support a finding of imprudence. The definition of "feasible and prudent avoidance alternative" in Section 774.17 provides the following direction for determining whether an alternative is prudent:

An alternative is not prudent if:

i. It compromises the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need;

ii. It results in unacceptable safety or operational problems;

iii. After reasonable mitigation, still causes;

   a) Severe social, economic, or environmental impacts;

   b) Severe disruption to established communities;

   c) Severe disproportionate impacts to minority or low income populations; or

   d) Severe impacts to other federally protected resources;

iv. It results in additional construction, maintenance, or operational costs of an extraordinary magnitude;

v. It causes other unique problems or unusual factors; or

vi. It involves multiple factors listed above that while individually minor, cumulatively causes unique problems of extraordinary magnitude.

5.1 Development of Potential Avoidance Alternatives

The Purpose and Need, engineering constraints, safety requirements, and need to avoid or minimize impacts on environmental resources described in the EIR/EIS formed the basis for the development of alternatives. The combination of these elements limited the opportunity to develop alternatives that could completely avoid impacts to Section 4(f) properties. In particular, the development and evaluation of alternatives considered the unusual geographic and topographic characteristics of the project area, and the presence of multiple Section 4(f) properties.

The planning process for identifying, designing and screening alternatives began with the study of many alternatives from a conceptual feasibility perspective in 2002. A number of build

alternatives were presented to stakeholders and the public during several meetings by the project development team to solicit comments and suggestions on the design. Nonstandard features of the design were discussed and the results were used to further refine the alternatives in the Project Study Report (PSR) approved by Caltrans in December 2007. The PSR included a summary of the results of the alternatives evaluation.

Throughout the planning process, many potential avoidance configurations were explored in order to attempt to avoid Section 4(f) properties, consisting of listed and eligible historic properties in close proximity to the ramp project locations. The challenge for finding an avoidance alternative is that the area designated to locate the new ramp is a tight confined space, and the Section 4(f) properties are located immediately adjacent to the SFOBB, with which the ramps must connect to meet the project's purpose and need. This required exploration of alternatives that considered creative ramp geometric solutions in order to avoid using 4(f) properties.

The No-Build Alternative and Avoidance Alternative 6 would avoid use of Section 4(f) properties. An evaluation of those alternatives as avoidance alternatives is presented below. Table 5-1 presents a summary of the prudence standards that would not be met by the avoidance alternatives. The rationale for these determinations is provided in the discussion below.

5.2 No-Build Alternative

The No-Build Alternative avoids effects to all Section 4(f) properties and therefore would not cause a Section 4(f) use. Although this alternative avoids any Section 4(f) uses of historic properties, it is not considered to be viable in the EIS/EIR because it would not satisfy the purpose and need of the proposed project. In accordance with 23 CFR 774.17, the six Section 4(f) standards were considered when evaluating whether the No-Build alternative would be prudent (Table 5-1).

The No-Build Alternative represents conditions if no other actions are taken. The No-Build Alternative assumes that the existing westbound on and off-ramps on the east side of YBI would remain in place and no further action or improvements would occur. The westbound on- and off-ramps would continue to operate as they are currently. The No-Build Alternative would not improve: traffic safety for drivers using the westbound on- and off-ramps; geometric design of the westbound on- and off- ramps on the east side of YBI; and traffic operations levels of service on the westbound on- and off-ramps. The No-Build Alternative would not meet the project need because:

- The westbound on-ramp would remain as-is with a very short merge distance of approximately 43 meters (141 feet). It would remain a steep entrance grade (10 percent) leading to a 122-meter-long (400 feet) crest vertical curve resulting in a 30 km/h (18.6 mph) design speed. The westbound on-ramp would not allow traffic to accelerate to a proper mainline speed of 80 km/h (50 mph) to merge with through traffic. The westbound off-ramp would remain as a left-side exit lane and would remain nonstandard (Highway Design Manual Section 504.2).

- The westbound on- and off-ramps would continue to operate at LOS F in both morning and evening peak hours.

- No geometric improvements would be made to the existing ramps and they would remain less compliant with Caltrans standards. Therefore, accident rates are likely to remain higher than the statewide average.

While the retention of the existing ramps in their current configuration would avoid any effects to Section 4(f) properties, it would not address the need to connect the new SFOBB to YBI via a ramp system nor would it address the existing safety deficiencies (prudence standard ii). Therefore, it would not meet the purpose and need of the project (prudence standard i).

5.3 Avoidance Alternative 6

i. It compromises the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need

The Avoidance Alternative is to protect Historic 4(f) Resources and minimize potential environmental impacts to the extent possible. After careful design investigations, one build alternative was developed that avoided use of all Section 4(f) properties. Avoidance Alternative 6 would not use any Section 4(f) properties. Avoidance Alternative 6 proposes westbound on- and off-ramps and a substantial tunnel system, which would allow traffic to enter and exit the new SFOBB from YBI. However, the design has multiple shortcomings. In accordance with 23 CFR 774.17, the viability of Avoidance Alternative 6 as an avoidance alternative was evaluated by applying the six standards of prudence and feasibility, described below. Avoidance Alternative 6 does not meet the first standard.

As stated in the Purpose and Need section, the needs of the project are to improve traffic operations and safety by improving the geometric configurations of the on and off-ramps

Table 2-3, in Chapter 2 of the EIR/EIS, presents a screening matrix of the nine build alternatives, including the recommended Alternatives 2b and 4, that were considered during the planning process and eliminated from further study for various reasons. Nonviable alternatives considered reconstructing the eastbound off-ramp but it was deemed infeasible due to the mandatory closure of the SFOBB, geometric challenges, effects on land use, excessive cost and safety concerns.

Despite a creative and exhaustive design approach to create Avoidance Alternative 6, it is not an acceptable alternative from a traffic safety and geometric design perspective, and therefore it would not meet the Purpose and Need of the project.

In order to make the alternative function, the ramps had to be designed with several non-standard geometric features. Many of the non-standard features are identified on Alternative 6 in Attachment D and further described below including: 1) excessive divergence angle; 2) short on-ramp acceleration length; 3) short vertical curve lengths; and 4) short superelevation transition length.

The non-standard geometric features that are included in the Avoidance Alternative introduce degradation of traffic operations and significant safety concerns. Major challenges associated with this alternative include geometric design flaws, traffic operational issues and safety problems.

Avoidance Alternative 6 proposes to construct a westbound on-ramp and westbound off-ramp as depicted in Attachment D. The ramps would be comprised of elevated bridge sections as well

as tunnel sections that would be mined through this portion of Yerba Buena Island. The tunnel for the off-ramp exit would be approximately 152.4 meters (500 feet) long and the tunnel for the on-ramp would be approximately 128 meters (420 feet) long. Due to the relatively short length and curved alignment for both of the tunnels, a tunnel boring machine cannot be used since it cannot accommodate tight radius curves. Tunnels would be constructed using tunnel liner plates.

Westbound Exit Ramp

The proposed westbound ramp alignments as depicted in Attachment D do not meet Caltrans design standards criteria. Following are some of the non-standard features, and associated safety repercussions of the proposed westbound exit ramp:

- Vertical Curve Lengths
    - At the ramp exit, a sag vertical curve is needed to accommodate the ramp grade change so that the off-ramp can cross up and over the proposed westbound on-ramp. Due to the limited space, the proposed sag curve would be 61 meter (200 foot) long, less than 15% of the standard 426.7 meter (1,400-foot) length. The design speed of the off-ramp where it departs from the mainline would be 27.4 km/h (17 mph); the exit design speed would be one third of the standard 80.5 km/h (50 mph). The non-standard design speed at the exit gore may have an impact on mainline traffic as vehicles destined for the off-ramp slow down on the mainline to negotiate the curve. This may negatively affect traffic operations as well as introduce unsafe braking conditions.
    - As the ramp passes over the westbound on-ramp, a crest vertical curve in the off-ramp profile would be needed to bring the ramp back down. However the distance available for the crest vertical curve would be only 182.9 meters (600 feet) and result in a 45.1 km/h (28 mph) ramp design speed; the proposed curve would be approximately one half of the standard 344.4 meter (1,130 foot) curve length. The non-standard crest vertical curve would reduce the distance the driver could see along the off-ramp, prohibiting the driver from having adequate sight stopping distance. This is an undesirable geometric feature and has likely potential to contribute to accidents because it provides inadequate time for the driver to recognize a problem ahead, react and stop the vehicle. [Reference HDM: Chapter 204.4, 504.2]
    - As the westbound off-ramp ties into Macalla Road, it would be very steep and would not have the standard vertical curve required as the ramp approaches the intersection. The alternative would have a 100 foot vertical curve which correlates with a 24.1 km/h (15 mph) design speed. The standard design speed at the base of an off-ramp is 40.2 km/h (25 mph).

- Excessive Roadway Grades

  The westbound off-ramp crosses over the westbound on-ramp twice. At the first crossing, both ramps are bridge structures; at the second crossing, both ramps are tunnels.

    - At the first crossing of the ramps, the off-ramp must be approximately 6.1 to 7.6 meters (20 to 25 feet) above the on-ramp. This requires that the off-ramp grade be approximately 16%; the grade would be twice the allowable 8% grade as it climbs up

and over the on-ramp. This steep grade may contribute to unsafe traffic operations as trucks and cars attempt to navigate the steep ramp, resulting in safety concerns.

- At the second crossing of the ramps, both roadways would be inside individual tunnels. The vertical separation required as they cross would need to be significant (12.2 to 15.2 meters [40 to 50 feet]) to avoid unbalanced loads on the lower tunnel and meet structural requirements. As the off-ramp crosses over, it would descend down to meet Macalla Road with a steep 8% grade. A non-standard 30.5 meter (100 foot) vertical curve would intersect Macalla Road; no flat area at the intersection stop bar would be available. This condition would be especially unsafe for heavy vehicles during deceleration. [Reference HDM: Chapter 204.4] The on-ramp would descend from Macalla Road towards the mainline at 10% grade to cross underneath the off-ramp tunnel. The 10% grade would be above the allowable grade standard of 8% affect larger vehicles as they navigate the ramp.

- Superelevation Transition
  - The tight horizontal geometry of the westbound ramp would not allow for adequate distance required for the standard length transition from the standard roadway cross-slope to the curve cross-slope. These sharp transition changes have a tendency to disorient drivers because they have to slow down on the curved segment and tend to speed up on the straight-away segment. [Reference HDM: Chapter 202.2 & 202.5]

- Exit Ramp Geometry
  - The divergence angle for the ramp would not follow 504.2B of the HDM criteria and would be 1.5 times larger than the standard. An abrupt departure angle would be needed so the westbound exit off-ramp could achieve enough separation from the mainline to start reaching the elevation and climb of the entrance ramp tunnel. These drastic angles of departure may be challenging to drivers and are likely to slow them down and increase the accident potential. [Reference HDM: Chapter 504.2]

Westbound Entrance Ramp

The proposed westbound entrance ramp as depicted in Attachment D would not meet several of Caltrans' design standard criteria. Following are some of the non-standard features and safety concerns:

- Entrance Gore to Mainline

  The standard on-ramp design, as it approaches the mainline, has several criteria that must be met to allow for a safe merge.
  - The standard on-ramp merge design requires an acceleration lane to be 355.7 meters (1,167-foot) long. However, due to space limitations within a constrained area, the proposed ramp acceleration length would be approximately 79.2 meters (260 feet) long; it would be less than 25% of the standard length and require drivers to merge very quickly onto the mainline freeway. This design is similar to the existing ramp condition. The available acceleration distance is important because the merge must be completed prior to the entrance of the YBI tunnel.
  - The space available allows for a merge ratio (merge length divided by ramp width) of only 12:1, in contrast to the design standard minimum of a 50:1 ratio. The "lane-drop" portion of the merge would be 47.5 meters (156 feet) long versus the 182.9 meter (600 foot) standard. This is similar to the existing condition; the existing "lane drop" is

141 feet long; and would not be an improvement. Drivers would be challenged to safely maneuver within such an abrupt merge condition. Additionally, there would not be any shoulder area inside the new tunnel resulting in no margin for a driving error. These conditions may make driving difficult and unsafe, especially for heavy vehicles that would use the ramp. [Reference HDM: Chapter 504.2]

- Approach Speed
  - Due to physical constraints, the proposed alignment has a 28.3 meter (93-foot radius) (24.1 km/h [15 mph]) curve prior to the entrance gore. This 24.1 km/h (15 mph) curve leads to the non-standard merge distance mentioned above. At the point where the on-ramp starts to merge with the mainline, standard design calls for a 80.5 km/h (50 mph) design speed to safely merge onto the mainline. The differential in speeds would contribute to unsafe freeway merges, reduction of mainline freeway operations, and increase the potential for accidents. [Reference HDM: Chapter 504.2]

- Superelevation Transition
  - Since the proposed alignment has a tight horizontal curve just prior to the merge, a superelevation transition would need to be carried well into the gore area with the mainline. This configuration may make drivers anxious as they gain speed to match mainline traffic, increasing the potential for an accident while merging. [Reference HDM: Chapter 202.2 & 202.5]

Macalla Road

Improvements would have to be made to Macalla Road in order for it to tie into Avoidance Alternative 6. This would include widening the road to allow for two full lanes, the introduction of a traffic signal, as well as the removal of buildings 62 and 240 to make room for the interchange termini. Neither of these buildings are historic. The design alterations that would be required for Macalla Road to work effectively with Avoidance Alternative 6 would result in reduced sight distances, potential traffic operational issues (back-ups on ramps and on the road), and could lead to potential decreased safety for users of the road. [Reference HDM: Chapter 504.3]

ii. It results in unacceptable safety or operational problems

Design refinements to Avoidance Alternative 6 were explored through the planning process to reduce the geometric, traffic, and safety deficiencies described above, however, the steep site conditions within a confined area limited by the space between the Senior Officers' Quarters District and the existing Yerba Buena Island Tunnel entrance made it difficult to overcome nonstandard conditions. Therefore, the Avoidance Alternative would not meet Caltrans standards and would not meet the project's purpose and need because it would create unacceptable safety and operational problems. Although there are some nonstandard features under the proposed Alternatives 2b and 4, Alternative 6 contains non-standard features that directly compromise safety including non-standard sight distance, merge distance, and excessive grades. Additional discussion about Alternatives 2b and 4 in contained Section

iii. After reasonable mitigation, still causes:

a) Severe social, economic, or environmental impacts

b) Severe disruption to established communities

c) Severe disproportionate impacts to minority or low income populations

d) Severe impacts to other federally protected resources

This factor is not applicable (NA).

iv. It results in additional construction, maintenance, or operational costs of an extraordinary magnitude

Avoidance Alternative 6 proposes westbound on- and off-ramps, the design has multiple downfalls that would result in additional construction, maintenance and operational costs. In order for Avoidance Alternative 6 to avoid Section 4(f) properties, the west-bound off-ramp would start the descent from the Bay Bridge right after passing the Section 4(f) properties (Senior Officers' Quarters Historic District as well as the Quarters One/Nimitz House), and would involve excavation into the steep hillside. E Two tunnels would need to be excavated and constructed as curved structures, further complicating the design implementation. The overall estimated cost of Avoidance Alternative 6 would range from 7 to nearly 13 times as much as the other alternatives. For instance, the cost for Alternative 2b is estimated to be $60 million, compared to the estimated cost of Avoidance Alternative 6 estimated to range from approximately $420 to $770 million dollars. The cost estimates of the other alternatives considered in the planning process are included in Table 2-3 of the EIR/EIS. In addition, annual maintenance costs for tunnels are high and can cost as much as $750,000 per mile because of the need for security cameras, continuous lighting, ventilation systems, drainage features and finish materials. Therefore, it is estimated that maintenance for this alternative could be as much as $125,000 to $175,000 annually, which is 5 to 7 times more than the cost of maintenance for a standard road configuration.

v. It causes other unique problems or unusual factors

Due to complex excavation to construct the tunnels into the hillside and the amount of material to be removed Avoidance Alternative 6 could take as long as 5 years to implement. Table 2-3 of the EIR/EIS provides a comparison of the durations estimated for the preliminary alternatives considered in the planning process. As indicated in Table 2-3 of the EIR/EIS, Alternative 2b is estimated to only take 3 years and Alternative 4 is estimated to take 3.5 years..

vi. It involves multiple factors listed above that while individually minor, cumulatively causes unique problems of extraordinary magnitude

This factor is not applicable (NA).

In summary, Avoidance Alternative 6 was determined to be not feasible and prudent as it would not address the project's purpose and need (prudence standard i); would result in substantial safety issues (prudence standard ii); cost factors of extraordinary magnitude (prudence standard iv); and other unique problems (extensive schedule delays) (prudence standard v).

In consideration of these findings, there is no feasible and prudent avoidance alternative to the use of Section 4(f) properties.

Table 5-1: Application of Prudence Standards to Potential Avoidance Alternatives (Section 774.17)

Prudence Standards	No-Build Alternative	Avoidance Alternative 6
Prudence Standard i: Compromises the project so that it is unreasonable given the purpose and need	X	X
Prudence Standard ii: Results in unacceptable safety or operational problems	X	X
Prudence Standard iii: Causes: Severe social, economic, environmental, community, or minority/low income impacts		NA
Prudence Standard iv: Results in additional construction, maintenance, or operational costs of extraordinary magnitude		X
Prudence Standard v: Causes other unique problems or unusual factors		X
Prudence Standard vi: Involves multiple factors that may cause cumulative impacts or impacts of extraordinary magnitude		NA

6.0 MEASURES TO MINIMIZE HARM

6.1 Alternative Development Process

Measures to minimize harm were part of the planning and development process. In particular, historic Section 4(f) features were identified at the start of the process and were consider throughout the planning and design development phases while exploring alternatives. A range of alternatives developed and discussed in the PSR was focused on reconstruction of the ramps on the east side of the YBI tunnel. Nonviable alternatives considered reconstructing the eastbound off-ramp, but it was deemed infeasible due to the mandatory closure of the SFOBB, geometric challenges, effects on land use, excessive cost and safety concerns. The ramps west of the YBI tunnel have not been considered for reconstruction because the space available is insufficient to provide enough room for the ramps to be designed and reconstructed to meet current geometric standards. Table 2-3 in the EIR/EIS presents the range of alternatives that were developed and screened through the planning process.

6.2 Alternative Features That Minimize Harm

The constraints associated with the development of project alternatives in accordance with the purpose and need limited the opportunity to design alternatives that could completely avoid affecting Section 4(f) resources. The range of alternatives were developed to try to avoid or minimize impacts to Section 4(f) resources while providing feasible concepts that responded to the project's requirements. Additional minimization efforts involved the aesthetics of the designs. The design elements for the proposed project were refined so that they contextually match the rhythm and style of the new SFOBB in order to help integrate the structure and improve the appearance of the visual environment.

6.3 Measures to Minimize Effects to Historic Properties

In order to mitigate the adverse effect of the build alternatives on the historic properties, a draft MOA has been developed working closely with SHPO and other key agencies. The MOA stipulates various activities that will be conducted to address adverse effects the build alternatives would have on Section 4(f) resources. Mitigation measures have been developed through consultation with the SHPO, the USCG, the SFCTA, and Caltrans, and with input from the Navy, City and County of San Francisco, and historic preservation organizations. It should be noted that Native American tribes were invited to participate in the Section 106 process, but and chose not to participate. The executed MOA will stipulate the commitments that the signatories have made to mitigate the proposed project's potential effects on historic properties including historic vibration studies, historic reports and condition assessments, cultural landscape protection and restoration plans, and monitoring and security during construction. Public materials shall be developed such as brochures, a photo history record book or displays that convey the history of the setting.

The mitigation measures to be implemented for this project add to and compliment both previous and on-going mitigation measures being undertaken as part of the East Span project. Caltrans and SFCTA will carry out mitigation commitments within the APE are protected and monitored before and during construction.

6.3.1 Senior Officers' Quarters Historic District and Quarters 1/Nimitz House

Alternative 2b: Alternative 2b would result in a permanent Section 4(f) use of the Senior Officers' Quarters Historic District. It would place permanent columns and support structures within the boundary of the district and in landscaped areas that contribute to the significance of the property. It is estimated that 0.089 hectare (0.22 acres) of the property would be permanently incorporated into the transportation facility. This land includes the footprint of both the column and footprint of the off-ramp structure above the historic district. This 0.089 hectare (0.22 acres) will become state-owned (Caltrans) right-of-way. Alternative 2b would also cause impacts to the resource related to setting and views.

Alternative 2b would also result in a permanent Section 4(f) use of Quarters 1/Nimitz House. The resource is individually significant, and also a contributing resource within the Senior Officers' Quarters Historic District, and included within that boundary. In relation to the project, the southern boundary of Quarters 1/Nimitz House follows the boundary of the district, along the SFOBB. The land from within the boundary of this resource is currently owned by the Navy and is in the process of being transferred to the City of San Francisco. Property rights for this land will then be transferred to Caltrans in fee title.

Measures to minimize harm include:

- Caltrans and the SFCTA will implement protective measures including, but not limited to: fencing, scaffolding and debris netting of the limits of work to prevent damage; conduct vibration studies prior to the commencement of any construction activity; develop construction procedures to avoid and minimize vibration impacts; and undertaking vibration monitoring during construction to ensure protection of the resource; preparation of a Historic Structures Reports (HSRs) and conditions assessment; and stabilization, monitoring, and security procedures for the historic structures and cultural landscape elements during construction.

- Caltrans and the SFCTA will repair any damage caused by the project in accordance with the Secretary of the Interior's Standards for Rehabilitation; and

- Caltrans and the SFCTA will restore the grounds, including but not limited to placement of new sod in grass areas, replacement of shrubbery and trees, regrading and re-vegetation of disturbed slopes, and repair or replacement of damaged paving, sidewalks, and curbs.

Alternative 4: Alternative 4 would result in a permanent Section 4(f) use of the Senior Officer's Quarters Historic District. It is estimated that 0.089 hectare (0.22 acres) of the property, the land directly beneath the ramps, would be permanently incorporated into the transportation facility. Two columns would also be constructed within the boundary of the resource. In addition, Alternative 4 would introduce new visual elements that would substantially impair the property. The introduction of numerous new piers supporting the ramps associated with this alternative creates a dominant visual element that changes the viewshed. The numerous piers obstruct the view from the resource to the east and southeast. The piers would also obstruct the view of the resource.

Alternative 4 would also result in a permanent Section 4(f) use of Quarters 1/Nimitz House. The land from within the boundary of this resource is currently owned by the Navy and is in the process of being transferred to the City of San Francisco. Property rights for this land will then be transferred to Caltrans in fee title. This land would become state-owned (Caltrans) right-of-

way. Alternative 4 would introduce new visual elements that would substantially impact the property.

Measures to minimize harm include:

- Caltrans and the SFCTA will develop and implement protective measures including, but not limited to: fencing, scaffolding and debris netting of the limits of work to prevent damage; conduct vibration studies prior to the commencement of any construction activity; develop construction procedures to avoid and minimize vibration impacts; and undertaking vibration monitoring during construction to ensure protection of the resource; preparation of a Historic Structures Reports (HSRs) and conditions assessment; and stabilization, monitoring, and security procedures for the historic structures and cultural landscape elements during construction.

- Caltrans and the SFCTA will repair any damage caused by the project in accordance with the Secretary of the Interior's Standards for Rehabilitation;

- Caltrans and the SFCTA will restore the grounds, including but not limited to placement of new sod in grass areas, replacement of shrubbery and trees, regrading and re-vegetation of disturbed slopes, and repair or replacement of damaged paving, sidewalks, and curbs; and

- Caltrans and the SFCTA will use form liners and/or context sensitive solutions in the design of the piers, as well as screen plantings and landscape designs to minimize visual impacts.

6.3.2 Quarters 10 (and Building 267)

Alternative 2b: Alternative 2b would result in a permanent Section 4(f) use of Quarters 10 (and Building 267). Quarters 10 and its associated garage (Building 267) would be removed to accommodate the construction of both on- and off-ramps and an abutment along the south side of Macalla Road. The buildings would be moved to an appropriate site on YBI in the vicinity of its current location. Approximately 0.182 hectare (0.450 acres) would be incorporated into the transportation facility. The land from within the boundary of this resource is currently owned by the Navy and is in the process of being transferred to the City of San Francisco. Property rights for this land will then be transferred to Caltrans in fee title.

Measures to minimize harm include:

- Caltrans and SFCTA will document Quarters 10 (and Building 267) to Historic American Building Survey (HABS) standards prior to relocation;

- Caltrans and the SFCTA will develop a relocation plan that takes into account the site layout as well as the potential reuse of the buildings;

- Caltrans and the SFCTA will consult with SHPO and other interested parties to obtain input on the plan;

- Caltrans and the SFCTA will ensure that the buildings will be protected, secured, and stabilized before, during and after the relocation;

- Caltrans and the SFCTA will ensure the buildings are relocated to an appropriate nearby site;

- Caltrans and the SFCTA will repair any damage caused by the project in accordance with the Secretary of the Interior's Standards for Rehabilitation;

- If the relocation does not occur prior to the initiation of construction, Caltrans and the SFCTA will ensure that vibration monitoring protocols are established, and methods of construction in the vicinity of the resource adapted to minimize vibration impacts.

Alternative 4: Alternative 4 would not result in a Section 4(f) use of Quarters 10 (and Building 267). The potential impacts from vibration during construction do not rise to the level of "substantial impairment" and can be minimized and mitigated by Caltrans utilizing standard vibration monitoring protocols and adapting construction methods to minimize vibration impacts.

6.4 Alternatives Considered and Rejected

The planning process for identifying, designing and screening alternatives began with the study of many alternatives from a conceptual feasibility perspective. The alternatives were evaluated for their ability to address the project's purpose and need. The development of these alternatives and an explanation for their dismissal can be found in Chapter 2 of the YBI Ramp Improvement Project EIR/EIS.

Throughout the planning process many avoidance configurations were explored in order to attempt to avoid Section 4(f) resources, consisting of listed historic properties in close proximity to the ramp project locations. This required consideration of alternatives that would include creative ramp geometric solutions in order to maintain distance from the 4(f) resources.

Based on the evaluation undertaken in the PSR, and as presented in Chapter 2 of the YBI Ramp Improvement Project EIR/EIS, the following alternatives were withdrawn from further study, with the exception of Avoidance Alternative 6. Alternative 6 described in this section represent the Avoidance Alternative that was created in an attempt to avoid the three known 4(f) resources, the Senior Officers' Historic District, Quarters 1/Nimitz House and Quarters 10 (including building 267). Avoidance Alternative 6 proposes to construct both off and on-ramps as depicted in Attachment D, and would be positioned inside a tunnel system mined through this portion of Yerba Buena Island. The tunnel for the westbound off-ramp exit ramp would be approximately 500 feet long and the tunnel for the entrance westbound on-ramp would be approximately 420 feet long. Unfortunately, this Avoidance Alternatives is not feasible and prudent because it introduces additional safety and operational concerns that would result in additional environmental impacts.

6.4.1 TSM and TDM

In addition to the build alternatives, transportation projects often explore alternatives to further increase operational efficiency to the existing road network and configuration or manage the demand. These techniques can be cost effective and environmentally friendly when they enable efficient use of available resources and when safety is not a factor. The goal is still the same to reduce congestion and enable existing and future capacity to be accommodated through the implementation of the Project.

The two most common methods to manage the demand include Transportation Systems Management (TSM) and Transportation Demand and Management (TDM) techniques. TSM techniques support making existing transportation systems operate in a more efficient manner. Typical techniques include improved traveler information, signal system coordination and improved response time to incidents. TDM techniques support a reduction in the number of vehicles using the transportation system. Typical techniques may include fringe parking with shuttle busses, encouraging transit oriented development, pricing strategies for parking, and ridesharing. Improvement of pedestrian and bicycle access, and transit services are also demand management techniques. Neither TSM nor TDM techniques work as a stand-alone alternative. They would not entirely solve the problem that the ramps do not meet current standards, nor resolve safety and operation concerns related to the ramp itself.

6.4.2 Nonviable Build Alternatives

A summary of the Alternatives considered and eliminated are included in the Alternatives Screening Analysis Table 2-3 in the EIR/EIS which is a matrix that was used to guide the decision process for selecting the Alternatives, 2b and 4, which were carried through the EIR/EIS analysis. A drawing of each nonviable alternative is provided in Attachment D of this document. The future proposed land use for the TI and YBI Redevelopment and existing historic resources are included on the figures. The screening levels included a review of the Purpose and Need, engineering considerations, environmental considerations, stakeholder considerations, construction considerations, right-of-way impacts and feasible financial cost. A brief summary of each alternative is included in the Table 2-3 of the EIR/EIS along with a color coded ranking of green=low, yellow=medium and red=high. Low in this case represents less potential for an environment effect and High means a greater potential for an environmental effect. A synopsis of the non-viable alternatives and some of the primary reasons they were eliminated is described below.

Alternative 1 was removed from consideration for the following reasons:

Engineering: The geometry of the ramps requires reduced stopping sight distance and design speeds. The access and circulation contains potentially confusing situations that could create driver confusion resulting in potential wrong-way movements.

Environmental: The off-ramps would adversely affect the Quarters 1/ Nimitz House and the Senior Officers' Quarters Historic District. The aerial structure of the ramp would be located within the San Francisco Bay Conservation and Development Commission's (BCDC's) 30.5 meter (100-foot) shoreline band.

Construction: Operational impacts would include rerouting access, reduction in lanes and road closures, causing delays. Offshore access may be required to construct in soft soils at the San Francisco Bay edge.

Right-of-Way and Construction Cost: This alternative requires the largest acquisition of USCG property to construct the westbound on-ramp. The cost is nearly double that of Alternative 2b.

Alternative 1A – Similar to Alternative 1, this alternative was removed for the following reasons:

Engineering: The geometry of the ramps requires reduced stopping sight distance and design speeds. The access and circulation contains potentially confusing situations that could result in driver confusion resulting in potential wrong-way movements.

Environmental: The east bound off-ramp would adversely affect the archaeologically sensitive area underneath the future SFOBB. The alternative would adversely affect the Quarters 1/ Nimitz House and the Senior Officers' Quarters Historic District, A portion of the ramp would be located within the BCDC's 30.5 meter (100-foot) shoreline band. *Construction:* Operational impacts would include rerouting access, reduction in lanes and road closures, causing delays. Offshore access may be required to construct in soft soils at the San Francisco Bay edge.

Right-of-Way and Construction Cost: This alternative requires the largest acquisition of USCG property to construct the westbound on-ramp. The cost is more than double that of Alternative 2b.

Alternative 2 – This alternative is similar to Alternative 1A and was removed for the following reasons:

Engineering: The geometry of the ramps requires reduced stopping sight distance and design speeds than Alternatives 1 and 1A. The access and circulation contains potentially confusing situations that could result in driver confusion resulting in potential wrong-way movements.

Environmental: The aerial structure of the ramps would adversely affect Quarters 1/Nimitz House and the Senior Officers' Quarters Historic District, and Quarters 10 (and Building 267).Land would be acquired from within the resource boundaries, creating a Section 4(f) use. Quarters 10 (and Building 267) would be removed

Construction: Operational impacts would include rerouting access, reduction in lanes and road closures, causing delays. Constructing the alternative through the historic resources requires complex phasing and staging.

Right-of-Way and Construction Cost: This alternative requires additional right-of-way north of the existing SFOBB mainline and aerial easement for eastbound off-ramp. The cost is nearly double that of Alternative 2b.

Alternative 2A – This alternative is similar to Alternative 2 and was eliminated for the following reasons:

Engineering: The geometry of the ramps requires reduced stopping sight distance and design speeds than Alternatives 1 and 1A. The eastbound hook ramp has a short, nonstandard length which has a higher potential for accidents.

Environmental: The aerial structure of the ramps would adversely affect Quarters 1/Nimitz House and the Senior Officers' Quarters Historic District, and Quarters 10 (and Building 267Land would be acquired from within the resource boundaries, creating a Section 4(f) use. Quarters 10 (and Building 267) would be removed

Construction: Operational impacts would include rerouting access, reduction in lanes and road closures, causing delays. Constructing the alternative through the historic resources requires complex phasing and staging.

Right-of-Way and Construction Cost: This alternative requires additional right-of-way north of the existing SFOBB mainline and aerial easement for eastbound off-ramp. The cost is nearly double that of Alternative 2b.

Alternative 3 – Similar to Alternative 2, this alternative was eliminated for the following reasons:

Engineering: The geometry of the ramps requires reduced stopping sight distance and design speeds than Alternatives 1 and 1A. The access and circulation contains decrease radius curves that could create driver difficulty resulting in potential for accidents. Longer elevated ramps require longer structures which are more difficult to design and construct.

Environmental: The aerial structure of the ramps passes through the Senior Officers' Quarters Historic District, and above Quarters 1/Nimitz House property. The eastbound on-ramp would encroach into an archaeologically sensitive area. The westbound ramps pass over San Francisco Bay with more potential to adversely impact biological resources.

Construction: Operational impacts would include rerouting access, reduction in lanes and road closures, causing delays. Constructing over the San Francisco Bay, the 30.5 meter (100-foot) shoreline band and through the historic resources requires very complex phasing and staging.

Right-of-Way and Construction Cost: This alternative requires additional right-of-way north of the existing SFOBB mainline and aerial easement for off-ramp. The cost is nearly double that of Alternative 2b.

Alternative 5 –This alternative was eliminated for the following reasons:

Engineering: The elimination of the tunnel and retention of a double deck viaduct would require additional seismic tie in considerations. Widening of the tunnel and the relocation of structures require excavating and daylighting the existing YBI tunnel, a historic resource. The bridge connecting Hillcrest Dr. to TI located on east side of YBI would have to be replaced.

Environmental: Modification of hillside and alteration to the historic tunnel would cause an adverse effect to this Section 4(f) resource. In addition, it would require an aerial easement over the Senior Officers' Quarters Historic District and Quarters 1/Nimitz House. Challenging visual impacts to tie into the bridge design.

Construction: The construction period associated with this alternative would take longer than other alternatives due to the complex tie into the bridge. Major delays would be expected due to the substantial amount of excavation/earthwork and alterations to the tunnel.

Right-of-Way and Construction Cost: This alternative requires additional right-of-way north of the existing SFOBB mainline and an aerial easement for the off-ramp. The cost is nearly 14 times as much as Alternative 2b. In addition, the cost is estimated at $735 million, which is substantially higher than the estimated costs for the other build alternatives.

Alternative 6 – Avoidance (**EIR/EIS Figure 2-14**) This Alternative was eliminated for the following reasons:

Engineering: This alternative would require construction of a westbound on and off-ramps that would dramatically alter the hillside and effect future development proposed by the TI and YBI Redevelopment Project. The westbound off-ramp would start its descent after passing over the Historic District boundary and would require a steep grade ranging from 10-16 % which of over standard maximum of 8 %. This would require a lower design speed down to 24.1 to 32.2 km/h (15-20 mph) on the approach to Macalla Road, due to a non-standard deceleration length of 61 meters (200 feet). The divergence angle for the ramp would not follow 504.2B of the HDM criteria and would be 1.5 times larger than the standard. The westbound on ramp has an S-

curve which is an undesirable geometry with a reduced length and tight turning radius. The horizontal curve radius requires slowing to 24.1 to 32.2 km/h (15-20 mph) maximum speed and there would be only a short merge onto the main lanes of the bridge. The reduction in length to less than 30% of the standard would require drivers to merge quickly onto the mainline freeway, similar to the existing ramp condition. The available space only allows for a transition ratio of 10:1, in contrast to the design standard minimum of a 50:1 ratio. Macalla Road would require two full lanes, the introduction of a traffic signal, as well as the removal of at least one building.

Environmental: The aerial structure of the westbound -ramp would start right after passing above the historic district and would therefore not impact any 4(f) resource. This alternative proposes westbound on and off-ramps that would divide the site, require removal of existing buildings and limit proposed land uses planned for future residential development. Potential visual impacts would also result from the tie-in connection with the design of the bridge structure.

Construction: Construction period would take longer than other alternatives due to complex excavation, amount of material and challenging construction techniques which would cause major delays to the local road network during the construction period.

Right-of-Way and Construction Cost: Cost is nearly thirteen times greater than Alternative 2b and is not viable due to the impacts described above and cost is estimated to be $770 million dollars. The cost estimate comparison to other alternatives can be referenced in Table 2-3 of the EIR/EIS.

7.0 COORDINATION

7.1 Public Involvement Program Overview

A public involvement program has been developed to guide this project through the comprehensive public information and outreach process. The public involvement program provides a variety of communication methods to educate the public on the current scope of the study, including impacts and benefits. Thorough information will be provided to educate the public about the study, and at targeted project milestones the study team will solicit input and feedback from the public and agencies as to their specific needs, issues, concerns, and recommendations. By educating through a variety of informative communication tools, the community and agencies will be well-equipped to provide meaningful public input.

Key elements to the public involvement plan include:

- Educating the public and agencies through effective communication tools
- Providing multiple opportunities for input on study alternatives
- Managing and organizing comments received, and presenting input in a concise manner to decision makers

Additional details of this public involvement process undertaken for the YBI Ramps Improvement Project can be found in Chapter 5 of the EIR/EIS.

7.1.1 Agency Early Consultation

The scoping process was launched with the publication of the NEPA NOI and CEQA Notice of Preparation (NOP). The NOI was published in the Federal Register on September 8, 2008, and the NOP was published on September 5, 2008 in local newspapers. The NOP was circulated to stakeholder agencies through the California State Clearinghouse on September 5, 2008, and to additional agencies, organizations, and the general public through direct mail. The NOP was advertised in local newspapers (San Francisco Chronicle, Contra Costa Times, and Oakland Tribune) on September 5, 2008, along with information about the scoping meeting and scoping comment period.

7.1.2 Release of the Draft EIR/EIS

The release of the Draft EIS/EIS is an opportunity for public involvement and education. With the release of the document, the environmental impacts, including visual, historic, and cultural resources, will be disclosed. The public review period of the Draft EIR/EIS will allow the public, agencies, and organizations to provide comments.

7.2 Historic Resources

There have been substantial coordination efforts during the course of this project related to historic resources and these efforts remain ongoing. To date, efforts to involve the public and inform them of the proposed project and potential environmental impacts have included:

- San Francisco County Transportation Authority (SFCTA) issued a Notice of Preparation (NOP) on September 5, 2008.

- Caltrans issued a Notice of Intent (NOI) to prepare a joint Environmental Impact Statement/Environmental Impact Report (EIS/EIR) on September 5, 2008.

- A Public Scoping meeting was held at the Port of San Francisco office, Bayside Conference Room, Pier 1, San Francisco, on September 24, 2008.

- San Francisco Bay Conservation and Development Commission (BCDC) – Design Review Board held a public hearing on April 6, 2008. SFCTA gave an informational presentation on the project and its progress.

- During preparation of the HRER, letters were sent out on December 11, 2008 informing area planning agencies, local governments, historical societies, museums, and other interested parties of the proposed project. The following organizations received the letter: San Francisco Architectural Heritage; San Francisco Landmark Preservation Advisory Board; Preservation Coordinator, San Francisco Planning Department; San Francisco History Association; San Francisco Museum and Historical Society; California Historical Society; San Francisco Beautiful; California Heritage Council; California Preservation Foundation; National Trust for Historic Preservation Western Office; National Park Service, Pacific West Region Office; Oakland Heritage Alliance; Oakland Landmarks Preservation Advisory Board; Oakland Cultural Heritage Survey; Alameda County Historical Society; Alameda County Parks, Recreation and Historical Commission.

- The Draft Historic Property Survey Report (HPSR), including Historical Resources Evaluation Report (HRER) and updated DPR523 forms, was submitted to Caltrans in March 2009. Final documents were submitted on September 23, 2009 and approved by Caltrans on October 22, 2009.

- The Final Finding of Effect Report (FOE) was approved by Caltrans in October 2009.

- On November 4, 2009, Caltrans and SFCTA issued a letter to all interested parties to inform them of the submittal of the FOE to the State Office of Historic Preservation (SHPO), and the conclusions of adverse effect, complying with Section 106.

- On February 8, 2010, the SHPO concurred with the findings of the Federal Highway Administration (FHWA) as presented in the FOE that the project would have an Adverse Effect on cultural resources.

Caltrans is continuing consultation with SHPO following 36 CFR 800.6, to arrive at a resolution of the adverse effects. Caltrans, SFCTA, and SHPO, are developing a draft MOA pursuant to Section 106 of the NHPA, to memorialize measures that would mitigate the adverse effects this undertaking would have on the historic properties. Caltrans sent a letter to interested parties in November 2009 notifying interested individuals and organizations that the project would have an adverse effect on historic resources and to solicit their input. No responses were received from that mailing. The executed MOA will stipulate commitments that the signatories have made.

Caltrans has been coordinating with the U.S. Navy throughout the Draft EIR/EIS process.

8.0 LEAST HARM ANALYSIS AND CONCLUDING STATEMENT

As presented in Section 5.0, there are no feasible and prudent avoidance alternatives. Because there are no feasible and prudent avoidance alternatives to the project, during the evaluation of the build alternatives several factors will be considered so as to identify the alternative that causes the least overall harm in light of the Section 4(f) preservation purposes. The least overall harm is determined by balancing the following factors:

- The ability to mitigate adverse impacts to each Section 4(f) property;
- The relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection;
- The relative significance of each Section 4(f) property;
- The views of the officials with jurisdiction over each Section 4(f) property;
- The degree to which each alternative meets the purpose and need for the project;
- After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f); and
- Substantial differences in costs among the alternatives.

This analysis will incorporate input from the agencies and members of the public during circulation of the Draft EIR/EIS, as well as from the outcome of the Section 106 consultation process and the resulting MOA. The conclusions of this analysis will be presented in the Final Section 4(f) Evaluation that will be circulated with the Final EIR/EIS.

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9.0 OTHER PARK, RECREATIONAL FACILITIES, AND HISTORIC PROPERTIES EVALUATED RELATIVE TO THE REQUIREMENTS OF SECTION 4(f)

This section of the document discusses parks, recreational facilities, and historic properties found within or adjacent to the project area that do not trigger Section 4(f) protection either because: 1) they are not publicly owned, 2) they are not open to the public, 3) they are not eligible historic properties, 4) the project does not permanently use the property and does not hinder the preservation of the property, or 5) the proximity impacts do not result in constructive use.

The following properties discussed below were identified in the project vicinity:

- Existing or Proposed Park and Recreational Facilities Evaluated
    - Proposed Transbay segment of the Bay Trail
- Other Historic Sites Evaluated
    - Quarters 8
    - San Francisco-Oakland Bay Bridge and Associated Contributing Elements
    - Prehistoric Component of Archaeological Site CA-SFr-04/H

The discussion of each property in this section documents:

- Why the property is not protected by the provisions of Section 4(f) or
- If it is protected by Section 4(f), why none of the alternatives under consideration would cause a Section 4(f) use by:
    - permanently incorporating land into the project,
    - temporary occupancy of land that is adverse to the preservationist purposes of Section 4(f), or
    - constructive use of land from the property.

9.1 Public Park and Recreation Facilities

9.1.1 Proposed Transbay Segment of San Francisco Bay Trail

A proposed transbay segment of the San Francisco Bay Trail is located near the project area. In 1989, the Association of Bay Area Governments (ABAG) prepared the Bay Trail Plan. This plan established policies and proposed alignments for a bicycle and pedestrian trail system around the perimeter of San Francisco and San Pablo Bays. It provides a recommended route for a continuous trail and policies to guide the selection of alignments and trail design and implementation. ABAG provides planning input but does not fund Bay Trail segments. Individual projects to implement segments of the Bay Trail are funded by other agencies and organizations. Such projects are subject to independent environmental review as well as applicable permitting from San Francisco Bay Conservation Development Commission (BCDC) or other agencies that may have jurisdiction.

The Bay Trail Plan designated many existing trails as segments of the Bay Trail, and it proposed new trail segments that would make the Bay Trail continuous. It did not specify the exact locations, features, and connections of future trail segments. Existing segments of the Bay Trail, as recreational trails on publicly-owned land or easements, are Section 4(f) properties.

ABAG's Bay Trail Plan proposed that segments of the Bay Trail cross San Francisco Bay via all transbay bridges, including the SFOBB. There is currently no Bay Trail crossing of the Bay via the SFOBB. The plans for the East Span Project of the SFOBB call for the inclusion of a bicycle/pedestrian path. That project is currently under construction.

Currently, no portion of the Bay Trail exists in the proposed YBI Ramps Improvement Project area, nor is it included in this project. The YBI Ramps Improvement Project does not include the installation of a shared pedestrian/bike lane and a contra-flow bike lane on Macalla Road, but the project does include widening and construction of sidewalks along Macalla Road that could accommodate those types of facilities in the future.

The shared pedestrian/bike path coming off the SFOBB on the eastbound on-ramp is part of Caltrans' YBITS2 project and not part of the YBI Ramps Improvement Project. That pedestrian/bike path runs around South Gate Road, underneath the SFOBB, and terminates at Macalla Road. If the pedestrian/bike path is constructed on YBI, it may ultimately be designated as part of the Bay Trail at some point in the future. There are no parks, paths, trails, or bike lanes that are part of the YBI Ramps Improvement Project. Therefore it has been determined that no impacts on any of these resources would take place, or require Section 4(f) protection, and the provisions of 4(f) are not triggered.

9.1.2 Other Potential Recreational Facilities

Recreation and open space uses are located on the adjacent Treasure Island and include water-related recreation and boating facilities; indoor and outdoor recreation facilities; and a variety of walking, bike trails, and picnic areas (City and County of San Francisco 2006:3-5). Water-related recreational facilities are concentrated around Clipper Cove, a public marina often utilized as a sailing venue for events such as regattas for dinghies and small keel boats (Treasure Island Sailing Center 2009). None of these features are adjacent to the project site and the terrain provides a separation between these areas. Some of the features including open space are identified on **Figure 11,** included in **Attachment A.** Other boating facilities include two recreational boat ramps (Piers 11 and 12) on the southern edge of TI and a fishing pier (Pier 23) on the west side of TI (City and County of San Francisco 2006:3-5). Outdoor recreation facilities include baseball fields, a pitching green, miniature golf course, two tennis courts, basketball courts, and two playgrounds concentrated in the interior of TI. Open space areas include four parks and picnic areas, and walking and bike trails. The dike around TI is also used as a jogging trail (City and County of San Francisco 2006:3-5). Certain appropriately marked areas of the islands are considered off-limits to the public due to SFOBB-related construction and ongoing environmental remediation (City and County of San Francisco 2009d).[2] The YBI Ramps Improvement Project would not impact these recreational areas.

[2] The Navy is in the process of completing a soil remediation project in an effort to clean up contaminated soils in the area and dispose of hazardous substances. The remedial action plan is in its final stages and is expected to be completed in 2009. The project is referred to as the *Action Memorandum / Interim Remedial Action Plan: Non-Time Critical Removal Action for Solid Waste Disposal Areas, Installation Restoration Site 12, Old Bunker Area, Naval Station Treasure Island, San Francisco, California* (AM/IRAP) (Sullivan 2009).

It should be noted that although there is open space within the APE for this project, there are no formally approved publicly accessible recreational facilities. As discussed in Chapter 3.2 of the YBI Ramp Improvement Project EIR/EIS, there are no parks or recreational facilities within the APE that would qualify for Section 4(f) protection. None of the buildings within the Officers' Quarters Historic District are open to the public for recreational use. Quarters 1/Nimitz House is owned by the Navy and is not open to the public for recreational use. Quarters 10 (and Building 267) is also owned by the Navy and is not open to the public for recreational use. Based upon the review of nearby recreational uses the YBI Ramp Improvement Project will not have an impact on any resources that would require Section 4(f) protection, therefore the provisions of 4(f) are not triggered.

9.2 Historic Resources

In addition to the Senior Officers' Quarters Historic District, Quarters 1/Nimitz House, Quarters 10 (and Building 267), there are three other historic properties within the Area of Potential Effect as defined by the implementing regulations of the NHPA.

9.2.1 San Francisco Oakland Bay Bridge and Associated Contributing Elements

The San Francisco Oakland Bay Bridge (SFOBB) is a multi-component property listed in the NRHP and the CRHR. The resource was inventoried, evaluated, and documented as part of the SFOBB East Span Seismic Safety Project, and was listed in 2001. The YBI tunnel is a contributing component to this resource. The two project build alternatives, 2b and 4, would not result in a Section 4(f) use of this resource. No land would be permanently incorporated into the project, nor would any land be temporarily occupied by it. The build alternatives would not have a severe impact that substantially impairs the historic quality of the resource. The proposed project would not cause a constructive use of the SFOBB or the contributing tunnel because the proximity impacts would not substantially impair the protected activities, features, or attributes of the historic resource.

9.2.2 Quarters 8

Quarters 8, a three-story Mediterranean style residence built in 1905, was determined to be eligible for listing on the NRHP and the CRHR in 1998. The resource was inventoried, evaluated, and documented as part of the SFOBB East Span Seismic Safety Project. The two project build alternatives, 2b and 4, would not result in a Section 4(f) use of this resource. No land would be permanently incorporated into the project, nor would any land be temporarily occupied by it. The build alternatives would not have a severe impact that substantially impairs the historic quality of the resource. The proposed project would not cause a constructive use of Quarters 8 because the proximity impacts would not substantially impair the protected activities, features, or attributes of the historic resource.

9.2.3 Archaeological Site CA-SFr-04/H

Section 4(f) applies to all archaeological sites on, or eligible for, inclusion on the NRHP, except when the archaeological property is important chiefly because of what can be learned by data recovery and it has minimal value for preservation in place (23 CFR 774.13 (b)(1 and 2)). The archaeological site on YBI, CA-SFr-04/H, is potentially eligible for the NRHP listing under Criterion D, and since this site has yielded and may again yield human remains, the SHPO concluded that its potential significance may extend beyond Criterion D. Evaluation of the site

concluded that the site is important chiefly for the information it contains. It did not warrant preservation in place, therefore Section 4(f) does not apply to this archaeological site.

The two project build alternatives, 2b and 4, would not result in a Section 4(f) use of this resource. No land would be permanently incorporated into the project, nor would any land be temporarily occupied by it. The build alternatives would not have a severe impact that substantially impairs the historic quality of the resource. The proposed project would not cause a constructive use of the site because the proximity impacts would not substantially impair the protected activities, features, or attributes of the resource.

No project elements will impact the archaeological site, it does not warrant preservation in place, and it will be protected by an Environmentally Sensitive Area (ESA).

9.2.4 Conclusion

After review of parks, recreational facilities, and historic properties found within or adjacent to the project area it has been determined that the YBI Ramp Improvement Project will not have an impact on any of these resources that would require Section 4(f) protection, therefore the provisions of 4(f) are not triggered.

10.0 LETTERS AND OTHER CORRESPONDENCE

[Letters and correspondence to be provided in Final Section 4(f) Evaluation]

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11.0 REFERENCES CITED

California Office of Historic Preservation. “National Register of Historic Places Registration Form, San Francisco-Oakland Bay Bridge.” Prepared by John J. Mascitelli, March 1999, revised by Karen Oriegel and Sean Riley in August 1999.

Hice, E. and D. Schierling. “Historical Study of Yerba Buena Island, Treasure Island, and their Buildings,” Mare Island Naval Shipyard, Base Realignment and Closure, Revision 1. Prepared for Environmental Department, Naval Station. March 1996.

JRP Historical Consulting Services. “Cultural Resources Inventory and Evaluation Investigations: Yerba Buena Island and Treasure Island Naval Station Treasure Island, San Francisco, California.” Prepared for Engineering Field Activity West, Naval Facilities Engineering Command. March 1997.

JRP Historical Consulting Services. DPR 523 Form for Quarters 8. January 1997.

Webb, Toni
2009 Finding of Effect Report, Yerba Buena Island Ramps Improvement Project, San Francisco, California. Prepared for San Francisco County Transportation Authority.

Webb, Toni
2009 Historical Resources Evaluation Report, Yerba Buena Island Ramps Improvement Project, San Francisco, California. Prepared for the San Francisco County Transportation Authority.

As part of the environmental studies for this project, a number of Section 106 cultural resources documents have been prepared. These have included:

- Notice of Preparation (September 5, 2008)
- Notice of Intent (September 5, 2008)
- Public Scoping Meeting (September 24, 2008);
- Interested Parties Letter Distribution (December, 2008)
- Draft Historic Property Survey Report (Draft HPSR – March 2009)
- Final Historic Property Survey Report (September 2009)
- Draft Finding of Effect Report (May 2009)
- Final Finding of Effect Report (October 2009)
- Interested Parties Letter Distribution (November 2009)

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ATTACHMENT A

(Figures 1-11)

Figure 1: Regional Location

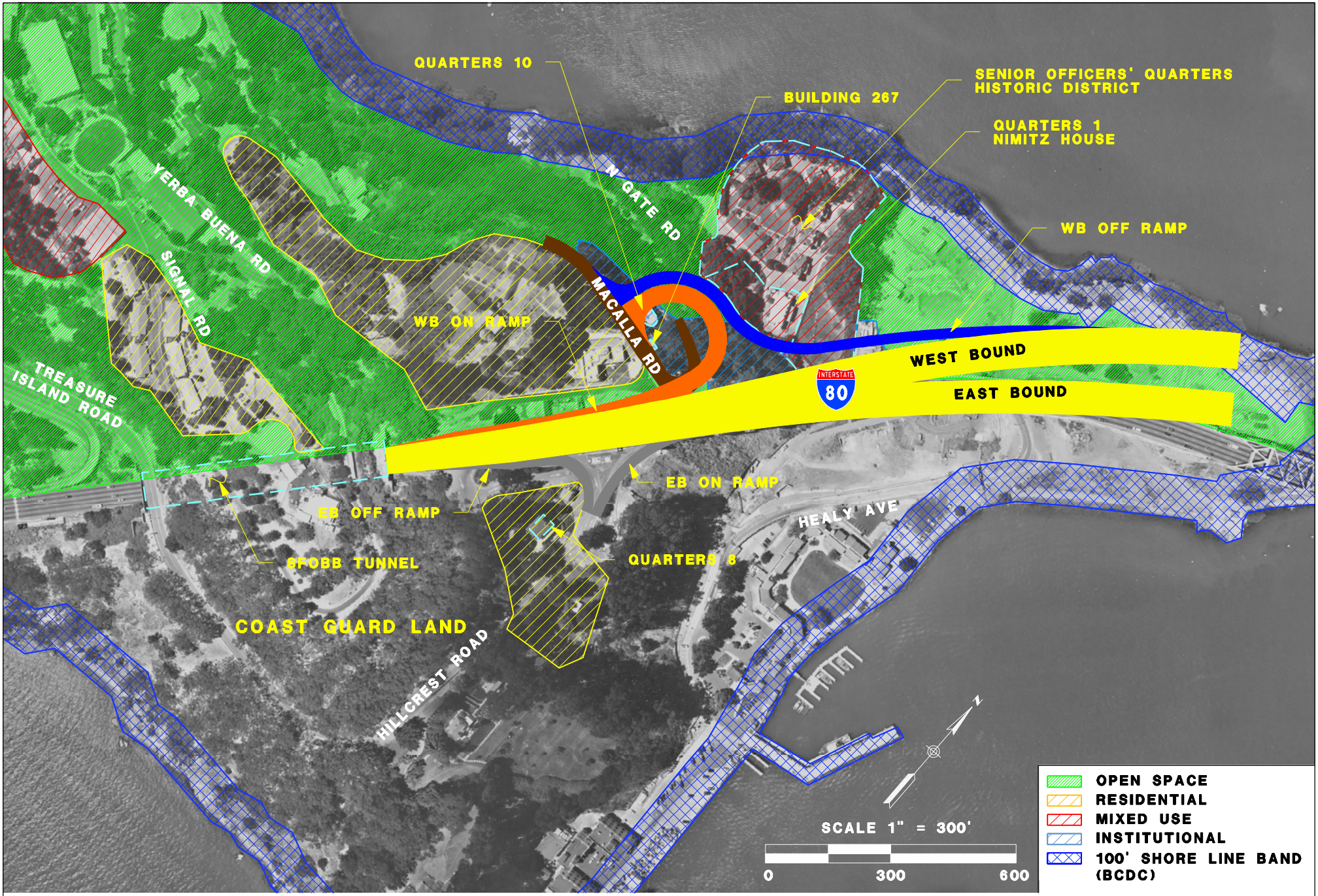
Yerba Buena Island
Ramps Improvement Project

06/09

Figure 2: Project Vicinity

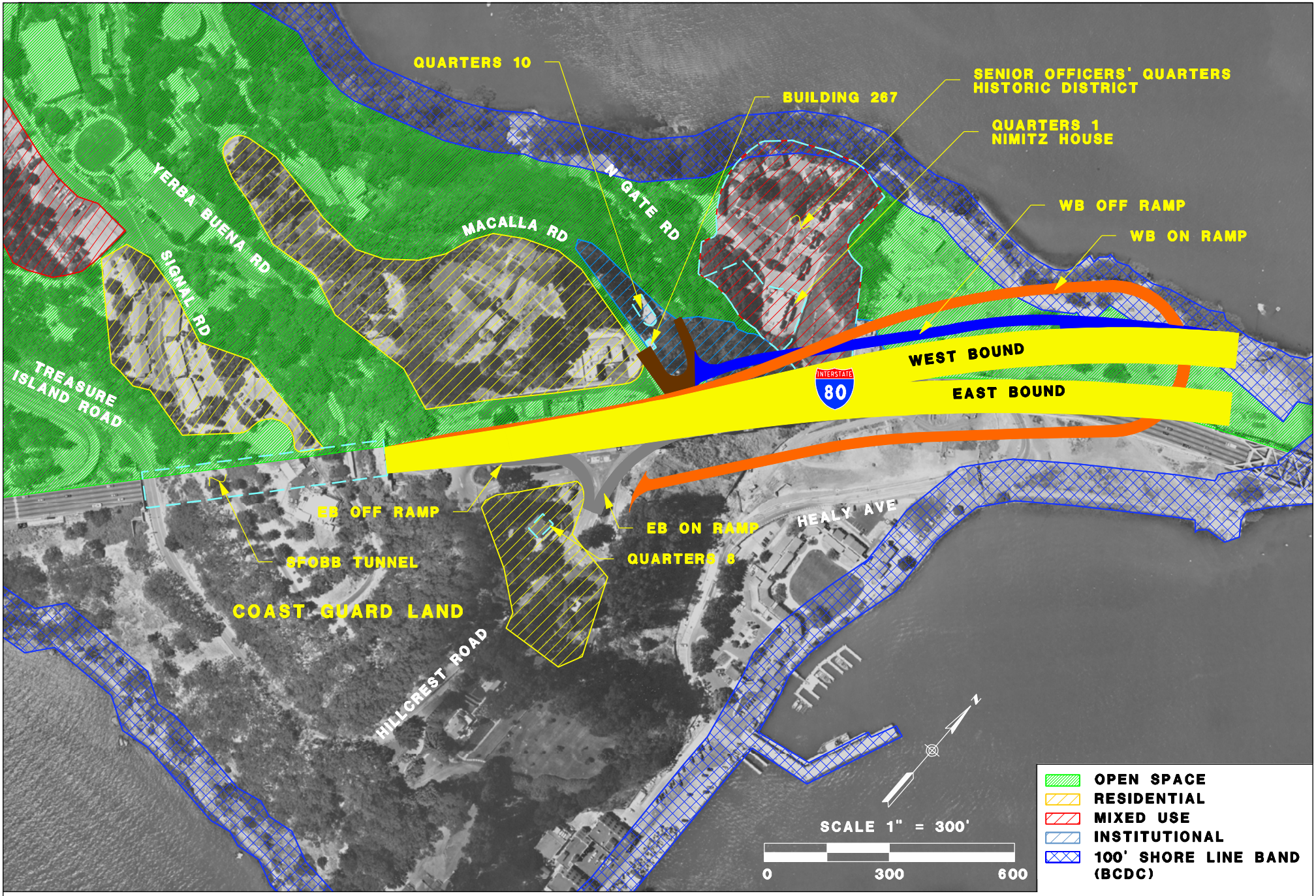
Yerba Buena Island Ramps Project

06/09



Source: AECOM Transportation 2010

Figure 3: Alternative 2b and Section 4(f) Properties



Source: AECOM Transportation 2010

Figure 4: Alternative 4 and Section 4(f) Properties

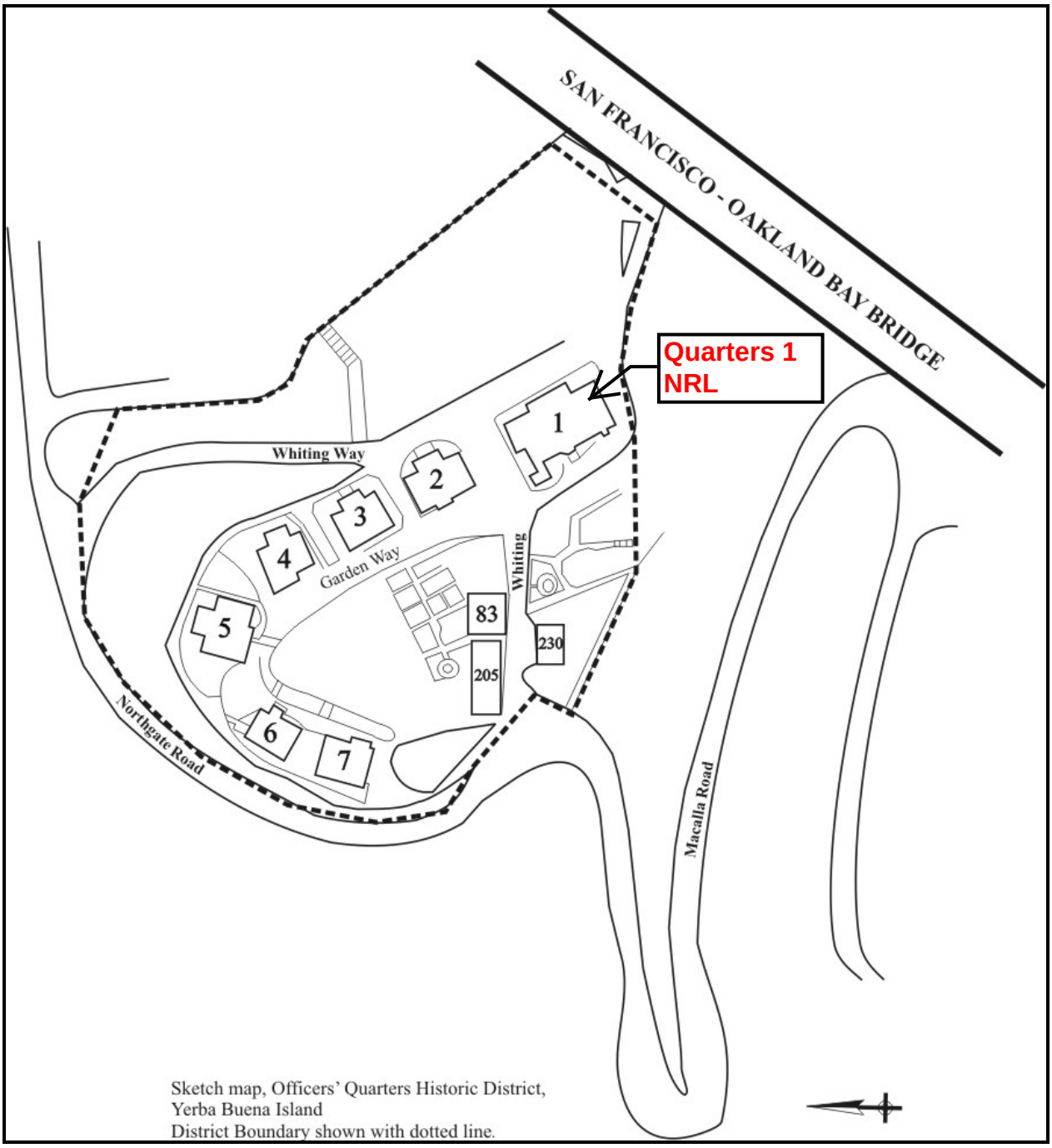


Figure 5: Location of Senior Officers' Quarters Historic District and Quarters 1 (Individually Listed on the National Register of Historic Places).

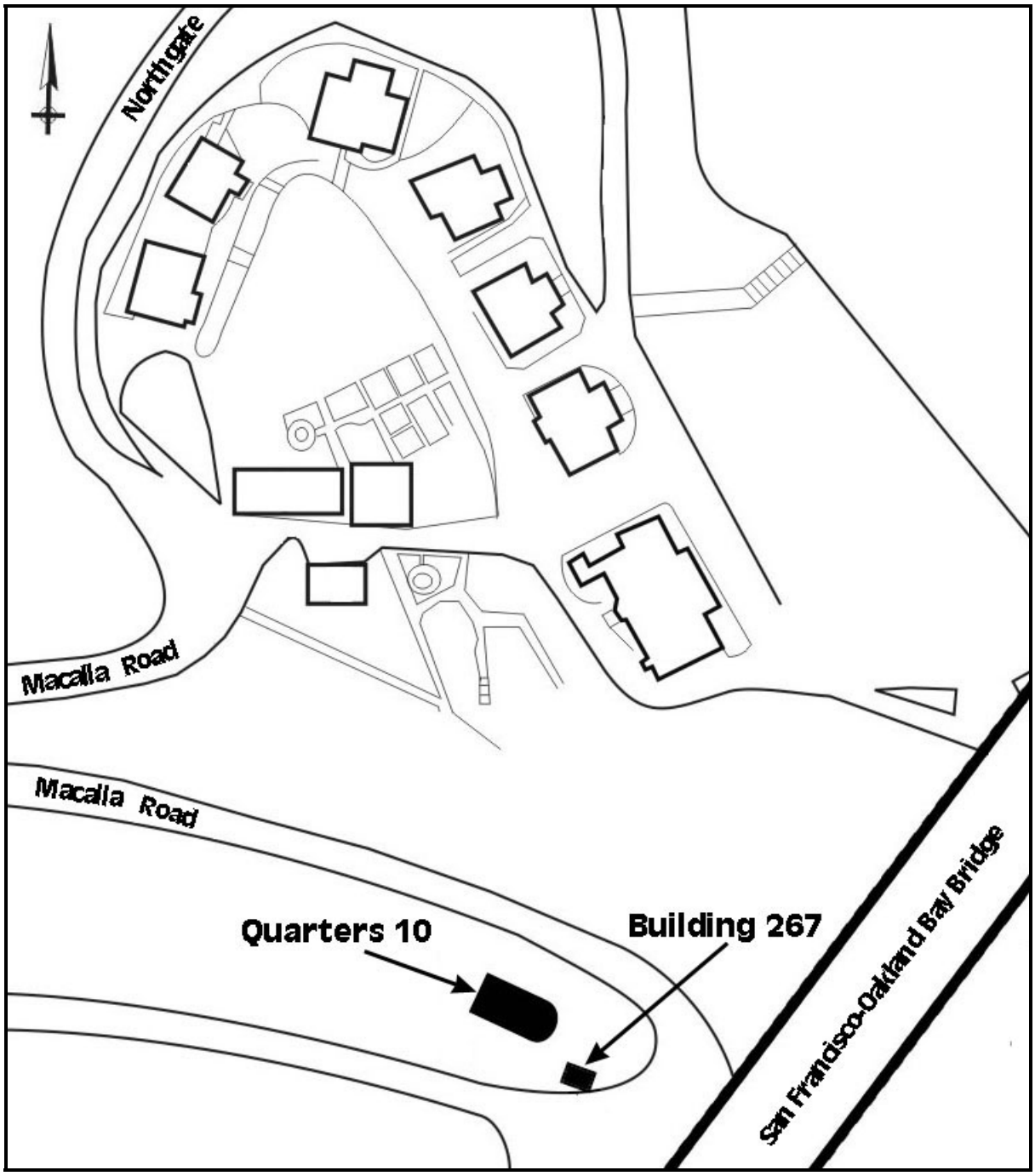


Figure 6: Location of Quarters 10 and Building 267 (Individually eligible for the National Register).

Figure 7: Alternative 2B in Relation to the Senior Officers' Quarters Historic District and the individually listed Quarters 1. Quarters 1 is also a contributing resource within the Historic District.

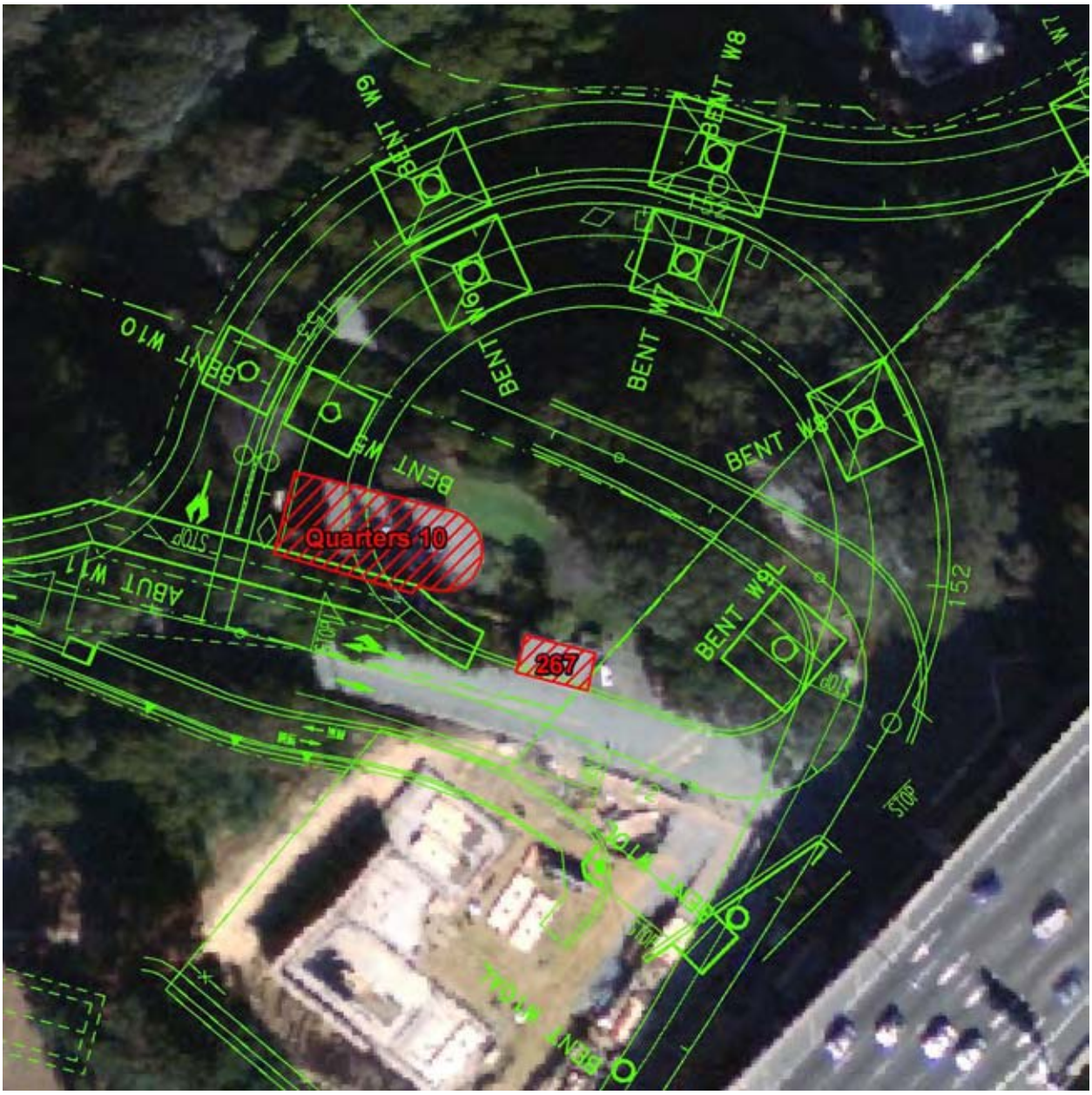


Figure 8: Alternative 2B in Relation to Quarters 10 and Building 267. Alternative would require the removal of both buildings.

Figure 9: Alternative 4 in Relation to the Senior Officers' Quarters Historic District and individually listed Quarters 1. Alternative 4 would span the Historic District and Quarters 1, with piers (bents) to the immediate south of the resources.

Figure 10: Alternative 4 in relation to Quarters 10 and Building 267.

Source: Google, EDAW/AECOM 2009

0.125 0.25 0.5 Miles

Figure 11
Vicinity Open Space

ATTACHMENT B

(Correspondence/Concurrence Letters)

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
P.O. BOX 942896
SACRAMENTO, CA 94296-0001
(916) 653-6624 Fax: (916) 653-9824
calshpo@ohp.parks.ca.gov
www.ohp.parks.ca.gov

February 8, 2010 Reply To: FHWA080922E

Anmarie Medin, Chief
Cultural and Community Studies Office
Caltrans Division of Environmental Analysis
PO Box 942874
Sacramento, CA 94274-0001

Re: Findings of Effect for the Proposed Yerba Buena Island Ramps Improvement Project, San Francisco County, CA

Dear Ms. Medin:

Thank you for consulting with me about the subject undertaking in accordance with the *Programmatic Agreement Among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act, as it Pertains to the Administration of the Federal-Aid Highway Program in California* (PA).

The Federal Highway Administration (FHWA) has determined that the proposed project will have an adverse effect on historic properties. Based on my review of the proposed documentation, I concur.

Thank you for considering historic properties as part of your project planning. If you have any questions, please contact Natalie Lindquist of my staff at your earliest convenience at (916) 654-0631 or e-mail at nlindquist@parks.ca.gov .

Sincerely,

Susan K Stratton for

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

San Francisco County Transportation Authority

100 Van Ness Avenue 26th Floor
San Francisco, California 94102
voice 415.522.4800 fax 415.522.4829
info@sfcta.org www.sfcta.org

November 4, 2009

Interested Parties
Yerba Buena Island Ramps Improvement Project

Subject: National Historic Preservation Act (Section 106) compliance for the Yerba Buena Island Ramps Improvement Project (04-SF-80 PM 7.6/8.1, EA 3A640)

Dear Interested Parties:

This letter is a follow-up letter to the letter you received last December regarding this project. California Department of Transportation (Caltrans) and the San Francisco County Transportation Authority (Authority) propose the replacement of westbound on- and off-ramps on the east side of Yerba Buena Island (YBI). The new ramps would maintain the functional role of the current ramps, while satisfying seismic requirements and highway design standards, and improve traffic operations and safety. The project begins at the east portal of the YBI tunnel and ends at the east side of the transition structure portion of the new San Francisco-Oakland Bay Bridge (SFOBB) currently under construction. The proposed project would not change the existing exit and entrance ramps on the west side of the YBI tunnel.

With this letter, Caltrans and the Authority notify you of the findings of historic properties identified within the project's Areas of Potential Effect (APE), in compliance with Section 106 of the National Historic Preservation Act. This study is part of the environmental studies for this project which are being conducted as part of Caltrans' and the Federal Highway Administration's compliance with the National Environmental Policy Act (NEPA), the California Environmental Quality Act (CEQA), and other applicable environmental laws and regulations. Historic properties are those identified during environmental studies as listed on or eligible for the National Register of Historic Places. These also qualify as historical resources under CEQA. The project's effects on such properties are then given careful consideration during environmental review for federally funded projects.

Historic properties within the current project APEs were previously identified and evaluated during the Section 106 process for the SFOBB East Span Seismic Safety Project in 1998. The following historic properties have been previously determined eligible for, and/or listed in, the National Register of Historic Places and the California Register of Historical Resources:

- Senior Officers' Quarters Historic District (listed 2/26/08), including the Nimitz House (Quarters 1) (individually eligible);
- Quarters 8 (determined eligible 9/1998);
- Quarters 10 (and contributing building 267) (listed 2/26/08);
- CA-SFr-04/H (archaeological site determined eligible 8/13/1998);
- San Francisco-Oakland Bay Bridge (listed 8/13/01).

Moving the City.

Caltrans and the Authority have applied the Criteria of Adverse Effect pursuant to the National Historic Preservation Act (set forth at 36 CFR 800.5(a)(1)). The Finding of Effect report (FOE) concludes that the undertaking will have an adverse effect on historic properties.

Neither alternative would affect archaeological site CA-SFr_04/H which will be protected by establishing an ESA (environmentally sensitive area) around it.

Alternative 2B would have direct adverse effects to the Senior Officers' Quarters Historic District, and Quarters 10 (with Building 267). Quarters 10 and Building 267 would be removed under this alternative. There would be no effect on Quarters 8.

Alternative 4 would have indirect adverse effects to Quarters 10 and Building 267; the Senior Officers' Quarters Historic District; and Quarters 1. The indirect effect would be caused by introduction of visual elements (elevated ramps) to the Senior Officers' Quarters Historic District that diminish the integrity of the district's historic features.

Because the new East Span of the SFOBB is currently under construction and the east span of the National Register-listed SFOBB will be removed, neither alternative of the YBI Ramps project has the potential to affect any components of the existing SFOBB.

If you wish to review a copy of the Historic Property Survey Report or the Finding of Effect report, you may contact Eric Cordoba, Project Manager; San Francisco County Transportation Authority; 100 Van Ness Avenue, 26th Floor; San Francisco, CA 94102; (925) 671-5458. E-mail: eric@cordobaconsulting.com. If you have comments on cultural resources and the project's effects on them, please contact Elizabeth Krase Greene at Caltrans District 4 Office of Cultural Resource Studies, 111 Grand Avenue, Oakland, CA 94612; (510) 286-5612. E-mail: elizabeth_greene@dot.ca.gov.

We have submitted the Finding of Effect Report to the State Office of Historic Preservation (SHPO). We hope to forward any comments you may have to SHPO and therefore we would appreciate your response within 30 days.

Caltrans and the Authority will be drafting a Memorandum of Agreement to mitigate the adverse effects on historic properties in the near future. You are welcome to provide input.

Sincerely,

José Luis Moscovich
Executive Director

cc: E. Greene – Caltrans
LS, EC – Chron, File: Yerba Buena Island Ramps Project

STATE OF CALIFORNIA – THE RESOURCES AGENCY Arnold Schwarzenegger, *Governor*

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
P.O. BOX 942896
SACRAMENTO, CA 94296-0001
(916) 653-6624 Fax: (916) 653-9824
calshpo@ohp.parks.ca.gov

May 1, 2008

Douglas E. Gilkey
1455 Frazee Road, Suite 900
San Diego, California 92108-4310

RE: Senior Officers Quarters Historic District, Yerba Buena Island Listing on the National Register of Historic Places

Dear Mr. Gilkey:

I am pleased to notify you that on February 26, 2008, the above-named property was placed on the National Register of Historic Places (National Register). As a result of being placed on the National Register, this property has also been listed in the California Register of Historical Resources, pursuant to Section 4851(a)(2) of the Public Resources Code.

Placement on the National Register affords a property the honor of inclusion in the nation's official list of cultural resources worthy of preservation and provides a degree of protection from adverse affects resulting from federally funded or licensed projects. Registration provides a number of incentives for preservation of historic properties, including special building codes to facilitate the restoration of historic structures, and certain tax advantages.

There are no restrictions placed upon a private property owner with regard to normal use, maintenance, or sale of a property listed in the National Register. However, a project that may cause substantial adverse changes in the significance of a registered property may require compliance with local ordinances or the California Environmental Quality Act. In addition, registered properties damaged due to a natural disaster may be subject to the provisions of Section 5028 of the Public Resources Code regarding demolition or significant alterations, if imminent threat to life safety does not exist.

If you have any questions or require further information, please contact the Registration Unit at (916) 653-6624.

Sincerely,

Stephen D. Mikesell for

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

April 25, 2008

The Director of the National Park Service is pleased to send you the following announcements and actions on properties for the National Register of Historic Places. For further information contact Edson Beall via voice (202) 354-2255, or E-mail: <Edson_Beall@nps.gov> This and past Weekly Lists are also available here: http://www.nps.gov/history/nr/nrlist.htm

Our physical location address is:

National Park Service 2280, 8th floor
National Register of Historic Places
1201 "I" (Eye) Street, NW,
Washington D.C. 20005

Please have any Fed Ex, UPS packages sent to the above address. Please continue to use alternate carriers, as all mail delivered to us via United States Postal Service is irradiated and subsequently damaged.

Landscape Architecture Month:
http://www.nps.gov/history/nr/feature/landscape/index.htm

WEEKLY LIST OF ACTIONS TAKEN ON PROPERTIES: 4/14/08 THROUGH 4/18/08

KEY: State, County, Property Name, Address/Boundary, City, Vicinity, Reference Number, NHL, Action, Date, Multiple Name

CALIFORNIA, SAN FRANCISCO COUNTY,
Administration Building, Treasure Island, SE Corner of Avenue of the Palms and California Ave., Treasure Island, 08000081, LISTED, 2/26/08

CALIFORNIA, SAN FRANCISCO COUNTY,
Hall of Transportation, Treasure Island, SE Side of California Ave. between Avenue D and Avenue F, Treasure Island, 08000082, LISTED, 2/26/08

CALIFORNIA, SAN FRANCISCO COUNTY,
Palace of Fine and Decorative Arts, Treasure Island, SE Side of California Ave. between Avenue F and Avenue I, Treasure Island, 08000083, LISTED, 2/26/08

CALIFORNIA, SAN FRANCISCO COUNTY,
Quarters 10 and Building 267, Yerba Buena Island, Jct. Northgate & Macalla Rds., North Shore of Yerba Buena Island, Yerba Buena Island, 08000084, LISTED, 2/26/08

STATE OF CALIFORNIA - THE RESOURCES AGENCY
Arnold Schwarzenegger, *Governor*

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
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calshpo@ohp.parks.ca.gov

May 1, 2008

Douglas E. Gilkey
1455 Frazee Road, Suite 900
San Diego, California 92108-4310

RE: Quarters 10 and Building 267, Yerba Buena Island Listing on the National Register of Historic Places

Dear Mr. Gilkey:

I am pleased to notify you that on February 26, 2008, the above-named property was placed on the National Register of Historic Places (National Register). As a result of being placed on the National Register, this property has also been listed in the California Register of Historical Resources, pursuant to Section 4851(a)(2) of the Public Resources Code.

Placement on the National Register affords a property the honor of inclusion in the nation's official list of cultural resources worthy of preservation and provides a degree of protection from adverse affects resulting from federally funded or licensed projects. Registration provides a number of incentives for preservation of historic properties, including special building codes to facilitate the restoration of historic structures, and certain tax advantages.

There are no restrictions placed upon a private property owner with regard to normal use, maintenance, or sale of a property listed in the National Register. However, a project that may cause substantial adverse changes in the significance of a registered property may require compliance with local ordinances or the California Environmental Quality Act. In addition, registered properties damaged due to a natural disaster may be subject to the provisions of Section 5028 of the Public Resources Code regarding demolition or significant alterations, if imminent threat to life safety does not exist.

If you have any questions or require further information, please contact the Registration Unit at (916) 653-6624.

Sincerely,

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

April 25, 2008

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KEY: State, County, Property Name, Address/Boundary, City, Vicinity, Reference Number, NHL, Action, Date, Multiple Name

CALIFORNIA, SAN FRANCISCO COUNTY,
Administration Building, Treasure Island, SE Corner of Avenue of the Palms and California Ave., Treasure Island, 08000081, LISTED, 2/26/08

CALIFORNIA, SAN FRANCISCO COUNTY,
Hall of Transportation, Treasure Island, SE Side of California Ave. between Avenue D and Avenue F, Treasure Island, 08000082, LISTED, 2/26/08

CALIFORNIA, SAN FRANCISCO COUNTY,
Palace of Fine and Decorative Arts, Treasure Island, SE Side of California Ave. between Avenue F and Avenue I, Treasure Island, 08000083, LISTED, 2/26/08

CALIFORNIA, SAN FRANCISCO COUNTY,
Quarters 10 and Building 267, Yerba Buena Island, Jct. Northgate & Macalla Rds., North Shore of Yerba Buena Island, Yerba Buena Island, 08000084, LISTED, 2/26/08

An Bui
BRAC PMO West
1455 Frazee Road, Suite 900
San Diego, CA 92108

Constance M. Callahan JD
U.S. Coast Guard
Maintenance Logistics Command, Pacififc
1301 Clay Street, Suite 700N
Oakland, CA 94612

Jack Gold, Executive Director
San Francisco Architectural Heritage
2007 Franklin Street
San Francisco, CA 94109

Linda Avery, Commission Secretary
San Francisco Historic Preservation Commission,
Planning Department
1650 Mission Street, Ste. 400
San Francisco, CA 94103

Mark Luellen, Preservation Coordinator
San Francisco Planning Department
1650 Mission Street, Suite 400
San Francisco, CA 94103

Ron Ross, President
San Francisco History Association
PO Box 31907
San Francisco, CA 94131

Erik Christoffersen, Executive Director
San Francisco Museum and Historical Society
P.O. Box 420470
San Francisco, CA 94142-0470

David Crosson, Executive Director
California Historical Society
678 Mission Street
San Francisco CA 94105

Sheila Kolenc, Interim Executive Director
San Francisco Beautiful
100 Bush Street, Suite 1580
San Francisco, CA 94104
Address updated name, address
and re-sent 11.9.09

William Applegate, President
California Heritage Council
P.O. Box 475046
San Francisco, CA 94147

Cindy Heitzman, Executive Director
California Preservation Foundation
5 Third St., Ste 424
San Francisco, CA 94103

Anthea Hartig Ph.D., Director
National Trust for Historic Preservation Western
Office
5 Third Street, Suite 707
San Francisco, California 94103

John J. Reynolds, Director
National Park Service, Pacific West Region Office
1111 Jackson Street, Suite 700
Oakland, California 94607

Valerie Garry, President
Oakland Heritage Alliance
446 17th Street, Suite 301
Oakland, CA 94612

Oakland Landmarks Preservation Advisory Board
Joann Pavlinec, Secretary & Historic Preservation
Planner
250 Frank H. Ogawa Plaza, Suite 3315
Oakland, CA 94612

Betty Marvin, Planner
Oakland Cultural Heritage Survey
250 Frank Ogawa Plaza, Suite 3330
Oakland, CA 94612

Winton "Mac" McKibben, President
Alameda County Historical Society
PMB 307
484 Lake Park Ave.
Oakland, CA 94610-2730

Alameda County Parks, Recreation and Historical
Commission
224 West Winton Ave., #111
Hayward, CA 94544

Rosemary Cambra, Chairperson
PO Box 360791
Milpitas, CA 95036

The Ohlone Indian Tribe
Andrew Galvan
PO Box 3152
Fremont, CA 94539

Trina Marine Ruano Family
Ramona Garibay, Representative
16010 Halmar Lane
Lathrop, CA 95330

Jakki Kehl
1307 Horizon Lane
Patterson, CA 95363

Indian Canyon Mutsun Band of Costanoan
Ann Marie Sayers, Chairperson
P.O. Box 28
Hollister, CA 95024

Amah/Mutsun Tribal Band
Irene Zwierlein, Chairperson
789 Canada Road
Woodside, CA 94062

California Native American Heritage Commission
Debbie Pilas-Treadway
915 Capitol Mall, Room 364
Sacramento, CA 95814

Alan Martinez, Commissioner
San Francisco Historic Preservation Commission
149 Ninth Street, Suite 205
San Francisco, CA 94103

Andrew Wolfram, Commissioner
San Francisco Historic Preservation Commission
Perkins + Will
185 Berry St. Lobby One Suite 5100
San Francisco, CA 94107

Charles Edwin Chase, Interim President
San Francisco Historic Preservation Commission
Architectural Resource Group
Pier 9, Embarcadero
San Francisco, CA 94111

James M. Buckley, Commissioner
San Francisco Historic Preservation Commission
1650 Mission Street Suite 400
San Francisco, CA 94103

Courtney Damkroger, Interim Vice President
San Francisco Historic Preservation Commission
2626 Hyde Street
San Francisco, CA 94109

Karl Hasz, Commissioner
San Francisco Historic Preservation Commission
Hasz Construction, Inc.
2250 Union Street, 3rd Floor
San Francisco, CA 94123

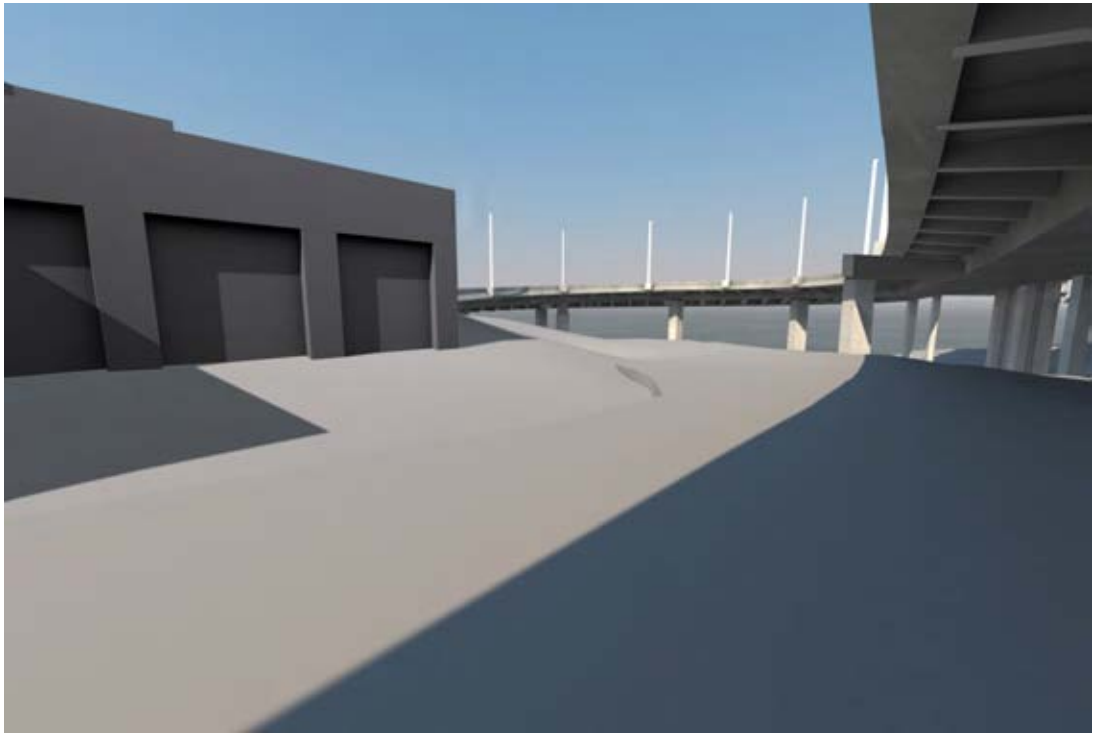
Diane Matsuda, Commissioner
San Francisco Historic Preservation Commission
John Burton Foundation
235 Montgomery Street, Suite 1142
San Francisco, CA 94104

Michael Tymoff
Office of Economic and Workforce Development
City Hall, Room 448
1 Dr. Carlton B. Goodlett Place
San Francisco, CA 94102

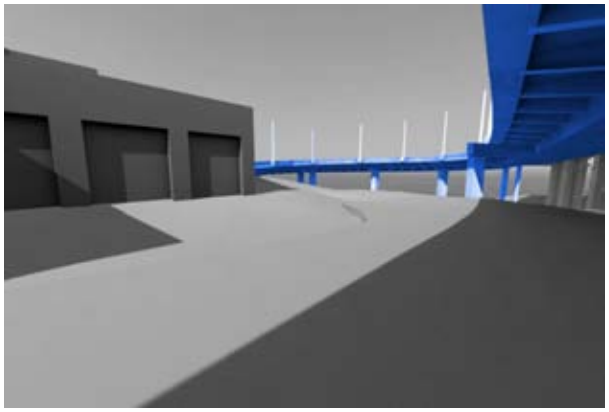
ATTACHMENT C

(Renderings and Simulations)

Simulation 1: Alternative 2B
Key Viewpoint 1: Macalla Road at North Gate Road Intersection



Rendered View



Alternative 2B Ramp Components: Blue highlighting distinguishes Alt. 2B ramp components from SFOBB East Span project components.

Quarters 10 to be relocated as part of Alt. 2B

Building 267 to be relocated as part of Alt. 2B

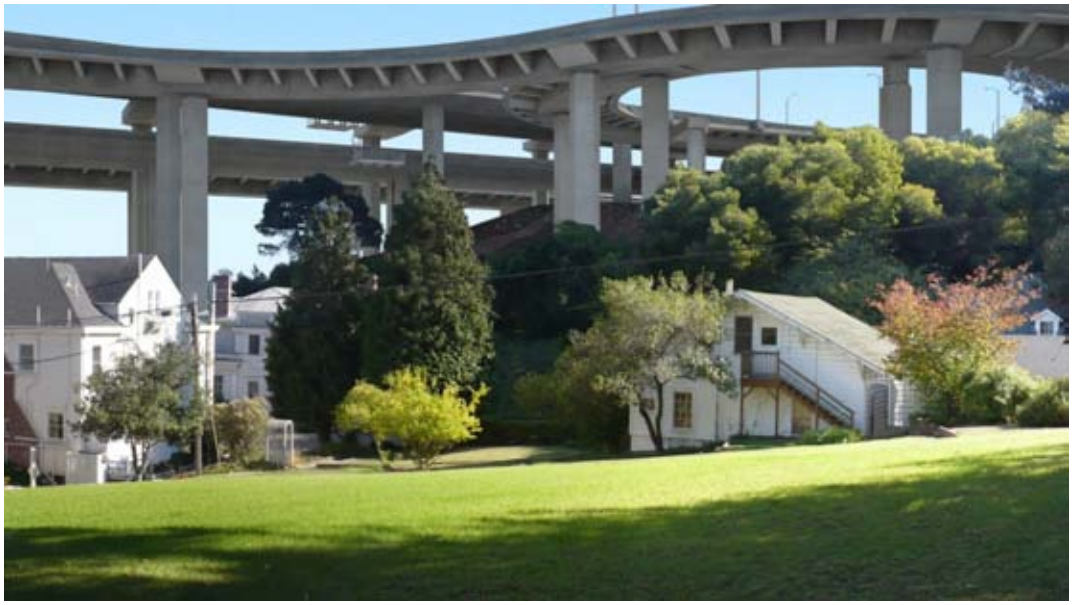
Quarters 10 and Building 267 (garage): white buildings with blue trim partially visible north of Macalla Road.

Structures at right are existing SFOBB components.

Rendered View

Existing View

Alternative 2B Ramp Components: Blue highlighting distinguishes Alt. 2B ramp components from SFOBB East Span project components.



Simulated View

Existing View

Alternative 2B Ramp Components: Blue highlighting distinguishes Alt. 2B ramp components from SFOBB East Span project components.

Simulated View

Existing View

Alternative 2B Ramp Components: Blue highlighting distinguishes Alt. 2B ramp components from SFOBB East Span project components.

Simulated View

Existing View

Alternative 2B Ramp Components: Blue highlighting distinguishes Alt. 2B ramp components from SFOBB East Span project components.

Simulated View

Existing View

Alternative 2B Ramp Components: Blue highlighting distinguishes Alt. 2B ramp components from SFOBB East Span project components.

Simulation 7: Alternative 2B
Key Viewpoint 7: Oakland Touchdown

Simulated View

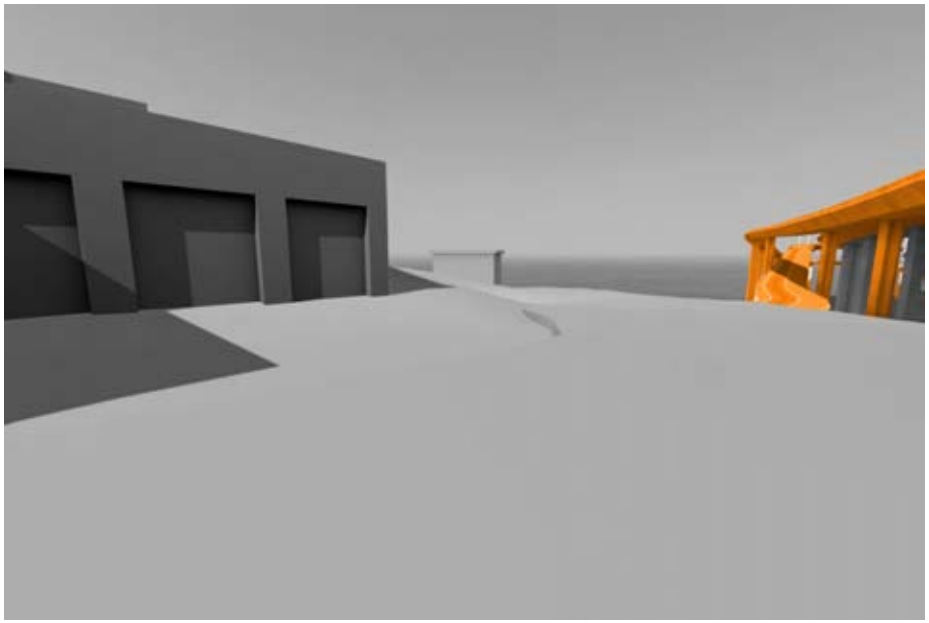
Existing View

Alternative 2B Ramp Components: Blue highlighting distinguishes Alt. 2B ramp components from SFOBB East Span project components.

Simulated View

Alternative 2B Ramp Components: Blue highlighting distinguishes Alt. 2B ramp components from SFOBB East Span project components.

Simulated View



Alternative 4 Ramp Components: Orange highlighting distinguishes Alt. 2B ramp components from SFOBB East Span project components.

Simulated View

Existing View

Alternative 4 Ramp Components: Orange highlighting distinguishes Alt. 4 ramp components from SFOBB East Span project components.

Simulation 11: Alternative 4
Key Viewpoint 3: Officers' Quarters Open Space

Simulated View

Existing View

Alternative 4 Ramp Components: Orange highlighting distinguishes Alt. 4 ramp components from SFOBB East Span project components.

Simulated View

Existing View

Alternative 4 Ramp Components: Orange highlighting distinguishes Alt. 4 ramp components from SFOBB East Span project components.

Simulated View

Existing View

Alternative 4 Ramp Components: Orange highlighting distinguishes Alt. 4 ramp components from SFOBB East Span project components.

Simulated View

Existing View

Alternative 4 Ramp Components: Orange highlighting distinguishes Alt. 4 ramp components from SFOBB East Span project components.

Simulation 15: Alternative 4
Key Viewpoint 7: Oakland Touchdown

Simulated View

Existing View

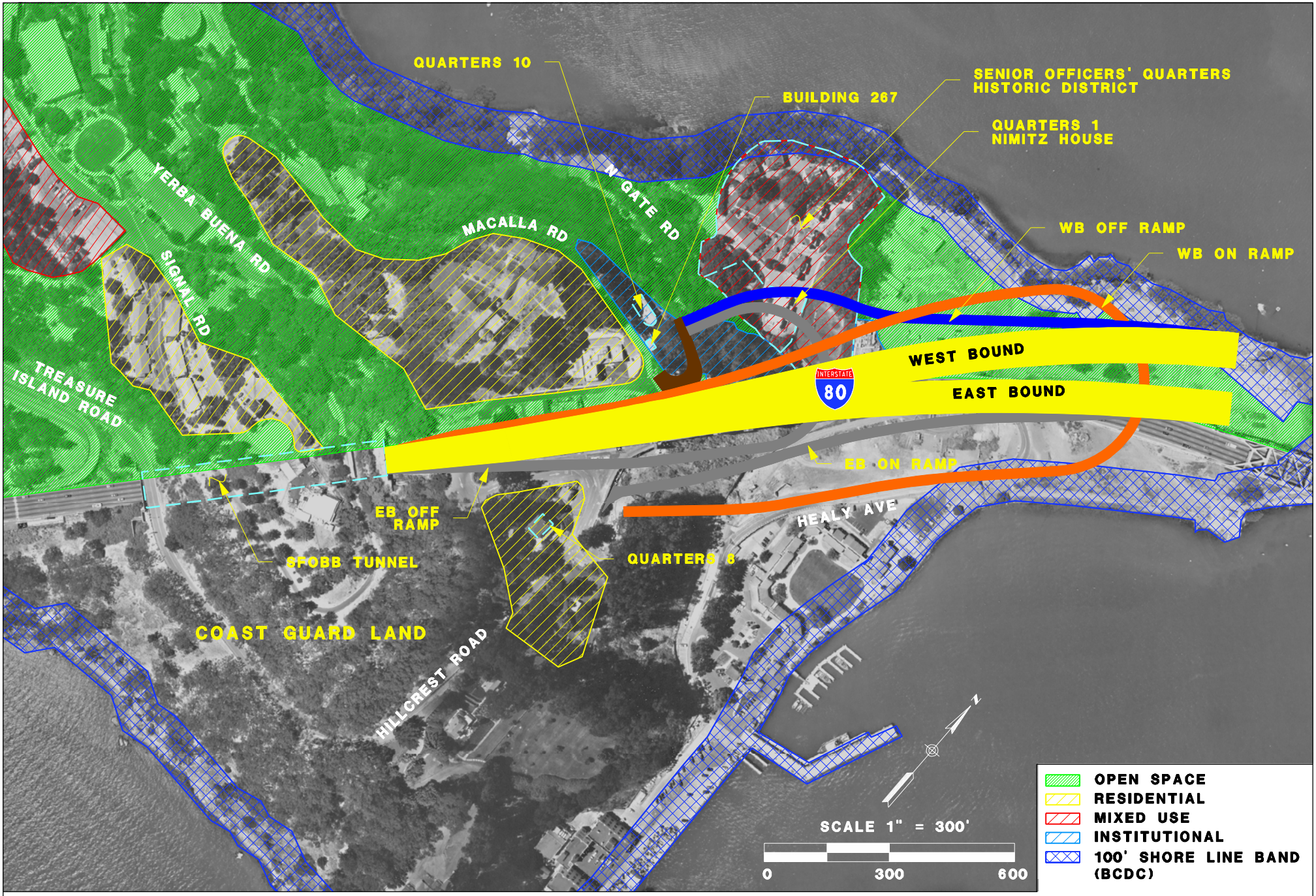
Alternative 4 Ramp Components: Orange highlighting distinguishes Alt. 4 ramp components from SFOBB East Span project components.

Simulated View

Alternative 4 Ramp Components: Orange highlighting distinguishes Alt. 4 ramp components from SFOBB East Span project components.

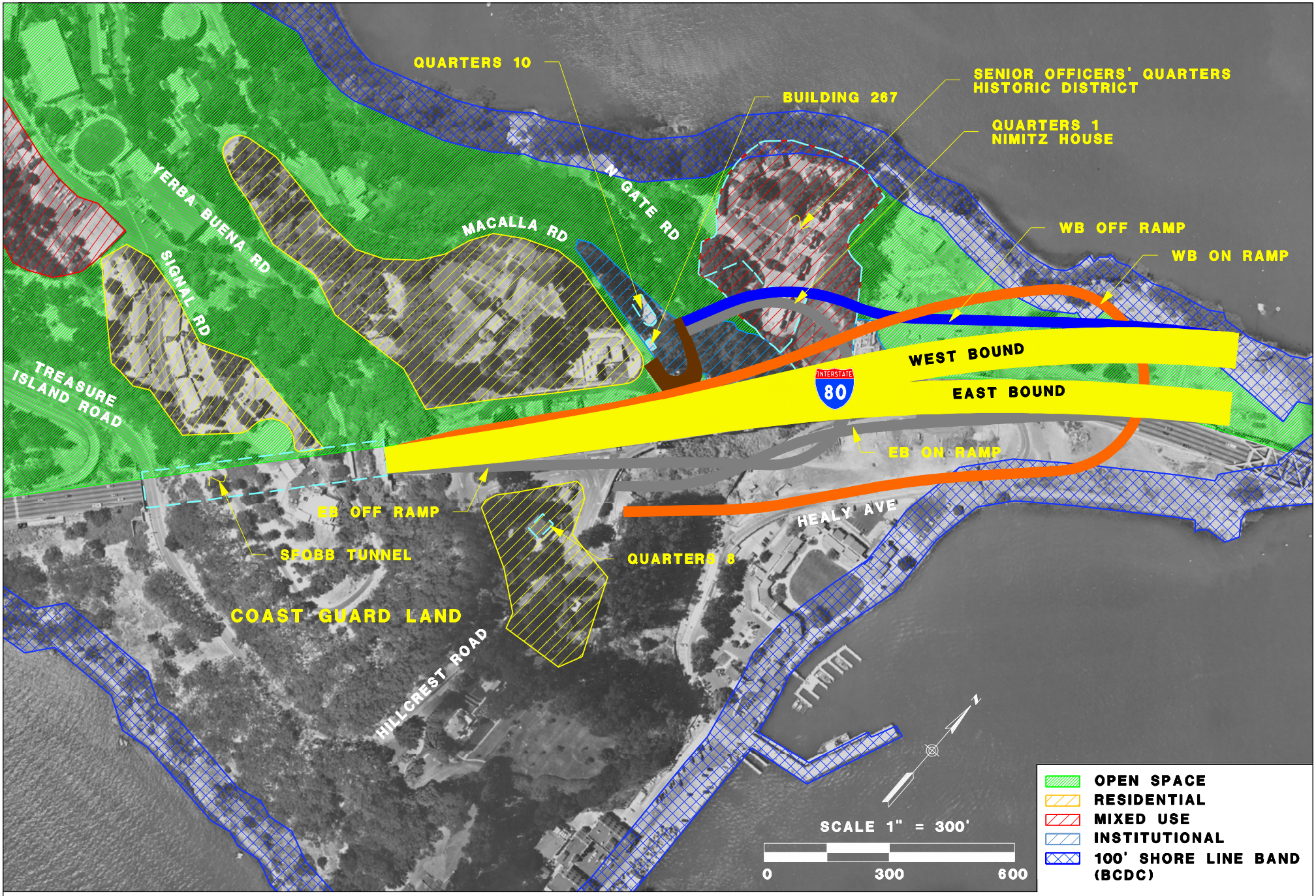
ATTACHMENT D

(Non-viable Alternatives)



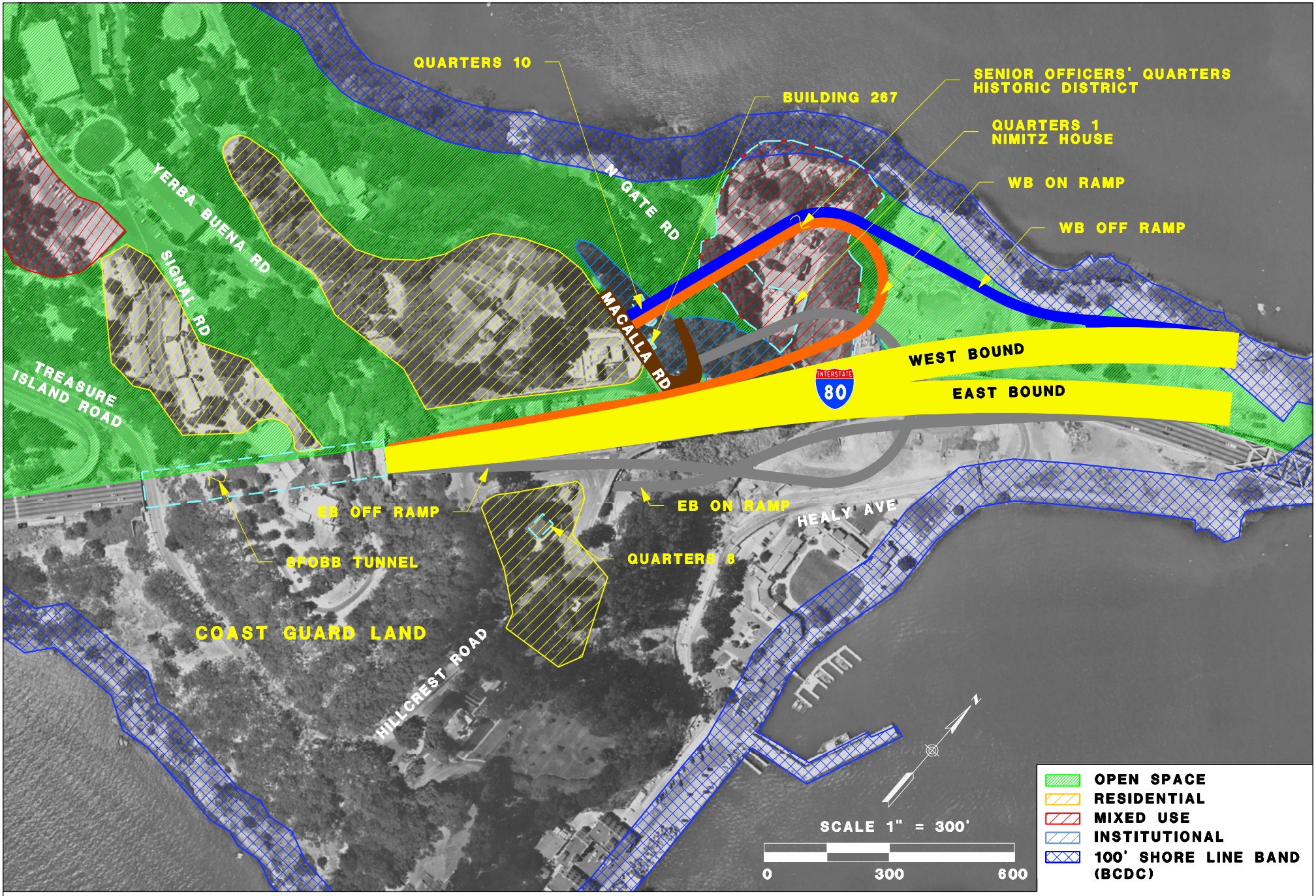
Source: AECOM Transportation 2010

Yerba Buena Island Ramps Alternative 1



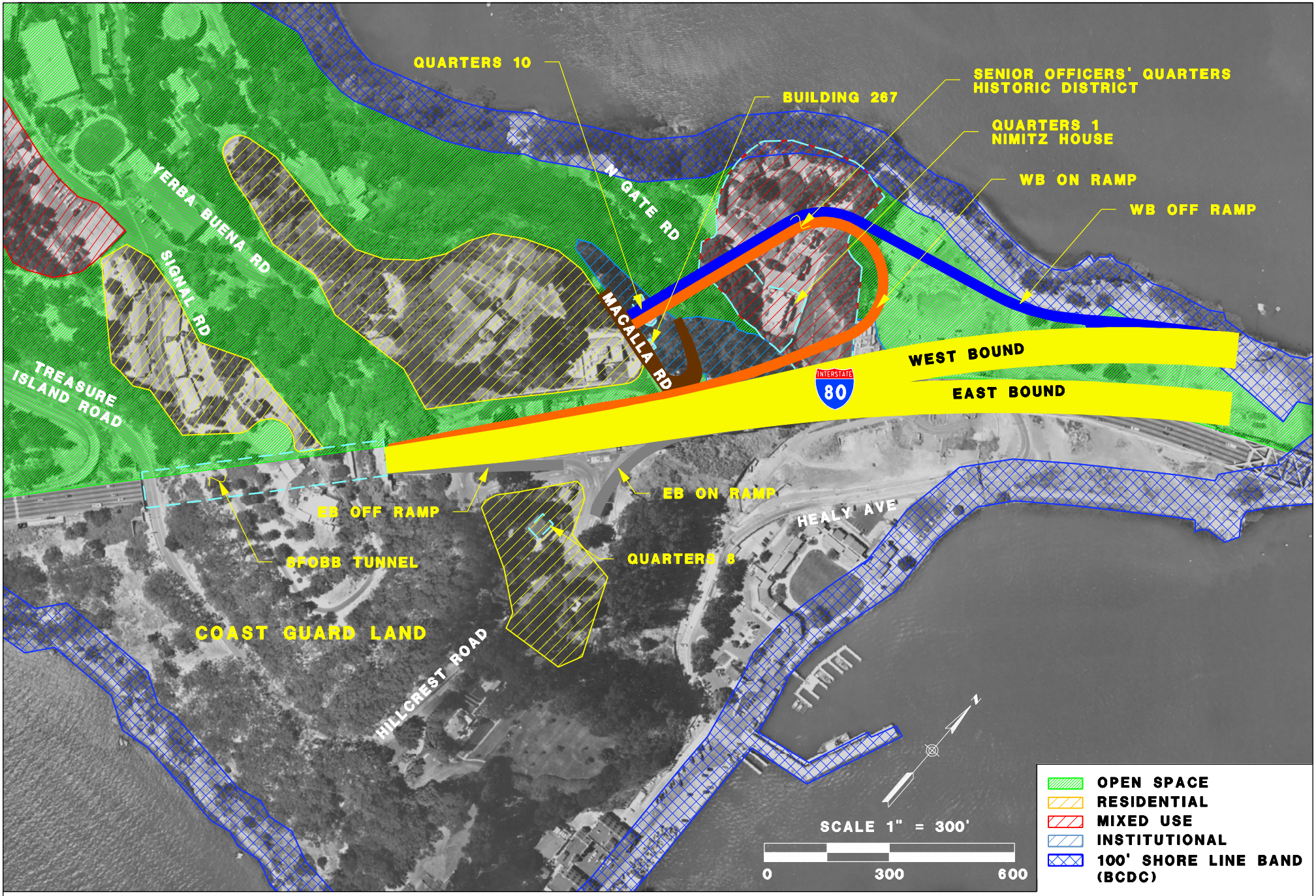
Source: AECOM Transportation 2010

Yerba Buena Island Ramps Alternative 1A



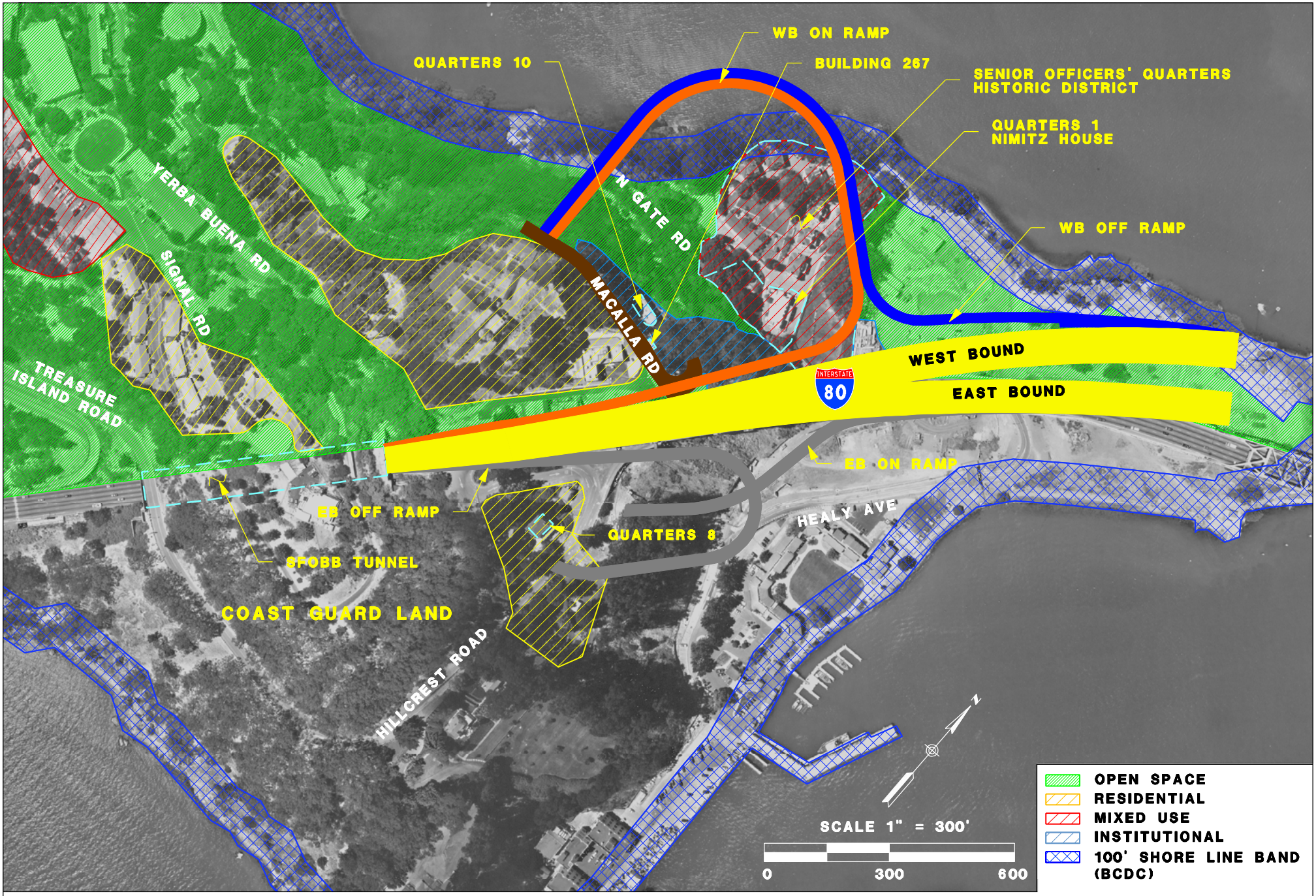
Source: AECOM Transportation 2010

Yerba Buena Island Ramps Alternative 2



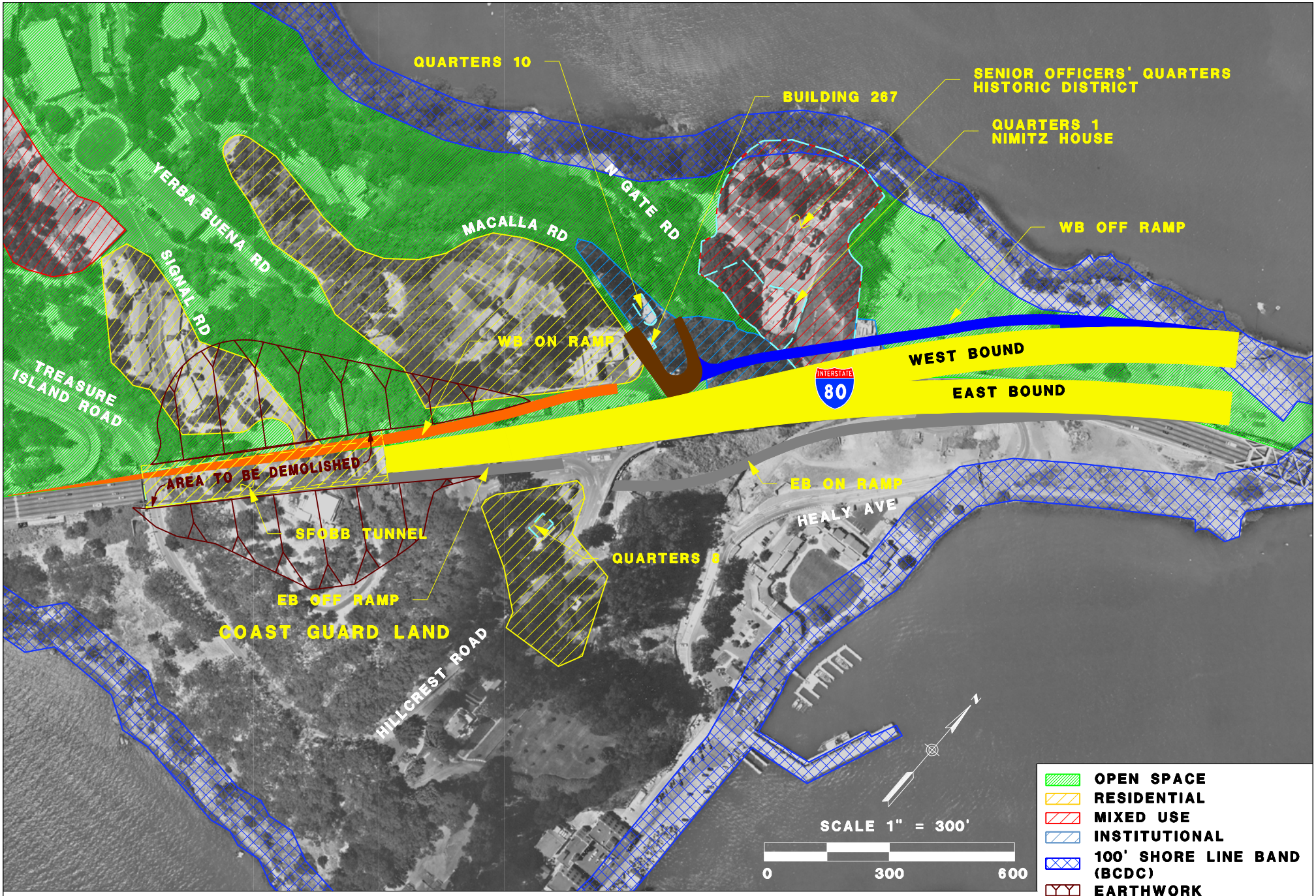
Source: AECOM Transportation 2010

Yerba Buena Island Ramps Alternative 2A



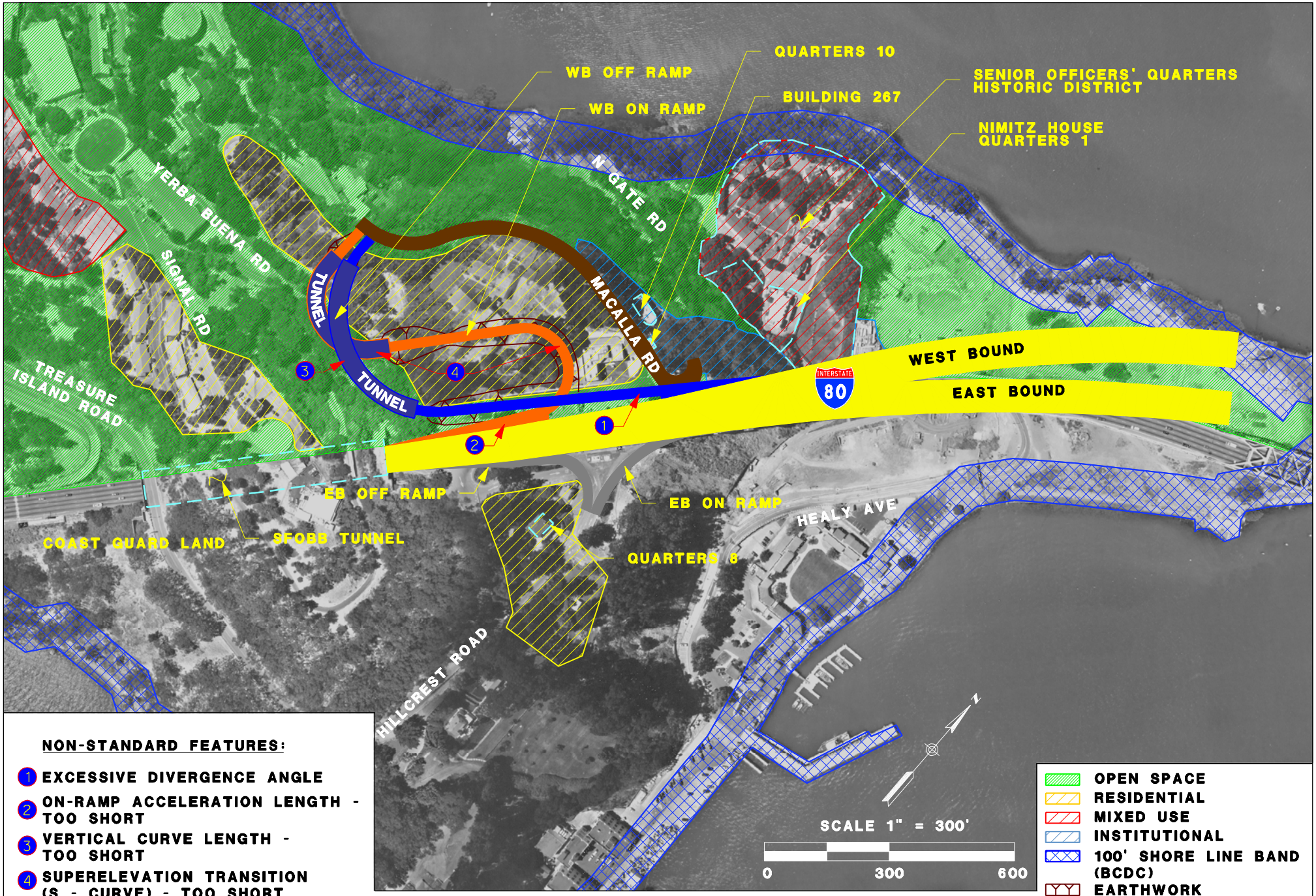
Source: AECOM Transportation 2010

Yerba Buena Island Ramps Alternative 3



Source: AECOM Transportation 2010

Yerba Buena Island Ramps Alternative 5



NON-STANDARD FEATURES:

1. EXCESSIVE DIVERGENCE ANGLE
2. ON-RAMP ACCELERATION LENGTH - TOO SHORT
3. VERTICAL CURVE LENGTH - TOO SHORT
4. SUPERELEVATION TRANSITION (S - CURVE) - TOO SHORT

Source: AECOM Transportation 2010

Yerba Buena Island Ramps
Alternative 6 - Avoidance Alternative

APPENDIX C

TITLE VI

DEPARTMENT OF TRANSPORTATION
OFFICE OF THE DIRECTOR
P.O. Box 942873, MS-49
SACRAMENTO, CA 94273-0001
PHONE (916) 654-5266
FAX (916) 654-6608
TTY 711

Flex your power!
Be energy efficient!

July 20, 2010

TITLE VI
POLICY STATEMENT

The California Department of Transportation, under Title VI of the Civil Rights Act of 1964 and related statutes, ensures that no person in the State of California shall, on the grounds of race, color, national origin, sex, disability, or age, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity it administers.

For information or guidance on how to file a complaint based on the grounds of race, color, national origin, sex, disability, or age, please visit the following web page: http://www.dot.ca.gov/hq/bep/title_vi/t6_violated.htm.

Additionally, if you need this information in an alternate format, such as in Braille or in a language other than English, please contact Charles Wahnon, Manager, Title VI and Americans with Disabilities Act Program, California Department of Transportation, 1823 14th Street, MS-79, Sacramento, CA 95811. Phone: (916) 324-1353 or toll free 1-866-810-6346 (voice), TTY 711, fax (916) 324-1869, or via email: charles_wahnon@dot.ca.gov.

CINDY McKIM
Director

APPENDIX D

SUMMARY OF MINIMIZATION AND MITIGATION MEASURES

Appendix D
Minimization and Mitigation Summary

Yerba Buena Island Ramps Project Minimization, Avoidance, and Mitigation Measures

This section comprises a summary of the minimization, avoidance, and mitigation measures for the Yerba Buena Island Ramps Improvement Project. Both California Environmental Quality Act (CEQA) and/or National Environmental Policy Act (NEPA) regulations require an enforceable mitigation monitoring program be developed for the project. Per CEQA Guideline 15907(a), "In order to ensure that the mitigation measures and project revisions identified in the EIR are implemented, the public agency shall adopt a program for monitoring or reporting on the revisions which it has required in the project and the measures it has imposed to mitigate or avoid significant environmental effects." Under NEPA regulations, "A monitoring and enforcement program shall be adopted and summarized where applicable for any mitigation" (Section 1505.2(c)). The project proponents have committed to implementing several measures as part of the project to minimize and avoid impacts with construction of the proposed YBI ramps. These measures include but are not limited to elements which would be designed into the new facility, continued coordination with affected parties, and implementation of best management practices during construction. The final mitigation measures will be developed in coordination with San Francisco County Transportation Authority (Authority) and the California Department of Transportation (Caltrans) and subject to approval by the Authority and Caltrans.

Additional measures are proposed to mitigate the impacts associated with project implementation. Mitigation is defined by both CEQA and NEPA as a measure which:

- Avoids the impact altogether by not taking a certain action or parts of an action;
- Minimizes impacts by limiting the degree or magnitude of the action and its implementation;
- Rectifies the impact by repairing, rehabilitating, or restoring the impacted environment;
- Reduces or eliminates the impact over time by preservation and maintenance operations during the life of the project; and
- Compensates for the impacts by replacing or providing substitute resources or environments.

Summary of Avoidance and Minimization Measures

Table D-1 presents the measures committed to by the project proponents to avoid and minimize impacts associated with the project. Table D-1 is comprised of the following columns:

- Resource Area
- Conflict/Impact to Be Avoided
- Minimization/Avoidance Measure

Summary of Mitigation Measures

Table D-2 presents the measures developed to mitigate the impacts associated with the project. Table D-2 is comprised of the following columns:

- Resource Area
- Impact to Be Mitigated
- Mitigation Measure

Table D-1
Summary of Avoidance and Minimization Measures

Resource Area	Conflict/Impact to be Avoided	Avoidance/Minimization Measure
Land Use	Conflicts with existing and future land uses, plans and policies	Coordination with TIDA, the U.S. Coast Guard, and other agencies regarding location and duration of construction activities and their potential temporary influence on existing operations and uses would be carried out prior to the initiation of construction.
Parks and Recreation	Temporary road closures, detours and increased noise levels during construction	Coordination with TIDA, the U.S. Coast Guard, and other agencies regarding location and duration of construction activities and their potential temporary influence on existing operations and uses would be carried out prior to the initiation of construction.
Growth	Inducement of direct or indirect unplanned growth	The No Build and two build alternatives would not result in a need to implement avoidance minimization, compensation, or mitigation measures resulting from project-related impacts to growth on YBI and TI.
Community Impacts	Impacts on the community	No avoidance, minimization or mitigation measures are necessary since there would be no community character-or cohesion-related impacts as a result of the proposed build alternatives.
Relocations	Impacts to buildings	No avoidance, minimization, or mitigation measures are necessary since, other than the two unoccupied buildings identified, no relocation impacts to existing businesses, residential structures, or activity centers would occur.
Environmental Justice	Disproportionately high impacts on minority or low-income populations	The proposed project would not cause disproportionately high and adverse effects on any minority or low-income populations per E.O. 12898 regarding environmental justice. Therefore, no avoidance, minimization or mitigation measures are necessary.
Emergency Services	Temporary road closures, detours and increased response times during construction	Implementation of the build alternatives would result in temporary detours and road closures. These impacts would be minimized through coordination with emergency service providers and access to the islands would be maintained throughout project construction.
Utilities	Relocation of utility infrastructure	Implementation of the build alternatives and potential relocations of utilities would be conducted in coordination with the applicable utility providers.

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Resource Area	Conflict/Impact to be Avoided	Avoidance/Minimization Measure
Traffic and Transportation/ Pedestrian and Bicycle Facilities	Traffic and transportation flow during construction	Construction activities would result in temporary detours and single-lane closures. These impacts would be minimized through coordination with the USCG and emergency service providers. Efforts would be made to concentrate the majority of road closures and construction activity during off-peak hours to reduce traffic impacts. Traffic would be diverted to one side of the road and traffic would be controlled by flaggers stationed at both ends of the closure. Similar traffic handling is currently being used on Macalla Road with the ongoing SFOBB construction by Caltrans. Macalla Road primarily serves the USCG and access to their facilities will be maintained at all times before, during, and after construction. Construction is expected to be completed in five stages. For the first four stages, the existing westbound entrance ramp on the east side of YBI would remain open and therefore little impact is expected on traffic. The last stage of construction is expected to require the closure of the existing westbound entrance ramp (by Macalla Road) on the east side of YBI and thus requiring a detour to the existing westbound entrance on the west side of YBI via Treasure Island Road. This proposed detour would be part of the final TMP, which would need to be reviewed and approved by the Fire Department. The expected detoured traffic of 110 vehicles in the AM peak hour and 130 vehicles in the PM peak hour (about 2 vehicles per minute) is not expected to degrade roadway segment LOS or substantially increase response time for emergency services on YBI. The YBI Ramps Improvement Project would result in the construction of westbound on-and off-ramps on the east side of YBI. The other four ramps would not have their capacity limited so therefore, no further analysis of impacts or issues is needed pertaining to the remaining ramps. The analysis of the ramps on the east side of YBI without ramp metering concludes that the average operating speed on the SFOBB would be lower because the capacity of the new on-ramp would increase to 1,200 vph from 330 vph. Without ramp metering, on-ramp traffic would be allowed to enter the mainline unimpeded, thus reducing queuing on the on-ramp. However, because Caltrans requires ramp metering, long delays and queues are expected on the approaches to the on-ramp, though it is expected that mainline speeds would improve. With ramp metering, the metering rates can be coordinated such that the number of vehicles entering the mainline would be based on the number of vehicles exiting the mainline. Additionally, the mainline metering lights for westbound traffic (just west of the toll booths) could be coordinated with the on-ramp, such that the traffic entering the SFOBB could be

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Resource Area	Conflict/Impact to be Avoided	Avoidance/Minimization Measure
		reduced while the metering rate for the on-ramp is increased, and vice versa. Volumes on the northbound Macalla Road approach to the westbound loop on-ramp are expected to be 879 vehicles in the AM peak hour and 1,119 vehicles (with 1,104 turning right onto ramp) in the PM peak hour in 2035. If the metering rate is set to the expected off-ramp volume of only 578 vph during the PM peak hour, a queue is expected to form on the Macalla Road approach to the on-ramp. To reduce such a queue, the metering rate may need to be increased to about 1,100 vph (which is still less than the 1,200 vph capacity assumed for the loop on-ramp). The southbound South Gate Road approach to the eastbound loop on-ramp is expected to be 490 in the AM peak hour and 604 in the PM peak hour in 2035. If the metering rate is set to the expected off-ramp volume of only 255 vph during the AM peak hour and 533 during the PM peak hour, the on-ramp queue is expected to be extensive on South Gate Road (especially during the AM peak hour). To reduce these queues, the metering rate may need to be increased to about 500 vph during the AM peak hour and 600 vph during the PM peak hour (which is still less than the 1,500 vph capacity assumed for this loop on-ramp).
Cultural Resources	Cultural resources impacts	The SFCTA and Caltrans are working closely with SHPO to ensure appropriate measures are developed and implemented under a Memorandum of Agreement (MOA). The Advisory Council on Historic Preservation (ACHP) was also notified of the adverse impact to cultural resources and has declined to participate (Johnson 2010). The MOA will describe the procedures that would be followed to ensure that the one known archaeological site (CA-SFR-04/H) is protected and how any inadvertent discoveries of archaeological sites will be addressed (see 3.8.4.1 below). Additionally, the MOA will describe how effects to buildings and the cultural landscape would be addressed (see 3.8.4.2 below). These are subject to revision following consultation among Caltrans, FHWA, SHPO, and SFCTA. **Archaeological Monitoring/ESA Action Plan** An Environmental Sensitive Area (ESA) Action plan will be developed and implemented to outline the avoidance and protection measures that will be taken to protect the known archaeological site (CA-SFR-04/H) and to address inadvertent discovery of unknown archaeological resources. A professional archaeologist who meets the Secretary of the Interior's Professional Qualification Standards (48 FR 44738-9) will work with Caltrans staff archaeologist in preparing the plan and ensuring the plan is implemented in the field. Testing

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		and data recovery conducted during the SFOBB East Span project clearly defined the site boundaries of the prehistoric component of CA-SFr-04/H, which will continue to be marked as an Environmental Sensitive Area (ESA). In the unlikelihood that prehistoric and/or historic-era materials are encountered within the project area outside of the ESA during construction, it is Caltrans policy that all earth-moving activity within and around the immediate discovery area would be diverted until a qualified archaeologist can assess the nature and significance of the find. If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall cease in any area or nearby area suspected to overlie remains, and the County Coroner contacted. Pursuant to Public Resources Code Section 5097.98, if the remains are thought to be Native American, the coroner would notify the NAHC) who would then notify the Most Likely Descendent (MLD). At this time, the person who discovered the remains would contact the Caltrans staff archaeologist so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.
Hydrology and Floodplains	Flooding and hydrologic impacts	***Flooding Minimization*** As the ramps under either build alternative would be constructed above an elevation of 2.7 meters (8.85 feet) NGVD, the project would not increase flood risk to YBI. However, for both alternatives, the proposed drainage system and bioswale would be designed to convey flood flows, and the project engineers would coordinate with the San Francisco Bay Regional Water Quality Control Board to ensure that the design capacity of the constructed storm drain system is adequate (AECOM 2009d). ***Hydrologic Minimization*** For both alternatives, bioswales would be designed to capture the increased flow rate due to the additional impervious surface. For Alternative 2b, the bioswale would be designed to capture and treat 0.03 m^3/s (1.06 ft^3/s)of runoff and for Alternative 4, the bioswale would be designed to capture and treat 0.04 m^3/s (1.4 ft^3/s) of runoff.
Water Quality and Storm Water Runoff	Water quality impacts resulting from construction dewatering and runoff; increase in	In compliance with EO 13112 and subsequent guidance from FHWA, the landscaping and erosion control measures included in the project would not use species listed as noxious or invasive weeds by the California Department of Food and Agriculture list. Disturbed areas

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	stormwater runoff due to increase in impervious surfaces	would be reseeded after construction activities are complete.
Geology/Soils/Seismic/ Topography	Slope stability and erosion impacts	The preliminary foundation memorandum (Preliminary Foundation Memorandum – Yerba Buena Island Ramps Improvement Project On East Side of the Island, Oakland, California, 2010) provides site-specific conclusions and recommendations about conditions at the YBI project site. Final determination of specific construction activities and design features planned at the project site would occur once a preferred project alternative is identified. Once an alternative has been selected, Caltrans would retain California-licensed geologists and geotechnical engineers to prepare a draft and final foundation report and to conduct a site-specific geotechnical study for the preferred alternative. This study would identify for the preferred alternative ramp alignment the presence of the hazards or conditions, as appropriate, including fault rupture hazard, soft-ground conditions, slope stability and landslides, strong seismic shaking, liquefaction and lateral spreading, settlement, and corrosive or expansive soil to affect concrete and steel. As part of the study, the geotechnical engineer would review the project plans and specifications to ascertain that geotechnical aspects of the project are addressed appropriately, including identifying corrective actions to avoid the hazard or support the design of engineering control measures. A liquefaction analysis would be conducted if the water table is determined to be above bedrock in loose to medium dense sands and the potential for liquefaction is of concern to the project design. Pile specifications would be developed, based on the results of the site-specific geotechnical study, along the proposed on-ramp and off-ramp alignment. Caltrans would document compliance with necessary avoidance and minimization measures prior to the final project design and final foundation report. The engineers would prepare a summary report that would document the investigation and detail the specific design support alternatives and protection measures that would be implemented. The ramps project in coordination with Caltrans would ensure that slope stability impacting USCG property, or its 365/24/7 access, will be maintained. The geotechnical engineer would conduct inspections and testing during the following stages of construction: • Grading operations, including excavations and compacted fill placement, • Shoring installation, • Removal or installation of support of buried utilities or structures,

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		• Pile installation, • CIDH drilling prior to placement of steel reinforcement, • Preparation of subgrade prior to placement of any overlying materials. • Foundation construction, • Backdrain construction, • When any unusual subsurface conditions are encountered.
Paleontology	Potential impacts to paleontological resources	In general, avoidance and minimization are not feasible with regard to addressing significant impacts on paleontological resources. Geologic formations are usually extensive, and project design cannot be adjusted sufficiently to effectively avoid or minimize paleontological impacts. As a result, mitigation is the approach generally taken to address paleontological impacts. A Paleontological Mitigation Plan (PMP) would be prepared under the direction of a qualified Principal Paleontologist and including: general fieldwork and laboratory methods proposed, curation requirements, report format and content, distribution and proposed staff and their qualifications. The PMP would include mitigation measures adequate for the recovery of samples and would also serve as a basis for obtaining any necessary permits from other agencies. Caltrans will retain a qualified principal paleontologist (MS or PhD in paleontology or geology familiar with paleontological procedures and techniques). The paleontologist will review the selected alternative alignment and design, once a preferred project alternative is identified; determine the potential for discovery of significant fossils; and identify specific mitigation measures as needed. Caltrans will implement the following mitigation measures as applicable to the selected alternative: a. A qualified paleontologist will be present to consult with grading and excavation contractors at pre-grading meetings. b. A paleontological monitor, under the direction of the qualified principal paleontologist, will be on site to inspect cuts for fossils at all times during original grading involving

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		sensitive geologic formations. c. When fossils are discovered, the paleontologist (or paleontological monitor) will recover them. Construction work in these areas will be halted or diverted to allow recovery of fossil remains in a timely manner. d. Fossil remains collected during the monitoring and salvage portion of the mitigation program will be cleaned, repaired, sorted, and cataloged. e. Prepared fossils, along with copies of all pertinent field notes, photos, and maps, will then be deposited in a scientific institution with paleontological collections. f. A final report will be completed that outlines the results of the mitigation program. In addition, the following mitigation measures should be implemented during the appropriate periods of project implementation. ***Onsite Training*** Onsite training should be conducted for all construction personnel who will work in excavated areas in the of the project area. Training will discuss the types of paleontological resources that could be encountered on the project and the procedures to be followed if they are discovered. ***Monitoring of Construction Activities*** Ground disturbing excavations include pile driving and column foundation construction. The minimum excavation depth for these construction activities is approximately 12.2 meters (40 feet). Ground disturbing activities are expected to penetrate paleontologically sensitive units throughout the PSA. Monitoring of project-related, ground-disturbing activities within the Franciscan Complex and the overlying Colma formation should occur. The following includes the areas and depth parameters when monitoring should occur: • In areas where the Franciscan Bedrock is mapped (as shown on Figure 1, Appendix

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		P). • If ground disturbances exceed 2 meters (6.5 feet) in depth in the areas mapped as Dune Sand and Alluvium (as shown on Figure 1, Appendix P). • If ground disturbances exceed 2.6 meters (8.5 feet) where Colluvium and Landslide Debris are mapped (2 meters [6.5 feet] for Dune Sands and 0.6 meters [2 feet] for Landslides) (as shown on Figure 1, Appendix P). • If ground disturbances exceed 9.1 meters (30 feet) in depth the southern saddle area where Manmade Fill is mapped (as shown on Figure 1, Appendix P). Monitoring should continue until a paleontologist has determined that the paleontologically sensitive units are not being impacted or do not contain paleontological materials. Periodic sampling of excavated material of the Franciscan Complex and Colma Formation will determine whether they contain sensitive paleontological resources. Monitoring, sampling, data recovery, reporting, and curation activities should take place in accordance with the professional standards determined by the Society of Vertebrate Paleontology (Conformable Impact Mitigation Guidelines Committee 1995). ***Unanticipated Discovery*** In the event fossils are discovered in an area where monitoring is not being performed, the following guidelines should be followed: • Stop all construction work within a 15.24 meter (50 foot) radius of the find until a qualified paleontologist can assess the significance of the find. If the discovery is significant or potentially significant, then potential mitigation will include: o Data recovery and analysis, o Preparation of a data recovery report, and o Accessioning recovered fossil material to an accredited paleontological repository, such as the University of California's Museum of Paleontology.

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Hazardous Waste/Materials	Potential to expose workers to hazardous materials during construction	Final determination of specific construction activities planned on or near a potential contaminant source would occur once a preferred project alternative is identified. Once a preferred alternative is identified, additional site-specific delineation of any remaining areas of unabated contamination would be performed to finalize details of construction, to detail procedures for handling of contaminated media, and to ensure worker safety during construction. This would include performance of a Phase 1 Hazardous Materials Site Assessment by qualified professional (e.g., a California Registered Environmental Assessor) in conformance with American Society for Testing and Materials standards. If the Phase I Environmental Site Assessment indicates that a release of hazardous materials could have affected soil or groundwater quality at the site, then the SFCTA would retain a qualified environmental professional to conduct a Phase II Environmental Site Assessment to determine the presence and extent of contamination at the site, in conformance with state and local guidelines and regulations. If the results of a Phase II assessment indicated the presence of hazardous materials, alteration of the project's design or a limited site remediation would be included in project specifications. The SFCTA would require that its contractors comply with applicable requirements for worker safety during construction activities in the presence of contaminated soils. Compliance with required laws and regulations through the project design and construction specifications would ensure that potential impacts associated with contaminated soils are minimized or avoided if possible. As required by the Navy's Finding of Suitability for Transfer (FOST) (2005), the proposed deed for transfer of the YBI transfer parcel will contain applicable CERCLA 120(h) notices, covenants, and warranties, as well as the additional notifications and restrictions indicated in the FOST. These are notices of the presence of hazardous substances, asbestos-containing material in buildings and structures (for which cleanup has been completed, as described below), lead-based paint adjacent to Quarters 1 through 7 and 10 (reevaluated every 2 years), residual petroleum contamination at UST 66 (not part of the project site), ongoing petroleum corrective actions at YF3 (not part of the project site), and PCBs in Buildings 118 and 200 (not part of the project site). The FOST includes restrictions on groundwater use near YF3, restrictions regarding use of structures with ACM, and occupancy restrictions on two vault rooms with elevated levels of PCBs (not part of the project site). Regardless of which alternative is selected, the responsibility and cost of the remediation would be incurred by the

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Resource Area	Conflict/Impact to be Avoided	Avoidance/Minimization Measure
		responsible party as determined by hazardous waste laws. **Additional Measures for Alternative 2b** **Building Relocations.** All known instances of LBP and ACM at YBI have been abated and removed (U.S. Navy 2008). The measures listed below would be applied to ensure safety from any ACM that may be discovered if the buildings were moved. Contract specifications for relocation of Quarters 10/Building 267 would include procedures for the abatement, handling, and disposal of LBP and ACM (if this proves necessary during building relocation activity), as well as the health and safety of workers and nearby residents (including USCG and U.S. Navy personnel). Prior to building relocation, ACM and LBP surveys would be performed to identify these materials. All procedures and permitting requirements would be consistent with Caltrans' guidelines and all Federal, state, and local laws and regulations and coordinated with responsible parties and regulatory agencies. Notices and restrictions related to asbestos were identified in the U.S. Navy's Finding of Suitability to Transfer (FOST) for YBI dated March 23, 2006, and these restrictions would be complied with during construction and operations. If surveys identify additional sources of LBP and/or ACM, workers performing activities on-site that may involve contact with contaminated soil, LBP, ACM, or groundwater would be required to have appropriate health and safety training in accordance with Federal and state regulations. To reduce the risk of exposure, a Worker Health and Safety Plan would be prepared and implemented during construction by a Certified Industrial Hygienist (CIH). The Health and Safety Plan would meet requirements of the Bay Area Air Quality Management District or other agencies as determined necessary for asbestos abatement and would include provisions for: • Conducting preliminary site investigations and analysis of potential job hazards, including identification and removal of the potential UST; • Personal protective equipment; • Safe work practices; • Site control;

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		• Exposure monitoring; • Decontamination procedures; and • Emergency response actions. The plan would address reduction of potential worker, U.S. Navy and USCG personnel, and public exposure to airborne contaminants by incorporating dust suppression techniques in construction procedures. Procedures would be in place to handle contaminated soils and groundwater, and if encountered, would follow applicable regulations.
Air Quality	Construction-related impacts	The contractor would be required to implement these "Basic Control Measures" during all construction activities. The abatement measures listed in the *Yerba Buena Island Ramps Improvement Project Air Quality Analysis* (Appendix J) are also required to be implemented during construction activities. In addition, the project site is approximately 1.62 hectares (4 acres); therefore, according to the BAAQMD CEQA Guidelines, the contractor is required to implement the BAAQMD's "Enhanced Control Measures." The following "Basic Control Measures" are required for all construction activities: • Water all active construction areas at least twice daily. • Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least 61 centimeters (24 inches) of freeboard. • Pave, apply water three times daily, or apply (nontoxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites. • Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites. • Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.

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		These additional "Enhanced Control Measures" should be implemented if the project site would exceed 1.62 hectares (4 acres): • Include all "Basic" control measures listed above. • Hydroseed or apply (nontoxic) soil stabilizers to inactive construction areas (previously graded areas inactive for 10 days or more). • Enclose, cover, water twice daily, or apply (nontoxic) soil binders to exposed stockpiles (dirt, sand, etc.) • Limit traffic speeds on unpaved roads to 24 kilometers (14.9 miles) per hour. • Install sandbags or other erosion control measures to prevent silt runoff to public roadways. • Replant vegetation in disturbed areas as quickly as possible.
Noise	Construction-related impacts	As required by the Caltrans' Standard Specification 14-8.02, "Noise Control": • Each internal combustion engine shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the project without said muffler. No construction is proposed for the No Build Alternative. Therefore, construction noise abatement would not be required. The following measures are recommended to avoid or minimize construction noise impacts associated with Alternatives 2b and 4: • Work in staging areas that generate loud noises, such as equipment maintenance, shall not occur during the hours prohibited for construction work. • If traffic control and construction signs that require power for lighting or flashing are located near residential units, the source of power would be batteries, solar cells, or another quiet source. Gas- or diesel-fueled internal combustion engines would not be

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		used. • Due to the proximity of the USCG Sector San Francisco facility to the construction area, a Memorandum of Understanding (MOU)/Memorandum of Agreement (MOA) shall be prepared detailing limitations on noise and impact activities prior to construction commencing.
Energy	Increase in energy consumption	The two Build Alternatives (2B and 4) would not result in a need to implement avoidance minimization, compensation, or mitigation measures resulting from project-related impacts to growth on YBI and TI, given that energy consumption would be reduced.
Natural Communities	Impacts to natural communities	With implementation of the avoidance and minimization measures described below, both project alternatives would not result in impacts to northern foredune and central coast riparian scrub vegetation. Potential impacts during construction activities would be avoided by placement of ESA exclusion fencing 3 meters (10 feet) from the perimeter of these communities. Contractor education would be conducted, bright-colored ESA fencing and signage shall be implemented, and a construction monitor shall confirm the fence integrity on a daily basis to protect the area from accidental equipment damage. If necessary, fence repair and/or reinforcements shall be completed immediately.
Wetlands and Other Waters	Impacts to wetlands and other waters	For both alternatives, the tidal waters of the Bay would be avoided by temporary construction features and permanent project features. Tidal waters would also not be affected by temporary construction activities due to implementation of standard construction BMPs to treat and minimize discharge into the Bay (Figures 3.17-3 and 3.17-4). Existing SFOBB project staging areas that are present within the BSA and addressed herein would be largely utilized for construction staging and access. Standard construction BMPs, including placement of straw wattles or silt fencing along the boundary of the project area, would be implemented according to an erosion control plan, which would be prepared to avoid discharge into the waters of the Bay during staging and construction of the ramps. Catch basin inlet protection and installation of straw wattles (fiber rolls) would be implemented throughout the site during construction. Other construction BMPs that would be reviewed and coordinated with the RWQCB for implementation during work near the Bay waters are discussed in Section 3.9, Hydrology and Floodplains.

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Plant Species	Impacts to plant species	**Stinging Phacelia** Stinging phacelia shall be avoided to the extent feasible by the chosen project alternative and protected during construction. Where avoidance is not feasible, compensatory measures shall be implemented. Potential impacts during construction activities shall be avoided to the extent feasible by placement of exclusion fencing 3 meters (10 feet) from the perimeter of the stinging phacelia stands outside the temporary and permanent impact area. Contractor education shall be conducted, bright-colored ESA fencing and signage shall be implemented, and a construction monitor shall confirm the fence integrity on a daily basis to protect the area from accidental equipment damage. Fence repair and/or reinforcements shall be completed immediately. Unavoidable impacts to stinging phacelia will be offset by implementation of a woodland habitat revegetation plan. Stinging phacelia plants removed in permanent and temporary disturbance areas will be replanted at a 1:1 ratio. Compensatory measures are not proposed.
Plant Species	Impacts to plant species	**Large Flowered Sand-Spurrey** Large flowered sand-spurrey shall be avoided to the extent feasible by the chosen project alternative and protected during construction. Potential impacts during construction activities shall be avoided by placement of exclusion fencing 3 meters (10 feet) from the perimeter of the large flowered sand-spurrey stand outside the temporary and permanent impact area. Contractor education shall be conducted, bright-colored ESA fencing and signage shall be implemented, and a construction monitor shall confirm the fence integrity on a daily basis to protect the area from accidental equipment damage. Fence repair and/or reinforcements shall be completed immediately. Loss of individuals is not anticipated; therefore, compensatory measures are not proposed.
Animal Species	Impacts to invertebrates	**Sandy Beach Tiger Beetle** Exclusion fencing will be placed around sandy dune habitats and contractor education will be conducted to prevent encroachment of construction activities.

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		Impacts to potential sandy beach tiger beetle habitat are not anticipated. In addition, the potential habitat within the BSA is considered marginal and the species has a very low potential to be present based on habitat quality and lack of occurrences in the vicinity. Compensatory measures are not proposed.
Animal Species	Impacts to invertebrates	**Monarch Butterfly** Prior to the onset of construction activities, a qualified biologist would conduct focused surveys for monarch butterfly to determine presence or absence within the proposed project areas. If monarch butterfly winter roost sites are determined to be present during focused surveys, occupied habitat would be avoided to the extent feasible, or it would be disturbed outside of the winter roost season, which is typically from September through March. ESA exclusion fencing would be placed around avoided habitats and contractor education would be conducted to prevent encroachment of construction activities. Bright-colored ESA fencing and signage would be implemented and a construction monitor would confirm the fence integrity on a daily basis to protect the area from accidental equipment damage. Fence repair and/or reinforcements would be completed immediately. If a new roost site is discovered during construction, the biological monitor would be contacted to implement avoidance procedures before construction resumes in the area. Removal of eucalyptus woodland and mixed broadleaf conifer forest habitat that may provide roost sites for monarch butterfly will be offset by implementation of the woodland habitat revegetation plan described in Section 2.2.4. Trees removed will be replaced at a 1:1 ratio providing potential habitat that may benefit the species longer term. Compensatory measures are not proposed.
Animal Species	Impacts to invertebrates	**Gummifera Leaf-Cutter Bee** Prior to the onset of construction activities, a qualified biologist would conduct focused surveys for gummifera leaf-cutter bee to determine presence or absence within the proposed project areas. If any gummifera leaf-cutter bees are determined to be present during focused surveys, occupied habitat would be avoided to the extent feasible. ESA exclusion fencing would be placed around avoided habitats and contractor education would be conducted to prevent encroachment of construction activities. Bright-colored ESA fencing and signage would be implemented and a construction monitor would confirm the fence integrity on a daily basis to protect the area from accidental equipment damage. Fence repair and/or reinforcements would be completed immediately. If the species is discovered during construction, the

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Resource Area	Conflict/Impact to be Avoided	Avoidance/Minimization Measure
		biological monitor would be contacted to implement avoidance procedures before construction resumes in the area. Removal of vegetation that may provide habitat for the gummifera leaf-cutter bee will be offset by implementation of the revegetation plan described in Section 2.2.4. Vegetation removed, including non-native trees, will be replaced at a 1:1 ratio providing potential habitat that may benefit the species longer term if it occurs in the area. Compensatory measures are not proposed.
Animal Species	Impacts to invertebrates	**San Francisco Lacewing** Prior to the onset of construction activities, a qualified biologist would conduct focused surveys for San Francisco lacewing to determine presence or absence within the proposed project areas. If any individuals are determined to be present during focused surveys, occupied habitat would be avoided to the extent feasible. ESA exclusion fencing would be placed around avoided habitats and contractor education would be conducted to prevent encroachment of construction activities. Bright-colored ESA fencing and signage would be implemented and a construction monitor would confirm the fence integrity on a daily basis to protect the area from accidental equipment damage. Fence repair and/or reinforcements would be completed immediately. If the species is discovered during construction, the biological monitor would be contacted to implement avoidance procedures before construction resumes in the area. Removal of eucalyptus woodland and mixed broadleaf conifer forest habitat that may provide habitat for San Francisco lacewing will be offset by implementation of the woodland habitat revegetation plan described in Section 2.2.4. Trees removed will be replaced at a 1:1 ratio providing potential habitat that may benefit the species longer term. Compensatory measures are not proposed.
Animal Species	Impacts to fish	The project is designed so that construction activities are located an adequate distance from the bay and therefore fish would be not be affected by construction activities. Construction noise levels, including pile driving, would be well below established thresholds to avoid potential injury to fish located in aquatic habitats adjacent to the site. The project would not result in the loss of any Essential Fish Habitat and therefore

Table D-1
Summary of Avoidance and Minimization Measures

Resource Area	Conflict/Impact to be Avoided	Avoidance/Minimization Measure
		compensatory measures are not proposed.
Animal Species	Impacts to raptors	**American Peregrine Falcon** Peregrine falcons have the potential to nest in proximity to the BSA and have a high potential to use the BSA for foraging. Construction activities within the vicinity of active raptor nests could result in nest abandonment, nest failure, or premature fledging. Destruction or disturbance of active nests would be in violation of the MBTA and Fish and Game Code. In addition, peregrines are protected under CESA. Therefore, the following minimization measures would be implemented to avoid project-related impacts to potentially nesting peregrine falcons: 1. Throughout project construction, monitoring of the potential peregrine falcon nest sites on the columns of the existing SFOBB would be continued following the methodology outlined in the Final Revised Bird Monitoring and Management Plan (LSA 2003). 2. If removal of structures occurs, or construction begins between December 15 and August 31 (the nesting season), a nesting bird survey would be performed by a qualified biologist within 15 days prior to the removal of potential nesting structures, or prior to disturbance of areas in the vicinity of potential nest sites. 3. If an active peregrine falcon nest is discovered on the bridge or other structures within the project area or within 457.2 meters (1,500 feet) of the project area boundary, a nondisturbance buffer zone would be established in coordination with CDFG as necessary. Contractor education would be conducted by a qualified biologist for nesting bird avoidance. Observations would be conducted by a qualified biologist to confirm that work occurring outside of the buffer zone is not disturbing the nesting pair. If necessary, buffer zones would be adjusted to reduce distress to birds. 4. CDFG would be consulted for clearance before construction activities resume within the buffer zone. 5. ESA exclusion fencing would be placed around avoided habitats and contractor education would be conducted to prevent encroachment of construction activities. Bright-colored ESA fencing and signage would be implemented and a construction monitor would confirm the fence integrity on a daily basis to protect the area from

Table D-1
Summary of Avoidance and Minimization Measures

Resource Area	Conflict/Impact to be Avoided	Avoidance/Minimization Measure
		accidental equipment damage. Fence repair and/or reinforcements would be completed immediately. If a new nest site is discovered during construction, the biological monitor would be contacted to implement avoidance procedures in coordination with CDFG before construction resumes in the area. No compensatory measures are proposed for this species.
Animal Species	Impacts to raptors	***Cooper's Hawk, Golden Eagle, White-Tailed Kite, and Other Nesting Raptors*** Cooper's hawks, golden eagle, white-tailed kite, and common raptor species such as red-tailed hawk have the potential to nest within habitats on-site. Any removal of trees, buildings, or other structures, or construction activities within the vicinity of active raptor nests could result in nest abandonment, nest failure, or premature fledging. Destruction or disturbance of active nests would be in violation of the MBTA and Fish and Game Code. Therefore, the following minimization measures would be implemented to avoid project-related impacts to potentially nesting raptors, in coordination with CDFG: 1. To the extent feasible, potential nest trees will be avoided. 2. To the extent feasible, the necessary removal of any trees or structures would occur from September 1 through December 15, outside the breeding season. If removal of trees or structures occurs, or construction begins between December 15 and August 31 (the nesting season), a nesting bird survey would be performed by a qualified biologist within 15 days prior to the removal of potential nesting trees or structures, or prior to disturbance of areas in the vicinity of potential nest sites. 3. All trees or structures with active nests would be flagged and a nondisturbance buffer zone established around the nest site in coordination with CDFG. Additionally, if any nests are found on the bridge or other structures within the project area or within 152.4 meters (500 feet) of the project area boundary, these nests shall be flagged and a nondisturbance buffer zone established. Buffer zones typically range between 61 and 152.4 meters (200 and 500 feet) depending on the species involved, site conditions, nesting stage, and type of work in proximity. Contractor education would be conducted for nesting bird avoidance. Observations would be conducted by a qualified biologist to confirm that work occurring outside of the buffer zone is not disturbing nesting pairs. If necessary, buffer zones would be adjusted to reduce

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Summary of Avoidance and Minimization Measures

Resource Area	Conflict/Impact to be Avoided	Avoidance/Minimization Measure
		distress to birds. 4. Active nests would be regularly monitored by a qualified biologist in coordination with CDFG to determine when the young have fledged and are feeding on their own. CDFG would be consulted for clearance before construction activities resume within the buffer zone. CDFG will be notified if any nest is disturbed. 5. ESA exclusion fencing would be placed around avoided habitats and contractor education would be conducted to prevent encroachment of construction activities. Bright-colored ESA fencing and signage would be implemented and a construction monitor would confirm the fence integrity on a daily basis to protect the area from accidental equipment damage. Fence repair and/or reinforcements would be completed immediately. If a new nest site is discovered during construction, the biological monitor would be contacted to implement avoidance procedures, in coordination with CDFG, before construction resumes in the area. Temporarily disturbed woodland and forested areas will be restored after completion of construction activities. Removal of eucalyptus woodland and mixed broadleaf conifer forest habitat that may provide nest sites for Cooper's hawk will be offset by implementation of the woodland habitat revegetation plan described in Section 2.2.4. Trees removed will be replaced at a minimum 1:1 ratio, with natives to the island replaced at a 3:1 ratio. Compensatory measures are not proposed.
Animal Species	Impacts to birds (non-raptors)	**Passerines and Nonpasserine Landbirds** Several special-status and common passerine and nonpasserine landbirds, listed above, have at least some potential to nest and forage on-site. Any removal of structures, trees, or shrubs, or construction activities in the vicinity of active nests could result in nest abandonment, nest failure, or premature fledging. Destruction or disturbance of active nests would be in violation of the MBTA and Fish and Game Code. In addition, due to its Fully Protected status under Fish and Game Code, incidental take of individuals or nests is not authorized. Therefore, the following minimization measures would be implemented to avoid project-related impacts to potentially nesting passerine and nonpasserine landbirds, in coordination with CDFG: 1. The removal of any structures, trees, or shrubs would occur from September 1 through February 1, outside the passerine and nonpasserine landbird breeding

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Summary of Avoidance and Minimization Measures

Resource Area	Conflict/Impact to be Avoided	Avoidance/Minimization Measure
		season. If removal of trees or shrubs occurs, or construction begins between February 1 and August 31 (the nesting season), a nesting bird survey would be performed by a qualified biologist within 15 days prior to the removal of potential nesting structures, trees, or shrubs, or prior to disturbance of areas in the vicinity of potential nest sites, i.e., trees and shrubs. 2. All active nests would be flagged and a nondisturbance buffer zone established around the nesting tree (or other nesting substrate) in coordination with the CDFG. Buffer zones for passerines and nonpasserine land birds typically range between 15.2 and 27.4 meters (50 and 90 feet) depending on the species involved, site conditions, and type of work proposed in the vicinity. Contractor education would be conducted for nesting birds, including a discussion of avoidance and protection measures. 3. Active nests would be monitored by a qualified biologist in coordination with CDFG to determine when the young have fledged and are feeding on their own. The project biologist would be consulted for clearance before construction activities resume in the vicinity. 4. If a new nest site is discovered during construction, the biological monitor would be contacted to implement avoidance procedures, in coordination with CDFG, before construction resumes in the area. No compensatory measures are proposed for these species.
Animal Species	Impacts to birds (non-raptors)	**Shorebirds, Marshbirds, and Waterbirds** Suitable nesting and foraging habitat is present on-site for several species of wading birds, including snowy egret, great blue heron, great egret, and black-crowned night-heron. Therefore, the following minimization measures would be implemented to avoid project-related impacts to potentially nesting birds, in coordination with CDFG: 1. The removal of any structures, trees, or shrubs would occur from September 1 through February 1, outside the breeding season. If removal of trees or shrubs occurs, or construction begins between February 1 and August 31 (the nesting season), a nesting bird survey would be performed by a qualified biologist within 15 days prior to the removal of potential nesting structures, trees, or shrubs, or prior to disturbance of

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Summary of Avoidance and Minimization Measures

Resource Area	Conflict/Impact to be Avoided	Avoidance/Minimization Measure
		areas in the vicinity of potential nest sites, i.e., trees and shrubs. 2. All active nests would be flagged and a nondisturbance buffer zone established around the nesting tree in coordination with the CDFG. Buffer zones for wading birds typically range between 30.5 and 61 meters (100 and 200 feet) depending on the species involved, site conditions, and type of work proposed in the vicinity. Contractor education would be conducted for nesting birds, including a discussion of avoidance and protection measures. 3. Active nests would be monitored by a qualified biologist in coordination with CDFG to determine when the young have fledged and are feeding on their own. The project biologist would be consulted for clearance before construction activities resume in the vicinity. 4. ESA exclusion fencing would be placed around avoided habitats and contractor education would be conducted to prevent encroachment of construction activities. Bright-colored ESA fencing and signage would be implemented and a construction monitor would confirm the fence integrity on a daily basis to protect the area from accidental equipment damage. Fence repair and/or reinforcements would be completed immediately. If a new nest or roost site is discovered during construction, the biological monitor would be contacted to implement avoidance procedures in coordination with CDFG before construction resumes in the area. Temporarily disturbed woodland and forested areas will be restored after completion of construction activities. Removal of eucalyptus woodland and mixed broadleaf conifer forest habitat that may provide nest sites for waterbirds such as herons and egrets will be offset by implementation of the woodland habitat revegetation plan described in Section 2.2.4. Trees removed will be replaced at a minimum 1:1 ratio, with natives to the island replaced at a 3:1 ratio. Compensatory measures are not proposed.
Animal Species	Impacts to birds (non-raptors)	**California Brown Pelican** California brown pelicans have a high potential to roost adjacent to the construction envelope. Construction activities immediately adjacent to their roosting habitat could cause disturbance or flushing of individuals. Therefore, the following minimization measure would be implemented to avoid project-related impacts to California brown pelican, in coordination with

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Summary of Avoidance and Minimization Measures

Resource Area	Conflict/Impact to be Avoided	Avoidance/Minimization Measure
		CDFG: 1. Exclusion fencing would be placed around the construction footprint to prevent construction equipment from entering areas where the pelicans may roost. Contractor education would be conducted, including a discussion of avoidance and protection measures. A construction monitor would confirm the fence integrity on a daily basis to protect the area from accidental equipment damage. Fence repair and/or reinforcements would be completed immediately. If a new roost site is discovered during construction, the biological monitor would be contacted to implement avoidance procedures in coordination with CDFG before construction resumes in the area. No compensatory measures are proposed due to the lack of permanent impacts.
Animal Species	Impacts to birds (non-raptors)	**Double-Crested Cormorant** Double-crested cormorants have potential to nest and forage on-site. Construction activities on or adjacent to the existing bridge structure or the eastern border of the BSA could potentially disturb cormorants. Therefore, the following minimization measures are recommended to avoid project-related impacts to double-crested cormorants, in coordination with CDFG: 1. Throughout project construction, monitoring of the potential cormorant nest sites on the existing SFOBB would be continued following the methodology outlined in the Final Revised Bird Monitoring and Management Plan (2003). 2. If construction activities begin between February 1 and August 31 (the nesting season), a nesting bird survey of the on-site bridge structure would be performed by a qualified biologist within 15 days prior to onset of construction to ensure that no cormorants have begun to nest in the structure or within 61 meters (200 feet) of the project disturbance footprint. 3. All active nests would be flagged or mapped and a nondisturbance buffer zone established around the nest in coordination with the CDFG. Buffer zones typically range between 30.5 and 61 meters (100 and 200 feet) for wading and waterbirds

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Summary of Avoidance and Minimization Measures

Resource Area	Conflict/Impact to be Avoided	Avoidance/Minimization Measure
		depending on the species involved, site conditions, and type of work proposed. 4. Active nests would be monitored by a qualified biologist in coordination with CDFG to determine when the young have fledged and are feeding on their own. CDFG would be consulted for clearance before construction activities resume. 5. Exclusion fencing would be placed around the construction footprint to prevent construction equipment for entering areas where the cormorants may roost. A construction monitor would confirm the fence integrity on a daily basis to protect the area from accidental equipment damage. Fence repair and/or reinforcements would be completed immediately. 6. If a new roost or nest site is discovered during construction, the biological monitor would be contacted to implement avoidance procedures in coordination with CDFG before construction resumes in the area. No compensatory measures are proposed for this species.
Animal Species	Impacts to terrestrial mammals	**Special-Status Bats** A preconstruction survey for roosting bats would be performed by a qualified biologist within 30 days prior to any removal of trees or structures on the site. If no active roosts are found, then no further action would be proposed. If either a maternity roost or hibernacula (structures used by bats for hibernation) is present, the following minimization measures would be implemented: 1. If active maternity roosts or hibernacula are found in trees or structures that would be removed or disturbed as part of project construction, the roost would be avoided by construction activities to the extent feasible. If an active maternity roost is located and avoidance of the occupied tree or structure is not feasible, demolition can commence before maternity colonies form (i.e., prior to March 1) or after young are volant (flying) (i.e., after July 31). Disturbance-free buffer zones as determined by a qualified biologist in coordination with CDFG would be observed during the maternity roost season (March 1 through July 31). 2. ESA exclusion fencing would be placed around avoided habitats and contractor

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Summary of Avoidance and Minimization Measures

Resource Area	Conflict/Impact to be Avoided	Avoidance/Minimization Measure
		education would be conducted to prevent encroachment of construction activities. Bright-colored ESA fencing and signage would be implemented and a construction monitor would confirm the fence integrity on a daily basis to protect the area from accidental equipment damage. Fence repair and/or reinforcements would be completed immediately. If a new roost site is discovered during construction, the biological monitor would be contacted to implement avoidance procedures before construction resumes in the area. 3. If a non-breeding bat hibernacula is found in a tree or structure scheduled for removal, the individuals would be safely evicted, under the direction of a qualified biologist (as determined by possession of a Memorandum of Understanding [MOU] with CDFG, typically amended to the individual's scientific collecting permit), by opening the roosting area to allow airflow through the cavity. Demolition can then follow at least one night after initial disturbance for airflow. This action should allow bats to leave during darkness, thus increasing their chance of finding new roosts with a minimum of potential predation during daylight. Trees or structures with roosts that need to be removed would first be disturbed at dusk, just prior to removal that same evening, to allow bats to escape during the darker hours. If special-status bats are found roosting within trees or structures on-site that require removal or if occupied habitat is accidentally damaged during construction, appropriate replacement roosts shall be created at a 1:1 ratio at a suitable location on-site or off-site in coordination with a qualified biologist, Caltrans and/or CDFG.

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Summary of Avoidance and Minimization Measures

Resource Area	Conflict/Impact to be Avoided	Avoidance/Minimization Measure
Animal Species	Impacts to terrestrial mammals	**San Francisco Dusky Footed Woodrat** A preconstruction survey for San Francisco dusky-footed woodrat and associated woodrat houses would be performed by a qualified biologist within 30 days prior to any removal of trees or other vegetation on the site and within 30.5 meters (100 feet) of planned construction activities. If no active houses are found, then no further action would be proposed. If active woodrat houses are found in or below trees and vegetation that would be removed or temporarily disturbed as part of project construction, the project would be redesigned to avoid the loss of the occupied habitat and disturbance to woodrats to the extent feasible. If the project cannot be redesigned to avoid removal of the occupied habitat, the woodrat house may be relocated to a suitable location as close to the original house as possible while maintaining an adequate buffer of construction activities in coordination with CDFG. Animal exclusion fencing would be placed around the construction area, to prevent woodrat ingress, and contractor education would be conducted. A construction monitor would confirm the fence integrity on a daily basis to protect the area from accidental equipment damage. Fence repair and/or reinforcements would be completed immediately. If a new nest site is discovered during construction, the biological monitor would be contacted to implement avoidance procedures in coordination with CDFG before construction resumes in the area. If San Francisco dusky-footed woodrat houses are found within portions of the project site that require permanent or temporary disturbance or if occupied habitat is accidentally damaged during construction, appropriate replacement houses/nests would be created at a 1:1 ratio at a suitable location on-site or off-site in coordination with a qualified biologist, Caltrans, and/or CDFG. Follow-up monitoring efforts would be conducted to evaluate relocation success and additional measures may be proposed if relocated houses are not successful.
Threatened and Endangered Species	Impacts to threatened and endangered species	**Fish** The project design is such that protected fish would be not be affected by construction activities. Construction noise levels, including pile driving, would be below established thresholds to avoid potential injury to protected fish located in aquatic habitats adjacent to the site. The project would not result in the loss of any habitat for Federally listed fish species and therefore compensatory measures are not proposed.

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Summary of Avoidance and Minimization Measures

Resource Area	Conflict/Impact to be Avoided	Avoidance/Minimization Measure
Threatened and Endangered Species	Impacts to threatened and endangered species	**Bank Swallow** Any removal of structures, trees, or shrubs, or construction activities in the vicinity of active nests could result in nest abandonment, nest failure, or premature fledging. Destruction or disturbance of active nests would be in violation of the MBTA and Fish and Game Code. Therefore, the following measures would be implemented to avoid project-related impacts to potentially nesting bank swallows in proximity to construction areas, in coordination with CDFG: 1. The removal of any structures, trees, or shrubs would occur from September 1 through February 1, outside the passerine and nonpasserine landbird breeding season. If removal of trees or shrubs occurs, or construction begins between February 1 and August 31 (the nesting season), a nesting bird survey would be performed by a qualified biologist within 15 days prior to the removal of potential nesting structures, trees, or shrubs, or prior to disturbance of areas in the vicinity of potential nest sites, i.e., hillsides and trees. 2. All active nests would be flagged and a nondisturbance buffer zone established around the nesting tree (or other nesting substrate) in coordination with CDFG. Buffer zones for passerines and nonpasserine land birds typically range between 15.2 to 27.4 meters (50 and 90 feet) depending on the species involved, site conditions, and type of work proposed in the vicinity. Contractor education would be conducted for nesting birds, including a discussion of avoidance and protection measures. 3. Active nests would be monitored by a qualified biologist in coordination with CDFG to determine when the young have fledged and are feeding on their own. The project biologist would be consulted for clearance before construction activities resume in the vicinity. 4. If a new nest site is discovered during construction, the biological monitor would be contacted to implement avoidance procedures in coordination with CDFG before construction resumes in the area. No compensatory measures are proposed for this species.

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Summary of Avoidance and Minimization Measures

Resource Area	Conflict/Impact to be Avoided	Avoidance/Minimization Measure
Threatened and Endangered Species	Impacts to threatened and endangered species	**Harbor Seal** The project design is such that harbor seal habitat and individuals will be avoided by construction activities. Based on the hydroacoustic analysis (Memo: Yerba Buena Island – Pile Driving Noise Descriptions. January 3, 2011a; E-Mail Correspondence: Airborne Noise from Pile Driving. January 6, 2011b), no avoidance measures are proposed. The project would not result in loss of any harbor seal habitat and therefore compensatory measures are not proposed.
Threatened and Endangered Species	Impacts to threatened and endangered species	**California Sea Lion** The project design is such that sea lion habitat and individuals will be avoided by construction activities. Based on the hydroacoustic analysis (Memo: Yerba Buena Island – Pile Driving Noise Descriptions. January 3, 2011a; E-Mail Correspondence: Airborne Noise from Pile Driving. January 6, 2011b), no avoidance measures are proposed. The project would not result in loss of any sea lion habitat and therefore compensatory measures are not proposed.
Invasive Species	Limit spread of invasive species	To avoid the environmental consequences outlined above, there would be a multilayered approach to avoid, minimize, and/or compensate the project's effects. In compliance with EO 13112, and subsequent guidance from FHWA, the landscaping and erosion control measures included in the project would not use species listed as noxious or invasive weeds by the California Department of Food and Agriculture (CDFA 2010). In areas of particular sensitivity, extra precautions would be taken if invasive species are found in or adjacent to the construction areas. These include the inspection and cleaning of construction equipment and eradication strategies to be implemented should an invasion occur. For botanical resources, hydroseeding and replanting for erosion control and revegetation of slopes would be verified for being invasive plant/weed-free before application by an established, approved, licensed, and insured contractor. Local native plant ecotypes would be used for replanting in affected areas. Standard BMPs would be implemented. To minimize attracting non-native/nuisance wildlife, garbage generated on-site would be appropriately disposed of in garbage cans placed throughout the site and deposited into large and secure

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Summary of Avoidance and Minimization Measures

Resource Area	Conflict/Impact to be Avoided	Avoidance/Minimization Measure
		dumpsters daily. These dumpsters would be emptied on a weekly basis before dusk. On-site toilets would be maintained daily for site sanitation and to avoid attracting more nuisance wildlife. Worker education would focus on the diminishment and disposal of on-site garbage and the factors associated with decreasing invasive species potential on-site. By encouraging proper and timely sanitation of construction-generated waste (especially food), invasive rodent (e.g., mice and rat) activity would be controlled. In most urbanized environments random food scraps and overgrown or salvage areas provide abundant forage and habitat for rodents. Neat, off-the-ground storage of pipes, girders, cable, wire, and lumber would help reduce the suitability of the area for rats and would also make rodent detection easier. Garbage and trash, and all garbage receptacles, would have tight-fitting covers. Feral pets should not be encouraged through provision of food for feeding. This food may become a ready supply of food for rats and mice, or other nuisance wildlife. Overall, the introduction and spread of exotic and invasive plant and wildlife species would be avoided to the maximum extent possible. BMPs, as identified by the SFRWQCB and described in Section 3.17.2.4, would be implemented to control erosion while not increasing the spread of invasive plant or wildlife species. In some cases, hydroseeding or rapid replanting measures can increase the spread of weed/invasive grass species through lack of seed purity or insufficient preparation of the seed mix. Revegetation contractors would implement standard quality assurance/quality control measures to verify the purity of native seed mix and the site appropriateness of ecotypes for revegetation utilizing container plants.

Table D-2
Summary of Mitigation Measures

Resource Area	Impact to be Mitigated	Mitigation Measure
Cultural Resources	Impacts to historic resources.	The MOA is being developed with input from SHPO. It would dictate a variety of tasks intended to avoid, minimize, or mitigate for impacts to the built environment. The MOA could include the following mitigation measures; ***Conduct Vibration Studies*** Prior to the commencement of any construction activity, measures to protect the buildings of the Senior Officers' Quarters Historic District, Quarters 1/Nimitz House, and Quarters 10/Building 267 from potential damage due to construction vibration will be developed and implemented. Existing analysis derived from the SFOBB ESSSP could be used to inform the need for changes in construction methodology, shoring, and/or building stabilization, if consultation among the SHPO, SFCTA, and Caltrans/FHWA requires it. ***Preparation of Historic Structures Reports and Conditions Assessments*** Historic Structure Reports (HSRs) would be prepared for Quarters 1/Nimitz House and Quarters 10/ Building 267. Detailed information is needed to assess what avoidance and protection measures are required to prevent adverse effects. The HSRs would be written in accordance with the standards established in *Preservation Brief 43: The Preparation and Use of Historic Structure Reports*, by Deborah Slaton, published by Heritage Preservation Services, National Park Service, 2005. The HSRs would include a history of the property/building, construction history, archaeology, architectural evaluation, conditions assessment, maintenance requirements, recommendations for proposed work, copies of original drawings and specifications if available, current drawings if different from the original, and historic and current photographs. Such information would also help facilitate future owners or operators' adaptive reuse of these buildings and structures. ***Stabilization/Monitoring/Security During Construction*** Before the construction phase of the project, a comprehensive stabilization/monitoring plan would be prepared, if consultation among the SHPO, SFCTA, and Caltrans/FHWA requires it. This plan could cover all potentially affected contributing elements, including historic structures and cultural landscape elements within the project area that are in proximity to construction activities. This plan would describe methods for the preservation, stabilization, shoring/underpinning, and monitoring of buildings, structures, and objects. The plan may also include provisions that high vibration construction techniques would be avoided in sensitive areas.

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Summary of Mitigation Measures

Resource Area	Impact to be Mitigated	Mitigation Measure
		Underpinning and/or other stabilization and protective methods could be implemented at buildings located near project construction areas and that may be susceptible to damage or inadvertent destruction. A professional historical architect or architectural historian who meets the Secretary of the Interior's Professional Qualifications Standards (see 36 C.F.R. Regulations Part 61) would approve and monitor underpinning and stabilization activities. These same buildings would also require pre- and post-construction condition assessment reports ***Interpretation of Historic Properties*** Public interpretive material would be developed commensurate with the significance themes for the resources affected by the project. Interpretive products may include signage, panels and other appropriate media for interpretation. The interpretation would outline the history and significance of the cultural resources. Interpretive signage would be coordinated with that already planned by Caltrans as mitigation for the SFOBB ESSSP. ***Relocation*** If Alternative 2b is selected, Quarters 10/Building 267 shall be relocated and reconstructed in accordance with the Secretary of the Interior's *Standards for the Treatment of Historic Properties: Standards for Preservation, Rehabilitation, Restoration, and Reconstruction* (1995). The process for moving these buildings would follow the approach outlined in *Moving Historic Buildings* (Curtis 1979). In addition, Quarters 10/Building 267 would be relocated by a professional mover with demonstrated experience in the successful movement of historic buildings. These efforts would be conducted in consultation with the Office of Historic Preservation. Appropriate steps would also be taken to ensure that buildings would be protected prior to moving to accommodate construction. Quarters 10/Building 267 would be protected in place until they are relocated. Measures taken for Quarters 10/Building 267 would include securing the building and providing security before, during, and following its relocation for a period of time agreed to by Caltrans and the SFCTA. These provisions would follow recommended standards established in National Parks Service *Preservation Brief 31: Mothballing Historic Buildings* (Park 1993). ***Cultural Landscape Monitoring and Protection Measures*** Protection measures, such as ESA fencing, would be used to protect known resources during

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Summary of Mitigation Measures

Resource Area	Impact to be Mitigated	Mitigation Measure
		construction. These measures would be implemented for contributing elements of the Senior Officers' Quarters Historic District, including buildings and historic landscaping that are in proximity to the construction zone but are not anticipated to be impacted by demolition or construction activities related to the project. Protection measures outlined in mitigation stipulated by the MOA could include, but are not limited to, shoring and other stabilization methods, fencing, scaffolding and debris netting, and fire protection protocols such as no-smoking zones and other stabilization measures for structures as determined necessary to protect contributing resources or sensitive areas. Monitoring of contributing elements of the Senior Officers' Quarters Historic District would be conducted in proximity to the project to support the protection measures for the built environment and the cultural landscape. Monitoring procedures would commence with preconstruction condition assessments of buildings and structures adjacent to the construction footprint to finalize monitoring requirements for built resources. If unexpected impacts to historic buildings or cultural landscape features are identified during construction, the provisions for protection, stabilization, or mitigation outlined in MOA would be followed in consultation with the U.S. Navy, SHPO. This monitoring would be conducted by a professional architectural historian and/or a professional cultural landscape historian or landscape architect as appropriate, who meets the Secretary of the Interior's Professional Qualifications Standards. ***Rehabilitation of Buildings and Rehabilitation/Restoration of Cultural Landscape Features*** The rehabilitation of Quarters 10/Building 267, and rehabilitation and/or restoration of cultural landscape features would be conducted in consultation with the Office of Historic Preservation and would follow the Secretary of the Interior's *Standards for the Treatment of Historic Properties: Standards for Preservation, Rehabilitation, Restoration, and Reconstruction* (1995) and National Parks Service *Preservation Brief 36: Protecting Cultural Landscapes: Planning, Treatment, and Management of Historic Landscapes* (Birnbaum 1994). Only portions of the Senior Officers' Quarters Historic District landscape would be affected by the project. Therefore, only specific areas, or subareas, of the larger cultural landscape would be subject to treatment as part of the mitigation measures for the proposed project.. Replanting would require coordination with natural resource restoration prescriptions and Caltrans landscape protocols.

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Summary of Mitigation Measures

Resource Area	Impact to be Mitigated	Mitigation Measure
		Minor Repairs and Reconstruction Inadvertent damage to historic properties, or to their contributing elements, would be repaired in accordance with the Secretary of the Interior's *Standards for Treatment of Historic Properties Standards for Preservation, Rehabilitation, Restoration, and Reconstruction* (1995). This would include damage to contributing elements such as landscaping, curbs, fencing, and related features, as well as contributing buildings, structures, and objects. ***Conduct Postconstruction Condition Assessment, and a Reevaluation of Resources*** Following completion of construction of the YBI Ramps, a postconstruction conditions assessment and reevaluation would be conducted to determine whether NRHP- listed resources continued to adequately meet listing criteria. This reevaluation would apply to Quarters 10/Building 267 to assess whether the property still retains sufficient historical integrity to convey its significance. This reevaluation would take place subsequent to the Yerba Buena Ramps Improvement Project completion.
Visual/Aesthetics	Change in visual character, removal of vegetation and increased light and glare during construction	Caltrans and FHWA mandate that a qualitative/aesthetic approach should be taken to mitigate for visual quality loss in the project area. This approach fulfills the letter and the spirit of FHWA requirements because it addresses the actual cumulative loss of visual quality that would occur in the project viewshed if the project was implemented along with the SFOBB. It also constitutes mitigation that can more readily generate public acceptance of the project. Visual mitigation for adverse project impacts addressed in the key viewpoint assessments and summarized in the previous section would consist of adhering to the following design requirements in cooperation with the District Landscape Architect. **Alternative 2b** Construction of the Alternative 2b design would in some cases have significant impacts on the visual quality of some areas when these areas are observed from certain viewpoints. This would be noticeable in cases where views toward or from the Senior Officers' Quarters Historic District would be dominated and/or obstructed by the ramp structures. Alternative 2b would require the removal of woodland vegetation, mostly mature eucalyptus trees, within the project's construction limits. Most of the trees that would

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Summary of Mitigation Measures

Resource Area	Impact to be Mitigated	Mitigation Measure
		be removed are located in the area southwest of the Nimitz House, which is where the off-ramp would end and the on-ramp would begin. These are mature tall trees that add to the island's appearance and shield the ramps partially from view. The removal of this vegetation would constitute a substantial visual impact, and a number of years would be required before the vegetation could reestablish itself to the density that exists today. Given the large scale of the ramps, it would be difficult to screen or sufficiently offset their visual impacts without in the process causing secondary significant visual impacts. Design requirements including ribbing to match the existing and proposed adjacent structures would be implemented under Alternative 2b. To promote a seamless interaction between the ramps and the SFOBB Transition Structure, the ramps would utilize a ribbed design that is consistent with the structural form and architectural vocabulary of the new SFOBB East Span. The intent is to blend the structure such that both components appear to be integrated as one project. A landscaping plan for the project area would be developed in cooperation with Caltrans' District 4 Landscape Architect and is still being designed. While the goal would be to aesthetically enhance the project site, bridge security may limit the range of options that can be considered. However, some new vegetation will be planted in appropriate locations. The landscaping alone will not fully mitigate the visual impact. The landscaping plan would incorporate the use of native plants such as Coast live oak, Toyon, Coyote brush, Snowberry, Blue elderberry, California blackberry, and Miner's lettuce, and would be developed in coordination with Caltrans' SFOBB landscape plan. In addition TIDA's Treasure Island/Yerba Buena Island Development Plan best management practices (BMPs) identified in the Habitat Management Plan would also be considered. The BMPs consist of revegetation, protection of sensitive resource areas, invasive plant removal and prevention, and hazard tree removal. The landscaping plan would be in compliance with the invasive species provisions outlined in the Biological Resources section of this EIR/EIS. In compliance with EO 13112 and subsequent guidance from FHWA, the landscaping and erosion control measures included in the project would not use species listed as noxious or invasive

Table D-2
Summary of Mitigation Measures

Resource Area	Impact to be Mitigated	Mitigation Measure
		weeds by the California Department of Food and Agriculture. **Alternative 4** Construction of the Alternative 4 design would in some cases have significant impacts on the visual quality of some areas when these areas are observed from certain viewpoints. This would be noticeable in cases where views toward or from the Senior Officers' Quarters Historic District would be dominated and/or obstructed by the ramp structures. Alternative 4 would require the removal of woodland vegetation, mostly mature eucalyptus trees, within the project's construction limits. Most of the trees that would be removed are located in the area at the northeastern tip of YBI southwest. These are mature tall trees that add to the island's appearance and shield the ramps partially from view. The removal of this vegetation would constitute a substantial visual impact, and a number of years would be required before the vegetation could reestablish itself to the density that exists today. Design requirements including ribbing to match the existing and proposed adjacent structures would be implemented under Alternative 4. To promote a seamless interaction between the ramps and the SFOBB Transition Structure, the ramps would utilize a ribbed design that is consistent with the structural form and architectural vocabulary of the new SFOBB East Span. The intent is to blend the structure such that both components appear to be integrated as one project. Given the large scale of the ramps, it would be difficult to screen or sufficiently offset their visual impacts without in the process causing secondary significant visual impacts. As described in Section 2.2.4, trees and sensitive plants removed during construction would be replaced with the intent to restore disturbed areas with similar landscape that would screen portions of the ramp structure (i.e. columns, column foundations) from surrounding viewpoints over time, to the extent feasible. A landscaping plan for the project area would be developed in cooperation with Caltrans' District 4 Landscape Architect and is still being designed. While, the goal

Table D-2
Summary of Mitigation Measures

Resource Area	Impact to be Mitigated	Mitigation Measure
		would be to aesthetically enhance the project site, bridge security may limit the range of options that can be considered. However, some new vegetation will be planted in appropriate locations. The landscaping plan alone will not fully mitigate the visual impact. The landscaping plan would incorporate the use of native plants such as Coast live oak, Toyon, Coyote brush, Snowberry, Blue elderberry, California blackberry, and Miner's lettuce, and would be developed in coordination with Caltrans' SFOBB landscape plan. In addition the Treasure Island/Yerba Buena Island Development Plan best management practices (BMPs) identified in the Habitat Management Plan would also be considered. The BMPs consist of revegetation, protection of sensitive resource areas, invasive plant removal and prevention, and hazard tree removal. The landscaping plan would be in compliance with the invasive species provisions outlined in the Biological Resources section of this EIR/EIS. In compliance with EO 13112 and subsequent guidance from FHWA, the landscaping and erosion control measures included in the project would not use species listed as noxious or invasive weeds by the California Department of Food and Agriculture.

APPENDIX E

LIST OF ACRONYMS

LIST OF ACRONYMS AND ABBREVIATIONS

AADT	annual average daily traffic
AB	Assembly Bill
ABAG	Association of Bay Area Governments
ACHP	Advisory Council on Historic Preservation
ACM	asbestos-containing material
ADA	Americans with Disabilities Act
ADI	Area of Direct Impacts
ADL	Aerially Deposited Lead
ADT	average daily traffic
AEP	Association of Environmental Professionals
AM/IRAP	Action Memorandum / Interim Remedial Action Plan
APE	area of potential effects
ARB	Air Resources Board
ARPA	Archaeological Resources Protection Act of 1979
ASR	Archaeological Survey Report
ATCM	Airborne Toxics Control Measure
ATG	Allied Technology Group
AWQC	ambient water quality concentrations
BAAQMD	Bay Area Air Quality Management District
BACT	best available control technology
BCDC	San Francisco Bay Conservation and Development Commission
BETP	Built Environment Treatment Plan
BGS	below ground surface
BMP	best management practice
BRAC	Defense Base Closure and Realignment Commission
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAAQS	California Ambient Air Quality Standards
CAFE	Corporate Average Fuel Economy
Cal/EPA	California Environmental Protection Agency
Caltrans	California Department of Transportation
CAP	Clean Air Plan
CARE	Community Air Risk Evaluation
CATS	Consolidated Area Telephone System
CCAA	California Clean Air Act
CCO	contract change order
CDFG	California Department of Fish and Game
CDMG	California Division of Mines and Geology
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CERFA	Community Environmental Response Facilitation Act
CESA	California Endangered Species Act
C.F.R.	Code of Federal Regulations
CGS	California State Geological Survey

CHP	California Highway Patrol
CIH	Certified Industrial Hygienist
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
CRHR	California Register of Historical Resources
CTM	Construction Traffic Manager
CWA	Clean Water Act
dBa	A-weighted decibel
DIB	Design Information Bulletin
DOD	Department of Defense
DSA	disturbed soil area
DTSC	California Department of Toxic Substances Control
EBMUD	East Bay Municipal Utility District
EBRPD	East Bay Regional Park District
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EO	Executive Order
ERIIS	Environmental Risk Information & Imaging Services
ESA	Environmentally Sensitive Area
ESSSP	East Span Seismic Safety Project
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FIRM	Flood Insurance Rate Map
FOE	Finding of Effect
FOST	Finding of Suitability to Transfer
FTA	Federal Transit Administration
GHG	greenhouse gas
HABS	Historic American Building Survey
HAER	Historic American Engineering Record
HAP	hazardous air pollutant
HBP	Highway and Bridge Program
HCM	Highway Capacity Manual
HOV	High Occupancy Vehicle
HPSR	Historic Property Survey Report
HRA	health risk assessment
HRER	Historic Resources Evaluation Report
HUD	U.S. Department of Housing and Urban Development
HWA	Hazardous Waste Assessment
I-80	Interstate 80
IPCC	Intergovernmental Panel on Climate Change
IR	Installation Restoration
IRP	Installation Restoration Program

kV	kilovolt
LBP	lead-based paint
LID	Low Impact Development
LOS	Level of Service
LUST	Leaking Underground Storage Tank
MACT	maximum achievable control technology
MBTA	Migratory Bird Treaty Act
MCE	Maximum Credible Earthquake
MGD	million gallons per day
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
mph	miles per hour
MS4	San Francisco Municipal Separate Storm Sewer System
MSAT	mobile source air toxic
MSC	Maps Service Center
MTC	Metropolitan Transportation Commission
m^3/s	cubic meters per second
NAAQS	National Ambient Air Quality Standards
NAC	noise abatement criteria
NAGPRA	Native American Graves Protection and Repatriation Act
NAVSTA-TI	Naval Station Treasure Island
NEPA	National Environmental Policy Act
NERT	Neighborhood Emergency Response Team
NES	Natural Environment Study
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NFA	No Further Action
NFIP	National Flood Insurance Program
NGVD	National Geodetic Vertical Datum
NHPA	National Historic Preservation Act
NO	nitric oxide
NO_2	nitrogen dioxide
NO_X	nitrogen oxides
NOAA	National Oceanic and Atmospheric Administration
NOD	Notice of Determination
NOI	Notice of Intent
NOP	Notice of Preparation
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NRHP	National Register of Historic Places
NSR	Noise Study Report
NSTI	Naval Station Treasure Island
OAP	ozone attainment plan
OES	Office of Emergency Services
OSHA	Occupational Safety and Health Act
PA	Programmatic Agreement

PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyls
PEAR	Preliminary Environmental Analysis Report
PeMS	Freeway Performance Measurement System
PG&E	Pacific Gas & Electric
PM	particulate matter
PM_{10}	Respirable Particulate Matter
$PM_{2.5}$	Fine Particulate Matter
POAQC	project of air quality concern
ppm	parts per million
PSR	Project Study Report
RAP	Relocation Assistance Program
RCRA	Resource Conservation and Recovery Act
RE	Resident Engineer
RI	Remedial Investigation
ROD	Record of Decision
ROG	reactive organic gas
ROI	Region of Influence
RTIP	Regional Transportation Improvement Plan
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SAS	Self-Anchored Suspension
SCPBRG	Santa Cruz Predatory Bird Research Group
SFAAB	San Francisco Bay Area Air Basin
SFBRWQCB	San Francisco Bay Regional Water Quality Control Board
SFCTA	San Francisco County Transportation Authority
SFFD	San Francisco Fire Department
SFOBB	San Francisco-Oakland Bay Bridge
SFPD	San Francisco Police Department
SFPUC	San Francisco Public Utilities Commission
SFWD	San Francisco Water Department
SHPO	State Historic Preservation Officer
SI	Site Investigation
SIP	State Implementation Plan
SMP	Site Management Plan
SO_2	sulfur dioxide
SO_X	sulfur oxides
SOMA	South of Market Neighborhood of San Francisco
SVOC	semivolatile organic compound
SWDR	Storm Water Data Report
SWMP	Storm Water Management Program
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
T-BACT	toxics best available control technology
TDM	Travel Demand Management

TI	Treasure Island
TICD	Treasure Island Community Development
TIDA	Treasure Island Development Authority
TMDL	Total Maximum Daily Load
TMP	Transportation Management Plan
TPH	total petroleum hydrocarbons
tpy	tons per year
TRPH	total recoverable petroleum hydrocarbons
TSCA	Toxic Substances Control Act
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USCG	United States Coast Guard
USDT	United States Department of Transportation
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	Underground Storage Tank
VIA	Visual Impact Assessment
VMT	vehicle miles traveled
VOC	volatile organic compound
vph	vehicles per hour
vphpl	vehicles per hour per lane
VTS	Vessel Trafficking Service
YBI	Yerba Buena Island
YBITS	Yerba Buena Island Transition Structure
µg/kg	micrograms per kilogram
µg/L	micrograms per liter

APPENDIX F

USFWS SPECIES LIST

U.S. Fish & Wildlife Service

Sacramento Fish & Wildlife Office

Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Counties and/or U.S.G.S. 7 1/2 Minute Quads you requested

Document Number: 100624034334

Database Last Updated: April 29, 2010

Quad Lists

Listed Species

Invertebrates

Branchinecta lynchi
vernal pool fairy shrimp (T)

Euphydryas editha bayensis
Critical habitat, bay checkerspot butterfly (X)

Haliotes cracherodii
black abalone (E) (NMFS)

Haliotes sorenseni
white abalone (E) (NMFS)

Icaricia icarioides missionensis
mission blue butterfly (E)

Speyeria callippe callippe
callippe silverspot butterfly (E)

Speyeria zerene myrtleae
Myrtle's silverspot butterfly (E)

Fish

Acipenser medirostris
green sturgeon (T) (NMFS)

Eucyclogobius newberryi
tidewater goby (E)

Hypomesus transpacificus
Critical habitat, delta smelt (X)
delta smelt (T)

Oncorhynchus kisutch
coho salmon - central CA coast (E) (NMFS)
Critical habitat, coho salmon - central CA coast (X) (NMFS)

Oncorhynchus mykiss
Central California Coastal steelhead (T) (NMFS)
Central Valley steelhead (T) (NMFS)
Critical habitat, Central California coastal steelhead (X) (NMFS)
Critical habitat, Central Valley steelhead (X) (NMFS)

Oncorhynchus tshawytscha
Central Valley spring-run chinook salmon (T) (NMFS)
Critical habitat, winter-run chinook salmon (X) (NMFS)
winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Ambystoma californiense
California tiger salamander, central population (T)

**The California brown pelican has been delisted since this list was generated.

Rana draytonii
California red-legged frog (T)
Critical habitat, California red-legged frog (X)

Reptiles

Caretta caretta
loggerhead turtle (T) (NMFS)

Chelonia mydas (incl. agassizi)
green turtle (T) (NMFS)

Dermochelys coriacea
leatherback turtle (E) (NMFS)

Lepidochelys olivacea
olive (=Pacific) ridley sea turtle (T) (NMFS)

Masticophis lateralis euryxanthus
Alameda whipsnake [=striped racer] (T)
Critical habitat, Alameda whipsnake (X)

Thamnophis sirtalis tetrataenia
San Francisco garter snake (E)

Birds

Brachyramphus marmoratus
marbled murrelet (T)

Charadrius alexandrinus nivosus
western snowy plover (T)

Diomedea albatrus
short-tailed albatross (E)

Pelecanus occidentalis californicus
California brown pelican (E)

Rallus longirostris obsoletus
California clapper rail (E)

Sternula antillarum (=Sterna, =albifrons) browni
California least tern (E)

Mammals

Arctocephalus townsendi
Guadalupe fur seal (T) (NMFS)

Balaenoptera borealis
sei whale (E) (NMFS)

Balaenoptera musculus
blue whale (E) (NMFS)

Balaenoptera physalus
finback (=fin) whale (E) (NMFS)

Enhydra lutris nereis
southern sea otter (T)

Eubalaena (=Balaena) glacialis
right whale (E) (NMFS)

Eumetopias jubatus
Critical Habitat, Steller (=northern) sea-lion (X) (NMFS)
Steller (=northern) sea-lion (T) (NMFS)

Physeter catodon (=macrocephalus)
sperm whale (E) (NMFS)

Reithrodontomys raviventris
salt marsh harvest mouse (E)

Plants

**The California brown pelican has been delisted since this list was generated.

Arctostaphylos hookeri ssp. ravenii
Presidio (=Raven's) manzanita (E)

Arctostaphylos pallida
pallid manzanita (=Alameda or Oakland Hills manzanita) (T)

Calochortus tiburonensis
Tiburon mariposa lily (T)

Castilleja affinis ssp. neglecta
Tiburon paintbrush (E)

Clarkia franciscana
Presidio clarkia (E)

Hesperolinon congestum
Marin dwarf-flax (=western flax) (T)

Holocarpha macradenia
Critical habitat, Santa Cruz tarplant (X)
Santa Cruz tarplant (T)

Lasthenia conjugens
Contra Costa goldfields (E)

Lessingia germanorum
San Francisco lessingia (E)

Streptanthus niger
Tiburon jewelflower (E)

Suaeda californica
California sea blite (E)

Proposed Species

Amphibians

Rana draytonii
Critical habitat, California red-legged frog (PX)

Quads Containing Listed, Proposed or Candidate Species:

SAN LEANDRO (447B)
HUNTERS POINT (448A)
SAN FRANCISCO SOUTH (448B)
BRIONES VALLEY (465B)
OAKLAND EAST (465C)
RICHMOND (466A)
SAN QUENTIN (466B)
SAN FRANCISCO NORTH (466C)
OAKLAND WEST (466D)

County Lists

Listed Species

Invertebrates

Haliotes cracherodii
black abalone (E) (NMFS)

Haliotes sorenseni
white abalone (E) (NMFS)

Icaricia icarioides missionensis
mission blue butterfly (E)

**The California brown pelican has been delisted since this list was generated.

Incisalia mossii bayensis
San Bruno elfin butterfly (E)

Fish

Acipenser medirostris
green sturgeon (T) (NMFS)

Eucyclogobius newberryi
tidewater goby (E)

Oncorhynchus kisutch
coho salmon - central CA coast (E) (NMFS)

Oncorhynchus mykiss
Central California Coastal steelhead (T) (NMFS)
Critical habitat, Central California coastal steelhead (X) (NMFS)
Critical habitat, Central Valley steelhead (X) (NMFS)

Oncorhynchus tshawytscha
Critical habitat, winter-run chinook salmon (X) (NMFS)
winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Rana draytonii
California red-legged frog (T)

Reptiles

Caretta caretta
loggerhead turtle (T) (NMFS)

Chelonia mydas (incl. agassizi)
green turtle (T) (NMFS)

Dermochelys coriacea
leatherback turtle (E) (NMFS)

Lepidochelys olivacea
olive (=Pacific) ridley sea turtle (T) (NMFS)

Birds

Charadrius alexandrinus nivosus
western snowy plover (T)

Diomedea albatrus
short-tailed albatross (E)

Pelecanus occidentalis californicus
California brown pelican (E)

**The California brown pelican has been delisted since this list was generated.

Rallus longirostris obsoletus
California clapper rail (E)

Mammals

Arctocephalus townsendi
Guadalupe fur seal (T) (NMFS)

Balaenoptera borealis
sei whale (E) (NMFS)

Balaenoptera musculus
blue whale (E) (NMFS)

Balaenoptera physalus
finback (=fin) whale (E) (NMFS)

Eubalaena (=Balaena) glacialis
right whale (E) (NMFS)

Eumetopias jubatus
Critical Habitat, Steller (=northern) sea-lion (X) (NMFS)
Steller (=northern) sea-lion (T) (NMFS)

Megaptera novaeangliae
humpback whale (E) (NMFS)

Physeter catodon (=macrocephalus)
sperm whale (E) (NMFS)

Reithrodontomys raviventris
salt marsh harvest mouse (E)

Plants

Arctostaphylos hookeri ssp. ravenii
Presidio (=Raven's) manzanita (E)

Clarkia franciscana
Presidio clarkia (E)

Hesperolinon congestum
Marin dwarf-flax (=western flax) (T)

Lessingia germanorum
San Francisco lessingia (E)

Key:

(E) *Endangered* - Listed as being in danger of extinction.
(T) *Threatened* - Listed as likely to become endangered within the foreseeable future.
(P) *Proposed* - Officially proposed in the Federal Register for listing as endangered or threatened.
(NMFS) Species under the Jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Service.

**The California brown pelican has been delisted since this list was generated.

Consult with them directly about these species.
Critical Habitat - Area essential to the conservation of a species.
(PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.
(C) *Candidate* - Candidate to become a proposed species.
(V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.
(X) *Critical Habitat* designated for this species

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, **or may be affected by** projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

Plants

Any plants on your list are ones that have actually been observed in the area covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the surrounding quads through the California Native Plant Society's online Inventory of Rare and Endangered Plants.

Surveying

Some of the species on your list may not be affected by your project. A trained biologist and/or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. See our Protocol and Recovery Permits pages.

For plant surveys, we recommend using the Guidelines for Conducting and Reporting Botanical Inventories. The results of your surveys should be published in any environmental documents prepared for your project.

Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

> Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that

**The California brown pelican has been delisted since this list was generated.

may result in take, then that agency must engage in a formal consultation with the Service.

During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

  Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our Map Room page.

Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts. More info

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6580.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you

**The California brown pelican has been delisted since this list was generated.

address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be September 22, 2010.

**The California brown pelican has been delisted since this list was generated.

APPENDIX G

FLOODPLAIN FORM

SUMMARY FLOODPLAIN ENCROACHMENT REPORT*

Dist. _4_____Co. __SF_____ Rte.__80_____ P.M. __7.6-8.1_____
Project No.: __ A640K _____ Bridge No. _____
Limits: _____

Floodplain Description: YBI was identified as Zone X, which is an area of minimal flood hazard, and outside the 500-year flood level. The project site is not located within a designated flood zone on the floodplain maps.

		No	Yes
1.	Is the proposed action a longitudinal encroachment of the base floodplain?	_X_	___
2.	Are the risks associated with the implementation of the proposed action significant?	_X_	___
3.	Will the proposed action support probable incompatible floodplain development?	_X_	___
4.	Are there any significant impacts on natural and beneficial floodplain values?	_X_	___
5.	Routine construction procedures are required to minimize impacts on the floodplain. Are there any special mitigation measures necessary to minimize impacts or restore and preserve natural and beneficial floodplain values? If yes, explain.	_X_	___
6.	Does the proposed action constitute a significant floodplain encroachment as defined in 23 CFR, Section 650.105(q).	_X_	___
7.	Are Location Hydraulic Studies that document the above answers on file? If not explain.	_X_	___

Floodplain encroachment is not anticipated. Therefore a Location Hydraulic Study is not required.

PREPARED BY:

_____ 2-8-11
Signature - Dist. Hydraulic Engineer Date

_____ 2/8/11
Signature - Dist. Environmental Branch Chief Date

Bob Zandipour 2-7-11
Signature - Dist. Project Engineer Date