

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration

RECORD OF DECISION

**SAN FRANCISCO-OAKLAND BAY BRIDGE EAST SPAN SEISMIC SAFETY
PROJECT**

Interstate Route 80
San Francisco and Alameda Counties, California

A. Decision

The selected alternative for the San Francisco-Oakland Bay Bridge (SFOBB) East Span Seismic Safety Project (referred to as the East Span Project) is Replacement Alternative N-6 with the self-anchored suspension bridge design option. The Final Environmental Impact Statement (FEIS) for the project (FHWA-CA-EIS-98-01-F), prepared by the Federal Highway Administration (FHWA) and the California Department of Transportation (Caltrans), identified this alternative as the Preferred Alternative. Replacement Alternative N-6 will meet the project purpose and need.

The existing East Span of the SFOBB is located on Interstate 80 in Alameda and San Francisco Counties, California. It will be replaced by a new bridge across the Central San Francisco Bay between Yerba Buena Island (YBI) and a spit of land referred to as the Oakland Touchdown area. The new bridge will be built on an alignment to the north of the existing bridge. It will transition from a double-deck viaduct structure to two parallel structures east of the YBI Tunnel, span across the Bay to the Oakland Touchdown area along its northern shore and conform to the existing traffic lanes west of the SFOBB Toll Plaza. The bridge over the main navigation opening is a self-anchored suspension span with a main tower serving as part of the structural system. The new bridge will be approximately 3,514 meters (11,526 feet) long and approximately 70 meters (230 feet) wide, including the space between the eastbound and westbound bridge decks.

The replacement bridge will provide 5 mixed-flow traffic lanes that will each be 3.6 meters (12 feet) wide and two shoulders that will each be 3.0 meters (10 feet) wide for each direction of travel. On the south side of the eastbound deck, a 4.7-meter (15.5-foot) bicycle/pedestrian path will be constructed 0.3 meter (1 foot) above the roadway and be separated from traffic by the roadway shoulder, a concrete barrier, and a railing. The bicycle/pedestrian path will extend from the Oakland Touchdown area to the western terminus of the bridge at YBI. A 3.2-meter (10.5-foot) wide section of the path will be shaded dark gray to delineate the area for bicyclists and a 1.5-meter (5-foot) wide section will be shaded a lighter gray for pedestrians.

Following construction and the transfer of traffic onto the new East Span, the existing East Span will be dismantled and removed. The steel spans of the superstructure will be dismantled and transported on barges to land and the concrete piers of the substructure in Bay will be removed to an elevation at least 0.46 meter (1.5 feet) below the mudline in accordance with United States Coast Guard (USCG) regulations. The hollow interiors of the caissons remaining below the mudline may be used as receptacles for pieces of concrete as the column above is dismantled. This method would substantially reduce the quantity of material requiring transport and disposal. The receptacles would naturally silt over by deposition of sediment. Footings on YBI and the Oakland Touchdown area will also be removed to an elevation 0.46 meter (1.5 feet) below grade.

The existing toll plaza at the Oakland Touchdown area will remain in place and tolls will continue to be collected from westbound traffic.

B. Alternatives Considered

The following alternatives were considered during project development and environmental analysis. For additional information, refer to the FEIS pages referenced after each alternative description.

No-Build Alternative

Under the No-Build Alternative, the existing 1936 bridge would not be retrofitted or replaced. See pages 2-3 to 2-4 of the FEIS.

Retrofit Existing Alternative

The Retrofit Existing Structure Alternative would retrofit both the existing East Span and the East Viaduct section on YBI. The alignment of the bridge would remain unchanged and the bridge would remain a double-deck structure. Each deck roadway cross section would also remain the same, including five 3.5-meter (11.5-foot) wide lanes with no roadway shoulders.

The seismic retrofit strategy of this alternative is based on isolating the superstructure from the substructure (towers and foundations). This work would include constructing additional large diameter piles and new pile caps around the existing foundations, strengthening and stiffening the towers, installing isolation bearings at the top of the towers, and strengthening and/or stiffening the superstructure truss members. Two new large deepwater columns would be added to the cantilever span in the main navigation opening. See pages 2-6 to 2-7 of the FEIS.

Replacement Alternative S-4

Replacement Alternative S-4 would involve constructing a new bridge (two-side-by-side bridge decks each with five mixed-flow traffic lanes) south of the existing alignment. Replacement Alternative S-4 would be approximately 3,550 meters (11,644 feet) long and approximately 70 meters (230 feet) wide including the space between the eastbound and the westbound bridge decks. Replacement Alternative S-4 was developed to avoid offshore conflicts with the existing East Bay Municipal Utility District (EBMUD) sewer outfall, which parallels the existing East Span to the south. This alternative would transition from a double-deck viaduct structure to two parallel structures east of the YBI Tunnel, reach the Oakland Touchdown area along its southern shore and conform to the existing traffic lanes west of the SFOBB Toll Plaza. The bridge over the main navigation opening is a self-anchored suspension span with a main tower serving as part of the structural system. Replacement Alternative S-4 would include a bicycle/pedestrian path on the south side of the eastbound structure with the same dimensions and characteristics as described for the selected alternative above.

Following construction and the transfer of traffic onto the new East Span, the existing East Span would be dismantled and removed in the same manner as described for the selected alternative above. See pages 2-5 to 2-6 of the FEIS.

The existing toll plaza at the Oakland Touchdown area would remain in place and tolls would continue to be collected from westbound traffic.

Replacement Alternative N-2

Replacement Alternative N-2 would involve constructing a new bridge (two-side-by-side bridge decks each with five mixed flow traffic lanes) north of the existing alignment and south of the alignment for Replacement Alternative N-6. Replacement Alternative N-2 would be approximately 3,479 meters (11,411 feet) long and approximately 70 meters (230 feet) wide,

including the space between the eastbound and the westbound bridge decks. This alternative was designed to minimize the length of the new bridge by closely following the alignment of the existing East Span. The new bridge would transition from a double-deck viaduct structure to two parallel structures east of the YBI Tunnel, span across the Bay to the Oakland Touchdown area along its northern shore and conform to the existing traffic lanes west of the SFOBB Toll Plaza. The bridge over the main navigation opening is a self-anchored suspension span with a main tower serving as part of the structural system. Replacement Alternative N-2 would include a bicycle/pedestrian path on the south side of the eastbound structure with the same dimensions and characteristics as described for the selected alternative above.

Following construction and the transfer of traffic onto the new East Span, the existing East Span would be dismantled and removed in the same manner as described for the selected alternative above. See page 2-5 of the FEIS.

The existing toll plaza at the Oakland Touchdown area would remain in place and tolls would continue to be collected from westbound traffic.

Replacement Alternative N-6 (Selected Alternative)

The selected alternative is described above under Decision. See pages 2-4 to 2-5 of the FEIS.

Alternatives Considered and Withdrawn

Other alternatives developed for the East Span Project were withdrawn from further consideration based on engineering constraints, and/or not meeting the project purpose and need. These included four northern alternatives, four southern alternatives, and one double-deck alternative. See pages 2-42 to 2-51 of the FEIS.

C. Basis for the Decision

In December 1998, after a thorough evaluation of project alternatives and consideration of comments from the public and agencies on the DEIS, Caltrans identified Replacement Alternative N-6 as the Preferred Alternative. In October 2000, FHWA also identified Replacement Alternative N-6 as the Preferred Alternative.

The Retrofit Existing Structure Alternative was not selected because it would not meet the project Purpose and Need.

This alternative would retrofit the existing SFOBB East Span to withstand a maximum credible earthquake (MCE) on the San Andreas or Hayward faults, however it is anticipated that substantial damage would occur as a result of an MCE and require extensive reconstruction or replacement. Replacement would be necessary if structural safety criteria could not be met through repairs to the damaged bridge.

If damage was such that repair of the cantilever section was feasible, it could require complete closure of the East Span from six months to one year. If, however, damage were sufficiently severe that replacement became necessary, the East Span would be completely closed for a substantially longer period of time. As a result, this alternative does not meet "lifeline" criteria established in the Purpose and Need.

In addition, this alternative would not meet current roadway design standards, which is another criterion of the Purpose and Need.

Replacement Alternative S-4 was not selected due to the engineering challenges and logistical impediments associated with its construction.

On YBI, Replacement Alternative S-4 would involve a permanent take of developable land from the USCG facility. Footings and support columns for Replacement Alternative S-4 would use the southeastern portion of YBI and span approximately 1.5 hectares (3.8 acres) of the 17-hectare (41-acre) USCG facility. USCG could develop the land under the bridge, subject to review and approval by Caltrans. Personnel at the facility perform search and rescue operations, maintain the Vessel Traffic Service that directs in-Bay ship traffic, and maintain and repair USCG boats and aids to navigation 24-hours a day, 7 days a week. The USCG coordinates over 2,000 local emergency response requests each year, and in 1999 alone its YBI facility saved 180 lives and over \$34 million in property. The Vessel Traffic Service is essential for the safe passage of large ocean-going ships, such as those moving daily to and from the Ports of Oakland and San Francisco, and is important in protecting the Bay environment by averting and responding to maritime accidents.

In a letter to Caltrans dated October 18, 2000, the USCG stated that a southern alignment for the East Span Project, such as Replacement Alternative S-4, would severely restrict its flexibility to utilize that part of its already constrained facilities. The USCG further stated that a southern alignment would constrain its ability to effectively conduct emergency service operations from YBI.

Replacement Alternatives N-2 and N-6 would minimize permanent impact on usable land area at the USCG facility.

At the Oakland Touchdown area, Replacement Alternative S-4 would permanently take approximately 3 hectares (7.4 acres) from a 5.9-hectare (14.7-acre) parcel on the former United States Army's Oakland Army Base (OARB) that has been designated by the Oakland Base Reuse Authority (OBRA) for a proposed Gateway Park. The parcel is protected by the provisions of Section 4(f) of the Department of Transportation Act of 1966. Under Section 4(f), the Secretary of Transportation may approve a transportation project requiring the use of publicly owned land of a public park only if there is no prudent and feasible alternative to using that land, and the project includes all possible planning to minimize harm to the protected Section 4(f) property.

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Replacement Alternatives N-2 and N-6 are prudent and feasible alternatives that avoid the use of the proposed Gateway Park.

Another impediment to construction of Replacement Alternative S-4 is that it would restrict road access to EBMUD's dechlorination facility at the Oakland Touchdown. The dechlorination facility, which operates 24 hours a day, 7 days a week, helps provide water treatment and discharge for over 640,000 people living along the east shore of San Francisco Bay. Under Replacement Alternative S-4, the bridge structure would be located above the existing service road to the dechlorination facility and the resulting vertical clearance would restrict access to the facility required for service and delivery vehicles. Consequently, the dechlorination facility, the service road, or both would need to be relocated.

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Neither the road nor the dechlorination facility would need to be relocated as a result of Replacement Alternative N-2 or N-6.

Replacement Alternative S-4 would also conflict with a portion of EBMUD's concrete outfall pipeline located underground on the southern portion of the Oakland Touchdown area. The outfall is a 2.8-meter (9-foot) diameter concrete, zero-load facility, which means that it cannot support any weight and must be protected or spanned to avoid being damaged. The technology exists to span the outfall; however, doing so would increase the potential for damage to the facility and add to construction complexity. If the outfall were damaged during construction, secondarily treated effluent would likely be prematurely released into the Bay, and EBMUD

would likely be fined for violation of its water quality permit. The time required to repair the facility would further delay implementation of the East Span Project.

Replacement Alternatives N-2 and N-6 avoid this construction risk and complexity.

Construction of the main tower for Replacement Alternative S-4 would be substantially more complex. The depth to bedrock for construction of the main tower of Replacement Alternative S-4 is 67-71 meters (220-233 feet) below the mudline, as compared to 11-14 meters (36-46 feet) for Replacement Alternative N-2 and 6-9 meters (20-30 feet) for Replacement Alternative N-6. Placing a key structural element of the bridge in over 60 meters (200 feet) of soft sediments would present substantial engineering challenges during construction and as a result, construction of this alternative would be much more difficult than construction of Replacement Alternatives N-2 or N-6. Replacement Alternative S-4 would require a longer tower to reach bedrock that would be subject to greater stresses in an earthquake and require a more massive foundation. The larger foundation would increase the area of bedrock to be excavated.

Construction of the main tower component under Replacement Alternatives N-2 and N-6 would be less complex.

In summary, Replacement Alternative S-4 was not selected because, even though it could provide equal seismic safety to that of Replacement Alternatives N-2 and N-6, it would take land from an operating USCG facility, thereby constraining the mission of that facility; it would use land from a Section 4(f) resource (proposed Gateway Park) for which there is a prudent and feasible alternative; it could compromise the operation of an important wastewater facility that serves over 600,000 people along the east side of the Bay; and it would result in more difficult in-Bay construction of the main tower. Replacement Alternatives N-2 and N-6 would minimize or avoid these impacts and were therefore preferred over Replacement Alternative S-4.

Because both Replacement Alternatives N-2 and N-6 could achieve equal seismic safety and would impact comparable amounts of resources, consideration was given to other factors in determining which alternative to select for this project. Replacement Alternative N-6 is the environmentally preferred alternative and has been chosen over Replacement Alternative N-2 on the basis of greater ease of construction of the main tower based on geologic conditions, consistency with the regionally preferred alignment and design features as expressed by the MTC and aesthetic benefits such as the optimal drivers' views of the San Francisco skyline for westbound motorists. The selected alternative was also identified as the Least Environmentally Damaging Practicable Alternative (LEDPA) by ACOE (on February 12, 2001) and EPA (on March 15, 2001). Documentation letters can be found in Appendix F of the FEIS. For additional information, see Section 2.2.6 of the FEIS.

D. Bay Plan Consistency

The project was coordinated extensively with the San Francisco Bay Conservation and Development Commission (BCDC) staff prior to the FEIS approval to assure that the preferred alternative conformed to the Coastal Zone Management Act, the McAtter-Petris Act, and the policies of the San Francisco Bay Plan. BCDC staff stated in a February 4, 2000 letter to Caltrans that Replacement Alternative N-6, with the self-anchored suspension design option, generally conforms to BCDC's amended Coastal Zone Management Program for San Francisco Bay.

Caltrans' final project plans, specifications, and estimates (PS&E) for those portions of the project within or affecting resources within BCDC's jurisdiction will incorporate conditions of the Bay Plan permit once they are obtained from BCDC. BCDC concurrence on the federal consistency determination will be included in the findings of its permit.

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Caltrans will continue to coordinate with BCDC regarding activities within its jurisdiction during further project design and development. For additional information, see Section 4.1.6 of the FEIS.

E. Air Quality Conformity

The selected East Span Project is located in a federal air quality non-attainment area for ozone and a maintenance area for carbon monoxide. As a result, the Bay Area Air Quality Management District (BAAQMD) prepared an Ozone Attainment Plan in 1999. The EPA is proposing to disapprove the 1999 Ozone Attainment Plan. As a result, the Metropolitan Transportation Commission (MTC), the California Air Resources Board, and the BAAQMD are currently preparing a 2001 Ozone Attainment Plan for submittal to EPA. A public hearing to discuss the 2001 Plan will be held July 18, 2001. The 2001 plan projects attainment of the ozone standard by 2006.

The East Span Project is included in the currently conforming MTC's 1998 Regional Transportation Plan (RTP) approved on January 21, 1999 and the 2000/01 Federal Statewide Transportation Improvement Program (FSTIP), which incorporates the State's 2001 Transportation Improvement Program (TIP) developed by MTC for the Bay Area. MTC's 2001 TIP was found to conform by FHWA and FTA on October 5, 2000. The conformity analysis conducted by MTC is consistent with the requirements of the Transportation Conformity Rule (40 CFR Parts 51 and 93).

The design concept and scope of the proposed project have not changed since inclusion into the MTC 1998 RTP and 2001 TIP and do not interfere with the timely implementation of transportation control measures in the applicable State Implementation Plan (SIP).

The project-level air quality analysis shows that there are no current violations of the carbon monoxide (CO) standards nor are any predicted in the future under the selected alternative. Consequently, the project meets the 40 CFR 93.116 requirement that the "project must not cause or contribute to any new localized CO violations or increase the frequency or severity of any existing CO violations in CO non-attainment and maintenance areas."

Therefore, pursuant to the transportation conformity regulations for implementing the provision of the Clean Air Act Amendments of 1990, the selected alternative conforms to the SIP for achieving the National Ambient Air Quality Standards. Refer to FEIS pages 3-35 to 3-39 and 4-45 to 4-47 for additional information regarding air quality.

F. Project Cost

In April 2001, Caltrans published updated cost information for Replacement Alternative N-6, which reflects cost increases due to such factors as increasing construction costs in a robust and competitive local economy; significant increases in the costs of steel; schedule delays which magnified the inflationary effect; and additional design amenities such as the belvederes and a wider bicycle path. Caltrans estimates that the current cost of Replacement Alternative N-6, suspension bridge option, would be \$2.6 billion.

The enabling legislation for the project, Senate Bill 60, signed by then-Governor Pete Wilson in 1997, anticipated the possible need for additional funding beyond original estimates and required Caltrans to return to the Legislature if necessary. In accordance with Senate Bill 60, Caltrans has submitted its cost estimates to the Legislature and anticipates that it will address the need for additional funding within the next few months.

Caltrans did not prepare updated cost estimates for the other project alternatives in April 2001. However, the most significant factors contributing to increased costs would apply to all of the build alternatives.

A financial plan is under development and will be provided and approved by FHWA before Federal funds can be authorized.

G. Measures to Minimize Harm

The measures described below have been or will be incorporated into the project to reduce the impact of constructing the selected alternative. Other measures to mitigate project impacts, including standard specifications and practices, are included in FEIS Chapter 4 and in Responses to DEIS comments contained in Volume II of the FEIS. These additional mitigation measures are incorporated into this record of decision by reference.

Community Impacts

The City and County of San Francisco (CCSF) would be reimbursed for documented losses in rental income from Quarters 1- 7. A pre-and post-construction survey of Quarters 1- 7 and Building 262 will be conducted and construction-related damage would be repaired. Measures to protect the buildings from construction period damage will be developed in consultation with property owners.

For the displacement of Buildings 30, 40, 75, 213, and 270 on YBI, Caltrans will work with the USCG and the Navy and, upon request, will provide buildings of like size, construction, construction materials, and quality, built to current code requirements. The USCG and the Navy will need to provide suitable sites for the replacement buildings outside State right-of-way if necessary.

The project will not have any disproportionately high and adverse human health or environmental effect on minority and low-income populations because there are no identified minority or low-income populations or communities in the project area. For additional information, see Sections 4.1 and 4.14.1 of the FEIS.

Transportation

The following discussion is solely related to transportation impacts during the construction period. Permanent transportation impacts will be negligible.

Lane and bridge closures are being investigated in an effort to simultaneously minimize public inconvenience, facilitate construction and maximize public safety. Closures will be timed during off-peak hours to the extent feasible and a traffic management plan will be implemented to manage impacts to traffic.

On YBI, the contractor will construct a detour around the column foundations to keep Macalla Road open or provide another travel way for USCG personnel. Column construction will be staged so that entrances to the USCG facility will remain open to the maximum extent feasible. Caltrans will coordinate with the USCG when brief closures of the entrances are necessary. Temporary detours will be constructed and flaggers employed to ensure motorist safety for USCG vehicles in the construction zone, barges will deliver wide and oversized construction loads when possible, and the contractor will be limited to parking within the temporary construction easement.

For pedestrian circulation on YBI, a new stairway will be constructed to replace the existing stairway that must be removed. Replacement will be done after consulting with the USCG, the Navy, and the CCSF about the appropriate site. Construction-period shuttle service will be provided for USCG personnel and authorized visitors of YBI.

For maritime operations, the USCG will issue a notification to mariners and implement a vessel warning system for periods when construction vessels and barges are moored within the bridge construction zone. For additional information, see Section 4.14.2 of the FEIS.

Visual

The appearance of the hillside adjacent to where the YBI tunnel meets the existing East Span on YBI may be permanently altered due to the removal of approximately 350 mature trees (mostly eucalyptus). A construction access plan will be developed to identify the location of grading, access roads, vegetation removal, and equipment platforms on YBI. Construction limits will protect selected vegetation and screening to the maximum extent feasible and a re-vegetation plan will include the planting of mature trees, monitoring, and replanting as necessary to return disturbed areas to a natural appearance and to establish visual screening between the bridge and the historic buildings in the Historic District on YBI. The slope behind the historic properties will be restored to provide a natural appearance and to reestablish visual screening of the bridge comparable to the existing conditions.

Approximately 71 mature trees (mostly pine) at the Oakland Touchdown area will be removed. For the Oakland Touchdown area, a master planting plan will be developed in coordination with local agencies and will be implemented within two years of completing bridge construction. For additional information, see Section 4.3 of the FEIS.

Noise

The contractor will be required to comply with local noise control ordinances to the extent practicable.¹ Consultation with the USCG will continue to identify and implement feasible and reasonable measures that reduce construction-related noise levels at USCG facilities. In addition, Caltrans is continuing to investigate the possibility of limiting the hours for pile driving to further reduce the construction noise impacts to other residents of YBI and Treasure Island. For additional information, see Section 4.14.5 of the FEIS.

Hazardous Wastes

FHWA met with the Navy, USCG, the Department of Toxic Substance Control (DTSC), CCSF, and the EPA regarding Installation Restoration (IR) sites on YBI, addressing the coordination of the cleanup of these sites through the Navy's Base Realignment and Closure (BRAC) with this project. Coordination with all responsible regulatory agencies will continue to ensure that hazardous wastes are appropriately managed, remediated and disposed of, if necessary.

All excavated material, including dredged material, will be disposed of offsite in conformance with federal, state, and local laws and regulations with the exception of a small quantity of dredged material that may be used to restore part of the barge access channel. However, excavated materials that contain lead from vehicle emissions within the ranges specified in the variance granted by the DTSC may be reused within the highway right-of-way for this project or at another Department project along the project corridor. For additional information, see Sections 4.6 and 4.14.6 of the FEIS.

Geology, Soils, and Seismicity

Caltrans will ensure that the project does not exacerbate pre-existing slope stability and erosion problems within Caltrans' right-of-way or its temporary construction easement on YBI during or after construction. Consultation with the USCG and collection of information on slope stability prior to and during construction will be conducted. For additional information, see Section 4.7 of the FEIS.

¹ According to Section 2908 of the San Francisco Noise Ordinance, if the nature of construction activities required is such that compliance with local noise control ordinances is not feasible, a special permit may be applied for with the CCSF Director of Public Works.

Water Resources and Quality

A Storm Water Pollution Prevention Program (SWPPP) will be prepared to identify pollutant sources that may affect the quality of storm water discharge associated with the construction activities and control measures to reduce the volumes and/or concentrations of such discharges. Using the current Best Management Practices (BMPs) for the construction industry, the objectives of the SWPPP will be to minimize the degradation of off-site receiving waters to the maximum extent practicable and to reduce the mass loading of chemicals and suspended solids to the downstream drainage system and the receiving water bodies. For additional information, see Section 4.14.7 of the FEIS.

Special Aquatic Sites

Special aquatic sites (as defined by ACOE under Section 404 of the federal Clean Water Act) impacted by the project include sand flats and eelgrass beds.

Sand Flats

A geotube rather than engineered fill will be used as a dewatering berm to construct the westbound roadway at the Oakland Touchdown to reduce impacts to sand flats. A geotube is a large, high-density polyethylene tube filled with excavated material and is used as a temporary tidal barrier during construction.

A portion of the sand flats at the Oakland Touchdown area will be restored on-site and rock slope protection will be constructed to provide an upland transition zone. In addition, a tidal marsh ecosystem is being planned off-site at an appropriate location, per agreement among resource agencies on out-of-kind mitigation. Should this plan prove infeasible, alternate mitigation will be developed in consultation with permitting and resource agencies. For additional information, see Sections 4.9 and 4.14.8 of the FEIS.

Eelgrass Beds

Delineation of Environmentally Sensitive Areas (ESAs) with fencing and buoys or similar devices will be included in the project plans, specifications, and estimates to avoid additional construction impacts. Caltrans will monitor for turbidity resulting from dredging, pile driving, barge maneuvering, and mud boils. Caltrans will require the contractor to implement a turbidity control program, which may include turbidity curtains and limitations on barge and tug boat maneuvering. Post-construction surveys to evaluate impacts of turbidity on eelgrass will also be conducted and if additional eelgrass beds are affected during construction, consultation will take place with the permitting agencies. Eelgrass from a portion of the barge access channel will be harvested prior to dredging and will be replanted in adjacent eelgrass beds.

In addition, a tidal marsh ecosystem is being planned off-site at an appropriate location, per agreement among resource agencies on out-of-kind mitigation. Should this plan prove infeasible, alternate mitigation will be developed in consultation with permitting and resource agencies.

In addition, the following design considerations have been included in the project to further minimize impacts to special aquatic sites:

Reduction in the width and depth of the barge access channel proposed in the Dredged Material Management Plan (DMMP), dated June 1999 to minimize impacts to eelgrass beds. The channel width has been reduced from 82 meters (270 feet) to 50 meters (164 feet) for the

Skyway contract and from 82 meters (270 feet) to 45 meters (148 feet) for the Oakland Touchdown contract.² The channel depths have been reduced to 3.7 meters (12 feet) below Mean Sea Level (MSL) from 4.3 meters (14 feet) as proposed in the DMMP; and

Use of temporary trestles, rather than temporary solid fill, for construction access in the Bay to reduce impacts to sand flats and eelgrass beds. For additional information, see Sections 4.9 and 4.14.8 of the FEIS.

Double-crested Cormorant and Western Gull

The double-crested cormorant colony will be monitored during breeding season and birds will be prevented from nesting on the existing bridge where potential impacts could occur as a result of dismantling activities. The protocol to prevent double-crested cormorants from nesting will follow the methods implemented for maintenance activities on the existing bridge, which involves washing partially constructed nests off the bridge with water before the nests are occupied. If the nests are completed and the birds have laid eggs, the nests will not be disturbed. Similar measures will be used to prevent western gulls from nesting in areas of potential impacts.

Caltrans will include cormorant nest platforms on the new bridge. Gulls will be able to use the pile caps. For additional information, see Sections 4.9 and 4.14.8 of the FEIS.

American Peregrine Falcon

The Santa Cruz Predatory Bird Research Group will monitor the American peregrine falcon on the existing bridge during their nesting period and if they show signs of disturbance during construction or dismantling operations, the eggs and/or chicks will be collected, raised off-site and eventually released at a natural site.

No long-term impacts are anticipated because the American peregrine falcon will probably nest on the new bridge. For additional information, see Sections 4.9 and 4.14.8 of the FEIS.

Black-crowned Night Heron, Allen's Hummingbird, White-Tailed Kite, Bank Swallow, and Bewick's Wren.

Prior to the removal of vegetation and trees on YBI, a biological monitor will survey for nests. Vegetation and trees with nests or vegetation and trees adjacent to areas with nests will not be removed until the nesting period (usually between January and July) is complete. Alternatively, to the extent feasible, vegetation and trees that need to be removed will be removed prior to the nesting season (after surveys have been conducted), so as to not affect the construction schedule. For additional information, see Section 4.14.8 of the FEIS.

Harbor Seal, California Sea Lion, and Gray Whale

Methods such as a sound attenuation system and/or monitoring could be used to avoid or minimize impacts to marine mammals resulting from pile driving. The decision as to what measures to implement will be made in consultation with the National Marine Fisheries Service (NMFS). These measures will be implemented pursuant to the terms of the Incidental Harassment Authorization that will be obtained from NMFS prior to project construction. For additional information, see Section 4.14.8 of the FEIS.

² Construction of the new bridge will be divided among four separate contracts including YBI and the Main Span, the Skyway, the Oakland Approach, and the Geofill contract at the Oakland Touchdown area. Geofill is a flowable fill with controlled and variable density that can be used for highway repair, trench filling, and tunnel and void filling.

Chinook Salmon, Steelhead, Green Sturgeon, and Longfin Smelt

Caltrans will require the contractor to implement a turbidity control program that will reduce the amount of sediments suspended by construction activities. If construction sequencing permits, dredging will be avoided in shallow water areas during the peak outmigration period for juvenile salmonids (January 1 through May 31).

In its letter concluding Section 7 consultation for special status fish species, NMFS proposed the use of sound attenuation during salmonid outmigration as a method to avoid pile driving impacts. FHWA and Caltrans agreed to implement such measures. Since release of the FEIS, FHWA and Caltrans have continued coordination with NMFS regarding potential impacts to special status fish species. Through this coordination, it was recognized that sound attenuation may reduce but not fully avoid impacts to special status fish species. In addition, it was also recognized that accurate assessment of pile driving impacts to special status fish species might not be possible. As a result of this recent coordination, NMFS is considering off-site measures to reduce the mortality of special status fish; such measures may provide greater long-term benefit to special status fish species. The decision as to what measures to implement will be made in consultation with NMFS. For additional information, see Section 4.14.8 of the FEIS.

Pacific Herring

During construction, a qualified biologist will monitor the Pacific Herring spawning period (January to March). If spawning is observed in the project area, in-water activities such as dredging will be suspended within 200 meters (600 feet) of spawning and not resume for a period of up to 14 days, allowing herring eggs to hatch and larvae to disperse. In addition, implementation of a turbidity control program, which may include turbidity curtains during dredging and limitations on barge and tugboat maneuvering, will reduce the impacts of turbidity on the herring spawn. For additional information, see Sections 4.9 and 4.14.8 of the FEIS.

Coast Live Oak Woodland

In accordance with the CCSF tree ordinance, displaced oak trees on YBI will be replaced in-kind at a 3:1 ratio in the same area to create a habitat comparable to the existing condition. Due to the root structure of mature oak trees, the replacement trees may be smaller than those displaced. Planted trees will be monitored and replanting will be performed as necessary. For additional information, see Section 4.9 of the FEIS.

Historic Properties

Measures to mitigate project effects on historic properties have been stipulated in a Memorandum of Agreement (MOA) among the FHWA, USCG, the State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (ACHP), with Caltrans as a concurring party. The Navy, local governments, and Native Americans were also asked to participate in the development of mitigation measures and invited to sign the MOA as concurring parties. For additional information, see Appendix O in the FEIS for a copy of the MOA.

Mitigation of Effects to the existing historic San Francisco-Oakland Bay Bridge include, but are not limited to salvage, interpretive exhibits, museum exhibits, oral history and school curriculum materials.

Mitigation of Effects to the Senior Officers' Quarters Historic District, Quarters 8, Quarters 10, Building 267, and Building 262 cited in the MOA includes but is not limited to:

Protective Measures: Appropriate measures will be developed, in consultation with the Navy and USCG, to protect the historic buildings from damage during the project.

Repair of Inadvertent Damage to Buildings: Any damage to any of the historic buildings resulting from the project would be repaired in accordance with the Secretary of the Interior's Standards for Rehabilitation.

Restoration of the Grounds: Caltrans will ensure that the grounds within the Senior Officers' Quarters Historic District, Quarters 8 and Quarters 10 are restored after completion of the bridge project to their condition prior to the start of the project.

Measures in the MOA concerning archaeological resources include development and implementation of a Treatment Plan for data recovery in consultation with USCG, SHPO, ACHP, and Native Americans.

Per the MOA, Caltrans will be responsible for preparing an annual report for all signatories to the MOA on efforts to carry out the mitigation program for historic properties.

H. Section 4(f)

The 4(f)-protected resources that will be used by the project include the existing San Francisco Oakland Bay Bridge and its contributing elements (a historic structure eligible for the National Register) and the Senior Officers' Quarters Historic District on Yerba Buena Island (a historic district eligible for the National Register). The use of land within the Senior Officers' Historic District will be limited to the construction period. No historic building will be used or subjected to a change in ownership by this project. This determination is documented in the Final Section 4(f) Evaluation prepared for the project.

Based upon the considerations outlined in the Section 4(f) evaluation, it is determined that there is no feasible and prudent alternative to these uses and that the proposed action includes all possible planning to minimize harm resulting from such use. For additional information, see Chapter 6 of the FEIS.

I. Monitoring and Enforcement

Other than the biological resource and historic building monitoring described in the MOA, special monitoring or enforcement programs are not required for specific project mitigation. Current FHWA and Caltrans policies and procedures are adequate to ensure that all of the project monitoring and mitigation measures referenced and/or prescribed above are carried out.

Caltrans will be responsible for preparing an annual report for the SHPO and all other signatories to the MOA on efforts to carry out the mitigation program for historic properties per the MOA as described above.

J. Comments on the FEIS

The FEIS was distributed to governmental agencies, organizations, and the public on May 8, 2001 and the Notice of Availability was published in the May 18, 2001 *Federal Register*. The FEIS 30-day availability period ended on June 18, 2001. As a result of FEIS circulation, comment letters were received from the Navy, the USCG, the EPA, EBMUD, the City of Emeryville, Kenneth A. Gosting (Transportation Involves Everyone), the Law Offices of Stuart Flashman (representing the Transportation Defense and Education Fund, Citizens' Alliance for a Better Bay Bridge, and Ken Bukowski), Rick Feher and Robert Freehling, and Dr. Robert R. Piper of the Sierra Club.



Purpose and Need:

The Law Offices of Stuart M. Flashman questioned why providing a "lifeline" link on the East Span warrants near-emergency priority when contingency plans already exist for an East Span failure, why the seismic safety and operations of the East Span are examined separately from the other components of the Bay Bridge, and why such a link would need to provide five lanes of traffic and two shoulders, as opposed to other combinations of lanes.

Response:

It is acknowledged that contingency plans for post-MCE emergency relief exist in the event of an East Span failure; however, reliance on such plans could delay the response-time of post-MCE emergency services. Designation of the East Span as part of a lifeline route represents the State's intention to use the East Span to provide high-level post-earthquake transportation services for emergency response and support for the safety and economic livelihood of the Bay Area. A key element in this decision was that the Bay Bridge provides the most direct vehicular route into San Francisco from the East Bay.

The replacement East Span is being designed to appropriately connect with other segments of the SFOBB; however, it has independent utility (i.e., it would be usable and a reasonable expenditure of funds even if no additional transportation improvements on the bridge are made). Having separate, independent projects whose overall goal is to provide seismic safety on the SFOBB brings implementation of that goal sooner to the citizens of the Bay Area because some projects can be completed sooner than others.

The Project Purpose and Need calls for maintaining the existing number of lanes (thereby maintaining current capacity); current design standards require the provision of shoulders. In addition, providing fewer or more than five lanes would require changes to the lanes at the YBI tunnel. Neither the YBI tunnel the West Span, nor the West Approach could accommodate more than five lanes without major reconstruction.

Compliance with NEPA:

The City of Emeryville and the Law Offices of Stuart Flashman stated that the East Span Project is inconsistent with NEPA regulations because the FEIS did not analyze a sufficient range of project alternatives, and therefore did not provide full public disclosure. They stated that the retrofit alternative, rail on the replacement East Span, and reuse of the existing East Span for bicycle and pedestrian use or rail were not adequately considered. In addition, all projects on the SFOBB were not considered in their entirety.

Response:

The FEIS considered a reasonable range of alternatives pursuant to NEPA. The range of alternatives considered in the FEIS was established by Caltrans and FHWA in accordance with NEPA requirements and in consultation with permitting and regulatory agencies under guidance of the NEPA/404 MOU. Participants considered options and provided written concurrence on the range of alternatives and the criteria established for selection of alternatives. For additional information, see response to Comment 2 of the CCSF Planning Department letter dated 11/23/98 and responses to Comments 3 and 4 of the City of Emeryville letter dated 10/26/98 in Volume II of the FEIS.

Rail on the East Span:

Comments from the City of Emeryville state that rail should be considered and/or implemented on the new East Span because it could have less environmental impacts than solely providing vehicular lanes, could be politically and structurally impossible in the future, could be managed by existing transit agencies, could be built before the institutional framework is in place and the "insurmountable" obstacles mentioned in the FEIS could be overcome.

The Law Offices of Stuart Flashman commented that there is little difference between including a rail component and adding a bicycle/pedestrian component to the new East Span.

Kenneth A. Gosting commented that rail should not be withdrawn from consideration on the basis that local and/or regional transportation planning agencies have not included it in their plans. Failure to include rail in the East Span Project could hinder the viability of California in the 21st century because the inclusion of rail capacity could be an incubator for rail emerging in the I-80 corridor between Oakland and Sacramento, where ridership has grown by 50 percent in the last year.

Dr. Robert R. Piper of the Sierra Club commented that the design does not facilitate future expansion of capacity at reasonable cost to accommodate growth in demand with minimal environmental damage.

Response:

The East Span Project does not preclude implementing a rail project, or other technologies, in the Transbay Corridor in the future. Engineering solutions can be found to make rail feasible on all segments of the SFOBB, if political and financial obstacles can be overcome. The City of Emeryville mentioned that the removal of the Transbay Terminal ramps precludes rail service on the East Span. Future rail could connect to the Transbay Terminal or other destinations in San Francisco with the addition of appropriate connections at that time.

As mentioned in the comments, rail is not currently part of the Regional Transportation Plan (RTP). The Metropolitan Transportation Commission (MTC), as the regional governmental agency that provides regional transportation planning and coordinating of transportation activities for the nine-county Bay Area, does not currently envision rail in the Transbay Corridor other than Bay Area Rapid Transit (BART). The near-term implementation of either a road- or rail-based high-occupancy transportation strategy on the SFOBB would be constrained by several factors. Planning, funding, and implementing new transit services, which would have to be integrated with existing transit services in the Bay Area, would take substantially longer than the East Span Project would take to build, thereby further delaying seismic safety on the East Span. For additional information, see Section 2.5 of the FEIS.

Construction-Period Impacts:

The USCG made several comments regarding construction activities on YBI adjacent to its facility and it expressed concern about noise and light impacts on residents, impacts from potential landslides on adjacent slopes, access and shuttle service, power supply during construction, contamination from dismantling operations, interference with implementation of its future projects, and displacement of recreational facilities.

EBMUD stated its concerns regarding potential impacts to its dechlorination facility and sewer outfall. EBMUD remains concerned about access to and protection of the facilities during and after construction. Specifically, EBMUD wants assurance from Caltrans that is in compliance with the zero-load specification for the outfall contained in EBMUD's RWQCB permit and that EBMUD is provided the opportunity to review the outfall damage prevention plan and requirements for pre- and post-construction inspection. EBMUD also expressed its concern regarding a temporary span of the outfall on the Oakland Touchdown.

Response:

Caltrans and the USCG will continue to coordinate to identify and address USCG concerns regarding construction-period impacts. Measures will be included to the extent feasible in contractor specifications to address USCG concerns. Some of the issues identified will be

resolved prior to selection of a contractor and others will be resolved through continued coordination.

Caltrans acknowledges that construction will interfere with implementation of some of USCG's plans, but will not interfere with USCG being able to finalize its Master Plan. Some recreational facilities will not be available during construction. This would only be during the duration of the work on YBI and would be for approximately four years, not the entire construction period (i.e., seven years).

Caltrans will also coordinate with EBMUD to address EBMUD's concerns regarding potential construction-period impacts and to ensure that during construction EBMUD can comply with its RWQCB permit specifications. EBMUD will have the opportunity to review drawings and requirements for pre- and post-construction inspections.

The temporary span proposed for the EBMUD outfall at the Oakland Touchdown area has been removed from the design plans and there are currently no plans for placing any load on the outfall during construction. The contractor will use the existing span that is currently used by Caltrans' vehicles. EBMUD and Caltrans would be required to approve it if the contractor proposes a new crossing.

Caltrans will also specify in the contract provisions that EBMUD and any other agencies owning or operating facilities at the western end of the Oakland Touchdown area will have access to them during construction. Any brief closures of the road required for the safe movement of construction equipment would be coordinated with EBMUD and other affected agencies.

Caltrans is currently preparing a letter to respond to EBMUD's letter of April 11, 2001 concerning pre-and post-construction inspection of the outfall.

For additional information, see Section 4.14 of the FEIS.

Relocation and Accommodation of Utilities:

Rick Feher and Robert Freehling commented that the location of the EBMUD sewer outfall should not have been a determining factor in the selection of a northern alignment since the need to move a sewer pipe seldom renders a construction plan unreasonable. They suggested that, at a cost of \$100 million, the outfall should be moved if it provides for a simpler and more seismically safe alternative.

The Navy commented that Caltrans needs to commit to providing all necessary rights of ownership and access to utilities that serve the U.S. Coast Guard and other portions of YBI in their present and future locations. It said that the FEIS failed to recognize its February 12 and April 12, 2001 notices to Caltrans that the Navy will not fund relocation of the backup water supply line on the existing East Span, but instead intends to abandon the line in place, in conformance with the 1944 permit between the Navy and Caltrans referenced in the FEIS. Also, because the October 26, 2000, deed (land transfer to the State) is silent on the matter of utilities, the FEIS and ROD should clearly commit Caltrans to provide all necessary rights of ownership and access to utilities that serve the USCG and other portions of YBI in their present and future locations.

Response:

There would be numerous issues associated with relocating the EBMUD sewer outfall including additional permitting, cross-agency coordination, potential for interruption of utility service to 640,000 residents of the East Bay and increased risk of environmental damage. Because of these factors, an alternative was selected that would not conflict with the outfall and would achieve seismic safety sooner than if the outfall were relocated.

Selecting a southern alternative would not have resulted in a more seismically safe bridge. All replacement alternatives would be built to the same seismic standard.

Standard utility accommodation and relocation procedures will be used by Caltrans so as to ensure no disruption of service to the USCG during and after project construction in those areas conveyed in fee to Caltrans. Should investigation reveal operating utilities in areas where Caltrans holds an easement and should it be necessary for such utilities to be relocated, Caltrans will provide for such relocation. Subsurface Utility Engineering (potholing) will be conducted to determine the location, type, and ownership of all operating and abandoned utilities. Operating utilities will be accommodated in place and permanent easements will be provided if they do not interfere with construction or will be relocated at the expense of Caltrans and provided with easements in areas controlled by Caltrans. Non-operating or abandoned utilities will not be provided easements. On YBI, Caltrans is in the process of issuing an encroachment permit to CCSF for the continued maintenance of utilities that pass through Caltrans' right-of-way. The permit will allow CCSF to service the utilities until a final resolution on utility ownership and operation, as a result of the federal land transfer, is obtained between all parties. Caltrans will seek an appropriate new owner of the existing water pipe line on the bridge.

Dredging, Air Quality and Related Issues:

The EPA encouraged Caltrans to provide its air quality analysis of dredging-related impacts to ACOE. It also mentioned that cost-effectiveness should not be the only factor considered when making decisions about the disposal of dredged material.

The Law Offices of Stuart Flashman commented that the level of analysis provided in the FEIS on impacts from dredging and disposal of contaminated sediments was insufficient and that the public was not provided the opportunity to comment on the information added to the FEIS on contaminated dredged materials.

Response:

Caltrans has offered its analyses to the ACOE and will provide them should the ACOE need them.

Caltrans agrees with the EPA that criteria other than cost also need to be used in identifying appropriate reuse/disposal sites. Caltrans has been in consultation with the EPA and other members of the Dredged Material Management Office (DMMO) during the decision-making process. On June 6, 2001, Caltrans presented its plan for dredged material disposal and beneficial reuse to the DMMO and received preliminary verbal agreement about the plan.

Caltrans prepared a Dredged Material Management Plan (DMMP) that was circulated to agencies and the public in June of 1999. Comments on the DMMP and responses are in Volume II, Section II of the FEIS. Sediment testing was conducted in accordance with DMMO procedures. A Sediment Sampling and Analysis Report (SAR) was prepared that summarized the results of the testing. The results of the SAR are discussed in the FEIS. A small volume of dredged material is contaminated to a degree that would not be suitable for aquatic disposal or beneficial reuse. Those sediments that did not qualify for unconfined aquatic disposal showed only slightly more toxicity than the allowable limit when compared with reference sediments at the aquatic disposal sites. Transportation of these sediments and handling of accidental spills are strictly regulated. Leakage would not be allowed during transport. These sediments would be disposed of at appropriate upland facilities in accordance with all applicable laws and regulations.

Public circulation of the SAR is not required; however the executive summary of the report was made available at public libraries and at Caltrans' District 4 Information Office. Caltrans has

been in consultation with EPA throughout the environmental process and dredging disposal/sediment sampling analysis and EPA has not indicated that it has any issues with the FEIS, the sediment sampling, or proposed reuse/disposal options. For additional information, see Section 4.14.10 of the FEIS.

Cumulative Impacts:

The Law Offices of Stuart Flashman and Kenneth A. Gosting commented that the FEIS failed to adequately analyze the cumulative impacts of the project, including but not limited to impacts from disposal of waste materials generated during dismantling of the existing East Span and construction of the new East Span.

Response:

Cumulative impacts have been identified and are addressed in Section 4.15. The EPA has stated in its comment letter on the FEIS that the cumulative analysis for the East Span Project is adequate and does a good job in adequately describing the regulatory framework and the methodology used in the analysis. Cumulative impacts of waste generated by construction and dismantling processes are expected to be minor.

Transfer and Control of Property on YBI:

The Navy made the following comments on the FEIS:

- YBI property and adjacent submerged lands conveyed in fee or burdened by construction and aerial easements to Caltrans by the FHWA in the October 26, 2000, deed are incorrectly identified in the FEIS as still being under the control of the Navy. Also, archaeological site CA-SFr-04/H and improvements on the deeded property, including Building 213, historic Buildings 262 and 267 and historic Quarters 10, are incorrectly identified as still under Navy control. The Navy's EIS for the base closure will evaluate the effects of the Navy's disposal and reuse of base lands not affected by the FHWA-to-Caltrans deed. The Navy's disposal decisions, based on that EIS, are expected to begin in 2002. The Defense Base Closure and Realignment Act will not be available for disposal of any deeded land reconveyed to the U.S.
- The FEIS was also incorrect in stating that Caltrans will consult with the Navy regarding mitigation of effects to historic properties. The Record of Decision (ROD) should clearly state that the Navy was not party to or a concurring signatory to the MOA included in Appendix O of the FEIS. Because the Navy no longer controls Quarters 10, Building 267 or Building 262, maintenance of these buildings is the responsibility of the State of California and FHWA.

Response:

Regarding control of property, property permanently needed for the bridge has been transferred in fee and is no longer under the ownership or control of the Navy. This fee-property contains archaeological site CA-SFr-04/H and part of the property on which Building 213 is located. Caltrans takes responsibility for the archaeological site as specified in the MOA (See Appendix O of the FEIS) and has agreed, if requested by the Navy, to construct a building similar to Building 213 (a fire station currently used for storage of a fire truck) on Navy land outside the bridge right-of-way. See Section 4.1 – Community Impacts of the FEIS.

The air space above Building 262 and over a portion of the grounds of the Senior Officers' Quarters Historic District has been transferred to Caltrans as a permanent aerial easement; this easement includes restrictions on the uses of the land improvements that conflict with the aerial easement. This easement leaves substantial control over the land and improvements on land, including Building 262, to the Navy.

A temporary construction easement (TCE) includes substantial restrictions on access to and through such property during the period of construction (approximately 7 years), but includes specific rights of access to the Navy and does not change the underlying ownership of the property. The TCE, which will be extinguished when construction is complete, includes Building 267 and Quarters 10. As specified in the deed, restricted rights of access will be provided to Building 262 across Caltrans' right-of-way for maintenance and monitoring during construction. Any damage caused to the buildings by Caltrans during construction will be repaired. See Section 4.10 and Appendix O of the FEIS.

Regarding reconveyance of property, transferred property includes some fee property, as described above, that will not be needed for Replacement Alternative N-6. The fee interest of such property will be reconveyed to the United States, but, as provided in the deed, will be encumbered by a TCE, as described above. Once the TCE is extinguished at the completion of construction of the project, the underlying fee will be clear of that encumbrance. The Navy retains the fee interest of those properties encumbered by the TCE and the aerial easements and any further transfer it wants to make of that property could be, and would have to be, done with the easements in place.

Regarding consultation with the Navy on the MOA, Caltrans and FHWA met with the Navy to discuss the MOA and incorporated some of the changes to the MOA recommended by the Navy. The Navy was invited to sign the MOA as a concurring party, but did not do so. See Sections 4.1 and 4.10, and Appendix O of the FEIS.

Land Use:

The Navy commented that the FEIS fails to adequately explore the adverse effects that construction actions and the new bridge will have on existing land use and future land uses.

Response:

A technical report was prepared for the East Span Project entitled, Land Use Issues Associated with the SFOBB East Span Seismic Safety Project and the Naval Station Treasure Island Draft Reuse Plan, January 2000. The purpose of the report was to provide an overview of CCSF's proposed development on the eastern side of YBI as outlined in the CCSF Naval Station Treasure Island Draft Reuse Plan, July 1996, in relation to the proposed alternatives for the East Span Project. The findings of this report, which included an analysis of how the replacement alternatives could affect future land uses, were incorporated into Section 4.1 of the FEIS. Impacts to existing land use were addressed in Section 4.14.1 of the FEIS, which was expanded to include a more comprehensive discussion of construction-period impacts on land use.

Design Standards – Lifeline Criteria and MCE vs. SEE:

Rick Feher and Robert Freehling commented that the FEIS includes inconsistencies as to whether the project design meets lifeline criteria and whether the MCE or SEE standard was used for achieving seismic safety of bridge design. Kenneth A. Gosting (Transportation Involves Everyone) commented that the use of the "probabilistic" seismic criteria as opposed "deterministic" criteria raises design doubts concerning the seismic safety of the proposed design.

Response:

An MCE is the largest earthquake reasonably capable of occurring based on current geological knowledge. Caltrans has projected the MCE for the SFOBB as an earthquake of magnitude 8 (Richter Scale) on the San Andreas Fault or 7 ¼ on the Hayward Fault. The design standard reflected in the DEIS was the MCE approach. The design standard for the East Span Project was upgraded to the more stringent SEE standard, meaning that a replacement span would be able to withstand a larger earthquake than an MCE. In other words, the design meets the SEE standard,

thereby meeting and exceeding the MCE standard. For additional information, see Appendix K in the FEIS.

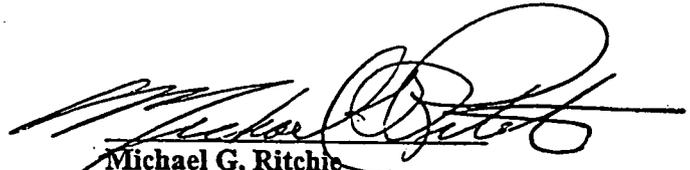
In its report entitled, Evaluation and Assessment of Proposed Alternatives to Retrofit/Replace the East Span of the San Francisco-Oakland Bay Bridge, dated October 2000, the ACOE says, "The replacement bridge does not meet lifeline criteria as defined in the ACOE's Scope of Work, but is being conformed to a unique Design Criteria, including the Safety Evaluation Earthquake (SEE) performance criteria. The design work is not yet complete and conformance to the SEE cannot be verified. However, it is the COE Team's opinion that Caltrans' team is highly qualified, using state-of-the-art design methods and is moving along a path to design a bridge that meets the seismic performance criteria."

K. Conclusion

Based upon careful consideration of all the social, economic and environmental evaluations contained in the Final Environmental Impact Statement; the input received from other agencies, organizations, and the public; and the factors and project commitments outlined above, it is the decision of the Federal Highway Administration to select Replacement Alternative N-6 with the self-anchored suspension design option for the San Francisco-Oakland Bay Bridge East Span Seismic Safety Project in San Francisco and Alameda Counties, California, identified as the Preferred Alternative in the Federal Highway Administration and California Department of Transportation's Final Environmental Impact Statement.

L. Record of Decision Approval

July 11, 2001
Date


Michael G. Ritchie
Division Administrator
Federal Highway Administration

Box 1, Folder 3

Item 5

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