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Staff Report:	July 26, 2002
Hearing Date:	August 7, 2002
Commission Action:	

STAFF REPORT: REGULAR CALENDAR

APPLICATION NO.: **1-01-069**

APPLICANT: **CALIFORNIA DEPARTMENT OF TRANSPORTION, District 1**

PROJECT LOCATION: At the Eureka Channel, Middle Channel, and Samoa Channel bridges on Route 255 (Post Mile 0.2 to 1.9), which collectively span Humboldt Bay, Humboldt County.

PROJECT DESCRIPTION: Seismically retrofit the substructure of the Eureka Channel, Middle Channel and Samoa Channel Bridges substructure (columns and footings). The project includes (1) strengthening and enlarging bridge foundations by adding a reinforced 18-inch-thick concrete top mat and/or pile cap to each of the 41 pier footings; (2) adding reinforced concrete casings on all pier columns; (3) installing four, three –foot or five-foot-diameter cast-in-steel shell (CISS) footing piles for a total of 148 piles; (4) placing pre-cast concrete skirts around the deep-water pile caps; (5) installing 19 sheet pile

	cofferdams around the pier footings; (5) excavating approximately 16,000 cubic yards of bay sediment around the bridge footings, (6) installing temporary construction trestles including approximately 1,115 trestle piles and a temporary 12,200-square-foot dock and remove trestles and dock following project construction, and (5) create a 107 square meter eelgrass bed.
LOCAL APPROVALS RECEIVED:	(1) City of Eureka Coastal Development Permit; (2) Humboldt Bay Harbor Recreation and Conservation District
OTHER APPROVALS RECEIVED:	(1) National Marine Fisheries Service Section 7 Endangered Species Act Consultation; (2) U.S. Fish and Wildlife Service Informal Consultation; (3) Department of Fish and Game 2080.1 Consistency Determination; (4) Regional Water Quality Control Board 401 Water Quality Certification; (5) Regional Water Quality Control Board Individual NPDES Permit
OTHER APPROVALS REQUIRED:	(1) Army Corps of Engineers; (2) Humboldt County Coastal Development Permit (for stockpiling areas located outside of the Commission's retained jurisdiction); (3) National Marine Fisheries Service Incidental Harassment Authorization
SUBSTANTIVE FILE DOCUMENTS:	(1) Environmental Assessment/Finding of No Significant Impact (March 2002)

SUMMARY OF STAFF RECOMMENDATION:

Staff recommends approval with special conditions of the coastal development permit application submitted by the California Department of Transportation (Caltrans) to seismically retrofit the State Route 255 Eureka Channel, Middle Channel, and Samoa Channel bridges that span Humboldt Bay. The three bridges are collectively known as the "Samoa Bridge," or the "Humboldt Bay Bridges," and connect the City of Eureka to Woodley Island and the Samoa Peninsula. The purpose of the project is to prevent bridge collapse and loss of lives in the event of a maximum credible earthquake (MCE) event (magnitude 7.5).

The proposed seismic retrofit work consists of strengthening the bridge columns and corresponding bridge footings of 41 bridge piers. The project involves excavating around the existing bridge footings and driving four new cast-in-steel-shell (CISS) footing piles around the ends of most of the exposed footings resulting in a total of 148 new footing piles. The work area around most of the pier footings would be dewatered and isolated by installing sheet pile cofferdams. Once the piles have been driven, the bay sediment in the hollow steel piles would be excavated and concrete would be poured into tightly sealed forms containing reinforcing steel to strengthen the footing piles and "tie" the new piles to each other and to the existing footing. In addition, reinforced concrete casings and reinforced concrete top mats would be constructed at each pier.

The construction areas in the bay would be accessed in two different ways. The deep-water bridge footings would be accessed by barges that would carry pile-driving cranes, drilling equipment, construction materials, and excavated material to the site. In shallower waters near the bridge abutments, temporary trestle structures would be built on top of steel or untreated timber pilings driven into the bay mud. Construction of the temporary trestles involves installing approximately 1,115 piles in the bay. Caltrans also proposes to construct a 12,200 square foot temporary dock east of the Eureka Channel Bridge for use in transporting construction materials and mobilizing equipment. All trestles, trestle piles, and the temporary dock would be removed in their entirety following project completion. In addition, temporary access roads would be constructed adjacent to Woodley Island Wildlife Area, an environmentally sensitive habitat area.

The proposed seismic retrofit project involves various forms of permanent and temporary wetland fill and involves dredging (excavating) in the bay. Therefore, the project is subject to the development standards set forth in Section 30233 of the Coastal Act. Approximately 51,170 square feet of bay bottom (tidal mudflat) would be temporarily impacted by construction trestles, and installation of sheet piling for cofferdam construction. Approximately 9,978 square feet of unvegetated channel bottom would be permanently displaced by enlarged columns and footings including 148 additional footing piles. Approximately 1,152 square feet of eelgrass habitat would be permanently displaced by the enlarged pier footings and approximately 31,301 square feet of eelgrass would be temporarily impacted by excavation, trestle shading, and operation of barges. The project also involves dredging (excavating) approximately 16,000 cubic yards of bay mud around the pier footings.

Humboldt Bay provides habitat for a variety of fish and wildlife species including federally and state listed threatened and endangered species. The deep-water channel portion of the project area provides foraging habitat for marine mammals such as Pacific harbor seals and provides a migratory corridor for federally listed salmonids. The bay also provides foraging and roosting habitat for a variety of shore birds including egrets, herons, and Brown pelicans. Humboldt Bay also contains highly productive areas of eelgrass, which provides critical foraging and sheltering habitat for a variety of birds and fish. A heron and egret rookery, an environmentally sensitive habitat area, is located on Indian Island adjacent to a portion of the project. Depending on the manner in which the seismic retrofit project is conducted, the portion of the project within the Commission's jurisdiction could have potential significant adverse impacts to (1) mudflat habitat, (2) brackish water channel habitat, (3) anadromous fish, (4) Pacific herring, (5)

California Brown pelican, (6) marine mammals, (7) water quality, and (8) eelgrass of Humboldt Bay. To address impacts to wetlands, environmentally sensitive habitat, and water quality, and to ensure consistency with Sections 30231, 30232, 30233 and 30240 of the Coastal Act, staff is recommending several special conditions that would minimize significant adverse impacts to coastal resources of Humboldt Bay.

To minimize impacts to biological resources of the bay, staff recommends Special Condition Nos. 1, 2, 3, 4, 5, and 6. To ensure protection of anadromous fish, Pacific herring, and roosting birds, staff recommends Special Condition No. 1 that limits construction activities to occur outside of sensitive time periods for these species. Special Conditions No. 2 and 3 require that biological monitors be present at the site during in-water construction activities to ensure that fisheries and marine mammals are not adversely impacted by excavation and pile driving. A small brackish water drainage channel would be temporarily diverted to dewater a pier on the Samoa Channel bridge. Special Condition No. 4 requires that all construction materials be removed from the channel following project completion and that the original contours of the channel be restored. Caltrans has prepared a mitigation and monitoring plan to mitigate for impacts to eelgrass. Staff recommends Special Conditions No. 5 and 6 that require Caltrans to submit final, revised eelgrass mitigation plans for the permanent and temporary impacts to eelgrass to incorporate additional requirements and standards to ensure that eelgrass habitat is not adversely impacted by the proposed project.

To minimize impacts to the water quality of Humboldt Bay, staff recommends Special Condition Nos. 7, 8, 9, 10, 11, and 12. Special Condition No. 7 requires Caltrans to submit a Hazardous Materials Management Plan to ensure that hazardous materials such as concrete and equipment fuel and oil do not enter waters of Humboldt Bay. Special Condition No. 8 requires submittal of an Erosion Control and Revegetation Plan to ensure that the temporary access roads to be constructed adjacent to Woodley Island do not result in erosion and sedimentation into the bay. Special Condition No. 9 requires submittal of a construction debris removal and disposal plan. Special Condition No. 11 requires that no creosote-treated piles be placed in the bay. Lastly, Special Condition No. 12 requires submittal of a revised final Storm Water Pollution Prevention Plan.

Additionally, the seismic retrofit project would result in a changed appearance of the project site from (1) the proposed permanent structural changes to the bridge itself and (2) the proposed temporary construction trestles, barges, and equipment in the bay during the course of the project which would affect views to and along the bay. Caltrans worked with landscape architects to incorporate various mitigation measures to reduce visual impacts of the project. These measures include utilizing the original design shapes to preserve the unity of the bridge appearance and utilizing the same materials to maintain consistency between the original and retrofitted structure.

The proposed retrofit project could potentially have significant adverse impacts on public access during construction. Humboldt Bay and the Eureka waterfront provides a variety of public access and recreation opportunities and several public access destinations are located in the project vicinity. During project construction, public access and recreational activities would be

temporarily restricted near the Eureka Channel Bridge along the Eureka waterfront, including closing the boat launch under the Eureka Channel Bridge for up to six months. To ensure that the Commission would have an opportunity to review any additional closure period beyond six months to assess impacts to public access, staff recommends Special Condition No. 10 requiring that Caltrans apply for a permit amendment to extend the closure of the boat launch facilities beyond a period of six months. To further minimize impacts to public access, staff recommends Special Condition No. 11 that requires Caltrans to clearly sign detours around the areas to be temporarily closed and to restore all public access areas to their original condition following project completion. To ensure that the project area remains available for boat access, Special Condition No. 16 requires that passage of at least 50% of the navigable channels adjacent to and under the bridge be kept clear of all obstructions consistent with U.S. Coast Guard requirements.

Finally, Special Condition No.18 requires Caltrans to provide a copy of any required approval of the U.S. Army Corps of Engineers to the Executive Director or evidence that no permit is required. Any changes to the project required by the Army Corps of Engineers must be reported to the Executive Director and such changes shall not be incorporated into the project until any required coastal development permit amendment is obtained.

As conditioned, staff believes that the project is fully consistent with the Chapter 3 policies of the Coastal Act.

STAFF NOTES:

1. Standard of Review

The proposed project is located within the Commission's area of retained permit jurisdiction. Therefore, the standard of review that the Commission must apply to the project is the Chapter 3 policies of the Coastal Act.

2. Commission Action Required at August 7, 2002 Meeting

Staff requests that the Commission act on this project at the August 7, 2002 hearing. The proposed project is a seismic retrofit project subject to the requirements of Senate Bill 805 (SB805; Streets and Highway Code Section 180 et. seq.). SB805 was enacted in 1994 following the Northridge earthquake to expedite the retrofit of existing highway structures to meet current seismic safety standards. SB805 requires state and local permitting agencies to either issue or deny a permit for specified seismic retrofit projects within 15 working days of receiving an application. In this case, Caltrans previously submitted a draft application to staff to enable staff to begin processing the permit. To ensure that the Commission could review the application within the 15 working day time

period, Caltrans submitted the formal application on July 24, 2002. The 15 working-day time period ends August 14, 2002. Therefore, if the Commission does not act on the application at the August 7, 2002 Commission meeting, the project shall be deemed approved unless the Commission obtains a time extension from the seismic retrofit permit review panel.

I. MOTION, STAFF RECOMMENDATION AND RESOLUTION:

The staff recommends that the Commission adopt the following resolution:

Motion:

I move that the Commission approve Coastal Development Permit No. 1-01-069 pursuant to the staff recommendation.

STAFF RECOMMENDATION OF APPROVAL:

Staff recommends a **YES** vote. Passage of this motion will result in approval of the permit as conditioned and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of the Commissioners present.

RESOLUTION TO APPROVE THE PERMIT:

The Commission hereby approves a coastal development permit for the proposed development and adopts the findings set forth below on grounds that the development as conditioned will be in conformity with the policies of Chapter 3 of the Coastal Act. Approval of the permit complies with the California Environmental Quality Act because feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the development on the environment.

II. STANDARD CONDITIONS: See Attachment A.

III. SPECIAL CONDITIONS:

1. Timing of Construction to Protect Anadromous Fish, Pacific Herring, and Bird Rookery

Seismic retrofit construction activities shall be limited as follows:

A. To avoid impacts to salmonids, no in-water work shall occur in the Eureka Channel between April 1 and August 31 (except eelgrass harvesting). All work within the waters of the Eureka Channel shall occur and be completed between September 1 and March 31. Work may occur within cofferdams in the Eureka Channel between April 1 and August 31 so long as the cofferdams are installed and removed between September 1 and March 31.

B. To avoid impacts to roosting birds at the Indian Island bird rookery, at Piers M-7, M-8, M-9, S-2, and S-3 as generally depicted on Exhibit X, neither pile driving or the installation of trestles associated with those piers shall occur between February 15 and August 15 during each year of construction.

C. To avoid impacts to Pacific herring runs, no pile driving or sheet pile installation shall occur in the Middle and Samoa Channels between January 1 and February 28

2. Fisheries Biological Monitor

A. A qualified biologist shall be on-site at all times during all in-water construction work including installation of cofferdams, excavation around bridge footings, and pile driving to monitor behavior of and disturbance to fish in the project area. The biologist shall capture any salmonids that may become stranded in the residual wetted areas as a result of project activities, and relocate the individuals to areas of the bay outside the project vicinity. Only NMFS approved methods shall be used to capture covered salmonids.

B. In the event that the monitoring biologist discovers individual or multiple listed species are injured or killed during the course of the project, all construction shall cease and shall not recommence except as provided in subsection (c) hereof; and a qualified biologist shall analyze the significance of the injury or death.

C. An applicant seeking to recommence construction following discovery of the individual or multiple listed species injured or killed during the course of the project shall submit a supplementary construction and work plan for the review and approval of the Executive Director.

(i) If the Executive Director reviews the Supplementary Construction and Work Plan and determines that the supplementary plan's recommended

changes to the proposed development or mitigation measures are de minimis in nature and scope, construction may recommence after this determination is made by the Executive Director.

(ii) If the Executive Director reviews the Supplementary Construction and Work Plan, but determines that the changes therein are not de minimis, construction may not recommence until after an amendment to this permit is approved by the Commission.

3. Marine Mammal Monitor

A. Prior to commencement of pile activities, marine mammal safety zones and noise contours shall be established for areas where the underwater sound pressure levels would reach 160 dB and 190 dB.

B. A qualified biologist shall be on-site at all times during CISS pile driving activities to monitor behavior of and disturbance to Pacific harbor seals and other marine mammals in the project area. The monitor shall be positioned to have an unobstructed view up and down the channel and shall have direct communication with the job foreman so that stop and start work directions could be relayed effectively. If CISS pile driving occurs at more than one bridge at a time, each bridge location would have a biologist assigned to monitor the presence of marine mammals.

C. If marine mammals are seen within the safety zone, pile driving shall not commence, or shall stop immediately and shall not restart until the marine mammal has moved beyond the 190 dB contour, either verified through sighting by a qualified observer outside the contour, or by waiting until enough time has elapsed (15 minutes) to assume that the animal has moved beyond the safety zone. If marine mammals are sighted within the 160 dB zone, behavior of the mammals shall be documented by monitors and reported to NMFS, but operations would not cease.

4. Brackish Channel Restoration

All temporary construction materials including but not limited to culverts and trestle materials shall be removed upon project completion and the original contours of the brackish water channel shall be restored.

5. Revised Eelgrass Mitigation and Monitoring Plan for Permanent Impacts to Eelgrass and Mudflat Habitat

A. PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the applicant shall submit, for review and written approval of the Executive Director, a final revised eelgrass and mudflat mitigation and monitoring plan that substantially conforms with the plan submitted to the Commission dated June 3, 2002 entitled "Humboldt Bay Bridges

Seismic Retrofit Project Final Eelgrass Mitigation Plan," except that it shall be revised to include the following provisions:

Eelgrass Mitigation:

(a) A pre-construction eelgrass survey shall be completed during the months of May through August, the period of active growth of eelgrass. The pre-construction eelgrass survey shall be completed prior to the beginning of construction and shall be valid until the next period of active growth;

(b) Within five years of the completion of planting, the entire eelgrass mitigation site shall have an extent of vegetated cover equal to a ratio of not less than 1.2 : 1 of the pre-construction extent of vegetated cover and have an average density equal to the average density at the impacted site. Specific success and monitoring criteria are as follows:

i. a minimum of 70 percent areal coverage and 30 percent density after the first year;
ii. a minimum of 85 percent areal coverage and 70 percent density after the second year;
iii. a sustained 100 percent areal coverage and at least 85 percent density for the third, fourth, and fifth years.

(c) Monitoring of the permanent eelgrass mitigation site shall determine the percent coverage and density of plants at the site and shall be conducted at 3, 6, 9, 12, 24, 36, 48, and 60 months after completion of the planting. All monitoring work shall be conducted during the active eelgrass growth period (May through August) and shall avoid the winter months (except during the first year).

(d) The extent of vegetated cover shall be defined as that area where eelgrass is present and where gaps in coverage are less than one meter between individual turion clusters. Density is defined as the average number of turions per unit area;

(e) Density and extent of vegetative cover shall be estimated at control areas during both pre-construction surveys and annual monitoring. Changes in density and extent of vegetated cover of the control areas will be used to account for natural variability. Selection of an appropriate control site shall be performed in consultation with the Department of Fish and Game and the National Marine Fisheries Service;

(f) Monitoring methods shall include land-based photos and random sampling of the eelgrass mitigation site using a sampling size adequate to obtain representative qualitative data for the entire mitigation site to determine percent cover and shoot density as defined in subsection (e) above;

(g) Sedimentation and erosion shall be monitored using calibrated PVC pipe used to monitor for sedimentation and erosion of the mitigation site. The pipes shall be placed at locations throughout the eelgrass mitigation site in a manner adequate to obtain sedimentation and erosion information of the entire mitigation site;

(h) A detailed monitoring schedule shall be provided that indicates when each of the required eelgrass monitoring events will be completed. Monitoring reports shall be provided to the Coastal Commission, the National Marine Fisheries Service, and the Department of Fish and Game within 30 days after the completion of each required monitoring period.

(i) The mitigation site shall be remediated within a year of a determination by the permittee or the Executive Director that monitoring results indicate that the site does not meet the performance standards identified in section (b), and in the approved final monitoring and mitigation program. If the performance criteria have not been met at the end of five years following the completion of planting, the applicant shall submit an amendment to the coastal development permit proposing additional mitigation to ensure all performance criteria are satisfied consistent with all terms and conditions of this permit.

Mudflat Mitigation:

(j) The mitigation plan shall include provisions for removal of fill material at the mitigation site to create at least 4,564 square feet of mudflat habitat.

(k) Within 30 days of completion of the mudflat mitigation work (1) "as built" plans shall be submitted demonstrating that the mudflat mitigation work has been completed in accordance with the approved mitigation plan, and shall include (2) an assessment of the initial biological and ecological status of the "as built" mudflat mitigation area. The assessment shall include an analysis of the attributes that will be monitored pursuant to the mitigation plan including at a minimum, (a) infauna species and density, and (b) erosion and sedimentation and shall include a description of the schedule and methods for monitoring.

B. The permittee shall undertake development in accordance with the approved eelgrass mitigation and monitoring plan. Any proposed changes to the approved final plan shall be reported to the Executive Director. No changes to the approved final plan shall occur without a Commission approved amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

6. Revised Eelgrass Mitigation and Monitoring Plan for Temporary Eelgrass Impacts

A. PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the applicant shall submit, for review and written approval of the Executive Director, a final revised eelgrass mitigation and monitoring plan that substantially conforms with the plan

submitted to the Commission dated June 3, 2002 entitled "Humboldt Bay Bridges Seismic Retrofit Project Final Eelgrass Mitigation Plan," except that it shall be revised to include the following provisions:

(a) A pre-construction survey shall be completed during the months of May through August, the period of active growth of eelgrass. The pre-construction survey shall be completed prior to the beginning of construction and shall be valid until the next period of active growth;

(b) The post-construction survey shall be completed in the same month as the pre-construction survey during the next growing season immediately following the completion of construction;

(c) If post-construction surveys indicate any decrease in eelgrass density or cover, then the site shall be monitored consistent with the approved final mitigation and monitoring plan for five years or until the performance criteria in section (f) have been met. If post-construction survey results demonstrate to the satisfaction of the Executive Director that eelgrass densities have not decreased at all and there has been no loss of extent of vegetated cover, then no further monitoring or mitigation is required;

(d) Adverse impacts to eelgrass shall be measured as the difference between the pre-construction and post-construction estimates of eelgrass cover and density. The extent of vegetated cover is defined as that area where eelgrass is present and where gaps in coverage are less than one meter between individual turion clusters. Density is defined as the average number of turions per unit area.

(e) Density and extent of vegetative cover shall be estimated at control areas during pre-construction surveys, post-construction surveys, and during annual monitoring. Changes in density and extent of vegetated cover of the control areas will be used to account for natural variability. Selection of an appropriate control site shall be performed in consultation with the Department of Fish and Game and the National Marine Fisheries Service;

(f) Within five years of completion of the project, the entire restoration site shall have an extent of vegetated cover equal to the pre-construction extent of vegetated cover and have an average density equal to the pre-construction average density. Specific success and monitoring criteria are as follows:

i. a minimum of 70 percent areal coverage and 30 percent density after the first year;
ii. a minimum of 85 percent areal coverage and 70 percent density after the second year;
iii. a sustained 100 percent areal coverage and at least 85 percent density for the third, fourth, and fifth years.

(g) Monitoring methods shall include aerial photographs and random sampling of the restoration site using a sampling size adequate to obtain representative qualitative data for the entire restoration site to determine percent cover and shoot density as defined in subsection (d) above;

(h) A detailed monitoring schedule shall be provided that indicates when each of the required monitoring events will be completed. Monitoring reports shall be provided to the Coastal Commission, the National Marine Fisheries Service, and the Department of Fish and Game within 30 days after the completion of each required monitoring period.

(i) The impacted site shall be remediated within a year of a determination by the permittee or the Executive Director that monitoring results indicate that the site does not meet the performance standards identified in section (f) the and in the approved final monitoring and mitigation program. If the performance criteria have not been met at the end of five years following the completion of planting, the applicant shall submit an amendment to the coastal development permit proposing additional mitigation to ensure all performance criteria are satisfied consistent with all terms and conditions of this permit.

B. The permittee shall undertake development in accordance with the approved eelgrass mitigation and monitoring plan. Any proposed changes to the approved final plan shall be reported to the Executive Director. No changes to the approved final plan shall occur without a Commission approved amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

7. Hazardous Materials Management Plan

A. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, the applicant shall submit, for the review and written approval of the Executive Director, a plan for the use and management of hazardous materials on the site to reduce impacts to water quality. The plan shall be prepared by a licensed engineer with experience in hazardous material management.

1. The plan, at a minimum, shall provide for the following:

(a) Equipment fueling shall occur only during daylight hours in designated fueling areas located in upland areas and otherwise outside of environmentally sensitive habitat areas;

(b) Oil absorbent booms and/or pads shall be on site at all times during project construction. All equipment used during construction shall be free of oil and fuel leaks at all times;

(c) Provisions for preparing and pouring cement in a manner that will prevent discharges of wet cement into coastal waters including, but not limited to, placement of measures such as catch basins, mats or tarps beneath the construction area to prevent spills or overpours from entering coastal waters;

(d) Provisions for the handling, cleanup and disposal of any hazardous or non-hazardous materials used during the construction project including, but not limited to, cement, equipment fuel and oil, and contaminated sediments;

(e) A schedule for maintenance of containment measures on a regular basis throughout the duration of the project;

(f) Provisions for the containment of rinsate from the cleaning of equipment, including cement mixing equipment, and methods and locations for disposal off-site. Containment and handling shall be in upland areas and otherwise outside of any environmentally sensitive habitat area;

(g) A site map detailing the location(s) for hazardous material storage, equipment fueling and maintenance, and concrete wash-out facilities;

(h) Reporting protocols to the appropriate public and emergency services/agencies in the event of a spill.

B. The permittee shall undertake development in accordance with the approved final plan. Any proposed changes to the approved final plan shall be reported to the Executive Director. No changes to the approved final plan shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

8. Erosion Control and Revegetation Plan

A. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, Caltrans shall submit, for the review and approval of the Executive Director, an erosion control and revegetation plan for all areas disturbed by construction of temporary access roads. The plan shall provide for (1) the use of geotextile fabric and gravel to cover temporary access roads during construction, (2) the complete removal of all geotextile fabric and gravel, (3) placement of erosion control measures such as mulch or rice straw, and (4) replanting the disturbed area with native vegetation.

B. The permittee shall undertake development in accordance with the approved final plan. Any proposed changes to the approved final plan shall be reported to the Executive Director. No changes to the approved final plan shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

9. Construction Debris Removal and Disposal

A. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, the permittee shall submit for the review and approval of the Executive Director a plan for the disposal of construction-related debris and contaminated sediments. The plan shall be consistent with the requirements of Special Condition No. 11. The plan shall describe the manner by which the material will be removed from the construction site and identify all temporary stockpiling and permit disposal sites that will be utilized. The plan shall demonstrate that all stockpiling and disposal sites are in upland areas where construction-related debris from this project may be lawfully stockpiled and disposed.

B. The permittee shall undertake development in accordance with the approved final plan. Any proposed changes to the approved final plan shall be reported to the Executive Director. No changes to the approved final plan shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

10. Trestle Piles

No creosote treated piles shall be placed in the waters of Humboldt Bay. The piles used to construct the temporary trestles shall be of concrete, steel, composite, untreated timber, or timber treated with a wood preservative approved by the Department of Fish and Game for use in marine waters. All piles placed shall be pulled up and completely removed without digging them out or cutting them off at the mudline.

11. Construction Responsibilities

The permittee shall comply with the following construction-related requirements:

(a) No construction debris or waste shall be placed or stored where it may be subject to entering coastal waters;

(b) Any and all debris resulting from construction activities shall be removed from the project site within 10 days of project completion and in accordance with the construction debris removal and disposal plan required by Special Condition 9;

(c) No machinery or construction materials not necessary for project construction shall be allowed at any time in Humboldt Bay;

(d) Non-buoyant debris discharged into coastal waters shall be recovered by divers as soon as possible after loss.

(e) Silt curtains and/or water bladder walls appropriate for use in marine waters shall be installed around the areas to be excavated at Piers E-12, E-13, E-14, and E-15.

(f) No contaminated sediments shall be returned to Humboldt Bay. Any contaminated sediments shall be legally disposed of at an appropriate upland facility.

(g) No imported materials shall be placed in Humboldt Bay around the bridge footings following completion of the retrofit work.

(h) Grounding and direct contact of the barge with eelgrass beds shall be minimized.

(i) No propellers, anchors, construction equipment, or piles shall be dragged over the mudflats or eelgrass beds.

12. Final Storm Water Pollution Prevention Plan

A. PRIOR TO COMMENCMENT OF CONSTRUCTION, Caltrans shall submit, for the review and approval of the Executive Director, a Final Stormwater Pollution Prevention Plan that is consistent with the requirements of Special Condition Nos.7, 8, 9, and 11.

B. The permittee shall undertake development in accordance with the approved final plan. Any proposed changes to the approved final plan shall be reported to the Executive Director. No changes to the approved final plan shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

13. Replant Trees to be Removed

Following project construction, Caltrans shall plant at a minimum, three native trees at the locations of the trees to be removed near the Eureka Channel Bridge abutment on Woodley Island.

14. Boat Launch Closure

Closure of the Eureka boat launch facility under the Eureka Channel Bridge shall not exceed a period longer than six months. The permittee shall obtain a permit amendment to close the boat launch facility under the Eureka Channel Bridge for any period longer than six months.

15. Public Access

During construction, Caltrans shall maintain clearly signed detours for public access around areas to be temporarily closed including a segment of the waterfront walkway in front of Carson Mill Park near the boat launch facility, the bike lane on Waterfront Drive, and Route 255 to safely accommodate vehicles, bicyclists, and pedestrians. Following project construction, all sidewalks or walkways shall be restored to their original condition.

16. Channel Access During Construction

A. At all times during project construction, and at all stages of the tide at and above the mean lower low water (MLLW), passage of at least 50% of the navigable channels adjacent to and under the bridge shall be kept clear of all obstructions including floating and submerged structures, equipment, and suspended overhead hazards to allow for continued access through the project area by boats and recreational water craft. The passage(s) shall be clearly marked with floating buoys.

B. Prior to commencement of construction, Caltrans shall submit a navigational access plan that is consistent with all other conditions of this permit, and that demonstrates that at least 50% of the navigable channels adjacent to and under the bridge shall be kept clear of all obstructions.

C. The permittee shall undertake development in accordance with the approved final plan. Any proposed changes to the approved final plan shall be reported to the Executive Director. No changes to the approved final plan shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

17. NOAA Nautical Chart Revision

Within 30 days of the completion of the proposed development, the applicant shall provide written verification to the California Coastal Commission that the applicant has submitted to the U.S. Coast Guard and the National Oceanic and Atmospheric Administration (NOAA):

1) as-built drawings, blueprints, or other engineering documents which depict the completed development;

2) geographic coordinates of the location, using a Differential Geographic Positioning System (DGPS) unit or comparable navigational equipment; and

3) the applicant's point of contact and telephone number.

18. U.S. Army Corps of Engineers Approval

PRIOR TO COMMENCEMENT OF CONSTRUCTION, the permittee shall provide to the Executive Director a copy of a permit issued by the U.S. Army Corps of Engineers, or letter of permission, or evidence that no permit or permission is required. The applicant shall inform the Executive Director of any changes to the project required by the U.S. Army Corps of Engineers. Such changes shall not be incorporated into the project until the applicant obtains a Commission amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.

IV. FINDINGS AND DECLARATIONS

1. Site & Project Description

The California Department of Transportation (Caltrans) proposes to seismically retrofit the State Route 255 Eureka Channel, Middle Channel, and Samoa Channel bridges that span Humboldt Bay. The three bridges are collectively known as the "Samoa Bridge," or the "Humboldt Bay Bridges," and connect the City of Eureka to Woodley Island and the Samoa Peninsula (Exhibits No. 1-3). The purpose of the project is to prevent bridge collapse and loss of lives in the event of a maximum credible earthquake (MCE) event (magnitude 7.5).

The Samoa Bridge is located within one of the most seismically active regions in North America. The California coastline north of Cape Mendocino is part of the Cascadia subduction zone, where the Gorda plate is being subducted under the North American Plate. Subduction zones have been associated with some of the largest and most destructive earthquakes. The Little Salmon Fault is located 3.1 miles from the bridges and is the nearest active fault capable of producing a MCE of magnitude 7.5. The three bridges were originally constructed in 1971 and were recently evaluated for structural integrity. The structural evaluation determined that all three bridges would be subject to collapse during an MCE and thus, require retrofitting. The proposed project has been initiated as part of the statewide Caltrans Seismic Safety Retrofit Program as mandated by the Governor in 1995 with the objective of preventing structural collapse during a maximum credible earthquake.

The seismic retrofit project involves two major stages. The first stage was completed in 1996 and involved retrofitting the superstructures (bridge deck and abutments) of the three bridges. The first stage also included the installation of temporary seismically activated traffic gates on all three bridges to provide an improved level of public safety until the bridges are completely retrofitted. The proposed project is the second stage and involves retrofitting the bridge substructure (columns and footings). Even though the bridge superstructure was seismically retrofitted, without the proposed substructure retrofit, the bridge remains susceptible to collapse during a major earthquake event.

Humboldt Bay is the second largest estuary in California and consists of Arcata Bay (North Bay) to the north, the South Bay, and a central entrance connecting the two bays. The bay has extensive intertidal mud flats that are largely exposed at low tide and are interlaced with numerous drainage channels. Three channels connect the two bays - Eureka Channel, Middle Channel, and Samoa Channel. The bridges cross all three of these channels in a location approximately five miles north of the bay entrance channel. The three bridges touch down on two islands, Woodley Island and Indian Island, and are adjacent to Daby Island. Although the bridges touch down on Indian Island, there is no vehicular or pedestrian access off of Highway 255 on to the island. Woodley Island is partially developed with a marina on the south side of the island. Indian Island and Daby Island are undeveloped except for several residences and a dock on the west side of Indian Island. Both islands are vegetated primarily with salt marsh vegetation.

Humboldt Bay provides habitat for a variety of fish and wildlife species including federally and state listed threatened and endangered species. The deep-water channel portion of the project area provides foraging habitat for marine mammals such as Pacific harbor seals and provides a migratory corridor for anadromous salmonids. The bay also provides foraging and roosting habitat for a variety of shore birds including egrets, herons, and Brown pelicans. Humboldt Bay also contains highly productive areas of eelgrass, which provides critical foraging and sheltering habitat for a variety of birds and fish including Black brant, Pacific herring, and sensitive salmonid species. The bay also provides extensive tidal mudflat habitat that supports benthic organisms such as polychaetes, bivalves, and gastropods. Although not regulated as a state or federally listed threatened or endangered species, Pacific herring is an important commercial fish species in Humboldt Bay. Pacific herring spawn in the eelgrass beds north of the bridges and utilize the Middle and Samoa Channels as a travel corridor to and from the spawning grounds.

The bridges are also adjacent to two managed areas of salt marsh and related undeveloped habitat. Indian Island is part of the U.S. Fish and Wildlife Humboldt Bay National Wildlife Refuge established to preserve and enhance habitat values associated with migratory water birds. The northwest half of Woodley Island is the Woodley Island Wildlife Area maintained by the Humboldt Bay Harbor District and is closed to the public except for scientific, educational and maintenance purposes.

There are several public recreation facilities along the bay waterfront in the vicinity of the proposed project including the Adorni Community Center, an outdoor amphitheater, Carson Mill Park, Clara May Berry Park, the Eureka waterfront walkway and a public boat launching facility under the Eureka Channel Bridge.

Construction Details

The seismic retrofit work consists of strengthening the bridge columns and corresponding bridge footings of 41 bridge piers. (Except for the northwest Eureka Channel Bridge abutment, the existing bridge abutments would not be strengthened on any of the bridges). The project involves excavating around the existing bridge footings and driving four new cast-in-steel-shell (CISS) footing piles around the ends of most of the exposed footings resulting in a total of 148 new footing piles. Depending on the location, footing piles would be driven 40 to 120 feet below mean sea level. Once the piles have been driven, the bay sediment in the hollow steel piles would be excavated and concrete would be poured into the tightly sealed forms containing reinforcing steel to strengthen the footing piles and "tie" the new piles to each other and to the existing footing. Exhibit No. 4 includes a glossary of bridge terminology and Exhibit Nos. 5, 6, and 7 show construction plans. The proposed construction details for each of the three bridges are outlined below:

- **Eureka Channel Bridge.** This bridge is 34-feet-wide, 1,820 feet long, and 50-feet-high and links the Eureka waterfront and Woodley Island. The Eureka Channel Bridge has 16 piers, designated E-1 (the abutment near the Eureka boat ramp) through E-16 (the abutment on Woodley Island), consecutively east to west. The specific development proposed includes:

1. Placing reinforced concrete casings around each pier column;

2. Adding 1.5-foot thick reinforced concrete top mats to each pier;

3. At Piers E-4, E-13, and E-14 driving four, three-foot-diameter CISS piles into the channel bottom and then excavating and filling each pile with concrete at each of the five pier footings;

4. At Piers E-6 through E-11 driving four, three-foot diameter CISS piles into the channel bottom and then excavating and filling each pile with concrete. These are deepwater piers and would have concrete skirting placed around the new top mats to protect the piles and hide them from view. The skirting would extend below the low tide level but not down to the bay bottom.

5. No footing piles would be installed at Piers E-2, E-3, E-5, and E-12 (enforce column and place top mat only);

6. At the northwest bridge abutment installing shear keys (concrete blocks) between the girders to prevent sideways movement and to support the bridge if the girders slip off the bridge abutment;

7. Removing fender piles around Piers E-7 and E-8.

- **Middle Channel Bridge.** This bridge is 34-feet-wide, 1,080 feet long, and 40 feet high and links Woodley Island and Indian Island. The Middle Channel Bridge has 10 piers, designated M-1 (the abutment on Woodley Island) through M-10, consecutively east to west. The specific development proposed includes:

  1. Placing reinforced concrete casings around each pier column;

  2. Adding 1.5-foot thick reinforced concrete top mats to each pier; the deep-water piers would have skirting placed to protect the piles and hide them from view at low tide. The skirting would extend below the low tide level but not down to the bay bottom.

  3. At Piers M-2 through M-9, driving four, three-foot diameter CISS piles into the bay bottom and then excavating and filling the piles with concrete. At Piers M-2 through M-7 strengthening and enlarging pier pile caps.

- **Samoa Channel Bridge.** This bridge is 34-feet-wide, 2,510 feet long, and 55-feet high and links Indian Island to the Samoa Peninsula. The Samoa Channel Bridge has 20 piers, designated S-1 through S-20, consecutively east to west. The specific development includes:

  1. Placing reinforced concrete casings around each pier column;

2. Adding 1.5-foot thick reinforced concrete top mats to each pier except at Piers S-8 and S-9 where the top mat would be two-feet thick.;

3. At Piers S-2, S-3, and S-14 through S-20 driving four, three-foot-diameter CISS piles, excavating, and then filling the piles with concrete;

4. At Piers S-4 through S-13, strengthening and enlarging the existing pile caps. At all of the footing piers, four, five-foot diameter CISS piles would be driven, excavated, and filled with concrete except at Piers S-8 and S-9 where six, five-foot diameter CISS piles would be driven at each footing.

At the shallow water bridge piers, sheet pile cofferdams would be constructed around each pier footing to enclose the work areas. These cofferdams are constructed by driving sheet piling into the substrate around the bridge footing and pouring a bottom concrete seal course to create a watertight box around the pier footing. Water would then be pumped out of the cofferdam into containment tanks. The cofferdams would dewater the work area and prevent excavated and drilled material from entering open waters of the bay. The cofferdams would be removed following completion of construction. Cofferdams and concrete seals would not be utilized for the Middle Channel Bridge piers or for the deep-water piers. At these locations, retrofit work would be accomplished with the use of pre-cast concrete skirting and cast in steel shell footing piles.

Piers E-12 through E-15 on the west side of the Eureka Channel Bridge do not have adequate space between the superstructure of the bridge and the bay bottom for typical pile driving equipment to drive the sheet piling for cofferdam walls into the substrate. Dewatering at these locations would involve excavating or dredging the bay mud from around the base of each pier during low tide when the mudflats are completely exposed. These low clearance piers would be accessed from small barges, which would settle on the mudflat near the piers during low tide. The excavation area would be sloped back at approximately three-foot horizontal to one-foot vertical (3:1) or steeper. The footings are presently buried in up to ten feet of mud. When the footings are uncovered, sheet piles would be physically maneuvered into place around them and bolted together to construct the cofferdams. The excavated material would be replaced around the footings following completion of the retrofit work.

At each bridge, the existing seismic gates and antenna towers, controller boxes, and electronic signs would be removed after construction. The existing seismic sensors on each bridge, which are currently connected to the seismic gates would remain. A communication cable would be installed to link the seismic sensors on each bridge. The one-inch-diameter cable would require trenching along the Route 255 roadway on Woodley Island.

Pile drivers, cranes, concrete mixers, drill rigs and other heavy equipment would be used to place the temporary trestles, coffer dams, new piles, steel reinforcing material, and concrete. Other construction equipment might include backhoes, generators, pumps, dump trucks, concrete truck, excavators, pavers, rollers, boats, and barges. The paver and rollers would be used to repave the

public boat launch parking lot and portions of Waterfront Drive following completion of the project.

Most of the proposed work would be confined to the existing State right of way. Approximately 19 acres of total additional temporary construction easements would be needed to construct the proposed project. Construction activity would likely be in progress concurrently at more than one bridge. It is anticipated that the proposed retrofit construction for all three bridges would require two to three years to complete.

Access and Staging Areas

The construction areas in the bay would be accessed in two different ways. The deep-water bridge footings would be accessed by barges that would carry pile-driving cranes, drilling equipment, construction materials, and excavated material. The barges would be as large as 80 x 200 feet with multiple anchor lines up to 300 feet long. The barges may rest on the bay bottom for short periods during low tide. In shallower waters near the bridge abutments, temporary trestle structures would be built on top of steel or untreated timber pilings driven into the bay mud to approximately 6 to 7 feet above mean sea level (Exhibits No. 8 and 9). The trestles would provide construction and heavy equipment access to the bridge footings near shore. Trestles off shore of either end of the Eureka Channel Bridge and the west end of the Samoa Channel Bridge would connect with land, allowing equipment and materials to be transported directly from shore to the trestle. All other trestles would be built from barges and would not connect with or provide access to land. Equipment and materials would be transported to these trestles by barge. Construction of the temporary trestles involves installing approximately 1,115 piles in the bay. Caltrans also proposes to construct a 12,200 square foot temporary dock east of the Eureka Channel Bridge for use in transporting construction materials and mobilizing equipment. All trestles, trestle piles, and the temporary dock would be removed in their entirety following project completion.

Caltrans is proposing to establish a construction work area located adjacent to the Eureka Channel Bridge on City of Eureka property. Caltrans has a lease with the City to use the site for staging activities. The site is located in the City of Eureka's coastal development permit jurisdiction and Caltrans has received a permit from the City to use the site for staging activities.

Caltrans is proposing to utilize an existing paved area, approximately 73,000 square feet in size, as a temporary stockpiling and sediment testing site for the 16,000 cubic yards of material proposed to be excavated from around the bridge footings. The site would also be used for equipment storage and fueling. The site is an existing industrial site located on the Samoa Peninsula on the east side of Vance Avenue in an area of Humboldt County's coastal permit jurisdiction. The County is currently processing a coastal development permit for the proposed staging and stockpiling site. Additional construction work areas are not included as part of the proposed project. Caltrans has indicated that any additional required staging areas would be the contractor's responsibility to locate and obtain any required permit approvals.

Debris Disposal
Construction activities are expected to generate up to 16,000 cubic yards of excavated and drilled material. Most of this material would be temporarily stockpiled and then replaced around the bridge footings following the retrofit work at each pier. It is anticipated that approximately 5,000 cubic yards of this excavated material would not be used as backfill and would be hauled away for disposal. Caltrans has identified a disposal site outside of the coastal zone near Rio Dell. If the construction contractor chooses not to use this disposal site, all necessary permits and approvals would be required.

Excavated material would either be transported by disposal lines, hauled away by trucks or double-handled and trucked from barges. Trucks could be loaded on the trestles or from docked barges. The locations of disposal lines would be approximately adjacent to the existing bridge within the bay and then staked along the upper portion of roadway fill on Woodley and Indian Islands.

Handling of excavated substrate materials would consist of separating water from sediment so that the solid material has acceptably low water content for upland disposal (for landfills, usually at least 50% solids by volume). This dewatering would be accomplished by settling and infiltrating using lined detention basins, containment tanks, filtration devices. Dewatered sediments would be tested and documented to meet all acceptance criteria of any selected disposal location. Separated water from these operations would be discharged either back to Humboldt Bay or to the City of Eureka wastewater treatment plant in compliance with all requirements of the RWQCB.

Eelgrass Mitigation
The proposed project would result in permanent impacts to eelgrass from enlarging pier footings which would eliminate approximately 107 square meters (1,152 square feet) of eelgrass habitat and approximately 38 square meters (408 square feet) of actual eelgrass (as delineated by Caltrans in Aug/Sept 2000). In addition, the proposed project would result in temporary impacts to eelgrass populations and eelgrass habitat from the installation of temporary trestles and the use of small, low draft barges. Approximately 2,908 square meters (31,301 square feet) of eelgrass could be temporarily impacted from these construction activities.

Caltrans proposes to mitigate for impacts to eelgrass by creating and planting a 107-square-meter eelgrass bed located along the northeast side of Indian Island adjacent to the project and by replanting the excavated areas around the low clearance piers. Specifically, the proposed mitigation involves removing 107 square meters (1,152 square feet) of rock and rubble from around the abutment located adjacent to pier M-9. The rock is excess rock slope protection that was placed or has sloughed off when the bridge was constructed in the early 1970's and is not functioning to maintain bank stability. The area would be excavated to bottom contours of –1 foot to +2 feet Mean Lower Low Water (MLLW) to create elevations similar to adjacent elevations and the site would be planted with eelgrass clusters. The excavated areas around affected piers in each channel would be backfilled to pre-construction levels with inoculating mud to recreate eelgrass habitat levels and allow for natural revegetation. The area around the

five Eureka Channel low clearance piers would be planted with eelgrass clusters to promote revegetation of the area.

Caltrans proposes to harvest the eelgrass growing in locations that would be impacted by enlarged pier footings and transplant them into the created eelgrass bed between May and June prior to commencement of construction of the retrofit project. Caltrans proposes to monitor the eelgrass mitigation and transplant sites for five years following project completion using a combination of aerial photograph interpretation and on-site ground-truthing.

2. Filling and Dredging in Coastal Waters and Wetlands

Section 30106 of the Coastal Act defines development, in part, as the "*removing, dredging, mining, or extraction of any materials.*" Section 30108.2 defines fill as the placement of earth or other substance or material in a submerged area.

The proposed seismic retrofit project involves various forms of permanent and temporary wetland fill. Approximately 51,170 square feet of bay bottom (tidal mudflat) would be temporarily impacted by construction trestles, including approximately 1,115 piles, and installation of sheet piling for cofferdam construction. The trestle piles and cofferdams would be removed following project construction. Approximately 4,564 square feet of channel bottom and sub-tidal habitat would be permanently displaced by enlarged columns and footings. The project also involves dredging (excavating) approximately 16,000 cubic yards of bay mud around the pier footings.

Coastal Act Section 30233 allows filling and dredging in wetlands only where there is no feasible less environmentally damaging alternative, where feasible mitigation measures have been provided to minimize adverse environmental effects, and where the project is limited to one of eight specified uses. Additionally, Coastal Act Sections 30230 and 30231 address protection of the biological productivity and water quality of the marine environment from the impacts of development.

Section 30233 of the Coastal Act provides as follows, in applicable part:

> *(a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:*
>
> ...
>
> *(5) Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.*

Sections 30230 and 30231 of the Coastal Act address the protection of coastal water quality and marine resources in conjunction with development and other land use activities. Section 30231 states:

> *The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of wastewater discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantially interference with the surface water flow, encouraging, wastewater reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.* (emphasis added)

Section 30230 of the Coastal Act states, in applicable part:

> *Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.*

The above policies set forth a number of different limitations on what development projects may be allowed in coastal wetlands. For analysis purposes, the limitations can be grouped into four general categories or tests. These tests are:

a. that the purpose of the filling, diking, or dredging is for one of the eight uses allowed under Section 30233;

b. that feasible mitigation measures have been provided to minimize adverse environmental effects;

c. that the project has no feasible less environmentally damaging alternative; and

d. that the biological productivity and functional capacity of the habitat shall be maintained and enhanced where feasible.

a. Permissible Use for Fill

The first test for a proposed wetland fill/dredging project is whether the fill/dredging is for one of the eight allowable uses under Section 30233(a). The relevant category of use listed under Section 30233(a) that relates to the proposed seismic retrofit project is subcategory (5), stated as follows:

(5) Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.

To determine if the proposed fill/dredging is for an incidental public service purpose, the Commission must first determine that the proposed fill/dredging is for a public service purpose. Since the seismic retrofit project would be conducted by a public agency to improve public safety on an existing public highway bridge, the Commission finds that the fill/dredging expressly serves a public service purpose consistent with Section 30233(a)(5).

The Commission must next determine if the fill is "incidental." The Commission has in the past determined that certain bridge seismic retrofit projects constitute "incidental" public service purposes under Section 30233(a)(5). For example, in CDP No. 1-96-71 (Caltrans' seismic retrofit of the Pudding Creek Bridge in Fort Bragg), the Commission found that the fill for the seismic retrofit was for an "incidental" public service purpose. In the present case, the Commission finds the public safety purpose of the proposed seismic retrofit project is incidental to "something else as primary," that is, the transportation service provided by the existing bridge. The purpose and need for the project is for public safety, to provide a bridge that will be less prone to collapse or damage in a strong earthquake. The project would not result in any roadway widening and therefore, would not increase the existing traffic capacity of the bridge.

Therefore, the Commission finds that for the reasons discussed above, the dredging and filling for the proposed project is for an incidental public service purpose, and thus, is an allowable use pursuant to Section 30233(a)(5) of the Coastal Act.

b. Feasible Mitigation Measures

Another test set forth by Section 30233 is whether feasible mitigation measures have been provided to minimize adverse environmental impacts. Depending on the manner in which the seismic retrofit project is conducted, the portion of the project within the Commission's jurisdiction could have potential significant adverse effects to (1) mudflat habitat, (2) brackish water channel habitat, (3) anadromous fish, (4) Pacific herring, (5) California Brown pelican, (6) marine mammals, (7) water quality, and (8) eelgrass of Humboldt Bay. The potential impacts and their mitigation are discussed in the following eight sections.

(1) Mudflat

Approximately 51,170 square feet of mudflat habitat would be temporarily impacted by trestle and cofferdam installation. Some footings would be enlarged and buried below the mud line and would not considered be considered permanent fill because the mud above the enlarged footings would continue to function as habitat. The temporary trestles would not have any long-term adverse impacts on the habitat of the bay bottom as they are proposed to be pulled up and removed in their entirety following completion of the project. However, approximately 4,564 square feet (424 square meters) of unvegetated sub-tidal mudflat habitat would be permanently impacted by enlarged columns and footings.

The subtidal bay bottom that would be permanently displaced is generally too deep for the growth of eelgrass due to limited light penetration. Nonetheless, the subtidal bay bottom provides valuable functions to the bay ecosystem. The mudflats of Humboldt Bay provide habitat to benthic invertebrates, which are important prey for many fish and birds in the Humboldt Bay area. Subtidal soft-bottom sediments host extensive microscopic diatoms and bacteria that convert nutrients into organic matter, oxygenate the sediments, and provide food for herbivores. Bacteria feed sediment deposit-feeders and break down organic matter releasing nutrients back into the water column. Animals that contribute to the ecological health of the subtidal community include crabs, polychaete and oligochaete worms, amphipods, isopods, snails, and bivalves. Additionally, subtidal mudflats provide feeding, spawning, and nursery grounds for commercial species of fish and invertebrates and provide refuge for fish during low tide.

Caltrans has not proposed mitigation for the permanent fill of subtidal mudflat, as they indicate the enlarged bridge structure is expected to increase the biological diversity within the bay channels in a manner not unlike an artificial reef. The bridge footings and columns in the subtidal area would provide some habitat value for marine invertebrates such as barnacles and mussels and for those organisms that feed on these invertebrates. However, the proposed enlargement of the footings and piles would displace an area of functioning subtidal mudflat, a type of coastal wetland, and thus, would result in a net loss of wetland area.

As discussed in section (8) on eelgrass, Caltrans proposes to remove rock, debris, and other fill material from an area within Caltrans' right of way near Pier E-9 on the northeast side of Indian Island to create a mudflat area that would be planted with eelgrass. The fill to be removed is material that was used to armor the bridge abutment when the bridge was constructed in 1971. Much of this material proposed to be removed has fallen and sloughed off and is no longer necessary for highway stabilization purposes. The Commission finds that this area proposed to be excavated to create an eelgrass mitigation site could be expanded to include an area of mudflat mitigation as well. Although the area would be more shallow than the subtidal habitat that would be permanently displaced by the enlarged bridge footings and columns, creation of mudflat habitat would offset the area proposed to be permanently filled and would ensure no net loss of wetland area. Therefore, to ensure that the proposed project would not result in either significant adverse impacts to mudflat habitat or a net loss of wetland area, the Commission attaches Special Condition No. 5 (j). This condition requires Caltrans to include provisions for creation of a minimum of 4,564 square feet of mudflat habitat at the proposed eelgrass mitigation site in the revised mitigation and monitoring plan required for permanent impacts. Special Condition No. 5(k) requires submittal of "as built" plans within 30 days of completion of the mudflat mitigation work. The condition also requires submittal of an assessment of the initial biological and ecological status of the "as built" mudflat mitigation area including an analysis of the attributes that will be monitored, including at a minimum, (a) infauna species and density and (b) sedimentation and erosion and a description of the schedule and methods for monitoring.

The required ratio of mudflat habitat creation to mudflat habitat loss would be 1:1. Although this ratio is low in comparison with the ratio the Commission requires for some projects, the Commission has previously approved projects at 1:1 ratios when the kind of habitat involved is

unvegetated mudflat (e.g. CDP No. 1-98-28, City of Eureka). This is because the biotic community in unvegetated mudflat areas is relatively simple in comparison with other wetland habitats and the benthic organisms that are commonly found within unvegetated mudflat areas typically can be expected to fully colonize new mudflat areas rapidly. Given that the mitigation area would be created adjacent to an extensive mudflat habitat, benthic organisms can be expected to migrate to and colonize the new habitat area fairly readily.

Therefore, as conditioned, the Commission finds that the project would not result in significant adverse impacts to mudflat habitat and is adequate to minimize significant adverse impacts to the mudflat habitat consistent with Section 30233 of the Coastal Act.

(2) Brackish Water Drainage Channel

A ten-foot-wide earthen drainage channel carrying tidally-influenced brackish water runs parallel to the bay shoreline on the Samoa Peninsula and crosses under the Samoa Channel Bridge between the railroad and Vance Avenue near Pier S-20. Hydrophytic vegetation grows along both sides of the wetland channel, consisting mainly of dense-flowered cordgrass (*Spartina densiflora*), an invasive exotic species that is on the California Native Plant Society's Invasive Weeds of Humboldt County A-List (most harmful). Vegetation does not grow directly under the bridge due to overshadowing by the bridge.

Approximately 1,290 square feet of the drainage channel would be diverted to a temporary culvert for several months so that the area around pier S-20 can be retrofitted. After the work at S-20 is complete, the culvert would be removed and the water restored to the drainage channel. During the remainder of the project, the drainage ditch would be bridged with a trestle to create an access road for work on the remaining Samoa Channel Bridge piers.

To ensure that the habitat values of the brackish water channel are fully restored upon project completion as proposed, the Commission attaches Special Condition No. 4 which requires that all temporary construction materials including but not limited to culverts and trestle materials shall be removed upon project completion and the original contours of the brackish water channel restored.

Therefore, the Commission finds that the proposed project, as conditioned, would not have significant adverse impacts to the brackish wetland habitat of the channel.

(3) Anadromous Fish Habitat

There are three listed anadromous fish species known to occur within the limits of the project including coho salmon, (*Oncorhynchus kisutch)*, chinook salmon *(Oncorhynchus tshawytscha)*, and Northern California steelhead *(Oncorhynchus mykiss)*. All three species are listed as threatened under the Endangered Species Act and coho salmon are listed as threatened under the California Endangered Species Act. Humboldt Bay is primarily used as a migration corridor for juvenile salmonids that are out-migrating to the ocean, or adults migrating to freshwater streams to spawn and as foraging habitat for juvenile salmonids. Humboldt Bay does not provide

suitable spawning habitat for any of the three fish species. The National Marine Fisheries Service has prepared, and Caltrans has submitted, a Biological Opinion for the seismic retrofit project that evaluates potential effects to federally listed salmonids.

The project area is located at the southern end of the North Bay near the mouths of Jacoby Creek and Freshwater Creek, which provide freshwater habitat for listed salmonids that are likely to reside in, and migrate through the project area. According to NMFS, adult salmonids migrating to freshwater in North Bay tributaries, and juveniles migrating to the ocean must pass through the project area. Juvenile salmonids may also rear in the area, especially in the vicinity of Freshwater Slough and the Eureka Channel where salinities may be diluted by input from Freshwater Creek during storm events, and when they are making the transition from estuarine conditions to marine conditions. The remainder of the project area serves generally only as a migration corridor for listed salmonids due to the lack of estuarine rearing conditions. Of the three listed salmonids, chinook salmon are likely to spend the longest time rearing in the estuarine environment. Individual chinook juveniles may spend the summer months rearing in estuarine salt marshes and eelgrass beds before migrating to the ocean in the fall. Also, individual coho salmon are likely to rear in brackish water areas for a period of days to weeks as they undergo the transition from freshwater to the marine environment.

According to NMFS, the project area most likely to have a seasonal concentration of juvenile salmonids is the Eureka Channel in the vicinity of Freshwater Slough, the Eureka waterfront, Woodley Island, and Daby Island. The potential for concentrations of juvenile salmonids is highest from early spring through late summer, particularly in and around eelgrass beds, and during periods when late season storms and high flows in Freshwater Creek reduce the area's salinity. Due to extended periods of rearing in estuaries, Chinook salmon are more likely to endure short-term impacts from the project than either steelhead or coho salmon.

Several construction related activities could adversely affect listed salmonids or salmonid habitat including cofferdam installation. Cofferdams would be installed to dewater the work area around the bridge footings. The installation of sheet piles to construct cofferdams would have potential impacts similar to those described above for pile driving. It is possible that juvenile salmonids could become trapped inside the cofferdams. Smaller fish could be entrained in pumps used to dewater the cofferdams and both large and small fish could remain in the dewatered cofferdam. Caltrans proposes to double-screen all pumps to prevent entrainment and to have a qualified biologist on site to monitor and rescue any trapped fish during the installation of cofferdams. The Commission attaches Special Condition No. 2 requiring a fisheries biologist to monitor the project area during the pile driving and cofferdam dewatering activities. Consistent with the Terms and Conditions imposed by NMFS, the biologist shall capture any salmonids that may become stranded in the residual wetted areas as a result of project activities and relocate the individuals to the bay using methods approved by NMFS.

Pile driving and removal can result in increases in turbidity when fine silts from the bay bottom are mobilized into the water column. Additionally, percussion and sound waves emanate underwater from pile driving. Increased water turbidity can have adverse effects on salmonids by increasing their vulnerability to prey. According to DFG and NMFS, recent investigations

into fish fatality around pile driving operations has indicated that in cases of extremely large piles being driven into bedrock, the shock wave from pile driving has the potential to rupture the swim bladders of some fish and cause internal bleeding in other organs. In the proposed project, the piles are relatively small (three or five feet in diameter) and would not be driven into solid rock. According to NMFS, fish will actively avoid areas of increased sedimentation and noise if they can. NMFS has indicated that the salmonids in the project area during the proposed work periods are most likely to be larger fish residing in open water and deeper channels and therefore, these fish are able to move readily in open water to escape poor water quality and excessive noise.

Impacts to individual salmonids due to excavation may be similar to impacts described above for pile driving. In addition, excavation proposed to occur in existing eelgrass beds has the potential to directly strike or entrap juvenile salmonids. To minimize these impacts, Caltrans proposes to limit in-water work on the Eureka Channel Bridge including pile driving, cofferdam installation, and excavation around the shallow water piers so as to only occur between September 1 and March 31. NMFS has indicated that this proposed in-water work window would avoid periods when juvenile salmonids would more likely be in the Eureka Channel and nearby eelgrass where they would potentially be adversely impacted by excavation. According to NMFS, salmonids would most likely be present in Eureka Channel rather than the Middle or Samoa Channels, because of the lower salinity caused by increased freshwater input and closer proximity to natal streams such as Freshwater Creek. NMFS does not anticipate that the proposed project would interfere with adult migrating salmonids, as they would be sufficiently mobile to avoid the construction area.

To ensure that the proposed project minimizes impacts to salmonids in the project area, the Commission attaches Special Condition No. 1. Consistent with the Terms and Conditions imposed by NMFS and proposed by Caltrans, the condition requires that all work performed on the Eureka Channel Bridge within the waters of Humboldt Bay shall be completed within the work period from September 1 to March 31 and that no in water work shall occur in the Eureka Channel between April 1 and August 31. The condition provides for work to occur within cofferdams outside of this in-water work period as long as the cofferdams are installed and removed within the in-water work periods.

Although pile driving, coffer dam installation, and excavation will be prohibited in the Eureka channel during the spring and summer months, such work would be allowed to occur during the rest of the year at any of the channels, including during the fall migration period for adult salmon that are coming from the ocean and seeking freshwater spawning grounds in freshwater streams up the estuary. For the reasons discussed previously, NMFS did not preclude work in the channels during this adult migration period. In addition, because the piles to be driven will be relatively small and would not be driven into solid rock, there is reason to believe that percussion and sound waves emanating underwater from pile driving will not adversely affect the salmon. However, there is some uncertainty that percussion and sound waves from the pile driving would not adversely affect salmon. The Commission finds that because of the potential impacts to fish from pile driving, it is essential to have a biological monitor on site not only during cofferdam dewatering activities as proposed by Caltrans and required by NMFS, but also during pile

driving activities to ensure that any fish kills that do occur in association with the pile driving are detected, notification is provided to the Commission staff, NMFS, and DFG, and the impact can be evaluated. Therefore, the Commission attaches Special Condition No. 2 which requires that should the biological monitor observe fish fatality in the project area, all in-water work shall cease and Caltrans shall notify the Coastal Commission, the National Marine Fisheries Service and the Department of Fish and Game. To recommence construction following discovery of fish kills, the applicant is required to submit a supplementary construction plan for the review and approval of the Executive Director to determine whether the changes are de minimis in nature and scope, or whether an amendment to this permit is required.

In addition to the water quality impacts from increased turbidity discussed above, spills of petroleum products during fueling of machinery and other accidental spills of contaminants, including wet cement and cement dust may occur. These contaminants could adversely affect listed salmonids, their habitat, and forage if they enter the marine environment. Caltrans proposes the use of certain Best Management Practices (BMPs) and implementation of a Storm Water Pollution Prevention Plan. These measures and additional water quality mitigation measures are discussed in section (7) below.

NMFS concluded that the seismic retrofit project is "not likely to jeopardize the continued existence of listed Pacific salmonids, or destroy or adversely modify designated critical habitat." Additionally, the California Department of Fish and Game issued a consistency determination dated April 25, 2002 indicating that the Biological Opinion prepared for the project is consistent with the California Endangered Species Act and that Caltrans does not need to obtain authorization pursuant to CESA for incidental take of coho salmon.

Therefore, the Commission finds that the proposed project, as conditioned, would minimize disturbance to sensitive anadromous fish by restricting the timing of the in-stream work and by having a biological monitor on site during in-water construction activities. Furthermore, the water quality mitigation measures discussed below will also ensure that significant adverse impacts to sensitive fish species are minimized.

(4) Pacific Herring

Although not protected as a state or federally listed threatened or endangered species, Pacific herring is an important commercial fish species in Humboldt Bay and is protected by regulations of the California Department of Fish and Game. Pacific herring spawn in the bay in sub-tidal zones on aquatic vegetation such as eelgrass. The peak spawning period in Humboldt Bay usually occurs during January and February. Because these fish are harvested primarily for their roe, this is also the peak time for commercial herring fishing.

According to the Department of Fish and Game Marine Region, herring travel back and forth through the channels daily below the bridge and also tend to seek shelter under the bridge. Herring spawn primarily in eelgrass beds in the North Bay, north of the bridges, and the channels below the bridge provide a travel corridor to and from the spawning grounds.

According to the DFG, herring are not as commonly found in the Eureka Channel most likely because of the lower salinity levels caused by increased freshwater input from upland watersheds that enter the bay near the Eureka Channel. The Department of Fish and Game has indicated that the primary potential impact to herring from the proposed project is the noise and vibration caused by pile driving and sheet piling installation which may cause herring to alter their spawning behavior and travel routes to and from primary spawning grounds during the peak herring spawning season (January through February). To minimize impacts to Pacific herring during peak spawning season, the Commission attaches Special Condition No. 1 (c) that requires that no pile driving or sheet pile installation occur in the Middle or Samoa Channels during the period of January 1 through February 28 of any construction year.

Therefore, the Commission finds that the proposed project, as conditioned, would not result in significant adverse impacts to Pacific herring in the bay.

(5) California Brown Pelican

The California brown pelican is listed as endangered under the Endangered Species Act and is common in Humboldt Bay during the summer and fall. They are found in great abundance from June through October and less common in winter and early spring. Pelicans feed on a variety of small fish and often use man-made structures to roost. Pelicans were observed regularly during 1999 spring and summer surveys of the project area at all three bridge locations, including on the bridge footings.

Brown pelicans tend to use a string of mariculture rafts just north of the westernmost portion of the project area for roosting. Brown pelicans are mobile and would likely respond to acoustic and visual disturbance by moving to adjacent areas where ample habitat is available. Consequently, disturbance could potentially temporarily preclude this listed species from using the project area for the length of the project, but would not do so permanently. During the course of the project, brown pelicans would likely not forage, roost, or otherwise use the area of project disturbance, resulting in reducing the area available for these essential behaviors. Brown pelicans forced to roost at other locations for the few unforeseen times required by project implementation may find those locations less accommodating than the mariculture rafts. However, for the length of the project, occasional roosting at an alternate location is not likely to significantly adversely affect brown pelicans.

According to the U.S. Fish and Wildlife Service (USFWS), contamination from a spill of toxic substances poses the greatest potential to adversely affect the Brown pelican and other species that could potentially occur in the project area. Pelicans could come in direct contact with spilled material and food supplies could be contaminated resulting in ingestion of toxic substances. Spills of petroleum products during fueling of machinery and other accidental spills of contaminants, including wet cement and cement dust may occur. These contaminants could adversely affect Brown pelicans, their habitat, and forage if they enter the marine environment. Caltrans proposes the use of certain Best Management Practices (BMPs) and implementation of a Storm Water Pollution Prevention Plan to minimize the chances of a spill. These measures and additional water quality mitigation measures are addressed in section (7) below.

In its Informal Consultation letter, the USFWS concluded that the proposed project may affect, but is not likely to adversely affect the brown pelican and other no additional mitigation is required. Therefore, the Commission finds that the proposed project, as conditioned, would not result in significant adverse impacts to the federally listed California Brown pelican.

(6) Marine Mammals

Pacific harbor seals are the most common marine mammal in Humboldt Bay and are present in the channels year round, using them for foraging and resting. Stellar sea lions are federally listed as threatened under the Endangered Species Act and are rarely observed in the bay.

Marine mammals in the bay are potentially vulnerable to their prey base being contaminated by water pollution. Project construction related activities including pile driving, operation of boats and barges, and excavation activities all could also result in harassment of marine mammals by disturbing foraging patterns or causing direct harm to the animals.

Pile driving operations have the potential to harass marine mammals in close proximity to the construction area. The highest sound energy is expected to occur during the driving of 44, five-foot-diameter steel shell footing piles at the deep-water piers of the Samoa Channel Bridge. The footing piles proposed for the other two bridges would be three-foot-diameter and much of the pile driving would occur within cofferdams or at upland locations. Driving temporary trestle piles, sheet piles, and footing piles at all three bridges (except no sheet piles for coffer dams at Middle channel bridge) could occur simultaneously at one or more of the bridges. The actual pile driving operation would occur intermittently since the equipment would need to be moved and set-up frequently. Marine mammals are highly mobile and sensitive to underwater noise. As such, the construction activity is expected to discourage marine mammals from staying in the construction area, thereby minimizing exposure to potentially harmful noise.

The National Marine Fisheries Service (NMFS) issued a Biological Opinion for the project regarding potential impacts to the listed Steller sea lion. According to the Biological Opinion prepared by NMFS, the nearest major Steller sea lion haul-out is the Sugarloaf/Cape Mendocino rookery located approximately 30 miles south of the project area. Although foraging in river mouths and estuaries has been documented for this species at various locations along the coast, Steller sea lions are rarely, if ever, found in Humboldt Bay. On the rare occasion that a Steller sea lion is found foraging in or near Humboldt Bay, it has been sighted near the entrance channel located several miles south of the project limits. NMFS concluded that based on the low likelihood of Stellar sea lions being present in the project area, the project is not likely to adversely affect the Stellar sea lion.

Pacific harbor seals are the most abundant marine mammal species found within Humboldt Bay. Seals are regularly seen within the three channels – Eureka, Middle, and Samoa. Two main haul-out locations have been identified in North Humboldt Bay (Arcata Bay) including on Daby Island, approximately ¼ mile north of the Eureka Channel Bridge, and Mad River Slough,

approximately 2 miles north of the Samoa Channel Bridge. The seals most likely to be affected by the pile driving activities would be those at the Daby Island haul-out site.

As discussed above, harbor seals could be adversely affected by the project by noise from pile driving and disturbance from general construction activities. Although the Pacific harbor seal is not a listed species, an Incidental Harassment Authorization from the National Marine Fisheries Service (NMFS) is required for the project. According to information published by NMFS in the Federal Register (April 10, 2002), NMFS considers that underwater sound pressure levels above 190 decibels (dB) could cause temporary hearing impairment in harbor seals. The effects of elevated sound pressure levels may include avoidance of an area, tissue rupture, hearing loss, disruption of echolocation, masking, habitat abandonment, aggression, pup abandonment, and annoyance.

During pile driving, the level of sound produced from the impact hammering may be affected by the size and maximum operating energy level of the piles, soil conditions, water depth, bathymetry, salinity, and temperature. The proposed piles would be installed in water 3.28 feet deep to 52.5 feet deep using three-foot and five-foot diameter piles. Caltrans provided NMFS with a determination of the potential 160 dB and 190 dB noise contours based on the hammer energy proposed to be used on the larger diameter CISS piles and the underwater sound propagation characteristics in shallow bay waters. The results identified a 160 dB noise contour at a distance of 670 meters (2,198 feet) and a 190 dB noise contour at a distance of 130 m (427 feet). Based on these results, marine mammals that are within the 190 dB contour could be subject to temporary hearing threshold shift or other non-lethal injury. Marine mammals within the 160 dB contour would also be likely to demonstrate avoidance behaviors, but would not be likely to sustain injuries associated with elevated noise levels.

Caltrans has indicated that attenuation devices such as air blankets and bubble curtains designed to decrease the noise level around the pile driver would not work in the three channels due to the high velocity tidal currents. Caltrans proposes to establish safety and buffer zones around each pile driving site prior to commencement of pile driving involving the large diameter piles. The safety zone is intended to include all areas where the underwater sound pressure levels are anticipated to equal or exceed 190 dB. Caltrans proposes to have qualified biologists monitor all CISS pile driving to observe for marine mammals in the vicinity of pile driving activity. If marine mammals are seen within the safety zone, pile driving must not commence, or must stop immediately and not restart until the marine mammal has moved beyond the 190 dB contour, either verified through sighting by a qualified observer outside the contour, or by waiting until enough time has elapsed (15 minutes) to assume that the animal has moved beyond the safety zone. In addition, a buffer zone would be established around large diameter piles for the 160 dB noise contour. If marine mammals are sighted within this zone, behavior of the mammals would be documented by observers and reported to NMFS, but operations would not cease.

The monitors would be positioned to have an unobstructed view up and down the channel and would have direct communication with the job foreman so that stop and start work directions could be relayed effectively. If CISS pile driving occurs at more than one bridge at a time, each bridge location would have a biologist assigned to monitor the presence of marine mammals.

NMFS has preliminarily determined that the short-term impact of pile driving and other activities associated with the seismic retrofit of three bridges may result in the temporary modification in behavior of Pacific harbor seals, but would not result in a significant effect to populations of Pacific harbor seals. NMFS concludes that "*While behavioral modifications, including temporarily vacating haul-out sites and other areas may be made by these species to avoid disturbance, the availability of alternate haul-out sites (including pupping sites) and feeding areas within the bay has led NMFS to the preliminary conclusion that the action would have a negligible impact on Pacific harbor seal populations in Humboldt Bay and along the California coast. In addition, no take by serious injury or death is anticipated and harassment takes should be at the lowest level practical due to incorporation of the mitigation measures mentioned previously in this document.*" Therefore, to ensure that the mitigation measures proposed by Caltrans to protect Pacific harbor seals are implemented, the Commission attaches Special Condition No.3.

As conditioned, the project would not result in significant adverse impacts to marine mammals and thus, no further mitigation is necessary.

(7) Water Quality

The potential water quality impacts from the proposed project include (1) increased turbidity in the bay during installation and removal of cofferdams and trestle piles and excavation around pier footings, (2) accidental spills or release of hazardous materials including concrete and equipment fluids, (3) stormwater runoff from access road construction, (4) disturbance of contaminated sediments, and (5) construction debris entering bay waters.

Turbidity

The project would have the potential to increase turbidity of bay waters during excavation of bay sediments and installation and removal of approximately 1,115 trestle piles, and 19 cofferdams. Construction activities are expected to generate up to 16,000 cubic yards of excavated bay sediments. Most of this material would be temporarily stockpiled and then replaced around the bridge footings following retrofit work. It is anticipated that approximately 5,000 cubic yards of this excavated material cannot be used as backfill and would require disposal. Excavated and drilled bay material would be transported by some combination of disposal lines, barges, or trucks to a stockpile location.

To minimize turbidity during excavation, Caltrans proposes to install sheet piling around the footings to create cofferdams. The excavation would occur within the cofferdams at low tide to confine turbidity and prevent sediment from becoming mobilized in the water column. Unconfined excavation would occur at four shallow water piers at the Eureka Channel Bridge. Because of the low vertical bridge clearance at the four shallow water piers (E-12, E-13, E-14, and E-15), conventional cofferdams cannot be installed around these four piers. Caltrans proposes the use of turbidity controls around these shallow water piers including silt curtains or water bladder walls. Caltrans has indicated that several companies manufacture silt curtains that

can be designed for a marine environment with tidal fluctuations. The curtains generally consist of a heavy vinyl coated fabric material equipped with tension cables and ballasts for support. Water bladder walls are essentially large tube-like structures consisting of polyethylene inner walls providing support surrounded by a heavy duty, woven, polypropylene fabric for durability. The inner walls are filled with water, which provide weight and rigidity to the wall structure. To ensure that these turbidity control measures are implemented as proposed at excavation locations not otherwise contained by cofferdams, the Commission attaches Special Condition No. 11(e) that requires the installation of silt curtains and/or water bladder walls appropriate for use in marine waters around the areas to be excavated at Piers E-12, E-13, E-14, and E-15.

Hazardous Materials

The proposed project involves the use of potentially hazardous materials on site and near bay waters. Potential contaminants include vehicle and heavy equipment fluids such as oil, grease, petroleum, hydraulic fluids, fuels, and coolants. In addition, the project requires the use of substantial amounts of concrete that would be poured from construction trestles or the bridge deck over the bay into pre-cast forms to retrofit the footings and columns. Wet concrete or cement powder and heavy equipment fluids can be toxic to marine life if they were to come in contact with coastal waters. Caltrans has not proposed specific measures to prevent concrete from coming in contact with bay waters, but has indicated that their contractor would be responsible for preparing a hazardous materials management and spill response plan that would provide measures for minimizing potentially hazardous and toxic materials from entering Humboldt Bay. Caltrans has submitted a conceptual Stormwater Pollution Prevention Plan that addresses only general Best Management Practices for concrete washout facilities, but does not provide site-specific measures for containing concrete, responding to accidental spills, or for locating fueling, or concrete wash-out and maintenance facilities.

To ensure that adverse water quality impacts associated with discharges of concrete and other potentially hazardous materials on site during project construction are minimized, Special Condition No. 7 requires the applicant to submit for the review and approval of the Executive Director, a Hazardous Materials Management and Spill Response Plan. The plan is required to provide for the following: (1) equipment fueling must occur only during daylight hours in designated fueling areas located in upland areas and otherwise outside of environmentally sensitive habitat areas; (2) oil absorbent booms and/or pads are required to be on site at all times during project construction; and (3) all equipment used during construction shall be free of oil and fuel leaks at all times. Additionally, Special Condition No. 7 requires the plan to include: (1) provisions for preparing and pouring cement over coastal waters in a manner that will prevent spills or overpours from entering coastal waters, including, but not limited to, placement of protective measures such as catch basins, mats or tarps beneath the construction trestle area; (2) a schedule for maintenance of containment measures on a regular basis throughout the duration of the project; (3) provisions for the handling, cleanup and disposal of any hazardous or non-hazardous materials used during the construction project including, but not limited to, cement, equipment fuel and oil, and contaminated sediments; (4) provisions for the containment of rinsate from the cleaning of equipment, including cement mixing equipment, and methods and locations for disposal off site; (5) a site map detailing the location(s) for hazardous material

storage and equipment fueling and maintenance and, (6) reporting protocols to the appropriate public and emergency services/agencies in the event of a spill.

Stormwater Runoff

Stormwater runoff from construction work areas and the site of two temporary access roads to be constructed on the southeast side of Woodley Island could result in significant sedimentation impacts. As discussed above, road construction would disturb soils over an approximately 18,000-square-foot area. Placement of geotextile fabric and gravel on the access roads is proposed to minimize erosion and sedimentation from stormwater runoff during construction. After construction, the geotextile fabric and gravel would be removed from the access roads and any disturbed ground would be restored to original grade and revegetated. To ensure that the access roads are protected by the geotextile fabric and gravel during construction activities as proposed and that the temporary access roadway locations are later restored in a manner that would not result in sedimentation reaching coastal waters or surrounding environmentally sensitive habitat areas, the Commission attaches Special Condition No. 8 that requires submittal of an erosion control and revegetation plan for review and approval by the Executive Director prior to commencement of construction. The plan shall provide for (1) the use of geotextile fabric and gravel to cover temporary access roads during construction as proposed by the applicant, (2) the complete removal of all geotextile fabric and gravel upon completion of construction activities requiring use of the roads, (3) placement of erosion control measures such as mulch or rice straw, and (4) replanting the disturbed area with native vegetation.

Contaminated Sediments

Due to historical land use activities, several investigations were conducted along the Eureka waterfront to evaluate potential contamination within the soil/groundwater matrix and the bay sediment/bay water matrix. Piers E-2 through E-5 are located on the southern bank of the Eureka Channel, which was the location of a former lumber mill and foundry. This area is located outside of the Commission's jurisdiction within the coastal development permit jurisdiction of the City of Eureka. Results of the investigations indicated that excavations adjacent to land-based Piers E-1 through E-5 would have the potential to expose soils and other fill materials that may contain elevated levels of lead, barium, and arsenic. Petroleum hydrocarbons have also been detected at or near these pier locations. Groundwater samples taken at these locations also revealed the presence of heavy petroleum hydrocarbons. As a result, under the coastal development permit approved by the City, all excavated materials near and adjacent to Piers E-2 through E-5 will be stockpiled with appropriate containment measures and tested to determine appropriate disposal options. The City of Eureka has indicated that collected groundwater can be disposed of and treated at the City's wastewater treatment plant, provided sample results are within acceptable limits.

At other locations outside of the Commission's jurisdiction, heavy construction equipment and materials would be mobilized at the former foundry site adjacent to the southeast side of the Eureka Channel Bridge. This site is currently a vacant lot and the subsurface soil of this site is contaminated. Under the coastal development permit approved by the City for this portion of the

project, no ground breaking activity would occur at this location and geotextile fabric and gravel would be temporarily placed, where needed, on the site prior to moving any materials or equipment to the site. During construction, a temporary fence would enclose the work area. All excavated material found to be contaminated would be stockpiled within the fenced work area on two layers of 10-mil thick black polyethylene and covered with polyethylene at all times. A perimeter berm for the stockpile would be constructed by wrapping the edges of the plastic over hay bales, or equivalent, to prevent contaminated water runoff and infiltration.

The investigation also included an evaluation of total metal concentrations in sediment samples at the bay locations within the Commission's jurisdiction to be excavated. Total metals were not detected above their respective Total threshold Limit concentration (TTLC) values or above ten times their respective Soluble Threshold Limit Concentration (STLC) values. Additionally, no Volatile Organic Compounds (VOCs), Semi-Volatile Organic Compounds (SVOCs), pesticides, Poly-Chlorinated Biphenols (PCBs), or dioxins were detected in the sediment samples collected from all three channels. However, as a precaution, Caltrans proposes to test the sediments excavated from the bay. If any of the excavated material is found through testing to contain contaminants, the material would be disposed of at an appropriately permitted upland facility. To ensure that any contaminated sediments are legally disposed of at an appropriately permitted upland facility and that no imported materials are placed in Humboldt Bay around the bridge footings following completion of the retrofit work, the Commission imposes Special Condition No. 9.

Construction Debris

Caltrans has identified a potential debris disposal site located at a Caltrans maintenance station south of Eureka in the Rio Dell area located outside of the coastal zone. Caltrans has indicated that this disposal location is merely an option for the contractor, but that the contractor may choose to dispose of the material at an alterative location. Therefore, to ensure that debris is adequately disposed of in an approved location, the Commission attaches Special Condition No. 9 requiring that prior to commencement of construction, the applicant submit for the review and approval of the Executive Director, a plan for the disposal of construction-related debris including the disposal of contaminated materials consistent with the requirements of Special Condition No. 11. The plan must describe the manner by which the material would be removed from the construction site, identify all debris disposal sites that would be utilized and demonstrate that all disposal sites are in upland areas where construction-related debris from the project may be lawfully disposed.

The proposed project involves installing approximately 1,115 temporary piles for construction trestles. The use of certain kinds of wood preservatives commonly used to treat piles such as creosote, can lead to adverse impacts to water quality and biological productivity. Contaminants in the wood preservative can potentially leach out of the piles and into the water column where they can be absorbed by fish and other aquatic organisms with potentially adverse consequences. To ensure that the trestle piles are acceptable for use in marine waters, the Commission attaches Special Condition No. 10. This condition prohibits the use of creosote-treated piles in the waters of Humboldt Bay and requires all piles to be composed of concrete, steel, composite, untreated

timber, or timber treated with a wood preservative approved by the Department of Fish and Game for use in marine waters.

The water quality of Humboldt Bay could also be adversely affected by construction debris entering the water from the removal of fender piles in the Eureka Channel and the use of various construction materials on trestles over the water. Special Condition No. 11 imposes certain construction-related responsibilities including responsibilities for ensuring that: (a) no construction debris or waste shall be placed or stored where it may be subject to entering coastal waters; (b) any and all debris resulting from construction activities shall be removed from the project site within 10 days of project completion and in accordance with the construction debris disposal plan required by Special Condition No. 9; (c) no machinery or construction materials not necessary for project construction shall be allowed at any time in Humboldt Bay; and (d) non-buoyant debris discharged into coastal waters shall be recovered by divers as soon as possible after loss.

Caltrans has submitted a conceptual Stormwater Pollution Prevention Plan (SWPPP) for the project that sets forth general Best Management Practices for controlling and preventing the discharge of pollutants to surface waters and groundwater. It is Caltrans' policy to require the contractor to prepare a SWPPP that may or may not be different from the conceptual SWPPP prepared by Caltrans. Additionally, the NPDES Permit approved by the RWQCB requires Caltrans to prepare a site-specific Storm Water Pollution Prevent Plan and monitoring program for the contaminated areas located near the Eureka Channel Bridge. To ensure that the final Storm Water Pollution Prevention Plan prepared by the applicant is consistent with the water quality control measures required by Special Condition Nos. 7, 8, 9, and 11 of this permit, the Commission attaches Special Condition No. 12 requiring that the final SWPPP and the site-specific SWPPP be submitted for review and approval of the Executive Director prior to commencement of construction.

Consistency with Section 30412 of the Coastal Act

Section 30412 prevents the Commission from modifying, adopting conditions, or taking any action in conflict with any determination by the State Water Resources Control Board or any California Regional Water Quality Control Board in matters relating to water quality. Staff consulted with the Regional Water Quality Control Board (RWQCB) about permitting requirements and potential impacts resulting from the proposed project. Caltrans has received two approvals from the Regional Water Quality Control Board including a Clean Water Act Section 401 Certification and an Individual National Pollution Discharge Elimination System (NPDES) Permit for the retrofit project (Exhibit Nos. 11 & 12). In addition, the project is subject to a general State Wide Storm Water Permit issued to Caltrans for all of its construction projects.

The Clean Water Act Section 401 Certification sets forth five project conditions. The conditions generally prohibit the discharge of any construction-related debris or other waste including oil or petroleum products, wash waters, or concrete treatment chemicals into Humboldt Bay. In addition, the conditions require that disturbance and/or removal of vegetation and soil be

minimized and that disturbed areas be revegetated following project construction. The conditions further prohibit the discharge of water from sealed cofferdams and/or CISS piles that would violate Receiving Water Limitations (as set forth in the Individual NPDES permit) or pH standards and require that any discharge not cause turbidity of the receiving waters to be increased more than 20% above naturally occurring background levels at a distance of 200 feet beyond the point of discharge.

Caltrans has previously been issued a State Wide Storm Water Permit (State Wide Permit). A Waste Discharge Requirements Order and the Individual NPDES permit approved by the RWQCB for the seismic retrofit project is intended to address activities not covered by the State Wide Permit and are intended to supplement, not replace, its terms. The NPDES permit sets forth general discharge prohibitions, receiving water limitations, solids disposal requirements, and provisions for monitoring and reporting to the RWQCB. The NPDES permit reiterates several conditions contained in the 401 Certification regarding turbidity and pH limitations of waste discharge. The permit further prohibits discharge of pumped groundwater having identified minimum levels of certain constituents including for example, petroleum hydrocarbons, Methyl Tertiary-butyl ether (MtBE), and Methanol. The NPDES permit also lists receiving water limitations for various potential pollutants including solid debris, biostimulants, toxic substances, pesticides or other chemicals. The receiving water limitations further require that waste discharge not result in a measurable temperature change, undesirable tastes or odors, or esthetically undesirable discoloration. The NPDES permit also requires that all solids disposal be disposed of at a legal disposal site approved by the RWQCB. Caltrans has received a waiver from the RWQCB to dispose of material at the proposed Rio Dell site. Lastly, the NPDES permit sets forth monitoring and reporting provisions that must be adhered to during the course of the project.

The Commission finds that requiring the Special Conditions discussed above to minimize adverse impacts to water quality does not conflict with any determination by the State Water Resources Control Board or any California Regional Water Quality Control Board in matters relating to water quality as required by Section 30412 of the Coastal Act. In acting on the project, the Regional Water Quality Control Board determined that the project as proposed could have significant water quality impacts and as a result, imposed various water quality control requirements in its permit approvals for the project to address the water quality impacts. The Commission's action to impose water quality conditions does not conflict with the Regional Board's determinations on water quality as the special conditions imposed by the Commission to address water quality reiterate mitigation measures proposed by the applicant and/or would help ensure that the water quality standards established by the Regional Board for the project are implemented and realized through the incorporation of specific water quality control measures.

The proposed seismic retrofit project involves increasing the size of the bridge footings and columns in the Eureka, Middle, and Samoa Channels of Humboldt Bay. The project would be constructed in an area of open water, through which vessels currently may pass freely. This area is extensively used for navigation, including commercial fishing vessels and recreational watercraft.

According to the National Oceanic and Atmospheric Administration (NOAA), "Over 98% of the nation's cargo is carried by waterborne transportation - a good portion consisting of hazardous cargo, posing a continuous threat to the environment"[1]. Although cargo vessels do not frequently travel under the bridges, the fuel all vessels carry is also hazardous to the marine environment. Should a vessel collide with the bridge, there is potential for a spill of oil and other hazardous materials to the marine environment. A spill of oil or other hazardous materials could damage sensitive eelgrass habitat adjacent to the bridge, as well as the resident and migratory marine mammals and birds found in the area such as harbor seals and California Brown pelican. Additionally, a spill of oil or other hazardous materials could adversely impact sensitive salmonid species and commercial and recreational fisheries in the area including Pacific herring. Such an event would conflict with Sections 30230 and 30231 of the Coastal Act that set forth provisions for the protection of coastal water quality and biological productivity.

Staff has consulted with the U.S. Coast Guard and NOAA regarding the proposed project and its affect on navigation. It is anticipated that there would not be an appreciable change to the horizontal clearance between the bridge footings, as the footings would be enlarged parallel with, rather than perpendicular to the channels. However, the U.S. Coast Guard and NOAA indicated that until the project is completed and properly surveyed, there is likelihood that updates to navigational information may be necessary. Recreational boaters and other mariners rely on updated charts and other nautical information to safely navigate. Using obsolete chart information may create dangerous situations for vessel operators. For example, if the recreational boat captain does not know, from using all of the currently available navigational information, that a newly enlarged bridge footings obstruct his or her intended path, he or she might, in heavy fog or other circumstances, guide the boat into a collision with the bridge footings. If mariners are not properly notified of the development, the existence of the enlarged footings has the potential to create a navigational hazard.

The potential for vessel accidents and subsequent damage to the marine environment may be significantly reduced if both the U.S. Coast Guard and NOAA staffs are provided with information about the development, so they can evaluate it for inclusion in navigational databases, nautical charts and updated editions of the *Coast Pilot 7*. The Commission therefore attaches Special Condition No. 17 that requires the applicant notify the U.S. Coast Guard and NOAA's Nautical Data Branch of the nature and location of the development within 30 days of its completion. The U.S. Coast Guard and NOAA staffs have indicated they will evaluate the information, and if additional information is needed, they will work directly with the permittee to obtain it.

Therefore, as conditioned, the Commission finds that the biological productivity and quality of coastal waters will be maintained and the project, as conditioned, is consistent with Sections 30230, 30231, 30233, and 30412 of the Coastal Act.

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[1] From National Oceanic and Atmospheric Administration website, http://chartmaker.ncd.noaa.gov/staff/charts/htm, accessed 5/18/01.

(8) Eelgrass

Eelgrass (*Zostera marina)* is a flowering plant that extends long rhizomes (roots) an average of 1.5 – 8 inches below the substrate from which the turions (stems) sprout with long, green blades (leaves) and it thrives in protected coastal waters with sandy or muddy bottoms. Eelgrass habitat is considered to be an environmentally sensitive habitat area worthy of protection because it functions as important shelter and foraging habitat. For example, black brant, small migratory geese, feed almost exclusively on eelgrass. Eelgrass also provides crucial sheltering habitat for federally listed juvenile salmonids and in some locations serves as a spawning ground for herring. Furthermore, eelgrass meadows provide dissolved oxygen, baffle wave energy, and stabilize sediments. Eelgrass is very dynamic and population size and distribution can vary substantially from year to year.

The project area was surveyed for eelgrass in October 2000 and August 2001 to establish baseline data and to quantify the extent and location of eelgrass within the project limits. Caltrans has prepared an Eelgrass Mitigation Plan (attached as Exhibit No. 14) and has identified temporary and permanent impacts to eelgrass populations and eelgrass habitat as a result of the proposed retrofit project. The distinction between "temporary" and "permanent" impacts is based upon whether the substrate is disturbed or permanently lost as a result of project activities. Areas that supported eelgrass during Caltrans' surveys were defined as eelgrass "populations," whereas areas of mudflat that could serve as substrate for eelgrass based on preferred site characteristics were defined as eelgrass "habitat." The following table (Table 1) provided by Caltrans summarizes impacts to eelgrass from various construction activities as further discussed below.

Table 1. Summary of Impacts to Eelgrass from Seismic Retrofit Construction Activities

Impact Activity	Permanent Impact to Eelgrass Populations (m^2)	Permanent Impact to Potential Eelgrass Habitat (m^2)	Temporary Impact to Eelgrass Populations (m^2)
Eureka Channel			
Enlarged Pier Footings	0	51	774
Excavation	0	0	959
Trestle Shading & Piles	0	0	873
Barges	0	0	0
Subtotals	0	51	2606
Middle Channel			
Enlarged Pier Footings	15	28	0
Excavation	0	0	38
Trestle Shading & Piles	0	0	0
Barges	0	0	0
Subtotals	15	28	38
Samoa Channel			
Enlarged Pier Footings	23	28	0
Excavation	0	0	264
Trestle Shading & Piles	0	0	0
Barges	0	0	0
Subtotals	23	28	264
Totals	**38 (408 sq. ft.)**	**107 (1,152 sq. ft.)**	**2,908 (31,301 sq. ft.)**

Permanent Impacts to Eelgrass

Approximately 1,152 square feet (107 square meters) of bay bottom that provides potential eelgrass *habitat* would be permanently eliminated by enlarging the bridge pier footings. The actual eelgrass *population* that would be permanently impacted by the enlarged piers and footings based on 2001 survey data would be 408 square feet (38 square meters). The locations of identified eelgrass *populations* that would be permanently affected by the project are concentrated around Piers M-9 (15 square meters adjacent to the abutment on the northeast side of Indian Island) and S-2 (23 square meters adjacent to the abutment on the northwest side of Indian Island).

Proposed Mitigation and Monitoring for Permanent Impacts to Eelgrass

Caltrans proposes to mitigate for the permanent loss of eelgrass and eelgrass habitat by providing on-site, in-kind mitigation. Caltrans proposes to create a 1,152 square-foot (107 square meter) eelgrass bed located in the Caltrans right of way directly adjacent to Pier M-9 near the abutment area on the northeast side of Indian Island. The mitigation site would be created by removing

rock and rubble from around the abutment, which was placed during the original construction of the bridge and has since sloughed off. The area would be excavated to bottom contours of between –1 to +2 feet (MLLW), within the tidal range favored by eelgrass. The entire created mitigation site would be planted with 6-inch-diameter eelgrass clusters planted approximately one foot apart in ten rows spaced six feet apart for a total of approximately 100 "planting units." The eelgrass would be transplanted in clusters that retain the mud and root wads rather than planting the turion (stem) alone to increase the likelihood of transplanting success. Prior to construction activities, eelgrass would be harvested from the project site, or from other locations as approved by the DFG and USFWS such as the drainage channel at the Eureka Public Marina that undergoes regular maintenance dredging. The mitigation site would be constructed and planted prior to commencement of the bridge retrofit project and the area would be planted between May and June based on recommendations from the Department of Fish and Game.

Eelgrass growth is highly dependent upon a number of environmental variables including temperature, salinity, current velocity, substrate, and light and these many factors affect the success of creating eelgrass habitat. The proposed mitigation site has some isolated eelgrass populations in the area, which indicates that eelgrass may establish in the area if favorable conditions are created and maintained. Caltrans selected the proposed mitigation site based on several criteria including its proximity to the area of project impact and its relative isolation from human intrusion and disturbance. Research on eelgrass habitats (Fonseca 1998) suggests that mitigation sites should have tidal velocities of 50 cm/second or less to minimize erosion and scour of the site. The proposed mitigation site was determined to have low maximum tidal velocities measured at 30.48 cm/second. Thus, Caltrans expects that erosion of the site would be minimal.

Caltrans proposes to monitor the permanent mitigation site using photo interpretation methods to identify spatial distribution and density using land based photos from fixed photo points to enable counting of eelgrass clusters in the permanent mitigation site. The bottom elevations of the permanent mitigation site would be monitored using calibrated PVC pipe placed in the excavated mitigation site to record and evaluate erosion and sedimentation trends. As an alternative to calibrated PVC pipe, Caltrans proposes to use a top foot on a surveying rod from a floating platform with a fixed land-based survey monument to monitor erosion and sedimentation. Caltrans proposes to monitor the site once per year for five years in August and submit monitoring reports by November 1 of each year.

Caltrans proposes that the mitigation site would be mitigated at a 1 to 1 eelgrass habitat ratio, as 107 square meters of habitat would be permanently displaced and 107 square meters of habitat would be created. Caltrans further proposes that permanent impacts to eelgrass populations would be mitigated at a ratio of 2.8 to 1, as 38 square meters would be permanently impacted and the entire 107 square meters of created habitat would be planted with eelgrass. Caltrans proposes that the site would be considered successful when eelgrass populations survive to replace the 38 square meters of eelgrass permanently displaced by the enlarged pier footings at the end of five years.

The proposed mitigation plan involves conducting a pre-construction survey to document eelgrass quantities prior to commencement of the project. However, it is not clear from the proposed plan how or when the pre-construction survey would be conducted and how it would be used to determine mitigation requirements. Additionally, it is not clear what criteria would be used to measure success and whether the proposed success standard would provide eelgrass habitat that is functionally equivalent to the eelgrass habitat that would be impacted by the project and account for the temporal loss of habitat values between the time of disturbance of the eelgrass beds for project construction and full restoration of habitat values at the mitigation site. Moreover, the proposed mitigation plan proposes to monitor the site only once a year for five years and there is some uncertainty as to the accuracy of the proposed monitoring methods. Thus, the Commission finds that the mitigation and monitoring plan submitted by the applicant does not provide sufficient provisions to ensure that the proposed eelgrass mitigation would be adequate to minimize significant adverse impacts to eelgrass as required by Section 30233 of the Coastal Act. Therefore, to ensure that significant adverse impacts to eelgrass are minimized, the Commission attaches Special Condition No. 5 that requires the applicant to submit for review and approval of the Executive Director, a revised eelgrass mitigation plan for permanent impacts to eelgrass that incorporates the additional provisions discussed below.

As noted previously, the applicant has submitted information regarding eelgrass survey data collected in October 2000 and August 2001. Eelgrass is extremely dynamic and can change in distribution and density from year to year. Although Caltrans anticipates commencing construction of the project, including the eelgrass mitigation site, in the spring of 2003, project delays can occur and such delays would result in increasingly outdated survey data if eelgrass quantities were not resurveyed prior to project construction. To ensure that Caltrans obtains an accurate inventory of eelgrass present at the site prior to construction, Special Condition No. 5(a) requires the pre-construction survey to be completed during the active eelgrass growing season (May-August) prior to the beginning of construction. The pre-construction survey is valid until the beginning of the next period of active eelgrass growth. Therefore, if the project does not commence before the start of the next growing season, a new survey must be completed during the active growing season. The pre-construction survey is required to be conducted during peak growing season conditions rather than during more dormant periods of the eelgrass lifecycle to ensure that project conditions, including monitoring and mitigation requirements, will be based on an accurate inventory of eelgrass present at the site in the peak eelgrass growing season immediately prior to project construction.

As noted previously, the mitigation and monitoring plan submitted by Caltrans proposes to create eelgrass habitat at a 1:1 ratio (107 m^2 : 107 m^2) and to replant eelgrass populations at a 2.8:1 ratio (107 m^2 : 38 m^2). However, Caltrans proposes that the site would be considered successful when eelgrass populations survive to replace the 38 square meters of eelgrass permanently displaced by the enlarged pier footings at the end of five years. Although Caltrans is hopeful that the entire 107 square meters planted with eelgrass will be successful, the amount of eelgrass density and cover that will ultimately become established habitat is difficult to predict. The proposed success standard, requiring eelgrass populations to survive in only 38 square meters of the total 107 square meters, translates to a 1:1 success standard after five years and does not account for the amount of time it would take for the mitigation site to provide functioning eelgrass habitat.

During the time that it takes for eelgrass habitat to become established, some biological productivity and habitat value is lost that would have otherwise been realized had the project impact not occurred. This temporal loss of habitat value and productivity is typically accounted for by increasing mitigation ratios, such that by the time the mitigation is functioning as habitat, the extent and function of the habitat created is at least equal to the extent and function of the habitat impacted. As proposed, the mitigation site would be created and planted prior to project construction, which eliminates some temporal loss of habitat values often common to mitigation projects. In addition, Caltrans proposes to plant more eelgrass than what would be permanently impacted (i.e. 2.8:1). However, as proposed, the site could ultimately result in five years of temporal loss of habitat values if only 38 square meters were to become successfully established after five years. In contrast, the National Marine Fisheries Service Southern California Eelgrass Mitigation Policy allows a 1:1 eelgrass mitigation ratio only if the mitigation site is established *three years before* the project impact occurs to allow adequate time for the eelgrass mitigation site to become functional habitat. In this case, the mitigation site would be constructed as late as one month prior to commencement of construction and thus, the created eelgrass habitat would not be functional by the time the impacts are incurred. As the proposed mitigation would thus allow for some diminishment of habitat values, the plan as proposed would not be adequate to minimize adverse impacts to eelgrass as required by Section 30233 of the Coastal Act. To ensure that temporal loss of habitat value and productivity are accounted for, the Commission requires that eelgrass at the site become established at a 1.2 : 1 ratio, which means that at least 45.6 square meters of eelgrass would have to be successfully established after five years. That is, for each square meter of eelgrass permanently impacted, 1.2 square meters of eelgrass must be successfully created at a level of cover equivalent to the level of cover of the eelgrass bed permanently impacted. This mitigation ratio was determined based on data gathered in southern California eelgrass habitats and is required by the National Marine Fisheries Service Southwest Region Southern California Eelgrass Mitigation Policy. This policy was adopted in July, 1991 by state and federal agencies (National Marine Fisheries Service, U.S. Fish and Wildlife Service, and the California Department of Fish and Game) to standardize and maintain consistency regarding mitigating adverse impacts to eelgrass resources. The rationale for this ratio is based on 1) the time necessary for a mitigation site to reach full fishery utilization (i.e. generally three years), and 2) the need to offset any productivity losses during this recovery period within five years. The additional planting success reflected in the ratio is required to accommodate for biological productivity loss over time. The Commission notes that although this mitigation ratio is based on Southern California data and has not been adjusted upwards for the more challenging northern California conditions (i.e. varying growing seasons), the Commission finds that this rationale is the best scientific information available at this time. The Commission attaches Special Condition No. 5(b) to require that this success standard be incorporated into the requirements of the final revised mitigation and monitoring plan.

The eelgrass mitigation and monitoring plan submitted by Caltrans proposes to prepare an "as built" plan 30 days following construction of the mitigation site and to monitor the site once a year for five years. As discussed above, eelgrass growth is highly dependent upon a number of environmental variables including for example, substrate, elevation, light, and wave action. Annual monitoring of the mitigation site would not be frequent enough to detect and remedy an unanticipated problem that may ultimately result in failure of the mitigation. For example,

severe winter storms may occur early on and result in increased scour and sedimentation during the time in which the eelgrass habitat was still becoming established. If the site was only monitored once a year in the fall, the problem may go unnoticed until the following year at which time the site may be entirely eroded or buried and remedial measures would not be effective. Therefore, to ensure that the site is monitored frequently enough during the first year of establishment so that such problems can be detected in time to salvage the mitigation work, the Commission requires Caltrans to monitor the site at 3, 6, 12, 24, 36, 48, and 60 months after completion of the eelgrass planting. The Commission attaches Special Condition No. 5(c) to require that provisions for this monitoring schedule be incorporated into the requirements of the final revised mitigation and monitoring plan. Special Condition No. 5(g) also requires that sedimentation and erosion of the site be monitored using calibrated PVC pipes spaced at locations throughout the mitigation site in a manner that would be adequate to effectively monitor sedimentation and erosion of the entire site.

Furthermore, it is not clear from the proposed plan how cover and density would be measured or defined when evaluating the success of the mitigation site. To clarify how the site would be evaluated for purposes of determining and reporting the level of success of the site, Special Condition No. 5(d) requires the plan to be revised to incorporate criteria for evaluating the mitigation site. This condition requires that the extent of vegetated cover be defined as that area where eelgrass is present and where gaps in coverage are less than one meter between individual turion clusters. Density shall be defined as the average number of turions per unit area. Subsection (e) of Special Condition No. 5 requires density and extent of vegetative cover to be estimated at control areas during both pre-construction surveys and annual monitoring. Changes in density and extent of vegetated cover of the control areas will be used to account for natural variability. Selection of an appropriate control site shall be performed in consultation with the Department of Fish and Game and the National Marine Fisheries Service to ensure that the control site is an adequate representative of eelgrass conditions in the bay.

Caltrans proposes to monitor the site using land based photos and extrapolating density and cover information. Although the use of photos from fixed photo points is useful in providing a 'snap-shot' of the conditions of the mitigation site at any one time, photos alone would not provide enough detail from which to draw conclusions about the density and cover of eelgrass at the mitigation site. Therefore, in addition to the proposed photo interpretation, the Commission requires Caltrans to conduct random samples of the mitigation area using a sample size adequate to obtain representative qualitative data for the entire mitigation area to determine density and cover data (as defined by subsection (d) of Special Condition No. 5) to substantiate the information obtained from land-based photos. The Commission attaches Special Condition No. 5(f) to require that provisions for this monitoring protocol are incorporated into the final revised mitigation and monitoring plan.

The mitigation plan proposed by the applicant also does not include provisions for remediation should the required performance standard fail to be met after five years. Therefore, to ensure that additional measures would be taken to minimize adverse impacts to eelgrass, Special Condition No. 5(i) requires the revised plan to include provisions for remediation. This condition requires that if the performance criteria have not been met at the end of five years

following the completion of the project, the applicant shall submit an amendment to the coastal development permit proposing additional mitigation necessary to satisfy the performance criteria consistent with all terms and conditions of this permit.

Temporary Impacts to Eelgrass

In addition to the permanent impacts to eelgrass discussed above, approximately 31,301 square feet (2,908 square meters) of eelgrass could be temporarily impacted by construction activities including excavation around pier footings, construction of access trestles, and barges resting on the bay bottom.

Approximately 774 square meters of eelgrass would be impacted by excavation around the Eureka Channel pier footings, which are buried in up to ten feet of bay mud. Approximately 1,261 square meters of eelgrass could be impacted by the installation of approximately 1,115 trestle piles and shading of trestle decks. The trestles would potentially impact eelgrass by shading and would be in place a minimum of six months and up to three years after which they would be completely removed following completion of the project. Approximately 873 square meters of eelgrass would potentially be impacted by barges resting on the bottom during construction work at low tide in shallow water areas of the Eureka Channel. (At all other locations that require barge access, the barges would be used at deep-water channels and would not contact the channel bottom). Damaged eelgrass leaves and stems (above ground vegetation) typically recover naturally over time, depending on the extent of damage, whereas damage to rhizomes decreases the ability of eelgrass to produce new leaves and stem structures. According to the Department of Fish and Game, impacts to eelgrass due to shading could occur in as little as six months. Although the bottom sediments would not be directly disturbed by shading, the loss of eelgrass in a shaded area opens up that area to increased erosion by wave action.

Proposed Mitigation and Monitoring for Temporary Impacts to Eelgrass

For areas temporarily impacted by construction activities, Caltrans proposes to restore the site and monitor the project area for natural reestablishment of eelgrass cover to pre-construction levels. Caltrans proposes to temporarily stockpile the excavated sediment from the area around the Eureka Channel piers (Piers E-11 through E-15) and replace the material to pre-construction elevations following the retrofit work. Caltrans anticipates that following restoration of the substrate to pre-project conditions, eelgrass would readily recolonize the disturbed areas. The excavated area around each of the piers (E-11 through E-15) would be planted with 93 square meters (1,000 square feet) of eelgrass using the same planting protocol as described above to facilitate natural revegetation of the area. Potential shading impacts under the trestle structures would be monitored for natural recolonization following completion of the project.

Caltrans proposes that the site would be successful when eelgrass cover achieves pre-construction levels of eelgrass cover (31,301 square feet). If natural eelgrass replenishment of pre-construction levels does not occur at the end of the third monitoring year, Caltrans proposes to transplant eelgrass in an amount required to equal pre-construction levels of cover.

Caltrans proposes to conduct pre and post construction surveys and to establish a control site in an undisturbed area of eelgrass near the project to determine variation in coverage based on natural fluctuations. Caltrans proposes to monitor the area using photo interpretation methods to identify spatial distribution and density using air photos at a 1:1200 scale and using a one-square-meter grid pattern over the temporary impact area combined with land based oblique photos and ground truthing to analyze density and coverage.

As noted previously, the applicant has submitted information regarding eelgrass survey data collected in October 2000 and August 2001. Eelgrass is extremely dynamic and can change in distribution and density from year to year. Although Caltrans anticipates commencing construction of the project, including the eelgrass mitigation site, in the spring of 2003, project delays can occur and such delays would result in increasingly outdated survey data if eelgrass quantities were not resurveyed prior to project construction. To ensure that Caltrans obtains an accurate inventory of eelgrass present at the site prior to construction, Special Condition No. 6(a) requires the pre-construction survey to be completed during the active eelgrass growing season (May-August) prior to the beginning of construction. The pre-construction survey is valid until the beginning of the next period of active eelgrass growth. Therefore, if the project does not commence before the start of the next growing season, a new survey must be completed during the active growing season. The pre-construction survey is required to be conducted during peak growing season conditions rather than during more dormant periods of the eelgrass lifecycle to ensure that project conditions, including monitoring and mitigation requirements, will be based on an accurate inventory of eelgrass present at the site in the peak eelgrass growing season immediately prior to project construction. Special Condition No. 6(b) requires that post-construction surveys be completed in the same month as the pre- construction survey during the next growing season immediately following project completion to assess any impacts to eelgrass that occur as a direct result from the proposed project. A post-construction survey conducted during a different time of year than the pre-construction survey could result in comparing peak growing season conditions with more dormant periods of the eelgrass lifecycle, thereby providing an inaccurate assessment of project impacts. Eelgrass growth tends to slow and cover is reduced during the winter as a result of increased wave action, wildlife foraging, and decreased light. Therefore, a post-construction survey conducted outside of the peak growing season may yield inaccurate results due to natural seasonal fluctuations in eelgrass density and cover. Furthermore, eelgrass may appear to be damaged immediately following project completion, but even if the blades are damaged, the rhizomes may remain viable. Evidence of permanent damage to eelgrass rhizomes would be more evident during the peak growing season immediately following project completion. To accurately measure impacts to eelgrass from the project, the post-construction survey should occur in the same month as the pre-construction survey during the peak growing season immediately following project completion to compare the density and extent of vegetated cover of the eelgrass under similar growing conditions.

The Commission finds that to ensure that eelgrass habitat values are not diminished to any extent as a result of the project, the mitigation site must achieve density and an extent of vegetated cover equal to pre-construction levels within five years. This performance standard is required as section (c) of Special Condition No. 6. Subsection (e) of Special Condition No. 6 requires density and extent of vegetative cover to be estimated at control areas during both pre-

construction surveys and annual monitoring. Changes in density and extent of vegetated cover of the control areas will be used to account for natural variability. Selection of an appropriate control site shall be performed in consultation with the Department of Fish and Game and the National Marine Fisheries Service to ensure that the control site is an adequate representative of eelgrass conditions in the bay.

Furthermore, it is not clear from the proposed plan how cover and density would be measured or defined when evaluating the success of the mitigation site. To clarify how the post-construction impacts would be defined and how the site would be evaluated for purposes of determining and reporting the level of success of the site, Special Condition No. 6(d) requires the plan to be revised to incorporate criteria for evaluating the mitigation site. This condition requires that the extent of vegetated cover be defined as that area where eelgrass is present and where gaps in coverage are less than one meter between individual turion clusters. Density shall be defined as the average number of turions per unit area.

This condition also ensures that changes in density and cover of the control areas will be used to adjust the density and cover in the impact areas in the event that uncontrollable factors affect eelgrass within Humboldt Bay (i.e. disease, storm events, etc.). Special Condition No. 1(h) further requires that selection of control sites be performed in consultation with the Department of Fish and Game and the National Marine Fisheries Service to ensure selection of a control site that is representative of the overall condition of eelgrass in Humboldt Bay.

Caltrans proposes to monitor the site using aerial photography and extrapolating density and cover information from minimal on-the-ground sampling. Aerial photographs can provide useful information for evaluating existing eelgrass beds if taken during the peak biomass season. However, the photos must provide sufficient resolution to be able to accurately detect the extent of eelgrass in the area. The use of aerial photos alone does not provide would not provide enough detail from which to draw conclusions about the density and cover of eelgrass at the mitigation site. Therefore, in addition to the proposed photo interpretation, the Commission requires Caltrans to conduct random samples of the mitigation area using a sample size adequate to obtain representative qualitative data for the entire mitigation area to determine density and cover data (as defined by subsection (d) of Special Condition No. 6 to substantiate the information obtained from aerial photos. The Commission attaches Special Condition No. 6(g) to require that provisions for this monitoring protocol are incorporated into the final revised mitigation and monitoring plan.

The mitigation plan proposed by the applicant does not include provisions for remediation should the required performance standard fail to be met after five years. Therefore, to ensure that additional measures would be taken to minimize adverse impacts to eelgrass, Special Condition No. 6(i) requires the revised plan to include provisions for remediation. This condition requires that if the performance criteria have not been met at the end of five years following the completion of the project, the applicant shall submit an amendment to the coastal development permit for additional mitigation necessary to satisfy the performance criteria consistent with all terms and conditions of this permit.

To further minimize the potential for significant adverse impacts to eelgrass from the barge resting on the bottom, the Commission attaches Special Condition No. 11(h). This condition requires that all grounding and direct contact of the barge with eelgrass beds shall be minimized. In addition, the Commission finds that adverse impacts to eelgrass could occur if the piles or other equipment were to be dragged over the bottom in areas of eelgrass beds. Therefore, to further minimize significant adverse impacts to eelgrass, the Commission attaches Special Condition No. 11(i) which prohibits propellers, anchors, construction equipment, or piles from being dragged over the mudflats or eelgrass beds.

Therefore, the Commission finds that as conditioned, the project would not result in significant adverse impacts to eelgrass habitat and is adequate to minimize significant adverse impacts to eelgrass consistent with Section 30233 of the Coastal Act.

c. Alternatives Analysis

The second test of Section 30233(a) is whether there are feasible less environmentally damaging alternatives to the proposed project. Coastal Act Section 30108 defines "feasible" as follows:

> *'Feasible' means capable of being accomplished in a successful manner within a reasonable time, taking into account economic, environmental, social, and technological factors.'*

A number of possible project alternatives, certain of which might potentially result in less environmental damage, were identified by Caltrans in the Initial Study/Environmental Assessment/Negative Declaration on the project. All of the alternatives, and design variations of them, were rejected by Caltrans as too costly, involving too much delay, or otherwise unacceptable.

1. Replace All Bridges

This alternative involves replacing all three of the existing Humboldt Bay Bridges with entirely new bridges. This alternative would substantially disrupt traffic traveling to and from Eureka, Woodley Island, and the Samoa Peninsula during construction unless the bridges were constructed on a new alignment. The advantages of this replacement alternative would be Caltrans' ability to design bridges that would have standard width shoulders and that would be more visually proportional than seismically retrofitting the existing bridges. Additionally, it is possible that a new replacement bridge could be designed with fewer columns and footings and in addition to removing the old bridge, would result in less permanent wetland fill than from retrofitting the old bridge. However, constructing a new bridge on a new alignment adjacent to the old bridge and removing the old bridge would result in a significantly greater area of wetland disturbance than the retrofit project. A new bridge alignment on either side of the existing alignment would impact wetland areas and other environmentally sensitive habitat areas that are currently undisturbed such as salt marsh habitat on Woodley and Indian Islands, the Wildlife Area on Woodley Island, and additional areas of eelgrass. Following removal of the old bridge, it is likely that habitat values in the affected areas would not be fully restored to a level they were

prior to the old bridge being built, or to a level equivalent to the habitat value of the areas where the new bridge would be built. Although constructing a newly designed bridge with fewer footings and removing the old bridge would result in less permanent wetland fill than retrofitting the old bridge, it is not a less environmentally damaging alternative because it would result in a greater area of disturbance and would compromise habitat values over a larger area of wetlands and environmentally sensitive habitat. Therefore, the Commission finds that this alternative is not a feasible less environmentally damaging alternative to the proposed project.

Caltrans further rejected this alternative in its own evaluation of alternatives because the future benefits that would be derived during the remaining expected life span of the existing three bridges (approximately 50 years) would be eliminated if these bridges were replaced. The potential lost benefits would include the recent superstructure retrofit cost for all three bridges. Caltrans also rejected this alternative because of high prohibitive costs and project delays that would be incurred. The estimated cost to replace all three bridges along the same alignment would be approximately $60.7 million and the cost to replace all three bridges along a parallel alignment would be approximately $63.8 million, as compared to $27 million for the proposed retrofit project. Moreover, Caltrans also believes the extended period of time required to replace the bridges would unnecessarily prolong the safety risk of the existing bridges in the event of a major earthquake. Caltrans indicates that building a new bridge would take approximately twice as long to construct as the proposed retrofit project. Therefore, because State legislature has declared it necessary to enhance as soon as possible the seismic safety of bridges such as the Humboldt Bay Bridges, the Commission finds that this alternative is not a feasible less environmentally damaging alternative to the proposed project.

2. Combination of Retrofitting and Replacing Bridges

This alternative involves retrofitting the Eureka Channel Bridge and completely replacing the Middle Channel and Samoa Channel Bridges. The estimated cost of this alternative would be twice the cost of the proposed project and would range from approximately $50 to $55 million. The environmental impacts would be the same for the Eureka Channel Bridge as for the proposed project. As discussed above, it is possible that new Middle Channel and Samoa Channel bridges could be designed with fewer columns and footings and in addition to removing the old bridges, would result in less permanent wetland fill than from retrofitting the old bridges. However, constructing new bridges along a new alignment adjacent to the old bridges and removing the old bridge would result in a significantly greater area of wetland disturbance than the retrofit project. A new bridge alignment on either side of the existing Middle Channel and Samoa Channel bridge alignments would impact wetland areas and other environmentally sensitive habitat areas that are currently undisturbed such as salt marsh habitat on Woodley and Indian Islands, the Wildlife Area on Woodley Island, and additional areas of eelgrass. Following removal of the old bridges, it is likely that habitat values in the affected areas would not be fully restored to a level they were prior to the old bridges being built, or to a level equivalent to the habitat value of the areas where the new bridges would be built. Although constructing two newly designed bridges with fewer footings and removing the old bridge would result in less permanent wetland fill than retrofitting the old bridges, it is not a less environmentally damaging alternative because it would result in a greater area of disturbance and would compromise habitat

values over a larger area of wetlands and environmentally sensitive habitat. Additionally, replacing only two of the three bridges would result in structural inconsistencies that would result in greater adverse visual impacts than similarly retrofitting all three bridges as proposed. Therefore, the Commission finds that this alternative is not a feasible less environmentally damaging alternative to the proposed project.

3. Retrofit Eureka Channel Bridge and Remove the Middle and Samoa Channel Bridges

This alternative involves retrofitting the existing Eureka Channel Bridge and removing the Middle Channel and Samoa Channel Bridges. The estimated cost for this alternative would be approximately $14 million dollars. This alternative is less costly and would maintain access to Woodley Island. Additionally, this alternative would result in the removal of wetland fill from the Middle and Samoa Channels. However, the roadway access between Eureka and the Samoa Peninsula would be lost, resulting in substantial out of direction travel and increased traffic congestion on Route 101. Although this alternative would result in less wetland fill than the proposed project, it is not a less environmentally damaging alternative because it would result in significant adverse impacts on public access along the coast and would not meet the project purpose and need of seismically retrofitting all three substandard bridges. Therefore, the Commission finds that this alternative is not a feasible less environmentally damaging alternative to the proposed project.

4. 1998 Substructure Seismic Retrofit Design

This alternative consists of retrofitting all three bridges with a different design than the proposed project. During the preliminary project design phase, Caltrans had proposed a retrofit project that was met with opposition from resource agencies and the public because of the visual and environmental impacts associated with the design. Although this alternative met the project purpose and need, it involved significantly more and larger piles in each of the three channels and a significantly greater amount of excavated material to be disposed of. This alternative would result in driving 684 footing piles compared to 148 for the proposed project, thus resulting in more wetland fill than the proposed alternative. Additionally, this alternative would have resulted in approximately 30,000 cubic yards of excess material compared to 5,000 cubic yards from the proposed alternative. The larger and more numerous footing piles would result in the retrofitted bridges appearing substantially out of scale with the bridge deck it supports and its setting. This alternative would also require eliminating the public boat launch facilities under the Eureka Channel Bridge. Thus, this alternative would result in more wetland fill as well as greater adverse visual and public access impacts. Therefore, the Commission finds that this alternative is not a feasible less environmentally damaging alternative to the proposed project.

5. Outrigger Seismic Retrofit

This alternative involves replacing the existing bridge columns and footings with "outrigger" type pairs of columns, which laterally and perpendicularly extend beyond the bridge superstructure. This alternative would meet the project purpose and need and unlike the

proposed project could support future bridge widening. However, this alternative would not result in less wetland fill because new piles and footings would be required for this design as for the proposed project. This alternative however, would have much greater visual impact than the proposed project, as it would add more above water structural elements that would be prominent from public vantage points. Therefore, the Commission finds that this alternative is not a feasible less environmentally damaging alternative to the proposed project.

6. No Project

This alternative would do nothing to enhance the seismic safety of the bridge and thus, would not meet the project purpose and need. In enacting Senate Bill 805 into law, the state legislature declared that the seismic retrofitting of substandard bridges is necessary for the immediate preservation of public safety. As it is now a matter of State law to enhance the seismic safety of bridges such as the Humboldt Bay Bridges, the Commission finds that the no project alternative is unacceptable as it does not accomplish project objectives in a successful manner. Therefore, the Commission finds that this alternative is not a feasible less environmentally damaging alternative to the proposed project.

7. Gravel Causeways or Excavated Channels for Construction Access

Caltrans considered constructing gravel causeways within the bay rather than temporary trestles to provide access to the bridge piers. Caltrans rejected this construction alternative because it would result in significantly more wetland fill than the temporary trestles. The gravel causeways would directly impact the bay bottom, including eelgrass and mudflat habitat for the entire width and length of the causeway whereas the temporary trestles result in direct impacts only from the intermittent supporting piles. Caltrans also considered excavating channels within the bay to provide barge access to all of the bridge piers as an alternative to constructing temporary trestles. This alternative would result in increased turbidity and would significantly increase direct impacts to fish, benthic habitat, and eelgrass. This alternative would also result in a significant amount of excess material to be disposed of. Although the proposed temporary trestles have the potential for impacting eelgrass by limiting light from shading, the trestles would not directly impact eelgrass rhizomes in the manner gravel causeways or channel excavation would. Furthermore, the likelihood of completely removing the trestle piles from the bay following project construction is greater than the likelihood of being able to completely remove gravel placed within the bay. Therefore, the Commission finds that using gravel causeways or excavated channels for construction access is not a feasible less environmentally damaging alternative to the proposed project.

Furthermore, for all of the above reasons, the Commission finds that as conditioned, the proposed project is the least environmentally damaging feasible alternative consistent with Section 30233(a).

d. Maintenance and Enhancement of Marine Habitat Values

The fourth general limitation set by Section 30233 and 30231 is that any proposed dredging or filling in coastal wetlands must maintain and enhance the biological productivity and functional capacity of the habitat, where feasible.

As discussed above in the section of this finding on mitigation, the conditions of the permit will ensure that the project will not have significant adverse impacts on the biological productivity or water quality of Humboldt Bay. The mitigation measures incorporated into the project and required by the Special Conditions discussed above will ensure that the seismic retrofit project would not adversely affect the biological productivity and functional capacity of the marine environment. Therefore, the Commission finds that the project, as conditioned, will maintain the biological productivity and functional capacity of the habitat consistent with the requirements of Section 30233 and 30231 of the Coastal Act.

e. Conclusion

The Commission thus finds that the project is an allowable use, that there is no feasible less environmentally damaging alternative, that feasible mitigation is required for potential impacts associated with the dredging and filling of coastal wetlands, and that wetland habitat values will be maintained or enhanced. Therefore, the Commission finds that the proposed development, as conditioned, is consistent with Sections 30233, 30230, and 30231 of the Coastal Act.

3. Protection of Adjacent Environmentally Sensitive Habitat Area (ESHA)

Section 30240(b) of the Coastal Act states in applicable part:

> *(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

Section 30240(b) requires that environmentally sensitive habitat areas be protected against any significant disruption of habitat values potentially resulting from adjacent development. The bridges are adjacent to two managed areas of salt marsh and wetland habitat. Indian Island is part of the U.S. Fish and Wildlife Humboldt Bay National Wildlife Refuge and most of the undeveloped portions of Woodley Island are within the Humboldt Bay Harbor Recreation and Conservation District's Woodley Island Wildlife Area. Temporary access roads would be constructed adjacent to Woodley Island Wildlife Area, an environmentally sensitive habitat area. Additionally, the retrofit work would occur adjacent to a heron and egret rookery, an environmentally sensitive habitat area located on Indian Island.

Temporary Access Roads Adjacent to Wildlife Area
Two temporary access roads would be constructed on both sides of the Eureka Channel Bridge on the south side of Woodley Island adjacent to the Woodley Island Wildlife Area, an

environmentally sensitive habitat area comprised largely of salt marsh habitat. The access roads would be approximately 50-feet wide and 200-feet long and would provide land access to and from the temporary trestles in the Eureka Channel.

The temporary access roads would be located on existing highway fill. The area of the temporary access roads is relatively flat and no grading is required. Caltrans surveyed the site and did not locate any rare or sensitive plants or habitat on or immediately adjacent to the proposed temporary access road location outside of the adjacent Wildlife Management Area. The Wildlife Management Area on Woodley Island is currently fenced on both sides of the proposed access road locations. The fence would remain in place during the entire construction period and Caltrans proposes to further designate the area as environmentally sensitive during project construction and prohibit all construction activities, construction personnel, and material or equipment storage in the area. All construction work, including the construction of the access roads, would avoid the Wildlife Management Area, as adequate clearance for both access roads already exists.

Access road construction includes the placement of geotextile fabric and gravel to minimize erosion and siltation from stormwater runoff. The geotextile fabric would be laid on the ground to stabilize the soil and gravel would be placed on top of the fabric to create a temporary road surface. This method of temporary road construction results in less runoff from paving, as stormwater runoff would infiltrate through the gravel and geotextile fabric. Following construction, the geotextile fabric and gravel would be removed from the access roads and any disturbed ground would be restored to the original grade and planted with erosion control vegetation. Caltrans' proposal to (1) remove the geotextile fabric, and gravel (2) restore contours, and (3) replant the disturbed areas would restore the access road locations to its more natural current condition, restoring its value as a transitional habitat area and buffer between the environmentally sensitive Wildlife Management Area and the highway. If the access roads were revegetated with non-native species, it is likely that such exotic species could spread into the adjacent environmentally sensitive habitat area and cause significant disruption to the ESHA. In addition, if the vegetation were not successful in establishing at the site, the disturbed areas could result in increased erosion and sedimentation being directed into the ESHA. To ensure that Caltrans' restoration proposals are implemented to protect the adjacent environmentally sensitive habitat, the Commission attaches Special Condition No. 8. The special condition requires Caltrans to submit an erosion control and revegetation plan for the review and approval of the Executive Director prior to the commencement of construction. The plan shall provide for (1) the initial installation of the geotextile fabric and gravel, (2) the complete removal of all geotextile fabric, gravel, and rock slope protection, (3) placement of erosion control measures such as mulch or rice straw, and (4) replanting the disturbed area with native vegetation.

Construction Adjacent to Bird Rookery

Portions of the proposed project would also be constructed adjacent to an egret and heron rookery located on Indian Island approximately 1,300 feet from the bridges. Egrets and herons are colonial nesters and usually concentrate in the same nesting and rearing sites year after year unless disturbed. With the exception of San Francisco Bay, Humboldt Bay supports the largest populations of wading birds such as herons and egrets in California and Indian Island supports

one of the largest heron and egret rookeries north of San Francisco Bay. Common egret, snowy egret, Great blue heron, and Black-crowned night heron nest and rear young at this location annually. Although these birds are not listed as threatened or endangered, the rookery constitutes environmentally sensitive habitat area because of its critical role in the lifecycle and continuance of these species. Nesting birds can be very sensitive to noise and other disturbance from human activities, and if sufficiently disturbed, particularly over extended periods of time, may abandon all nesting activities.

Due to its proximity to the highway, the birds that nest at this rookery are already accustomed to a high level of noise disturbance. A noise study was conducted within project limits and pile driving was identified as the only type of construction activity that was louder than the ambient noise of the highway. It was also determined that construction activities and associated noise on most of the project area were too far away to cause adverse impacts to the rookery. Work on the westernmost part of the Middle Channel Bridge and the easternmost part of the Samoa Channel Bridge would be close enough to the rookery to cause a potential for disturbance.

Caltrans proposes to limit pile driving on the piers nearest the rookery during the primary nesting period for the birds that utilize the rookery. To ensure that significant disruption to the adjacent rookery is minimized by limiting construction near the rookery during the nesting season as proposed, the Commission attaches Special Condition No. 1(B). The condition requires that at Piers M-7, M-8, M-9, S-2, and S-3, neither pile driving or the installation of trestles associated with those piers shall occur between February 15 and August 15 during each year of construction.

With the mitigation measures that are proposed and required, which are designed to minimize any potential impacts to the adjacent wetland habitat of Woodley Island as well as to the adjacent egret and heron rookery on Indian Island, the project as conditioned will not significantly degrade adjacent ESHA and will be compatible with the continuance of those habitat areas. Therefore, the Commission finds that the project as conditioned is consistent with Section 30240(b) of the Coastal Act.

4. Geologic Hazards

The Coastal Act contains policies to assure that new development minimizes risks to life and property from geologic hazard and assure stability and structural integrity. Section 30253 of the Coastal Act states in applicable part:

> *New development shall:*
>
> *(1) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.*
>
> *(2) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural land forms along bluffs and cliffs.*

The Samoa Bridge is located in an extremely seismically active area. The purpose of the project is to upgrade a bridge facility that is in danger of collapse during seismic activity and make it safe, consistent with the intent of Section 30253 that development in the coastal zone minimize risks to life in areas of high geologic hazard. The nearest major active fault zone is the Little Salmon Fault, located approximately three miles from the bridges and with the potential to result in a 7.5 magnitude earthquake. A geotechnical report was prepared for the proposed retrofit project. According to the report, the greatest geologic hazard in the project area would be ground shaking associated with seismic activity. Strong ground shaking could cause liquefaction under the bridge footings and abutments because of the depth of unconsolidated material within each of the three channels. Surface fault rupture and resulting displacement is not expected since there are no known faults crossing any of the bridges.

Caltrans has indicated that because each of the three bridges included in the project is slightly different in terms of size, setting, and design, each bridge was studied individually to develop appropriate retrofit strategies designed to withstand collapse during a maximum credible earthquake. Exploratory soil borings within the channels, geologic and seismic data, and structural foundation reports of the existing bridges formed the basis of the retrofit designs.

Caltrans also prepared a computer model of Humboldt Bay to determine the potential project effects on the bay water hydraulics and sediment dynamics. The study determined that post-construction tidal velocities would have almost no effect on the existing channel depths and tidal velocities. A site specific hydraulic study was also conducted and it was determined that there would be no increased flooding risk associated with the proposed project.

The project is proposed in part as a seismic retrofit safety project to reduce the risks to life and property associated with earthquakes. Given the purpose of the project, and that the design of the proposed retrofit project was based on a thorough geotechnical analysis of the geologic hazards affecting the project site, the Commission finds that the project as proposed is consistent with Section 30253 of the Coastal Act and no further mitigation is required.

5. Visual Resources

Section 30251 of the Coastal Act states that the scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance, and requires in applicable part that permitted development be sited and designed to protect views to and along the ocean and scenic coastal areas, minimize the alteration of natural land forms, and be visually compatible with the character of surrounding areas.

The seismic retrofit project involves enlarging bridge columns, footings, and piles at all three bridge spans. The changed appearance of the project site from (1) the proposed permanent structural changes to the bridge itself and (2) the proposed temporary construction trestles, barges, and equipment in the bay during the course of the project would affect views to and along the bay. The project would not result in the alteration of natural landforms.

Caltrans prepared and submitted a Visual Impact Assessment for the proposed retrofit project that describes the existing natural and developed landscape of the area and evaluates the visual changes that would result from the proposed project. The character of the project area is defined by both natural and man-made features including the open water of the bay, extensive tidal mudflats, boats in the marina, commercial and residential development along the Eureka waterfront, and by the existing bridges themselves. The three bridges are visible from many vantage points in and around Humboldt Bay. The Eureka Channel Bridge is visible from more vantage points than the other two because of its close proximity to the Eureka waterfront. The closest vantage points from which to view the Eureka Channel Bridge are the Eureka boat ramp and pedestrian/bicycle path adjacent to the bridge abutment. The Eureka Channel Bridge can also be viewed from the marina on the south side of Woodley Island and from the Eureka waterfront area, which includes the Adorni Community Center, Sacco Amphitheater, Carson Mill Park, and the Humboldt County Main Library. The Samoa Channel Bridge is visible from Highway 255 along the Samoa Peninsula, but there are far fewer potential viewers and surrounding public facilities compared to the Eureka Channel Bridge. The Middle Channel bridge can be viewed from Startare Drive on Woodley Island. The bridges are also visible to boaters on the bay. The bridges also comprise, in part, the background view for southbound travelers along Highway 101 from points north of the Eureka Slough. There are few locations where all three bridges are in one view and such locations are at great distances from the bridge itself. The proposed project would not change the quality or character of views eastbound and westbound along Route 255 over the bridge, as no changes to the bridge railings are proposed and travelers on the bridge cannot see the bridge's substructure because of the elevated viewing angle.

Unlike new bridges where a variety of architectural designs could be accommodated, seismic retrofit projects are more constrained due to the fact that the design must integrate the existing structure. In 1998, Caltrans initially developed a seismic retrofit design that involved footings and columns that were approximately 7% larger than the proposed design and included over 600 new piles, many of which would be visible at low tide. In response to agency and public concerns over the 1998 design, Caltrans worked with landscape architects and a new design (the proposed project) was developed that reduces the size of the footings and incorporates various mitigation measures to further reduce visual impacts of the project. These measures include utilizing the original design shapes to preserve the unity of the bridge appearance and utilizing the same materials to maintain consistency between the original and retrofitted structure. Additionally, concrete skirting would screen proposed new piles under the pile caps during low tides.

The primary visual impact of the project is the greater bulk and mass of the bridge as a result of the enlarged structural elements. In addition, because the footings and columns would be enlarged, there would be a slight reduction of views between the bridge columns. The footings and columns of each of the three bridges would be enlarged and encased with concrete. As a result, these elements that rise above the ground would be more visible and of greater bulk than the existing footings and columns. Following construction, two enlarged Eureka Channel bridge pier footings and twelve of the enlarged Samoa Channel bridge pier footings would be above the mudline or groundline. All of the Middle Channel footings would be above the mudline or

groundline after construction. Exhibit No. 10 shows the existing bridges and photo-simulations of the bridges after they are retrofitted. Because of changing tide levels, the bridge footings and columns would be both more and less visible than in the photo-simulation depending on the tidal condition.

Specifically, the proposed top mats would mimic the original shape of the footing, but would have 18 inches of reinforced concrete added to the height and 14' in length added at opposite ends of the top mats (pile caps). The width of the footing mat would maintain the original dimension. The columns would maintain the original hexagonal shape while adding an additional 2' to the entire diameter of each column. Pile caps for deep water piers would be elongated and additional piles would be installed and hidden behind new concrete skirts which would blend into existing skirts. Proposed footings vary in size at all three bridges and retrofitted pile caps vary slightly in dimensions, but would not be noticeable. Large hexagonal footings for deep-water piers would be the most noticeable change. In addition, top mats would increase the height and length of the pile caps over the water, thus becoming more prominent and visible.

The piles for land and shallow water piers are not visible since they are either below grade or under water. At deep-water piers, piles would be screened with a concrete skirt and would only be visible at low tide. The pile caps and skirts block the view of the piles, which provides some aesthetic quality except at extreme low tide conditions when the piles could be seen. The skirts give the appearance that the footing is solid concrete and more consistent with the design of the rest of the bridge.

Changes would be most obvious from the waterline and immediate foreground views, particularly of the Eureka Channel Bridge. Closer views of the retrofitted bridge would differ at low and high tides, as the pile caps would be more visible during low tides and less visible at high tides. According to the Visual Assessment prepared for the project, at low tide, the pile caps would resemble large white floating rafts. The pile caps would be consistent with the character of the existing pile caps and footings as they would be of the same shape. However, the enlarged size of the footings would appear somewhat out of context and scale to the bridge's other elements. The enlarged footings would be particularly exaggerated on the Middle Channel Bridge since the pier height is shorter than that of the other two bridges.

The existing pile caps are discolored by stains, mineral deposits and plant growth from the marine environment. In contrast, the proposed new pile caps would be a cleaner, brighter concrete surface and would contrast with the more worn appearance of the existing concrete. The resulting color differences would be noticeable when viewing the bridge. Caltrans proposes to power wash the exposed portions of the old skirts to help blend the two concrete surfaces and minimize the color contrast between the old and new structure. The glare from the new and washed old concrete elements would be eliminated over time as the concrete is discolored by weather and moisture.

The proposed project would also result in temporary impacts to views to and along the bay during the duration of project construction. The temporary trestles, construction barges, heavy

equipment, and associated construction materials would be visible to travelers crossing the bridge and from the many public vantage points described above. However, the temporary nature of this impact limits its significance and all construction materials and debris would be removed upon project completion. In addition, although the project is planned to take two to three years to complete, as discussed above, staging and stockpiling activities will be undertaken consistent with local CDPs.

Additionally, three mature trees (two Monterey cypress and one eucalyptus) would be removed near the Eureka Channel Bridge abutment on Woodley Island to construct temporary access roads. The trees provide scenic qualities by framing traveler's views from State Route 255 in both directions. Caltrans proposes to plant three native trees at the location of those to be removed following project construction. To ensure that this mitigation is implemented as proposed, the Commission attaches Special Condition No. 13 that requires a minimum of three native trees to be planted in the locations from which the three trees would be removed.

As proposed, the project incorporates materials and shapes that replicate the existing patterns of the bridge to produce a design that would be visually compatible with the existing character of the area and most protective of views to and along the bay area given the design constraints imposed by seismic retrofit requirements. The proposed project also minimizes the alteration of natural land forms. Therefore, the Commission finds that the proposed development as conditioned is consistent with Section 30251 of the Coastal Act.

6. Public Access

Section 30210 of the Coastal Act requires that maximum public access shall be provided consistent with public safety needs and the need to protect natural resource areas from overuse. Section 30212 of the Coastal Act requires that access from the nearest public roadway to the shoreline be provided in new development projects except where it is inconsistent with public safety, military security, or protection of fragile coastal resources, or adequate access exists nearby. Section 30211 requires that development not interfere with the public's right to access gained by use or legislative authorization. Section 30214 of the Coastal Act provides that the public access policies of the Coastal Act shall be implemented in a manner that takes into account the capacity of the site and the fragility of natural resources in the area. In applying Sections 30210, 30211, 30212, and 30214, the Commission is also limited by the need to show that any denial of a permit application based on these sections, or any decision to grant a permit subject to special conditions requiring public access, is necessary to avoid or offset a project's adverse impact on existing or potential access.

Humboldt Bay and the Eureka waterfront provides a variety of public access and recreation opportunities including boating, sailing, kayaking, and fishing, as well as walking, bicycling, bird watching, and picnicking. Several public access destinations are located in the project vicinity including a waterfront walkway, the Adorni Community Center, Sacco Amphitheater, Carson Mill Park, a public boat launch facility on the Eureka shoreline and a waterfront walkway along the marina on the south side of Woodley Island.

During project construction, public access and recreational activities would be temporarily restricted near the Eureka Channel Bridge along the Eureka waterfront. The public boat launch facility located under the south end of the Eureka Channel Bridge includes a floating dock, a boat launch ramp, parking for vehicles with boat trailers and public restrooms. Although much of the facility is within the City of Eureka's coastal development permit jurisdiction, the portions of the boat ramp that extend below mean high tide are within the Commission's jurisdiction. Except for a portion of the actual boat launch ramp, this boat launch facility is located within the existing Caltrans right-of-way. The City of Eureka obtained Caltrans lease to construct and operate the boat launch with the understanding that it could be closed during periods of bridge maintenance or construction. Four of the bridge footings that require retrofitting are located within the boat launch complex. As a result, the public boat launch under the Eureka Channel Bridge would be closed for up to six months during work on the bridge piers within and adjacent to the boat launch. Caltrans proposes to install a temporary fence with detour signs that would direct pedestrians around the construction zone during the closure period. In addition, Caltrans proposes to repave and re-stripe the parking area following project completion thereby improving the overall condition of the public facility.

As four of the bridge footings requiring retrofit work are located within the boat launch complex, there are no alternatives to the temporary closure of the facility that would allow for project construction and ensure public safety. The Samoa Boat Launch and a new boat launch facility approximately 0.75 miles to the west along the Eureka shoreline on Waterfront Drive would continue to be available to the public as alternatives during the construction period. The City of Eureka has indicated in a letter to Caltrans that they no longer experience a peak demand for the boat launching facility under the Eureka Channel Bridge as the new boat launch facility, located approximately 0.75 miles south along Waterfront Drive, has become a more popular boat launching facility. The City has indicated that the new ramp has more than adequate capacity to accommodate additional boat traffic during any six-month closure period.

The Commission finds that although closing the boat launch facility for six months as proposed may not result in a significant adverse impact to public access, closure of the facility for a longer period could create a burden on public access that may need to be mitigated in order for the revised project to be consistent with Coastal Act public access policies. To ensure that the Commission would have an opportunity to review any additional closure period for impacts to public access, the Commission attaches Special Condition No. 14 requiring that Caltrans apply for a permit amendment to extend the closure of the boat launch facilities beyond a period of six months.

During construction, a segment of the waterfront walkway in front of Carson Mill Park near the boat launch facility would also need to be temporarily closed. However, a detour would be provided and the overall use of the walkway would remain relatively unchanged during construction. The bike lane on Waterfront Drive may also be temporarily closed for the duration of the bridge footing work at the south end of the Eureka Channel Bridge. Measures would be implemented to allow bicyclists to safely use the roadway during the temporary bicycle lane closure. After construction, any sidewalks or walkways would be restored to their original condition. In addition, during construction one lane of traffic on Route 255 might be

occasionally closed for trucks to pour concrete from the bridge decks to the substructure below. Minor delays would be expected, but passage of vehicles, bicyclists, and pedestrians would be accommodated. To ensure that these public access facilities remain available for public access use as proposed, the Commission attaches Special Condition No. 15 that requires Caltrans to implement the proposed measures for providing continued public access during construction of the project.

During construction, boat traffic would need to maneuver around barges carrying construction equipment and materials and around the barge anchor lines. Temporary trestles and cofferdams would be located in shallow waters and not within the deep-water navigation channels. If temporary discharge lines for pumped bay water are used, they would be weighted to rest on the channel bottom. After construction, the deep-water footings would increase in length (parallel to the channels), but would not impair navigability of the channel. The deep-water footings would have pile caps to protect the footings and boats in the event of potential contact. In addition, concrete skirts would be attached to the pile caps to prevent boats from striking the footing piles, especially at low tide conditions. During project construction, Caltrans proposes to maintain at least fifty-percent of the navigable channels for boat access at all times as required by the U.S. Coast Guard. To ensure that the channels of the bay within the vicinity of the project remain accessible to boaters during the course of the project as proposed, the Commission attaches Special Condition No. 16 that requires at least 50% of the navigable channels to remain available for boat access at all times during the project.

The proposed project involves the placement of numerous piles in the bay for construction of temporary access trestles. Caltrans proposes to remove the piles following project completion. If the piles are only partially removed, or broken off during removal and left in the water, they could pose a safety and navigation hazard to boaters and recreators on the bay. Therefore, to avoid adverse impacts to public access and recreation on the bay from hazardous piles, the Commission attaches Special Condition No. 10 to ensure that all piles are removed in their entirety.

Two fender pile structures near the southwest segment of the Eureka Channel Bridge would be removed after construction. Removing these fender piles would eliminate two navigational obstacles. Caltrans proposes to coordinate with the U.S. Coast Guard to place navigation lights after the existing fender piles are removed at the Eureka Channel Bridge.

The proposed seismic retrofit project as proposed would have only temporary impacts on public access during project construction. All existing access ways in and around the project site would either remain open for public use or, in locations where the access way would need to be closed for public safety purposes during construction, the public would be provided with alternate temporary access ways. The public boat-launching ramp affected by construction will only be closed for six months unless the Commission approves a permit amendment to allow a longer closure after considering whether the additional impact on pubic access would need to be mitigated. In addition, the project as conditioned would not increase the nature or intensity of use, and thus would not create any new demand for public access or otherwise create any additional burdens on public access. Therefore, the Commission finds that the proposed project,

as conditioned, does not have any significant adverse effect on public access, and that the project as proposed without new public access is consistent with the requirements of Coastal Act Sections 30210, 30211, 30212, and 30214.

7. U.S. Army Corps of Engineers Review

The project is within and adjacent to a navigable waterway and is subject to review by the U.S. Army Corps of Engineers (USACE). Pursuant to the Federal Coastal Management Act, any permit issued by a federal agency for activities that affect the coastal zone must be consistent with the coastal zone management program for that state. Under agreements between the Coastal Commission and the USACE, the Corps will not issue a permit until the Coastal Commission either approves a federal consistency certification for the project or approves a coastal development permit. To ensure that the project ultimately approved by the Corps is the same as the project authorized herein, the Commission attaches Special Condition No. 18 that requires the applicant, prior to the commencement of construction, to demonstrate that all necessary approvals from the USACE for the proposed project have been obtained.

8. California Environmental Quality Act

Section 13096 of the Commission's administrative regulations requires Commission approval of a coastal development permit application to be supported by findings showing that the application, as modified by any conditions of approval, is consistent with any applicable requirement of the California Environmental Quality Act (CEQA). Section 21080.5(d)(2)(A) of CEQA prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available, which would substantially lessen any significant adverse effect the proposed development may have on the environment.

The Commission incorporates its findings on Coastal Act consistency at this point as if set forth in full. As discussed above, the proposed project has been conditioned to be found consistent with the policies of the Coastal Act. These findings address and respond to all public comments regarding potential significant adverse environmental effects of the project that were received prior to preparation of the staff report. Mitigation measures that will minimize or avoid all significant adverse environmental impact have been required. As conditioned, there are no feasible alternatives or feasible mitigation measures available, beyond those required, which would substantially lessen any significant adverse impact that the activity would have on the environment. Therefore, the Commission finds that the proposed project, as conditioned to mitigate the identified impacts, can be found consistent with the requirements of the Coastal Act and to conform to CEQA.

EXHIBITS:

1. Regional Location Map
2. Vicinity Map
3. Site Photos
4. Bridge Terminology
5. Deep Water Pier Retrofit (Typical)
6. Bridge Plans
7. Construction Plans
8. Proposed Trestle (Typical)
9. Proposed Access Locations
10. Photo Simulations
11. Regional Water Quality Control Board NPDES Permit
12. Regional Water Quality Control Board Section 401 Certification
13. Proposed Eelgrass Mitigation Site
14. Proposed Eelgrass Mitigation Plan

ATTACHMENT A

STANDARD CONDITIONS

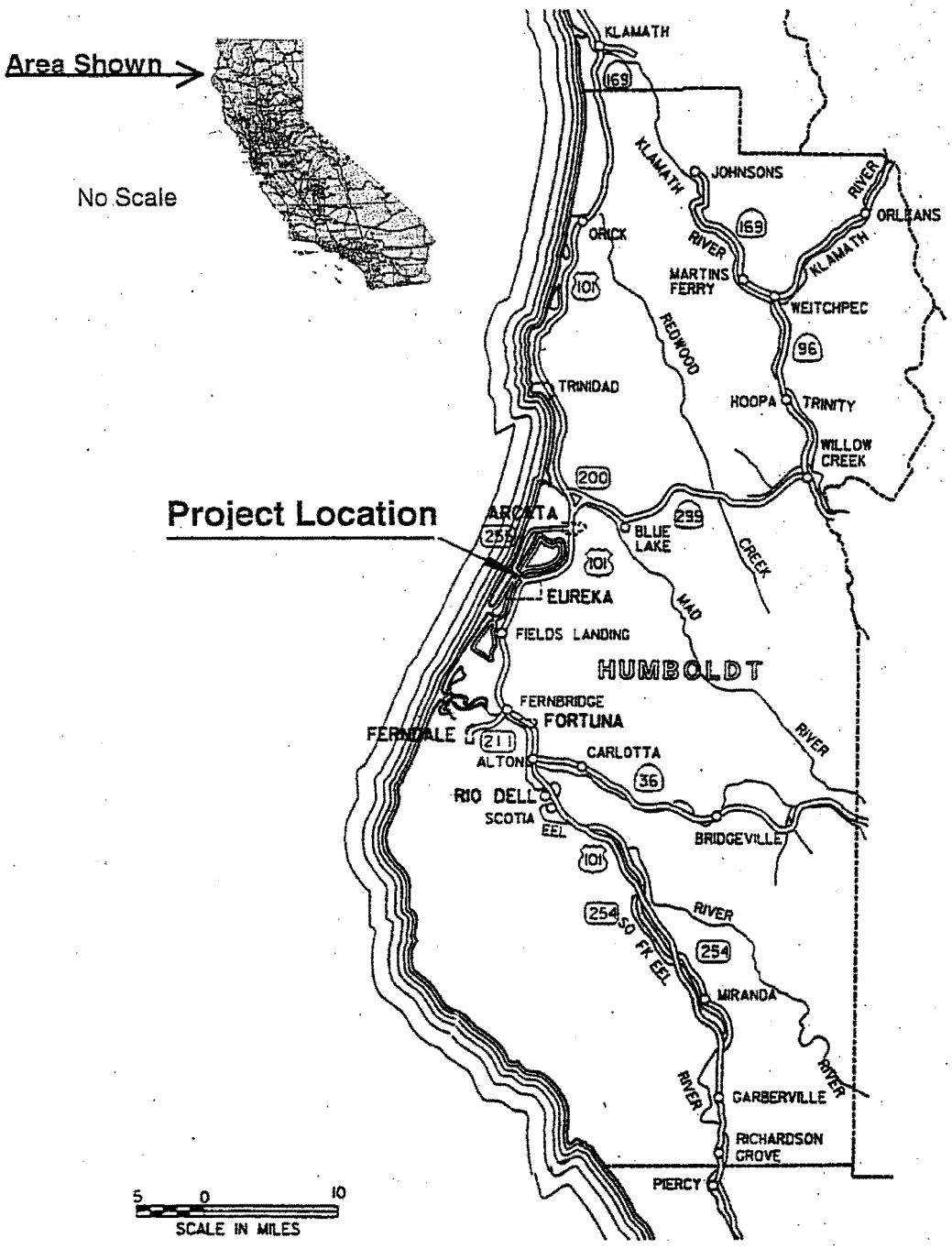
1. Notice of Receipt and Acknowledgement. The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.

2. Expiration. If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable amount of time. Application for extension of the permit must be made prior to the expiration date.

3. Interpretation. Any questions of intent of interpretation of any condition will be resolved by the Executive Director of the Commission.

4. Assignment. The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.

5. Terms and Conditions Run with the Land. These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.



Regional Location Map

EXHIBIT NO. 1
APPLICATION NO. 1-01-069
CALTRANS
REGIONAL LOCATION

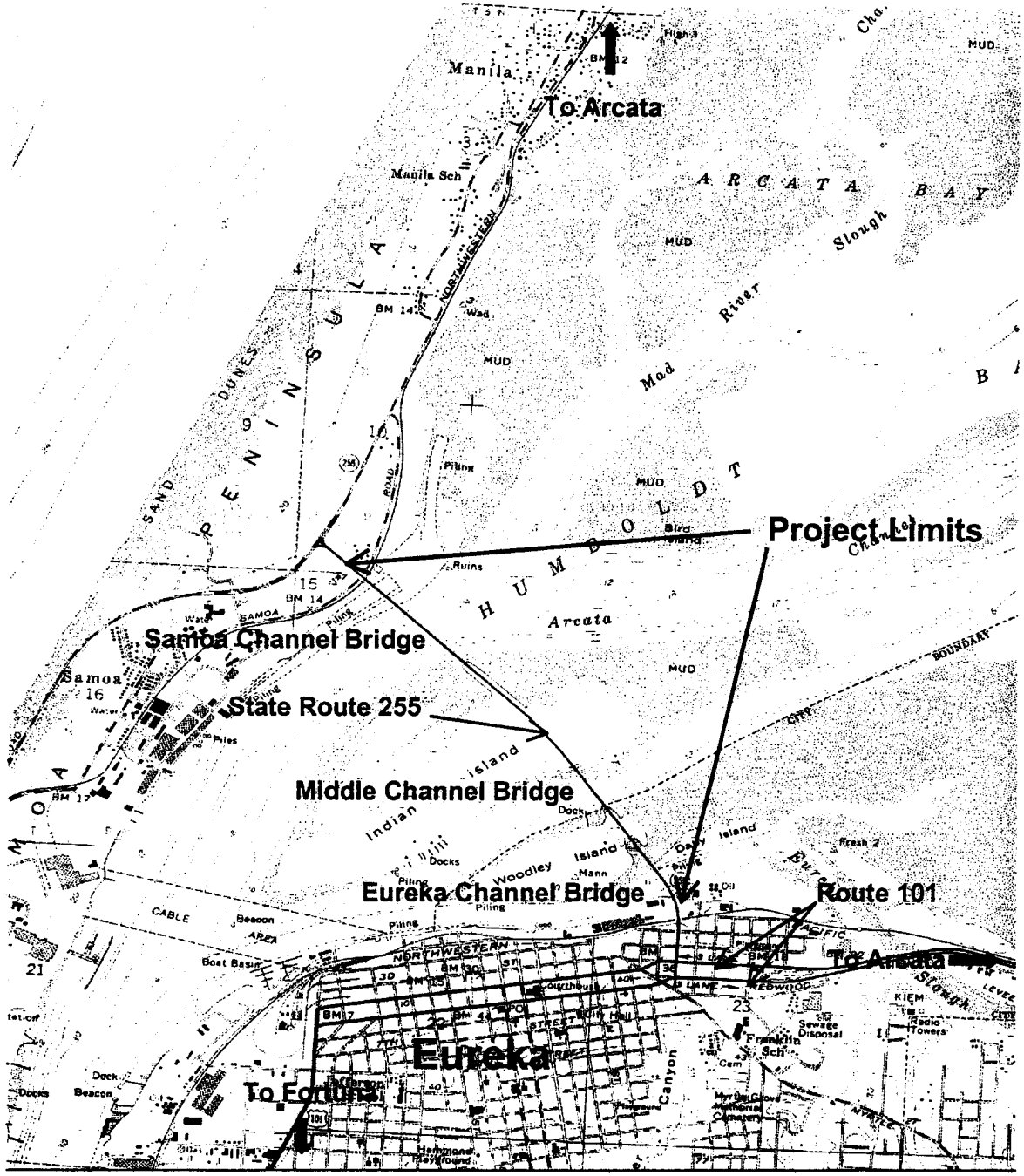
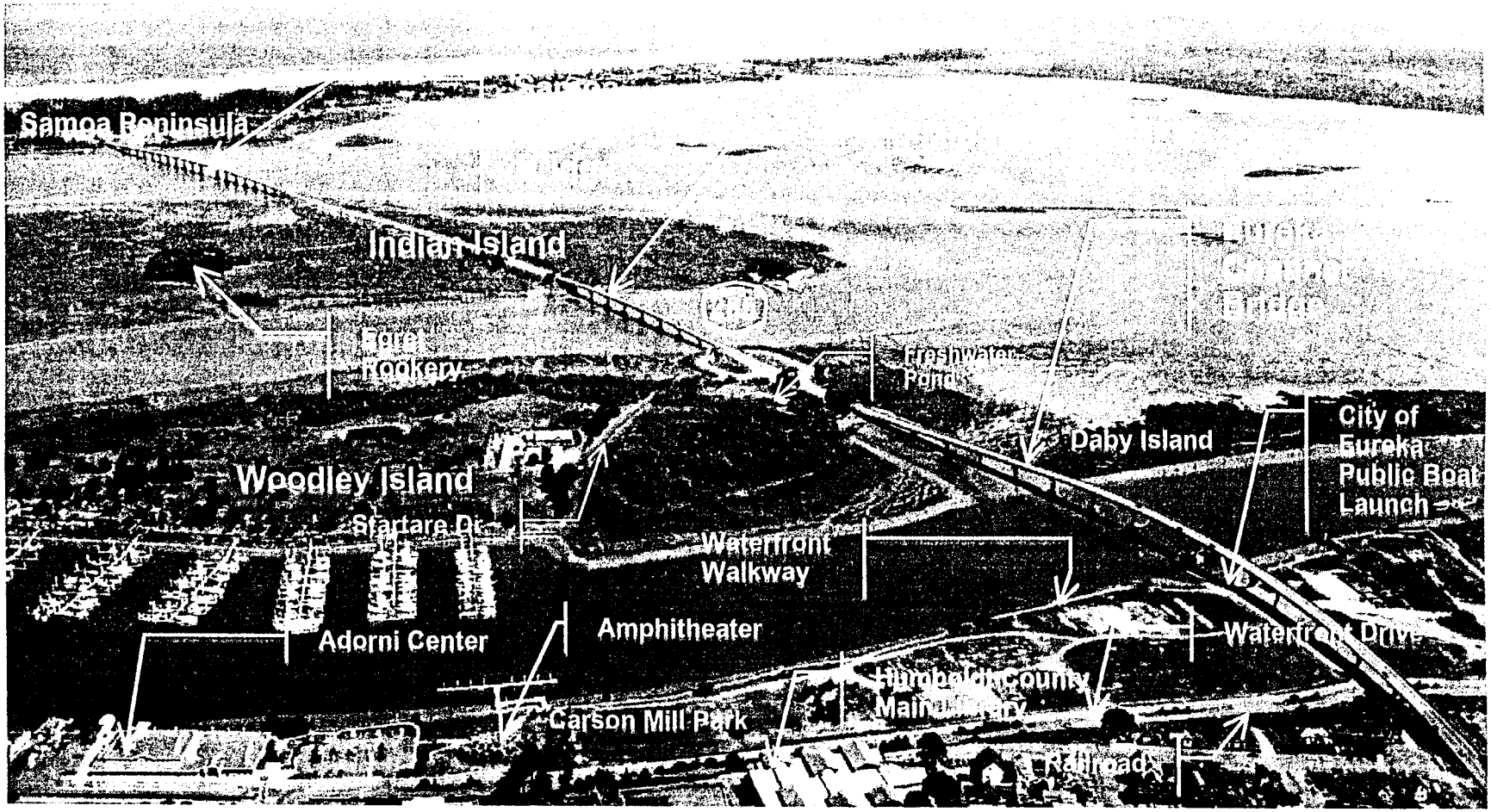


Exhibit 2 - Project Location Map

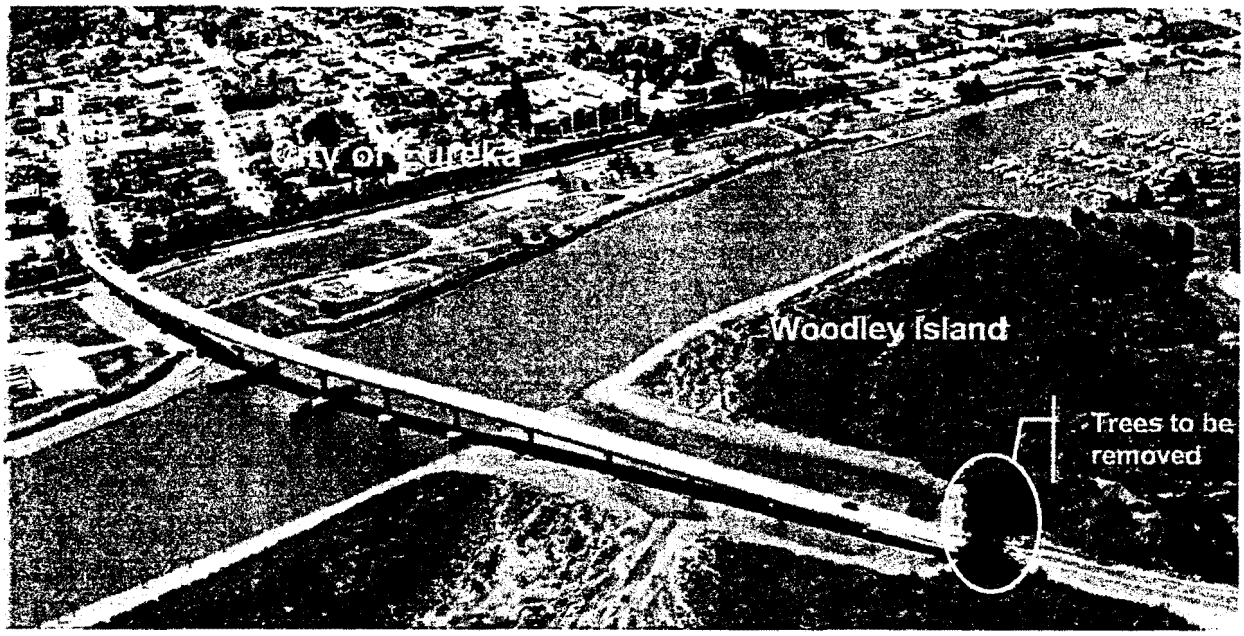
EXHIBIT NO. 2
APPLICATION NO. 1-01-069
CALTRANS
VICINITY MAP

EXHIBIT NO. 3
APPLICATION NO. 1-01-069
TRANS
SITE PHOTOS (1 of 3)

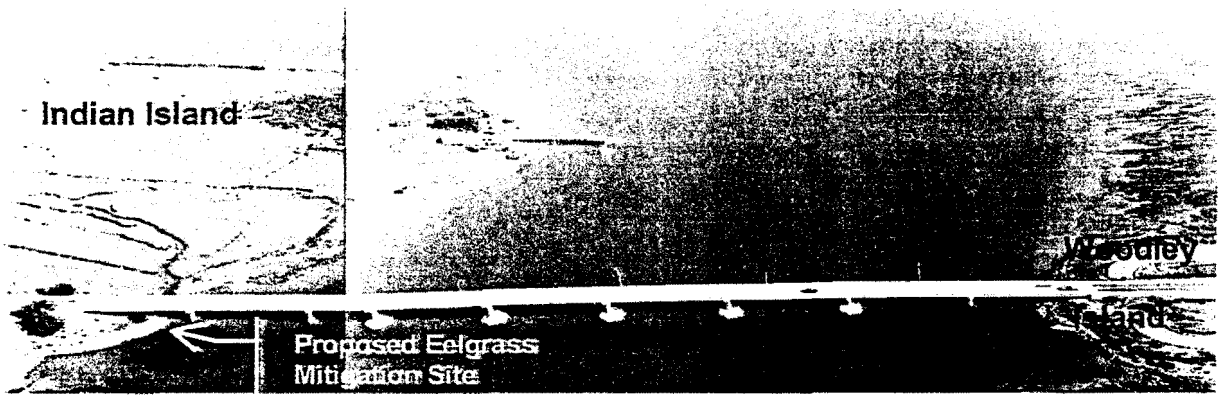


- Humboldt Bay Bridges Aerial Photograph
Viewed From Eureka towards the Samoa Peninsula

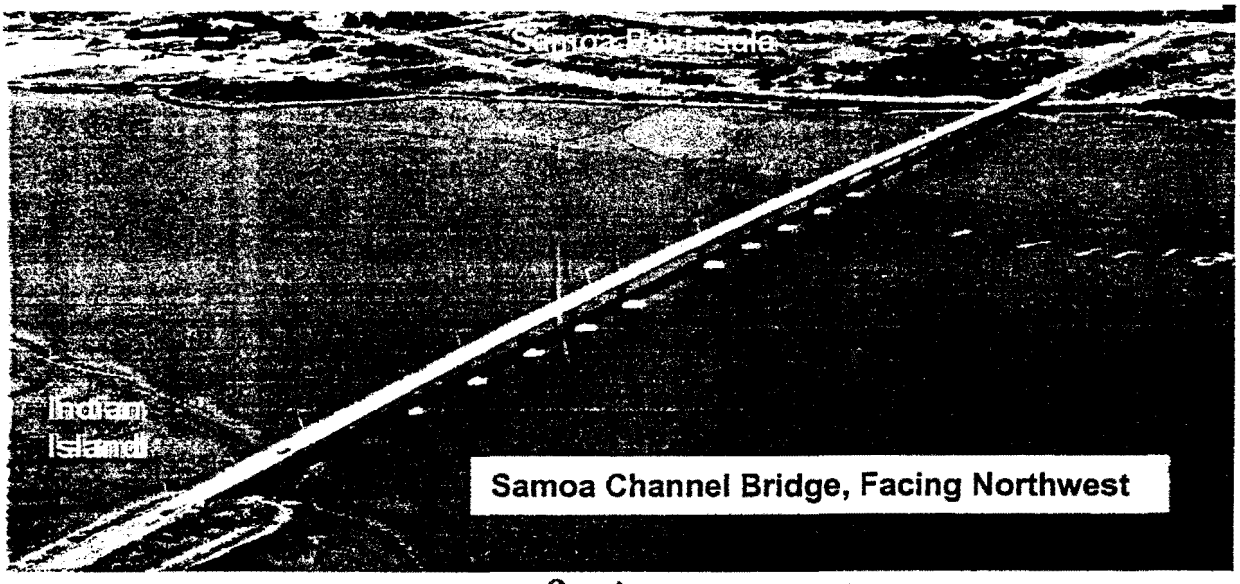
MMH\\Exhibit3

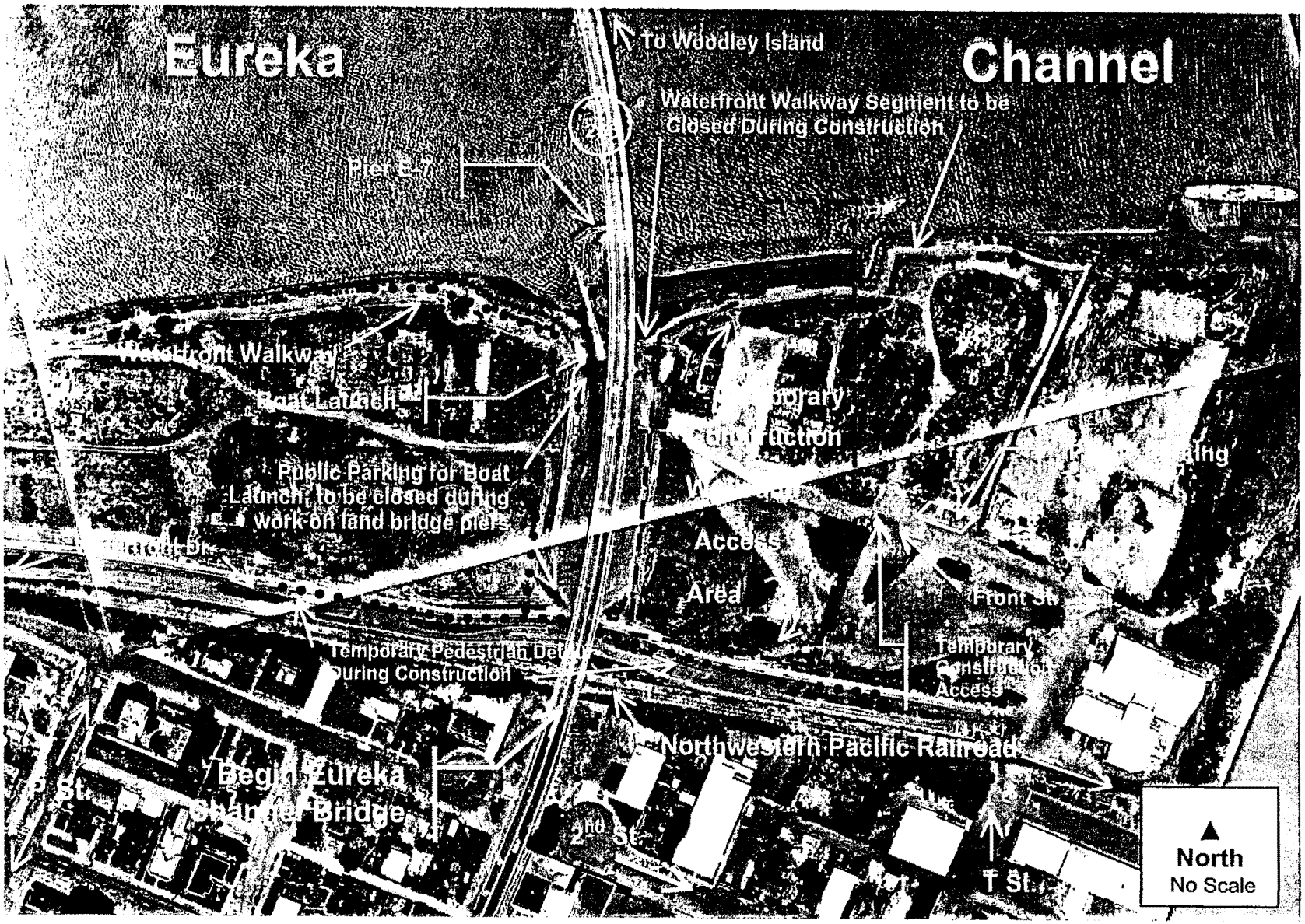


Eureka Channel Bridge, Facing South



Middle Channel Bridge, Facing Northeast





Temporary Access/Work Area at Eureka Channel Bridge

Date of Photograph: June 13, 1997

ECBWorkArea

Bridge Terminology

The following terms are used in the exhibits and text descriptions of the proposed project. For visual examples of the terms, refer to the figure that follows this terminology list.

Abutment (abbreviated abut) – Land structure supporting bridge superstructure at either end of a bridge.

Bent or column - Vertical bridge structural support; on the general plans the bents follow a numbering convention starting with the southernmost abutment designated as bent number 1 preceded with the first letter of the specific bridge, e.g., M-4 would be the fourth bent from the south on Middle Channel Bridge.

Channel - Any navigable waterway by vessels or artificially improved or created so as to be navigable by vessels, including the structures and facilities created to facilitate navigation.

Cofferdam - A watertight temporary structure that prevents water from entering an enclosed area; the enclosed area can be pumped dry in order to work on expanding bridge footings and adding footing piles.

Footing - The enlarged foundation under a column or bent to spread the bridge weight and prevent settling; in the case of the Humboldt Bay Bridges, footings could be completely or partially above ground.

Girder - a large strong beam, often of steel, forming a supporting element in a framework.

Mean Sea Level - The mean elevation of daily ocean tides. Humboldt Bay is influenced by ocean tides and to a lesser degree, stream discharge.

Pier - Vertical bridge structural support in open water. A letter-number designation is used throughout this document when referring to specific piers; piers are designated by either E for Eureka Channel Bridge, M for Middle Channel Bridge, and S for Samoa Channel Bridge, followed by a number. For example, Pier E-5 refers to the fifth pier (from the south bridge abutment) of the Eureka Channel Bridge. Note that each bridge abutment is considered the first or last bridge pier in terms of the pier numbering designation.

Pile - A heavy pipe driven or cast into ground (or bay channel bottom) to anchor a bridge footing. Temporary piles will be installed for a temporary trestle bridge for heavy equipment access to the columns and footings at the Eureka Channel and Samoa Channel Bridges.

EXHIBIT NO. 4
APPLICATION NO. 1-01-069
CALTRANS
BRIDGE TERMINOLOGY (1 of 2)

Pile Cap – A raised portion on the top mat of the footing on deep-water piers.

Pile Cap Platform – A temporary construction feature attached to new deep-water footing piles which provides a platform to construct enlarged pile caps.

Seal Course – Permanent concrete feature placed at bottom of footing piles and sheet piles are attached to the seal courses to isolate water from the work area; seal courses are used in situations where it is difficult to de-water because the bay bottom is too porous.

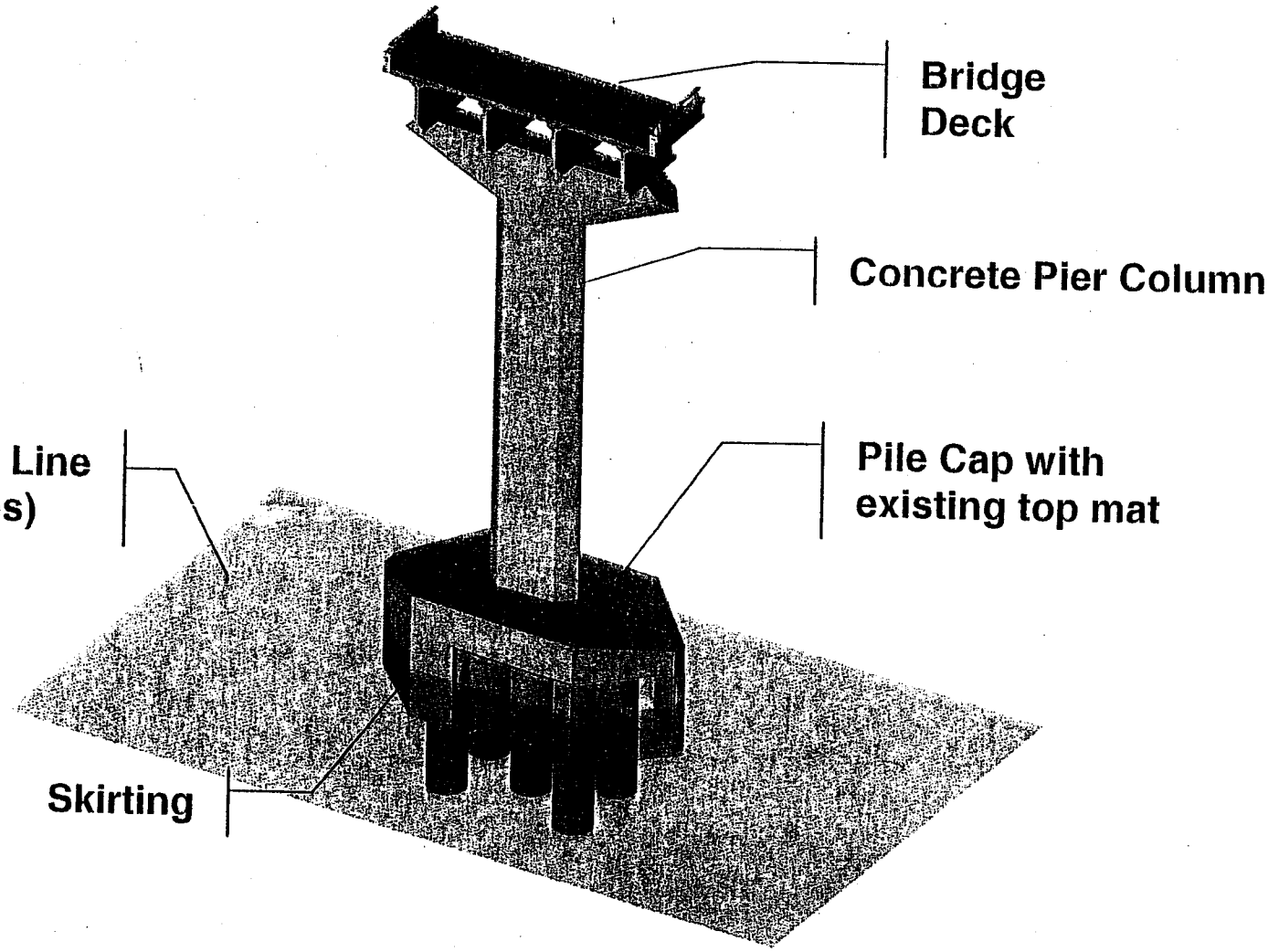
Skirt – Concrete pre-cast structure that attaches around deep water pier pile caps that protects the bridge footing piles and hides them from view during low tides.

Span - Distance between bridge bents.

Substructure - That part of a bridge below the superstructure consisting of the columns, footings, footing piles, and shear keys.

Superstructure - That part of a bridge above the abutments and bents; i.e., the bridge deck, railing, girders, etc.

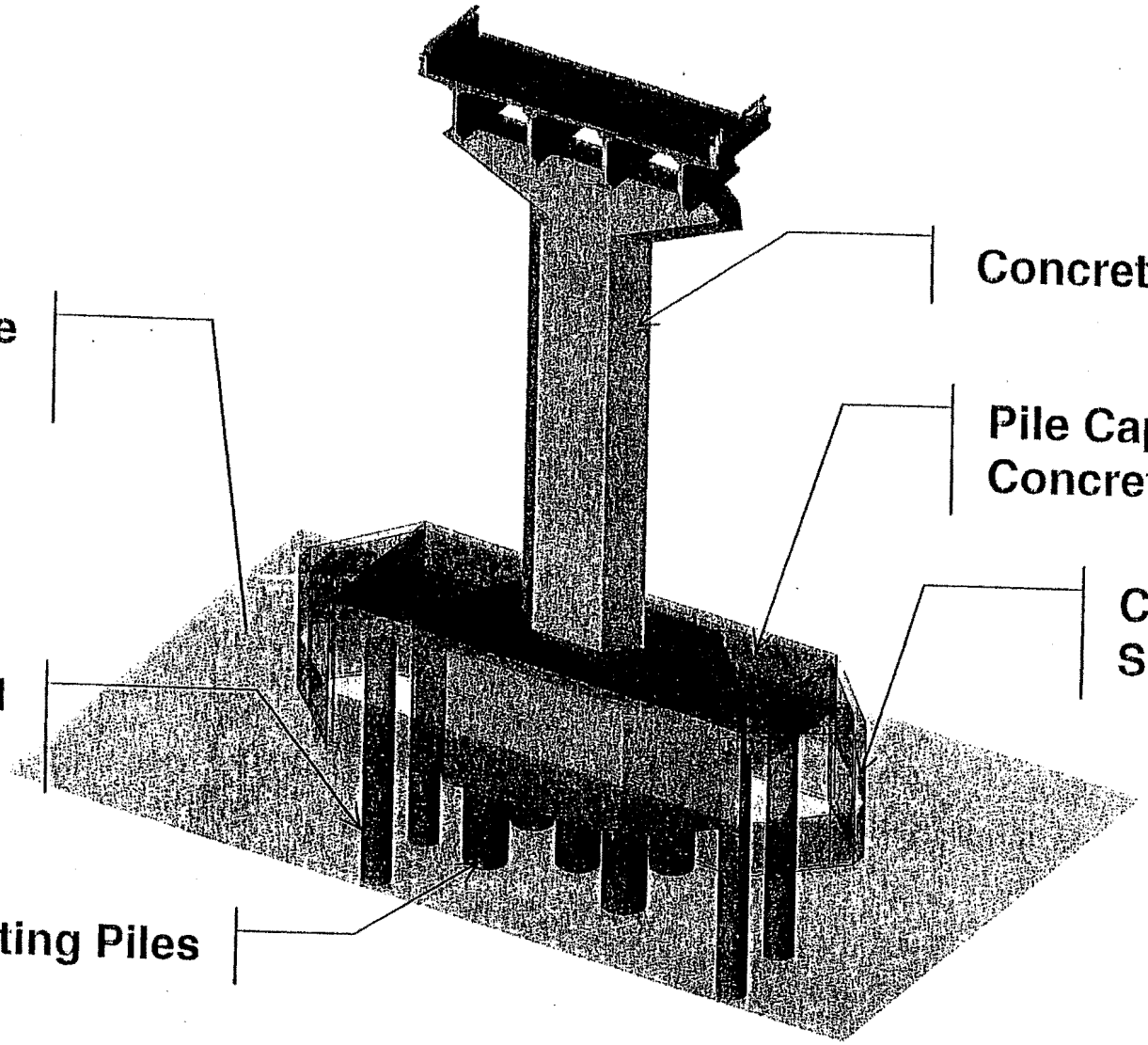
Top Mat – A vertical enlargement of the footing foundation starting from the top of the existing footing.



Typical Existing Deep Water Bridge Pier
Cross Section - Perspective

Ex13ExistDWFoot

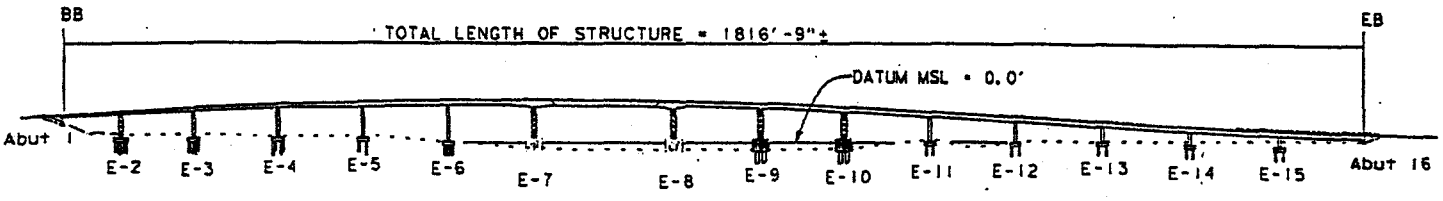
EXHIBIT NO. 5
APPLICATION NO. 1-01-069
CALTRANS
EXISTING & PROPOSED DEEP WATER PIERS (1 of 2)

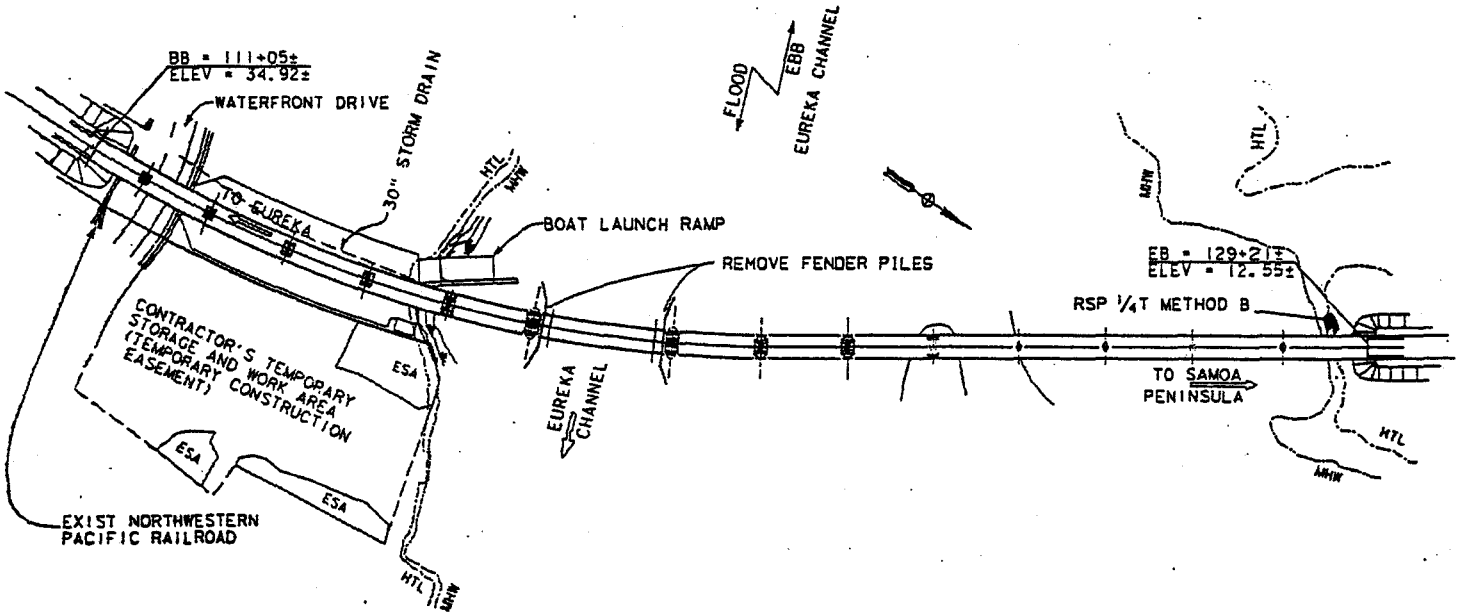


Typical Proposed (Retrofitted) Deep Water Pier

MMH\Ex14DeepWaterProp

PROPOSED CONDITIONS LOOKING SOUTHWEST
AT BENTS TO BE RETROFITTED





NOTE:

ESTIMATED EXCAVATION BELOW MHW: 6030 CY
ESTIMATED EXCAVATION BELOW HTL: 6030 CY
TOTAL EXCAVATION: 7980 CY
ESTIMATED CONCRETE BELOW MHW: 1000 CY
ESTIMATED CONCRETE BELOW HTL: 1300 CY
TOTAL ESTIMATED CONCRETE: 1750 CY

EUREKA CHANNEL BRIDGE

PURPOSE: TO REDUCE SAFETY HAZARDS CAUSED BY PROBABLE SEISMIC ACTIVITY BY REINFORCING THE BRIDGE FOOTINGS AND ENCASING THE BRIDGE COLUMNS.

DATUM: 1929 USCS&GS (MSL)

ADJACENT PROPERTY OWNERS:

1. CITY OF EUREKA
2. HUMBOLDT BAY HARBOR DISTRICT
3. SIMPSON TIMBER COMPANY
4. NORTHWESTERN PACIFIC RAILROAD

Caltrans

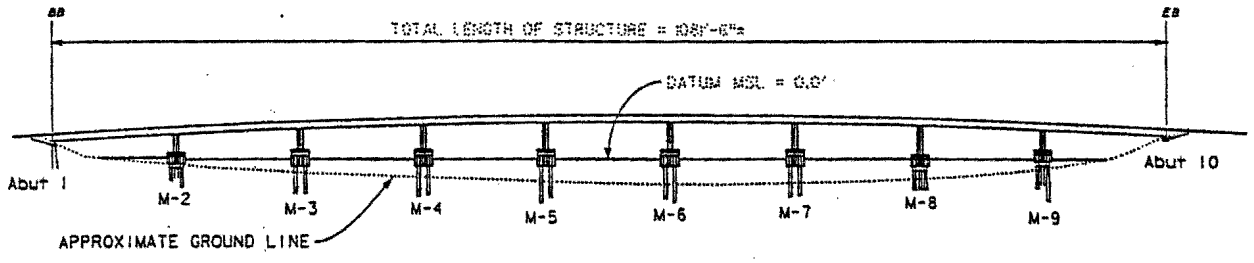
Application By Caltrans Dist. 1
Box 3700 Eureka Ca. 95502-3700

BRIDGE DETAIL

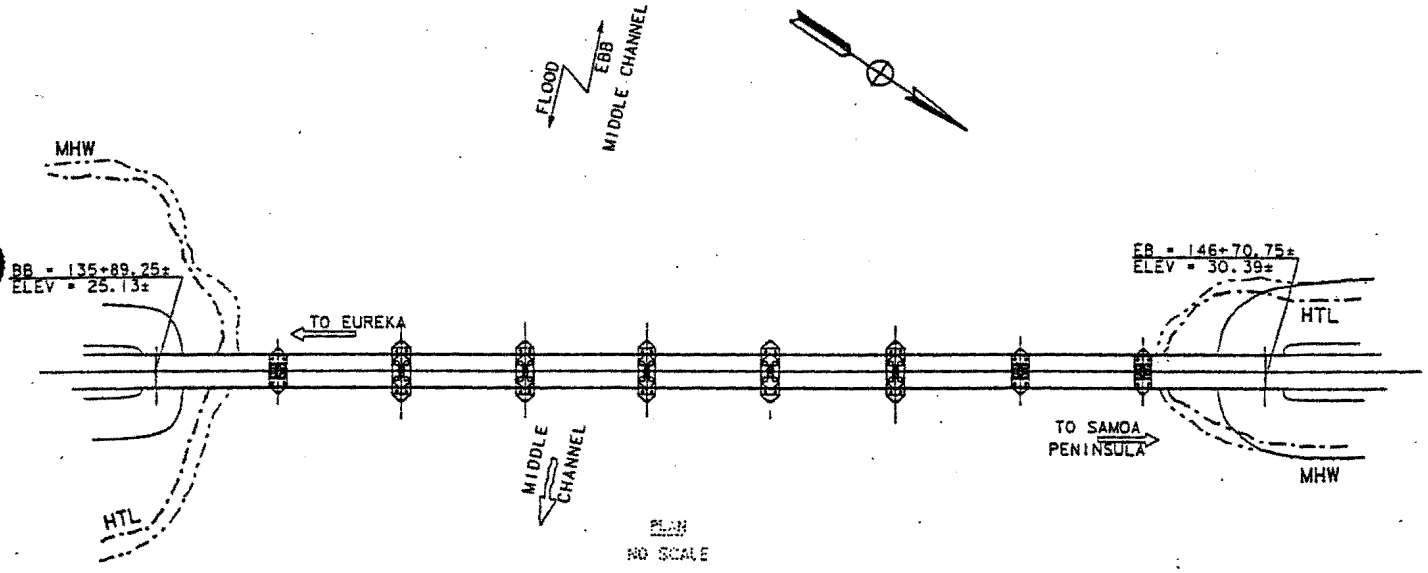
IN: HUMBOL
AT: ROUTE
COUNTY OF:
APPLICATIC
SHEET 5 OF

EXHIBIT NO. 6
APPLICATION NO. 1-01-069
CALTRANS
BRIDGE PLANS (1 of 3)

PROPOSED CONDITIONS LOOKING SOUTHWEST
AT BENTS TO BE RETROFITTED



ELEVATION
NO SCALE



PLAN
NO SCALE

NOTE:

ESTIMATED EXCAVATION BELOW MHW: 520 CY
ESTIMATED EXCAVATION BELOW HTL: 520 CY
TOTAL EXCAVATION: 520 CY
ESTIMATED CONCRETE BELOW MHW: 1150 CY
ESTIMATED CONCRETE BELOW HTL: 1480 CY
TOTAL ESTIMATED CONCRETE: 1610 CY

MIDDLE CHANNEL BRIDGE

PURPOSE: TO REDUCE SAFETY HAZARDS CAUSED BY PROBABLE SEISMIC ACTIVITY BY REINFORCING THE BRIDGE FOOTINGS AND ENCASING THE BRIDGE COLUMNS.

DATUM: 1929 USCS&GS (MSL)

ADJACENT PROPERTY OWNERS:

1. CITY OF EUREKA
2. HUMBOLDT BAY HARBOR DISTRICT
3. SIMPSON TIMBER COMPANY
4. NORTHWESTERN PACIFIC RAILROAD

Caltrans

Application By Caltrans Dist. 1
Box 3700 Eureka Ca. 95502-3700

BRIDGE DETAIL

IN: HUMBOLDT BAY

AT: ROUTE 255, PM 0.2 TO PM 1.9

COUNTY OF: HUMBOLDT

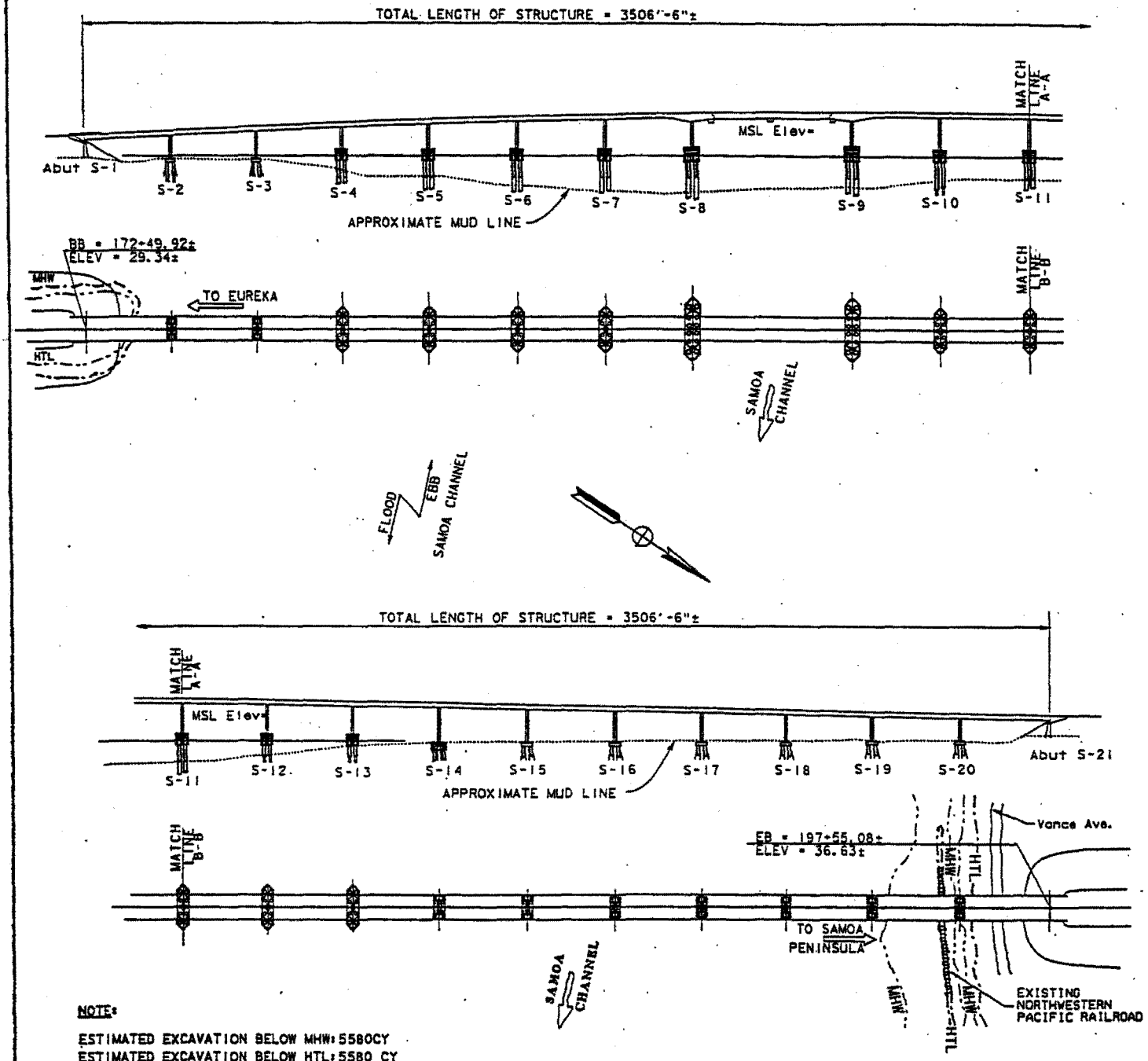
APPLICATION BY: CALTRANS

SHEET 6 OF 28 PREPARED 10/00

296701

2 of 3

PROPOSED CONDITIONS LOOKING SOUTHWEST
AT BENTS TO BE RETROFITTED



NOTE:

ESTIMATED EXCAVATION BELOW MHW: 5580CY
ESTIMATED EXCAVATION BELOW HTL: 5580 CY
TOTAL EXCAVATION: 5580CY
ESTIMATED CONCRETE BELOW MHW: 4190 CY
ESTIMATED CONCRETE BELOW HTL: 4880 CY
TOTAL ESTIMATED CONCRETE: 5430 CY

SAMOA CHANNEL BRIDGE

PURPOSE: TO REDUCE SAFETY HAZARDS CAUSED BY PROBABLE SEISMIC ACTIVITY BY REINFORCING THE BRIDGE FOOTINGS AND ENCASING THE BRIDGE COLUMNS.

DATUM: 1929 USCS&GS (MSL)

ADJACENT PROPERTY OWNERS:

1. CITY OF EUREKA
2. HUMBOLDT BAY HARBOR DISTRICT
3. SIMPSON TIMBER COMPANY
4. NORTHWESTERN PACIFIC RAILROAD

Caltrans

Application By Caltrans Dist. 1
Box 3700 Eureka Ca. 95502-3700

BRIDGE DETAIL

IN: HUMBOLDT BAY

AT: ROUTE 255, PM 0.2 TO PM 1.9

COUNTY OF: HUMBOLDT

APPLICATION BY: CALTRANS

SHEET 7 OF 28 PREPARED 10/00

296701

3 of 3

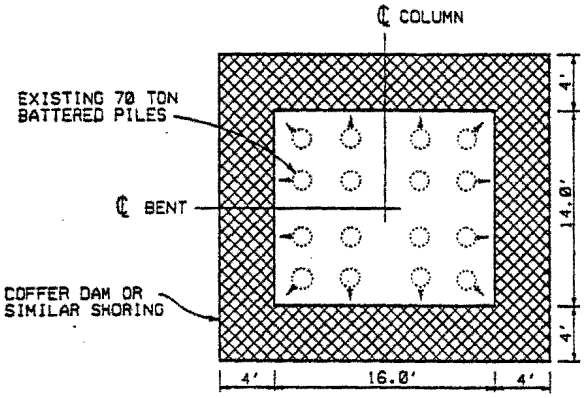
EUREKA CHANNEL BRIDGE

NOTES

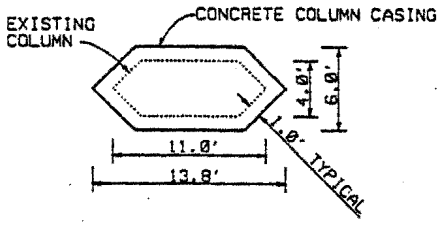
1. EXISTING 4 CENTER PILES OMITTED AT PIER E-2.
2. PIERS 3 & 4 ARE IN PARKING LOT.
3. PIER E-3 HAS ALL VERTICAL PILES.
4. THE SEAL COURSE WILL EXTEND TO THE LIMITS OF THE COFFERDAM WALLS.
5. SEE DATA TABLES, SHEET 15 FOR FOUNDATION DATA, EXCAVATION AND CONCRETE QUANTITIES

LEGEND

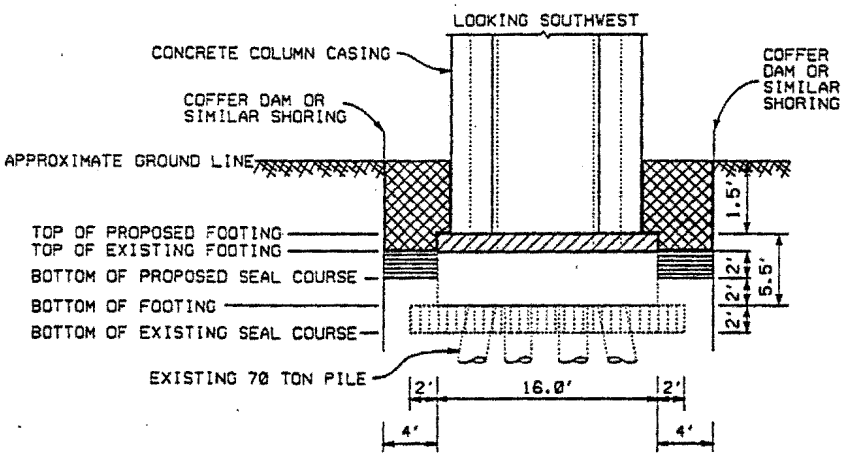
- TOP MAT
- LIMITS OF PROPOSED EXCAVATION
- LIMITS OF EXISTING SEAL COURSE
- LIMITS OF PROPOSED SEAL COURSE
- LIMITS OF EXISTING STRUCTURE
- LIMITS OF PROPOSED STRUCTURE



FOOTING PLAN VIEW



13'10" HEXAGONAL COLUMN PLAN VIEW



EXCAVATION FOR FOOTING RETROFIT ELEVATION VIEW

NO SCALE

PURPOSE: TO REDUCE SAFETY HAZARD CAUSED BY PROBABLE SEISMIC ACTIVITY BY REINFORCING THE BRIDGE FOOTINGS AND ENCASING THE COLUMNS.

DATUM: 1929 USCS&GS (MSL)

ADJACENT PROPERTY OWNERS:

1. CITY OF EUREKA
2. HUMBOLDT BAY HARBOR DISTRICT
3. SIMPSON TIMBER COMPANY
4. NORTHWESTERN PACIFIC RAILROAD

Caltrans

Application By Caltrans Dist. 1
Box 3700 Eureka Ca. 95502-3700

PROF
PIER

IN:
AT:
COUN
APPL

SHEET

EXHIBIT NO. 7
APPLICATION NO. 1-01-069
CALTRANS
CONSTRUCTION PLANS (1 of 17)

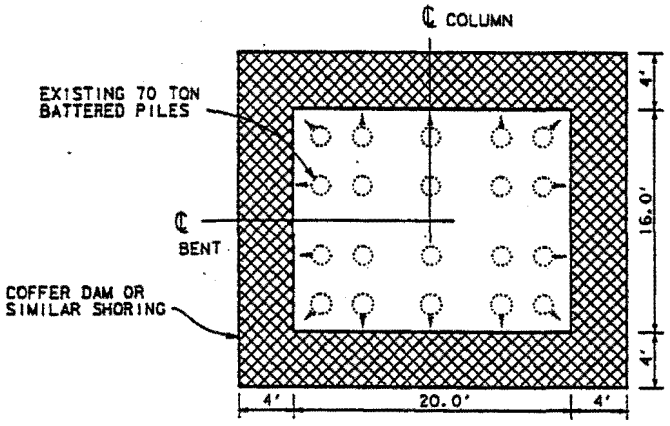
296701

NOTES

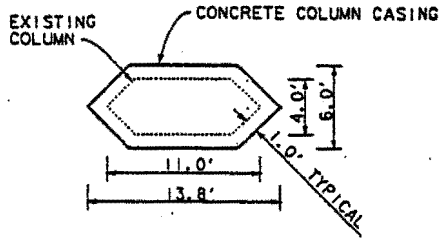
1. PIER 5 IS IN PARKING LOT.
2. THE SEAL COURSE WILL EXTEND TO THE LIMITS OF THE COFFER DAM WALLS.
3. SEE DATA TABLES, SHEET 15 FOR FOUNDATION DATA, EXCAVATION AND CONCRETE QUANTITIES

LEGEND

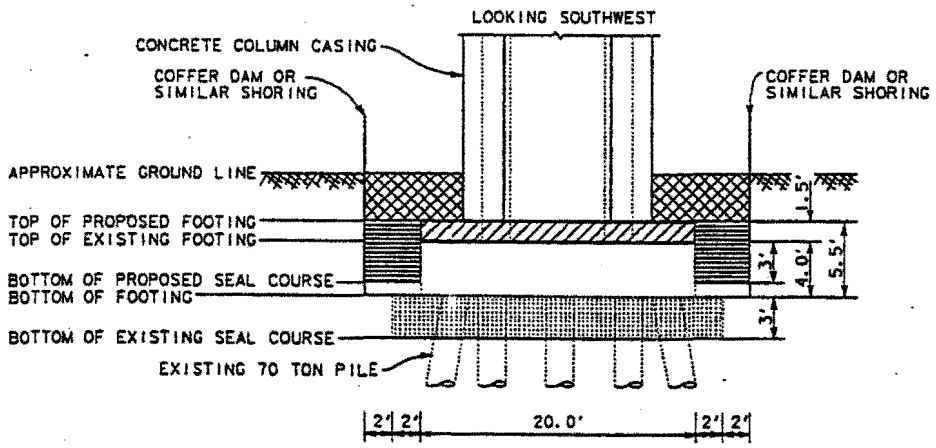
- = TOP MAT
- = LIMITS OF PROPOSED EXCAVATION
- = LIMITS OF EXISTING SEAL COURSE
- = LIMITS OF PROPOSED SEAL COURSE
- = LIMITS OF EXISTING STRUCTURE
- = LIMITS OF PROPOSED STRUCTURE



FOOTING PLAN VIEW



13'10" HEXAGONAL COLUMN



EXCAVATION FOR FOOTING RETROFIT

NO SCALE

PURPOSE: TO REDUCE SAFETY HAZARDS CAUSED BY PROBABLE SEISMIC ACTIVITY BY REINFORCING THE BRIDGE FOOTINGS AND ENCASING THE BRIDGE COLUMNS.

DATUM: 1929 USCS&GS (MSL)

ADJACENT PROPERTY OWNERS:

1. CITY OF EUREKA
2. HUMBOLDT BAY HARBOR DISTRICT
3. SIMPSON TIMBER COMPANY
4. NORTHWESTERN PACIFIC RAILROAD

Caltrans

Application By Caltrans Dist. 1
Box 3700 Eureka Ca. 95502-3700

PROPOSED CONSTRUCTION PIERS E-5

IN: HUMBOLDT BAY

AT: ROUTE 255, PM 0.2 TO PM 1.9

COUNTY OF: HUMBOLDT

APPLICATION BY: CALTRANS

SHEET 9 OF 28 PREPARED 10/00

296701

2-4-17

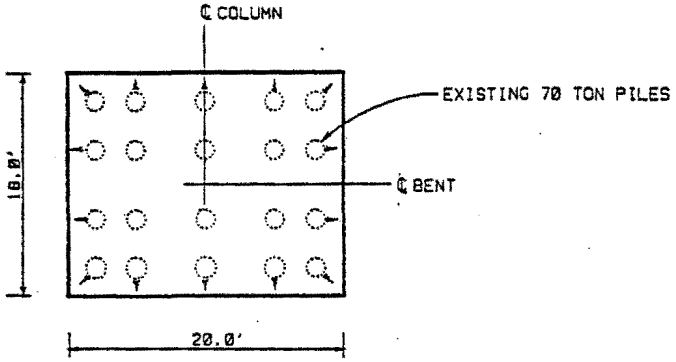
EUREKA CHANNEL BRIDGE

NOTES

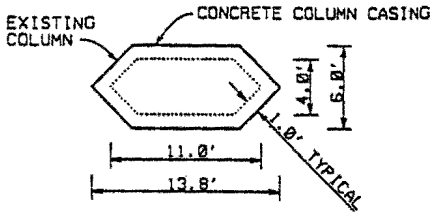
1. THE SEAL COURSE WILL EXTEND TO THE LIMITS OF THE COFFERDAM WALLS.
2. EXCAVATION TO BE DONE PRIOR TO PLACING COFFERDAM OR SHORING
3. SLOPING OF EXCAVATION APPROXIMATE
4. SEE DATA TABLES, SHEET 15 FOR FOUNDATION DATA, EXCAVATION AND CONCRETE QUANTITIES

LEGEND

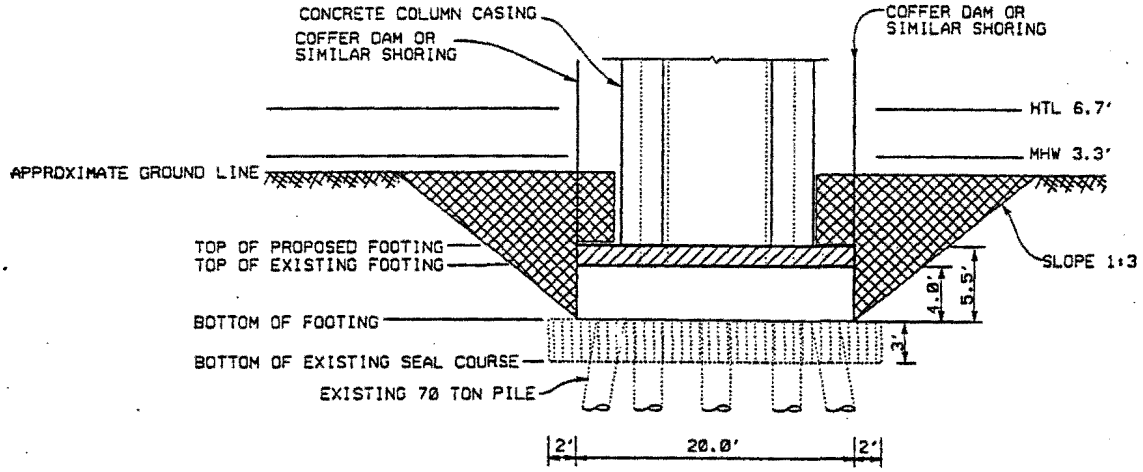
- = TOP MAT
- = LIMITS OF PROPOSED EXCAVATION
- = LIMITS OF EXISTING SEAL COURSE
- = LIMITS OF PROPOSED SEAL COURSE
- = LIMITS OF EXISTING STRUCTURE
- = LIMITS OF PROPOSED STRUCTURE



FOOTING PLAN VIEW



13'10" HEXAGONAL COLUMN



EXCAVATION FOR FOOTING RETROFIT
ELEVATION VIEW

NO SCALE

PURPOSE: TO REDUCE SAFETY HAZARD CAUSED BY PROBABLE SEISMIC ACTIVITY BY REINFORCING THE BRIDGE FOOTINGS AND ENCASING THE COLUMNS.

DATUM: 1929 USCS&GS (MSL)

ADJACENT PROPERTY OWNERS:

1. CITY OF EUREKA
2. HUMBOLDT BAY HARBOR DISTRICT
3. SIMPSON TIMBER COMPANY
4. NORTHWESTERN PACIFIC RAILROAD

Caltrans

Application By Caltrans Dist. 1
Box 3700 Eureka Ca. 95502-3700

PROPOSED CONSTRUCTION

PIERS E-12 & E-15

IN: HUMBOLDT BAY

AT: ROUTE 255, PM 0.2 TO PM 1.9

COUNTY OF: HUMBOLDT

APPLICATION BY: CALTRANS

SHEET 10 OF 28 PREPARED 10/00

296701

3 of 17

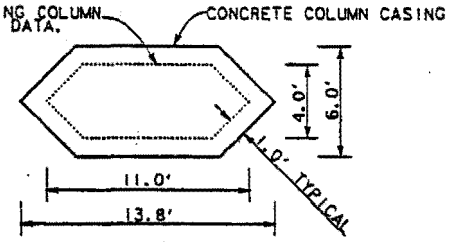
EUREKA CHANNEL BRIDGE

NOTES

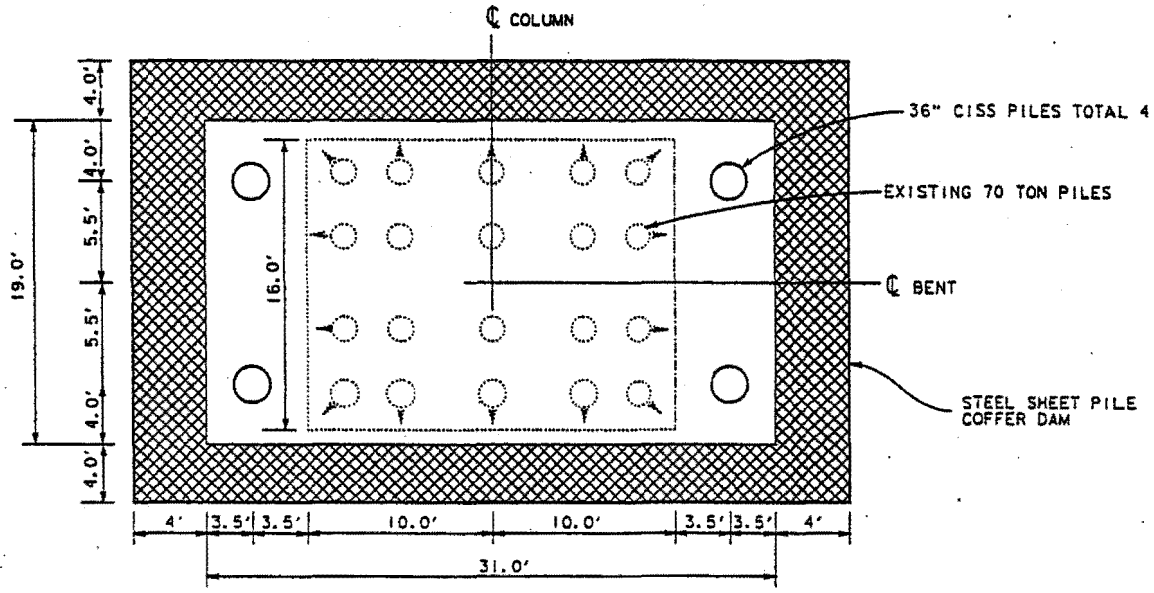
1. THE SEAL COURSE WILL EXTEND TO THE LIMITS OF THE COFFERDAM WALLS.
2. EXCAVATION OF E-13 PRIOR TO COFFERDAM OR SHORING
3. EXCAVATION OF E-13 TO BE SLOPED. SEE E-12, E15
4. SEE DATA TABLES, SHEET 15 FOR FOUNDATION DATA, EXCAVATION AND CONCRETE QUANTITIES

LEGEND

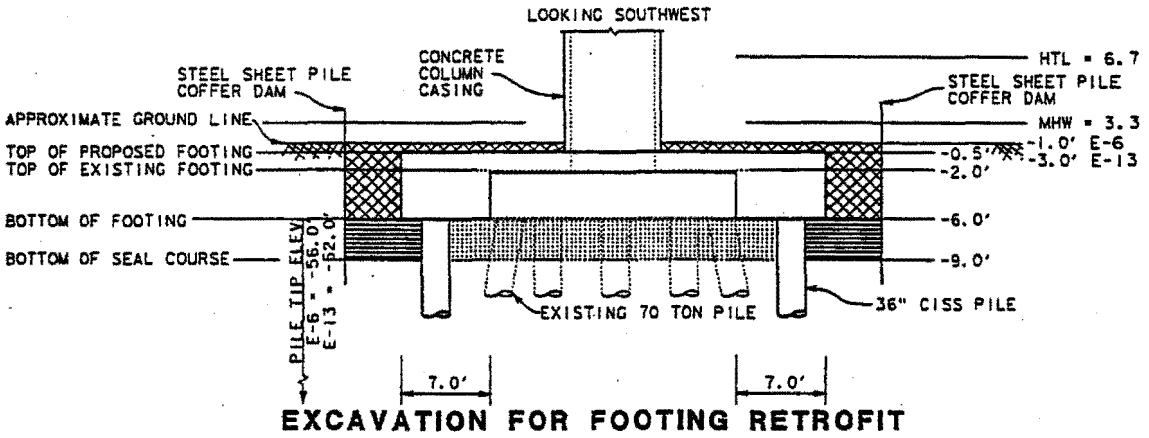
- = LIMITS OF PROPOSED EXCAVATION
- = LIMITS OF EXISTING SEAL COURSE
- = LIMITS OF PROPOSED SEAL COURSE
- = LIMITS OF EXISTING STRUCTURE
- = LIMITS OF PROPOSED STRUCTURE



13'10" HEXAGONAL COLUMN



FOOTING PLAN VIEW



EXCAVATION FOR FOOTING RETROFIT

NO SCALE

PURPOSE: TO REDUCE SAFETY HAZARD CAUSED BY PROBABLE SEISMIC ACTIVITY BY REINFORCING THE BRIDGE FOOTINGS AND ENCASING THE COLUMNS.

DATUM: 1929 USCS&GS (MSL)

ADJACENT PROPERTY OWNERS:

1. CITY OF EUREKA
2. HUMBOLDT BAY HARBOR DISTRICT
3. SIMPSON TIMBER COMPANY
4. NORTHWESTERN PACIFIC RAILROAD

Caltrans

Application By Caltrans Dist. 1
Box 3700 Eureka Ca. 95502-3700

PROPOSED CONSTRUCTION PIER E-6 & E-13

IN: HUMBOLDT BAY

AT: ROUTE 255, PM 0.2 TO PM 1.9

COUNTY OF: HUMBOLDT

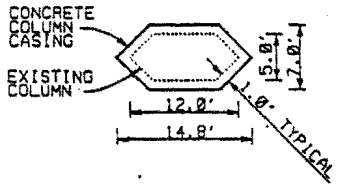
APPLICATION BY: CALTRANS

SHEET 11 OF 28 PREPARED 10/00

296701

4/4/17

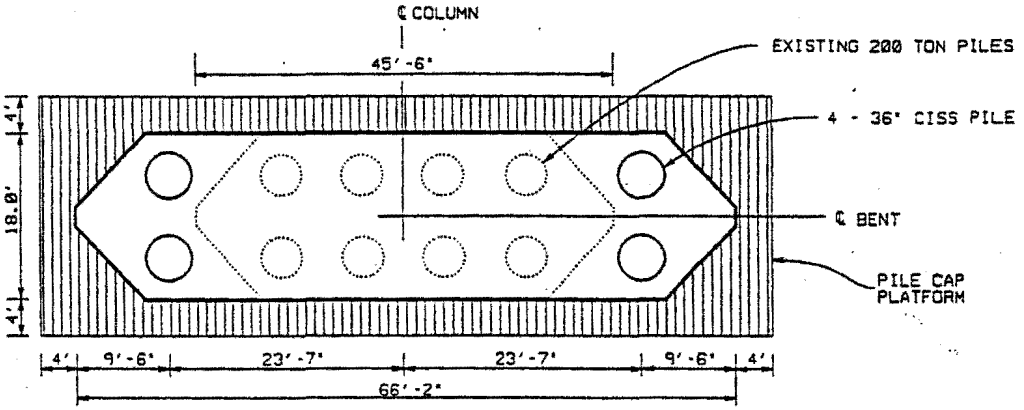
EUREKA CHANNEL BRIDGE



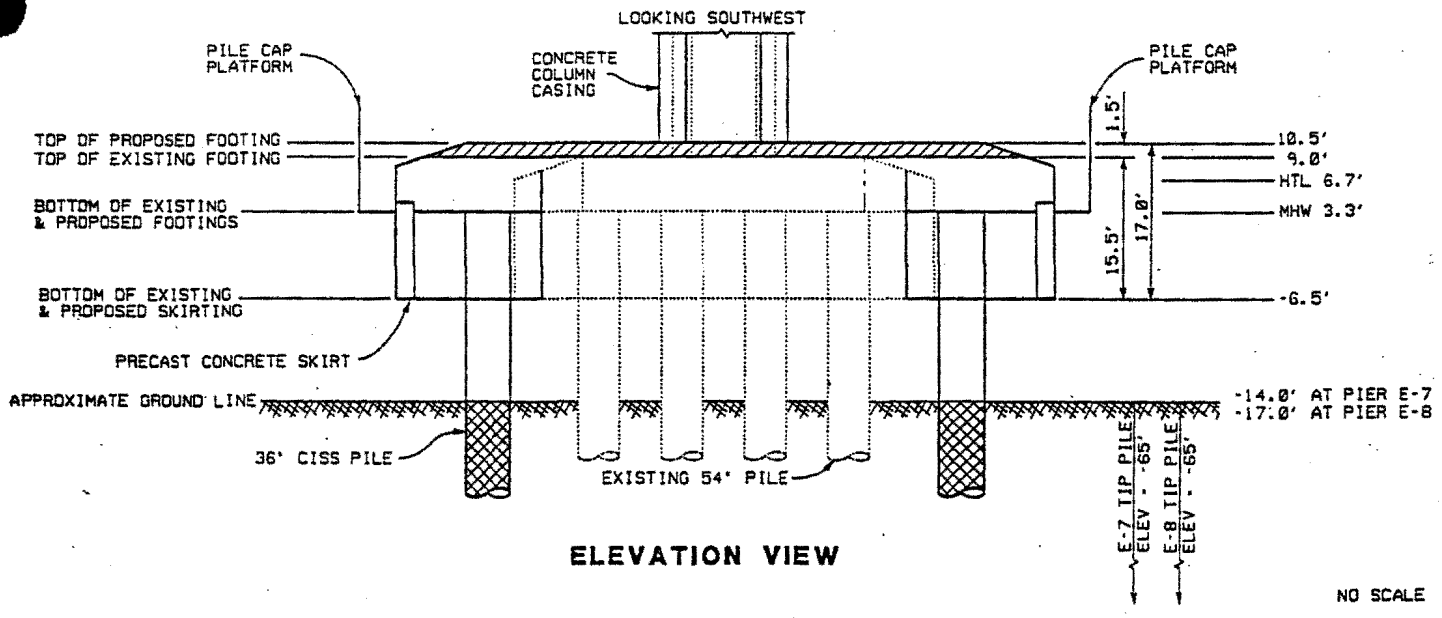
14'10" HEXAGONAL COLUMN

LEGEND

- TOP MAT
- LIMITS OF PROPOSED EXCAVATION
- LIMITS OF PILE CAP PLATFORM
- LIMITS OF EXISTING STRUCTURE
- LIMITS OF PROPOSED STRUCTURE



FOOTING PLAN VIEW



ELEVATION VIEW

NO SCALE

PURPOSE: TO REDUCE SAFETY HAZARD CAUSED BY PROBABLE SEISMIC ACTIVITY BY REINFORCING THE BRIDGE FOOTINGS AND ENCASING THE COLUMNS.

DATUM: 1929 USCS&GS (MSL)

ADJACENT PROPERTY OWNERS:

1. CITY OF EUREKA
2. HUMBOLDT BAY HARBOR DISTRICT
3. SIMPSON TIMBER COMPANY
4. NORTHWESTERN PACIFIC RAILROAD

Caltrans

Application By Caltrans Dist. 1
Box 3700 Eureka Ca. 95502-3700

PROPOSED CONSTRUCTION PIERS E-7 & E-8

IN: HUMBOLDT BAY

AT: ROUTE 255, PM 0.2 TO PM 1.9

COUNTY OF: HUMBOLDT

APPLICATION BY: CALTRANS

SHEET 12 OF 28 PREPARED 10/00

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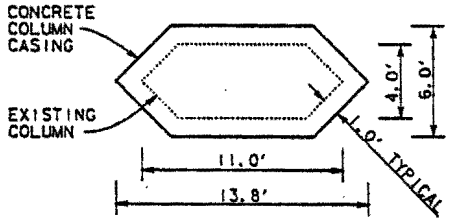
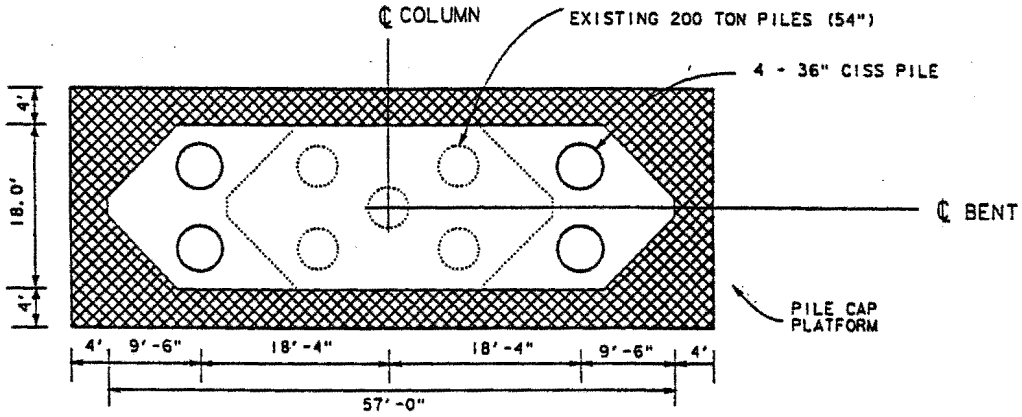
LEGEND

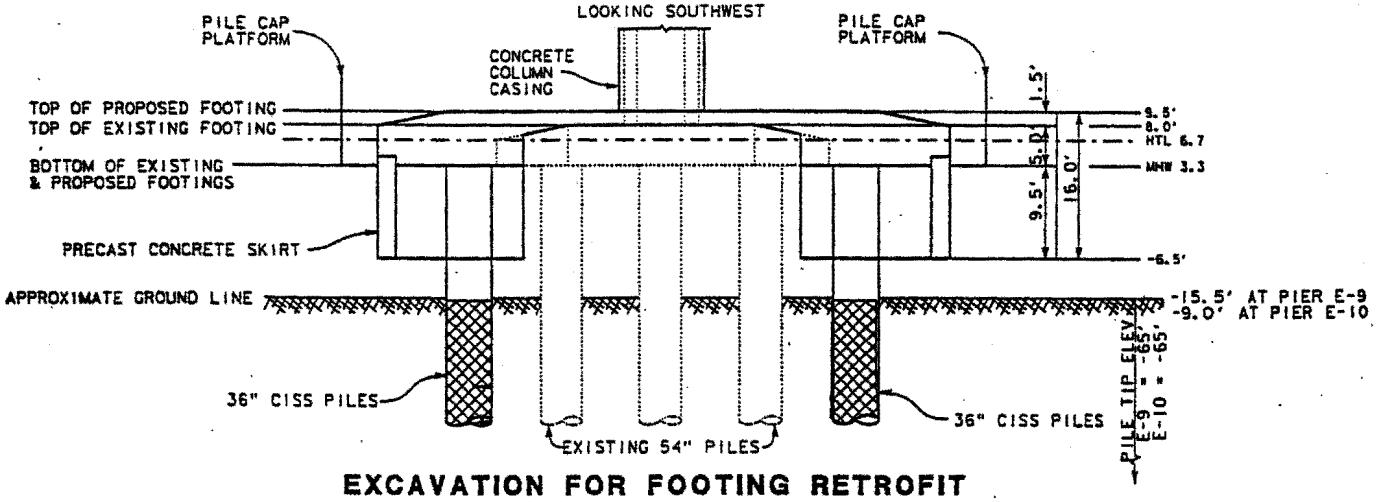
- = LIMITS OF PROPOSED EXCAVATION
- = LIMITS OF EXISTING SEAL COURSE
- = LIMITS OF PROPOSED SEAL COURSE
- = LIMITS OF EXISTING STRUCTURE
- = LIMITS OF PROPOSED STRUCTURE



13'10" HEXAGONAL COLUMN



FOOTING PLAN VIEW



EXCAVATION FOR FOOTING RETROFIT

NO SCALE

PURPOSE: TO REDUCE SAFETY HAZARD CAUSED BY PROBABLE SEISMIC ACTIVITY BY REINFORCING THE BRIDGE FOOTINGS AND ENCASING THE COLUMNS.

DATUM: 1929 USCS&GS (MSL)

ADJACENT PROPERTY OWNERS:

1. CITY OF EUREKA
2. HUMBOLDT BAY HARBOR DISTRICT
3. SIMPSON TIMBER COMPANY
4. NORTHWESTERN PACIFIC RAILROAD

Caltrans

Application By Caltrans Dist. 1
Box 3700 Eureka Ca. 95502-3700

PROPOSED CONSTRUCTION PIERS E-9 & E-10

IN: HUMBOLDT BAY

AT: ROUTE 255, PM 0.2 TO PM 1.9

COUNTY OF: HUMBOLDT

APPLICATION BY: CALTRANS

SHEET 13 OF 28 PREPARED 10/00

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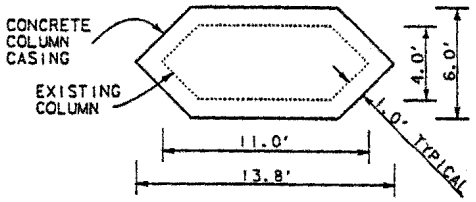
EUREKA CHANNEL BRIDGE

NOTES

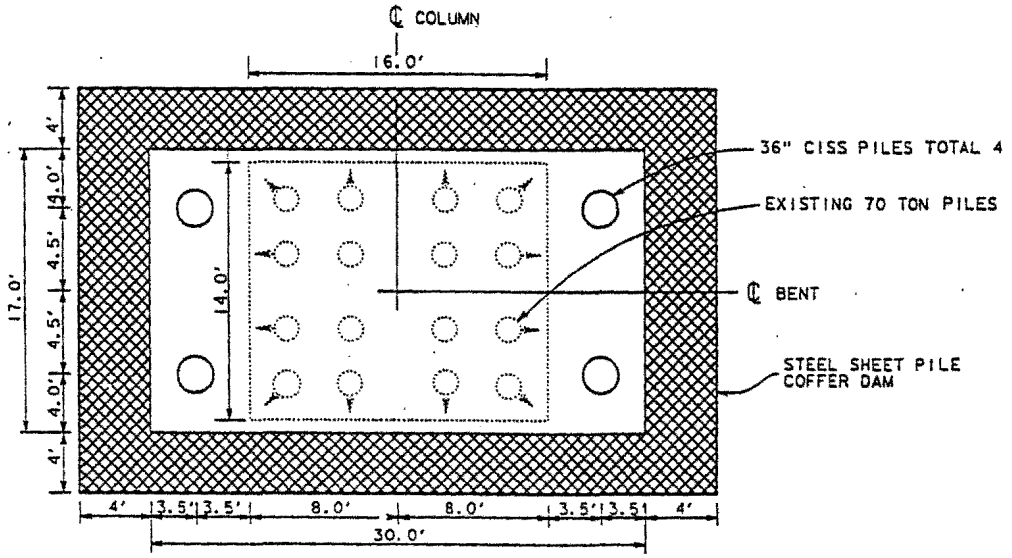
1. THE SEAL COURSE WILL EXTEND TO THE LIMITS OF THE COFFERDAM WALLS.
2. EXCAVATION OF E-14 PRIOR TO COFFERDAM OR SHORING
3. EXCAVATION OF E-14 TO BE SLOPED. SEE E-12, E15
4. SEE DATA TABLES, SHEET 15 FOR FOUNDATION DATA, EXCAVATION AND CONCRETE QUANTITIES

LEGEND

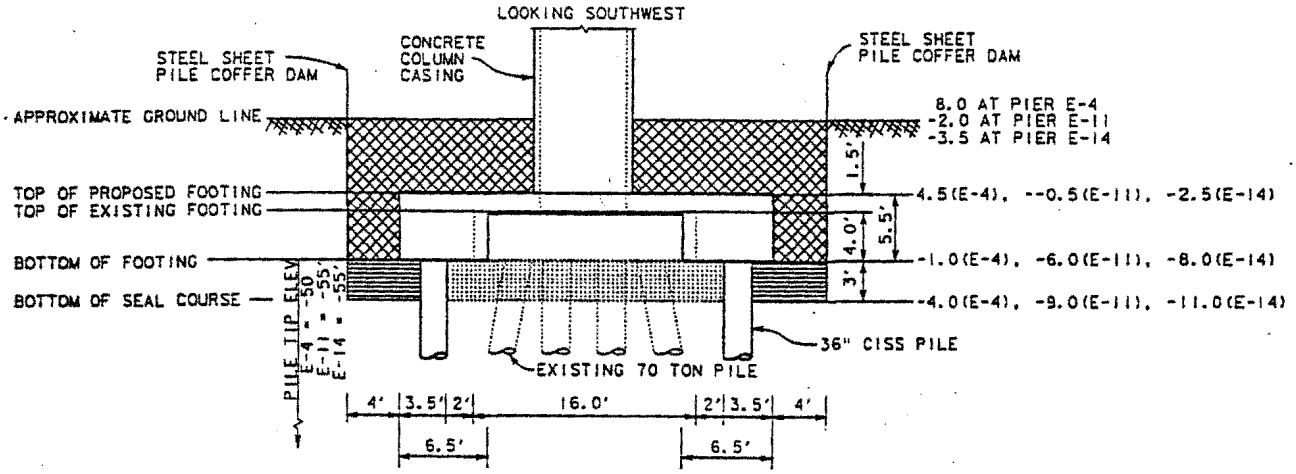
- = LIMITS OF PROPOSED EXCAVATION
- = LIMITS OF EXISTING SEAL COURSE
- = LIMITS OF PROPOSED SEAL COURSE
- = LIMITS OF EXISTING STRUCTURE
- = LIMITS OF PROPOSED STRUCTURE



13'10" HEXAGONAL COLUMN



FOOTING PLAN VIEW



EXCAVATION FOR FOOTING RETROFIT

NO SCALE

PURPOSE: TO REDUCE SAFETY HAZARD CAUSED BY PROBABLE SEISMIC ACTIVITY BY REINFORCING THE BRIDGE FOOTINGS AND ENCASING THE COLUMNS.

DATUM: 1929 USCS&GS (MSL)

ADJACENT PROPERTY OWNERS:

1. CITY OF EUREKA
2. HUMBOLDT BAY HARBOR DISTRICT
3. SIMPSON TIMBER COMPANY
4. NORTHWESTERN PACIFIC RAILROAD

Caltrans

Application By Caltrans Dist. 1
Box 3700 Eureka Ca. 95502-3700

PROPOSED CONSTRUCTION PIER E-4, E-11 & E-14

IN: HUMBOLDT BAY
AT: ROUTE 255, PM 0.2 TO PM 1.9
COUNTY OF: HUMBOLDT
APPLICATION BY: CALTRANS

SHEET 14 OF 28 PREPARED 10/00

296701

7917

EUREKA CHANNEL BRIDGE

FOOTING DATA (FT)			
LOCATION	PILE TIP	BOTTOM FOOTING ELEVATION	GROUND LINE ELEVATION
PIER E-2	NA	-1.0	8.9
PIER E-3	NA	-1.0	9.2
PIER E-4	-50.0	-1.0	7.9
PIER E-5	NA	-1.0	8.2
PIER E-6	-56.0	-6.0	1.0
PIER E-7	-65.0	3.0	-14.1
PIER E-8	-65.0	3.0	-17.1
PIER E-9	-65.0	3.0	-15.4
PIER E-10	-65.0	3.0	-8.9
PIER E-11	-55.0	-6.0	-2.0
PIER E-12	NA	-6.0	-3.0
PIER E-13	-52.0	-3.0	-3.0
PIER E-14	-55.0	-8.0	-3.6
PIER E-15	NA	-11.0	-3.0

EXCAVATION QUANTITIES (CY)			
LOCATION	BELOW MHW	BELOW HTL	TOTAL
PIER E-2	N/A	N/A	210
PIER E-3	N/A	N/A	210
PIER E-4	N/A	N/A	530
PIER E-5	N/A	N/A	230
PIER E-6	500	500	500
PIER E-7	70	70	70
PIER E-8	70	70	70
PIER E-9	70	70	70
PIER E-10	80	80	80
PIER E-11	300	300	300
PIER E-12	510	510	510
PIER E-13	1350	1350	1350
PIER E-14	1700	1700	1700
PIER E-15	1380	1380	1380

CONCRETE QUANTITIES (CY)			
LOCATION	BELOW MHW	BELOW HTL	TOTAL
PIER E-2	N/A	N/A	35
PIER E-3	N/A	N/A	38
PIER E-4	N/A	N/A	171
PIER E-5	N/A	N/A	50
PIER E-6	159	163	197
PIER E-7	98	163	193
PIER E-8	98	163	191
PIER E-9	98	163	191
PIER E-10	98	163	187
PIER E-11	143	147	167
PIER E-12	20	24	38
PIER E-13	136	140	147
PIER E-14	128	131	131
PIER E-15	25	29	29

PURPOSE: TO REDUCE SAFETY HAZARD CAUSED BY PROBABLE SEISMIC ACTIVITY BY REINFORCING THE BRIDGE FOOTINGS AND ENCASING THE COLUMNS.

DATUM: 1929 USCS&GS (MSL)

ADJACENT PROPERTY OWNERS:

1. CITY OF EUREKA
2. HUMBOLDT BAY HARBOR DISTRICT
3. SIMPSON TIMBER COMPANY
4. NORTHWESTERN PACIFIC RAILROAD

Caltrans

Application By Caltrans Dist. 1
Box 3700 Eureka Ca. 95502-3700

DATA TABLES FOR EUREKA CHANNEL BRIDGE

IN: HUMBOLDT BAY

AT: ROUTE 255, PM 0.2 TO PM 2.0

COUNTY OF: HUMBOLDT

APPLICATION BY: CALTRANS

SHEET 15 OF 28 PREPARED 5/00

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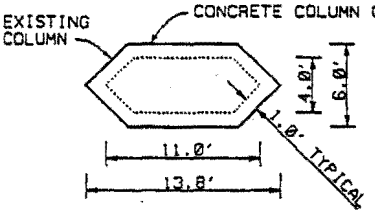
MIDDLE CHANNEL BRIDGE

NOTES

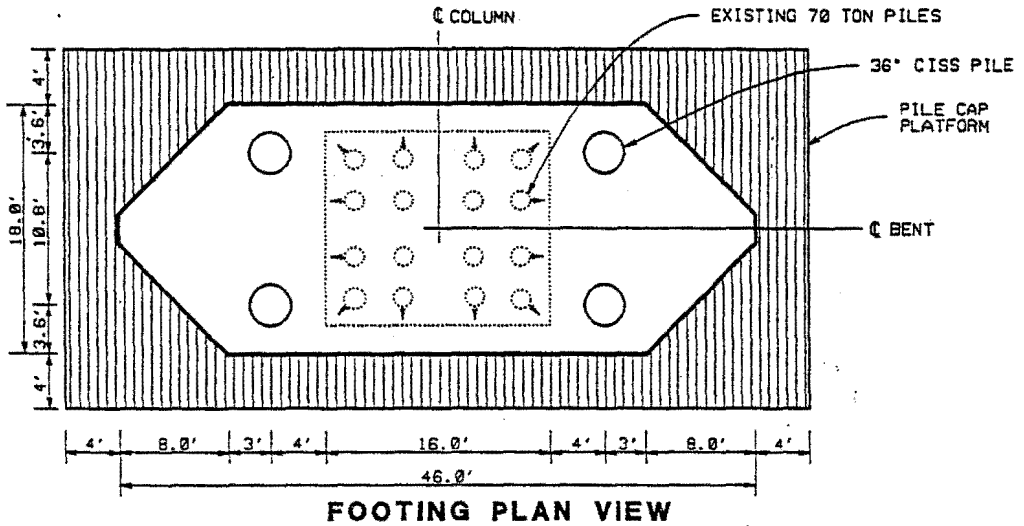
1. SEE DATA TABLES. SHEET 18. FOR FOUNDATION DATA. EXCAVATION QUANTITIES AND CONCRETE QUANTITES



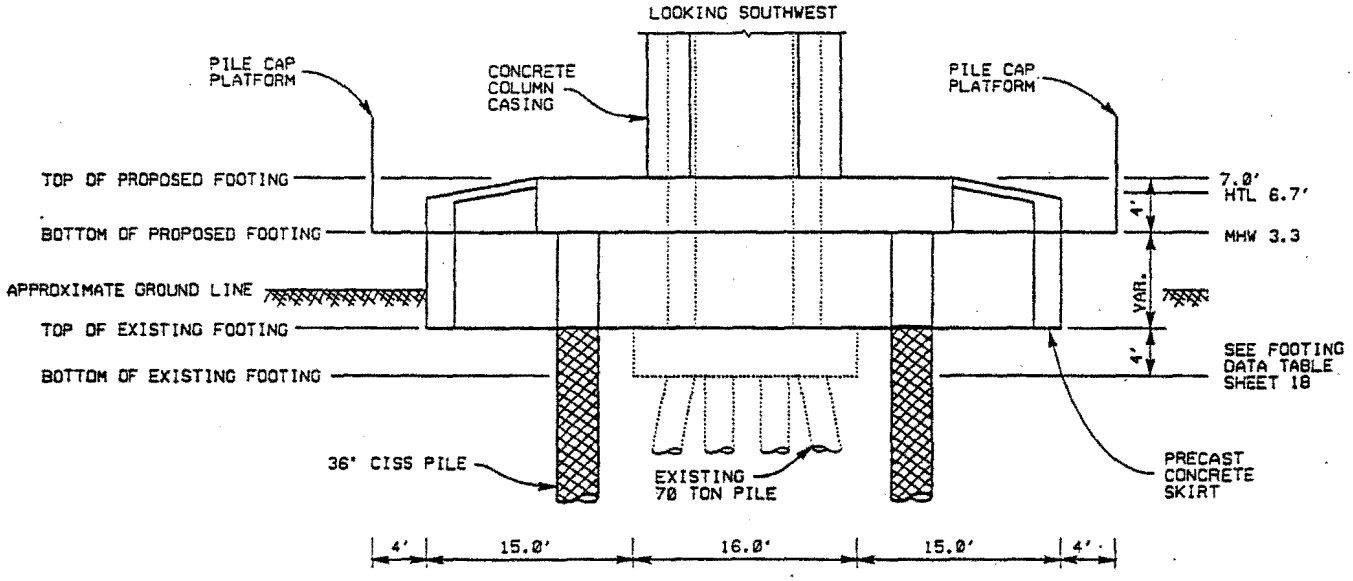
LEGEND

- LIMITS OF PILE CAP PLATFORM
- LIMITS OF EXISTING STRUCTURE
- LIMITS OF PROPOSED STRUCTURE
- LIMITS OF EXCAVATION

13'10" HEXAGONAL COLUMN



FOOTING PLAN VIEW



ELEVATION VIEW

NO SCALE

PURPOSE: TO REDUCE SAFETY HAZARD CAUSED BY PROBABLE SEISMIC ACTIVITY BY REINFORCING THE BRIDGE FOOTINGS AND ENCASING THE COLUMNS.

DATUM: 1929 USCS&GS (MSL)

ADJACENT PROPERTY OWNERS:

1. CITY OF EUREKA
2. HUMBOLDT BAY HARBOR DISTRICT
3. SIMPSON TIMBER COMPANY
4. NORTHWESTERN PACIFIC RAILROAD

Caltrans

Application By Caltrans Dist. 1
Box 3700 Eureka Ca. 95502-3700

PROPOSED CONSTRUCTION PIERS M-2, M-8, M-9

IN: HUMBOLDT BAY
AT: ROUTE 255, PM 0.2 TO PM 1.9
COUNTY OF: HUMBOLDT
APPLICATION BY: CALTRANS

SHEET 16 OF 28 PREPARED 10/00

296701

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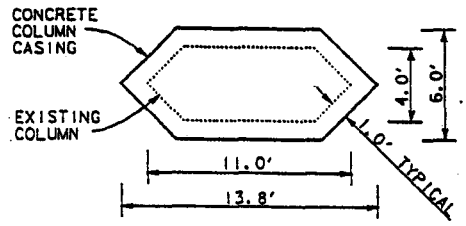
MIDDLE CHANNEL BRIDGE

NOTES

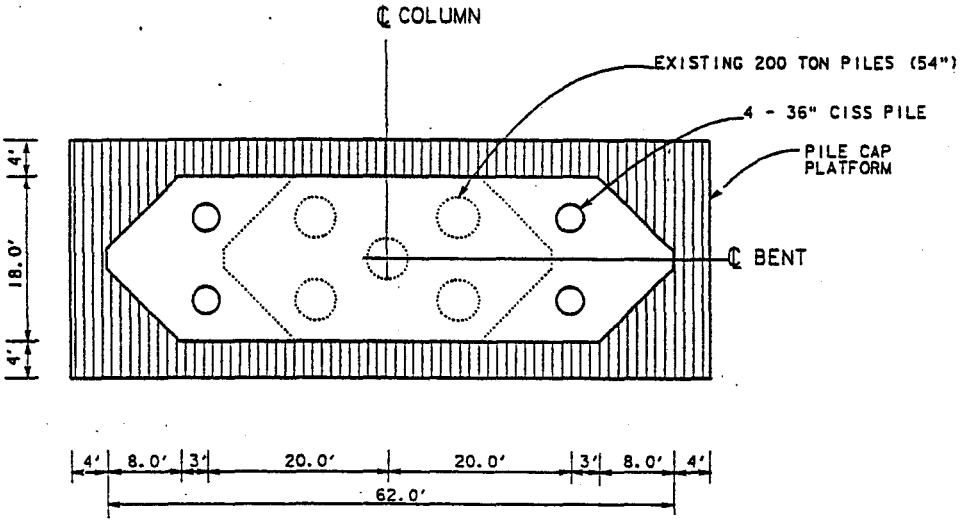
1. SEE DATA TABLES, SHEET 18, FOR FOUNDATION DATA, EXCAVATION QUANTITIES AND CONCRETE QUANTITES

LEGEND

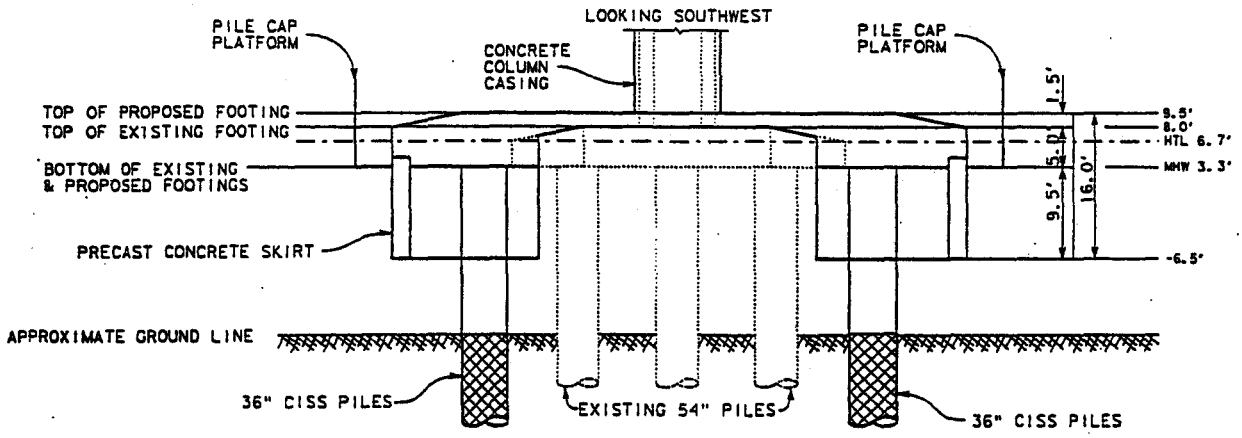
- = LIMITS OF EXCAVATION
- = LIMITS OF PILE CAP PLATFORM
- = LIMITS OF EXISTING STRUCTURE
- = LIMITS OF PROPOSED STRUCTURE



13'10" HEXAGONAL COLUMN



FOOTING PLAN VIEW



EXCAVATION FOR FOOTING RETROFIT

NO SCALE

PURPOSE: TO REDUCE SAFETY HAZARD CAUSED BY PROBABLE SEISMIC ACTIVITY BY REINFORCING THE BRIDGE FOOTINGS AND ENCASING THE COLUMNS.

DATUM: 1929 USCS&GS (MSL)

ADJACENT PROPERTY OWNERS:

1. CITY OF EUREKA
2. HUMBOLDT BAY HARBOR DISTRICT
3. SIMPSON TIMBER COMPANY
4. NORTHWESTERN PACIFIC RAILROAD

Caltrans

Application By Caltrans Dist. 1
Box 3700 Eureka Ca. 95502-3700

PROPOSED CONSTRUCTION
PIERS M-3 - M-7

IN: HUMBOLDT BAY
AT: ROUTE 255, PM 0.2 TO PM 2.0
COUNTY OF: HUMBOLDT
APPLICATION BY: CALTRANS

SHEET 17 OF 28 PREPARED 10/00

296701

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MIDDLE CHANNEL BRIDGE

FOUNDATION DATA (FT)			
LOCATION	PILE TIP ELEVATION	BOTTOM FOOTING ELEVATION	GROUND LINE ELEVATION
PIER M-2	-55.0	-8.0	-7.5
PIER M-3	-65.0	3.0	-14.0
PIER M-4	-65.0	3.0	-22.0
PIER M-5	-65.0	3.0	-26.0
PIER M-6	-65.0	3.0	-23.0
PIER M-7	-65.0	3.0	-19.0
PIER M-8	-55.0	-11.0	-9.8
PIER M-9	-60.0	-6.0	-2.0

EXCAVATION QUANTITIES (CY)			
LOCATION	BELOW MHW	BELOW HTL	TOTAL
PIER M-2	70	70	70
PIER M-3	70	70	70
PIER M-4	60	60	60
PIER M-5	60	60	60
PIER M-6	60	60	60
PIER M-7	60	60	60
PIER M-8	60	60	60
PIER M-9	80	80	80

CONCRETE QUANTITIES (CY)			
LOCATION	BELOW MHW	BELOW HTL	TOTAL
PIER M-2	218	222	233
PIER M-3	98	162	176
PIER M-4	98	162	179
PIER M-5	98	162	182
PIER M-6	98	162	182
PIER M-7	98	162	181
PIER M-8	218	222	241
PIER M-9	222	226	241

NO SCALE

PURPOSE: TO REDUCE SAFETY HAZARD CAUSED BY PROBABLE SEISMIC ACTIVITY BY REINFORCING THE BRIDGE FOOTINGS AND ENCASING THE COLUMNS.

DATUM: 1929 USCS&GS (MSL)

ADJACENT PROPERTY OWNERS:

1. CITY OF EUREKA
2. HUMBOLDT BAY HARBOR DISTRICT
3. SIMPSON TIMBER COMPANY
4. NORTHWESTERN PACIFIC RAILROAD

Caltrans

Application By Caltrans Dist. 1
Box 3700 Eureka Ca. 95502-3700

DATA TABLES FOR MIDDLE CHANNEL BRIDGE

IN: HUMBOLDT BAY
AT: ROUTE 255, PM 0.2 TO PM 1.9
COUNTY OF: HUMBOLDT
APPLICATION BY: CALTRANS

SHEET 18 OF 28 PREPARED 10/00

296701

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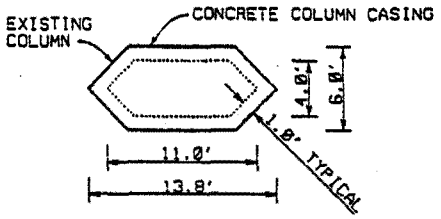
SAMOA CHANNEL BRIDGE

NOTES

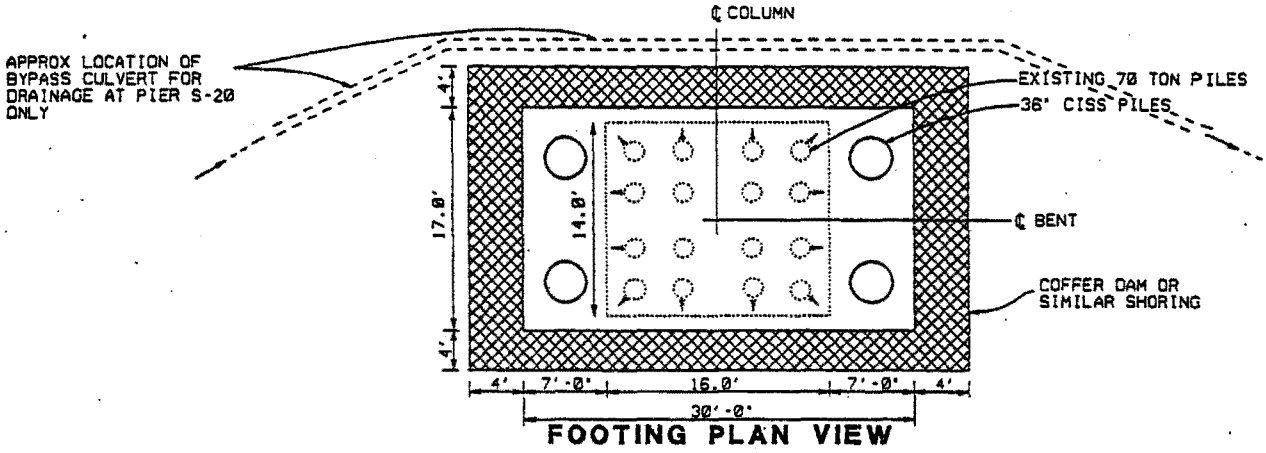
1. THE SEAL COURSE WILL EXTEND TO THE LIMITS OF THE COFFERDAM WALLS.
2. SEE DATA TABLES. SHEET 24. FOR FOUNDATION DATA. EXCAVATION QUANTITIES AND CONCRETE QUANTITIES.

LEGEND

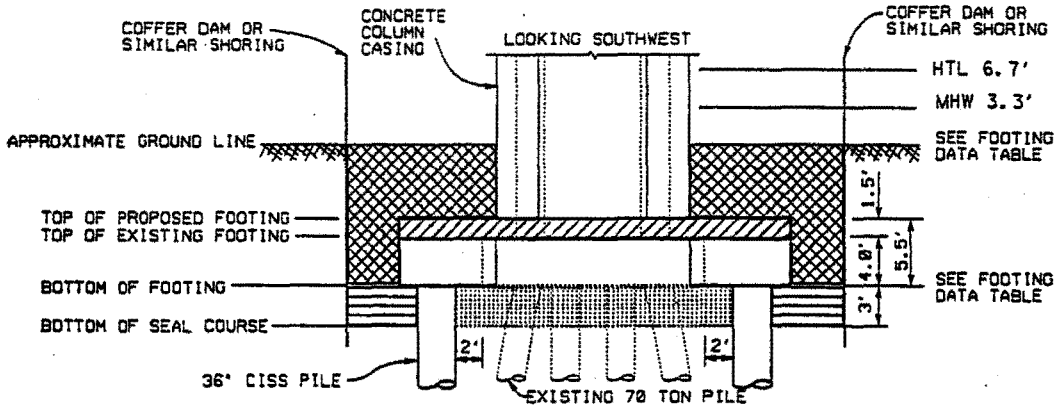
- TOP MAT
- LIMITS OF PROPOSED EXCAVATION
- LIMITS OF EXISTING SEAL COURSE
- LIMITS OF PROPOSED SEAL COURSE
- LIMITS OF EXISTING STRUCTURE
- LIMITS OF PROPOSED STRUCTURE



13'10" HEXAGONAL COLUMN



FOOTING PLAN VIEW



EXCAVATION FOR FOOTING RETROFIT

NO SCALE

PURPOSE: TO REDUCE SAFETY HAZARD CAUSED BY PROBABLE SEISMIC ACTIVITY BY REINFORCING THE BRIDGE FOOTINGS AND ENCASING THE COLUMNS.

DATUM: 1929 USCS&GS (MSL)

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3. SIMPSON TIMBER COMPANY
4. NORTHWESTERN PACIFIC RAILROAD

Caltrans

Application By Caltrans Dist. 1 Box 3700 Eureka Ca. 95502-3700

PROPOSED CONSTRUCTION
PIERS S-2, S-3, S-16, S-17 S-18, S-19, S-20

IN: HUMBOLDT BAY
AT: ROUTE 255, PM 0.2 TO PM 1.9
COUNTY OF: HUMBOLDT
APPLICATION BY: CALTRANS

SHEET 19 OF 28 PREPARED 10/00

296701

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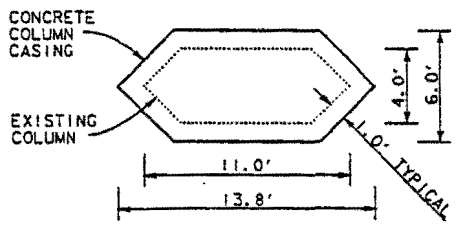
NOTES

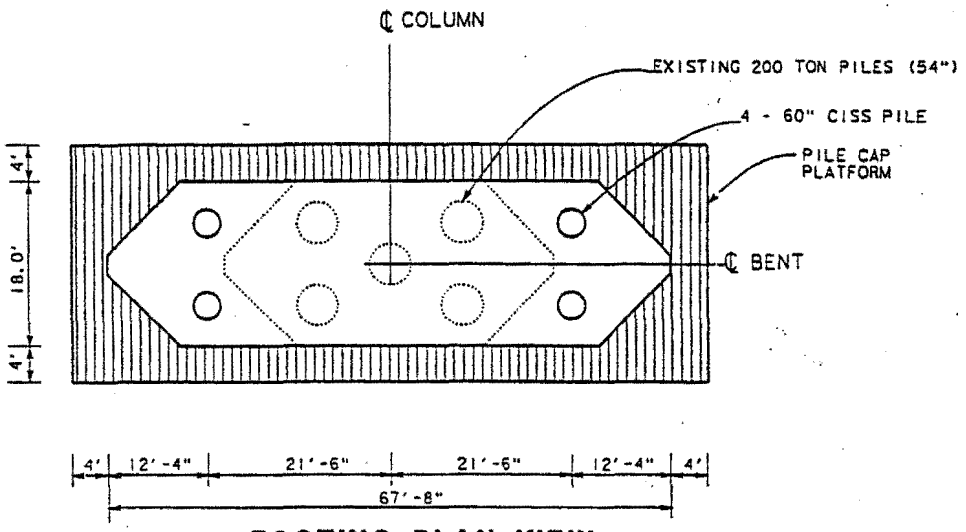
1. SEE DATA TABLES. SHEET 24. FOR FOUNDATION DATA. EXCAVATION QUANTITIES AND CONCRETE QUANTITES

LEGEND

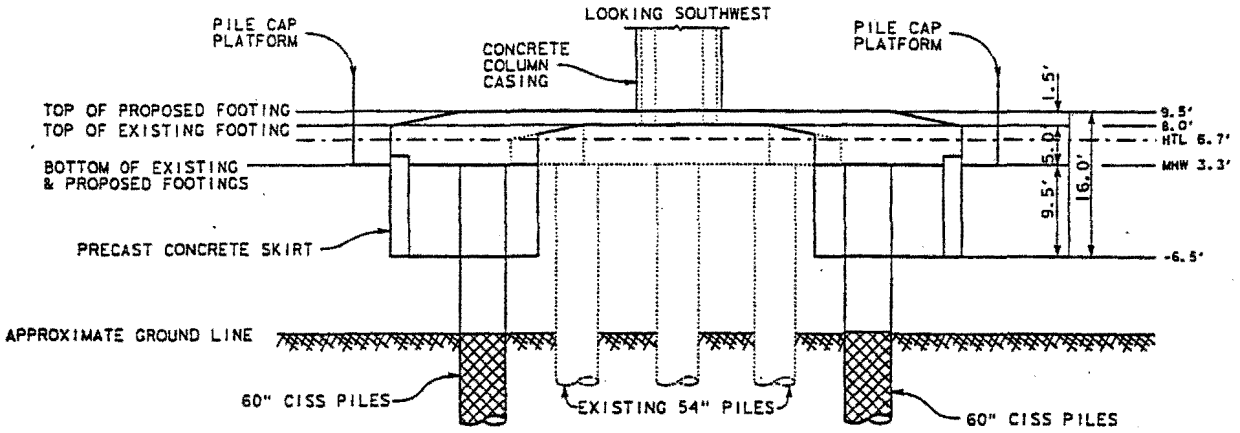
- ▨ = LIMITS OF EXCAVATION
- ▥ = LIMITS OF PILE CAP PLATFORM
- ----- = LIMITS OF EXISTING STRUCTURE
- —— = LIMITS OF PROPOSED STRUCTURE



13'10" HEXAGONAL COLUMN



FOOTING PLAN VIEW



EXCAVATION FOR FOOTING RETROFIT

NO SCALE

PURPOSE: TO REDUCE SAFETY HAZARD CAUSED BY PROBABLE SEISMIC ACTIVITY BY REINFORCING THE BRIDGE FOOTINGS AND ENCASING THE COLUMNS.

DATUM: 1929 USCS&GS (MSL)

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Caltrans

Application By Caltrans Dist. 1
Box 3700 Eureka Ca. 95502-3700

PROPOSED CONSTRUCTION
PIERS S-4, S-5, S-6, S-13

IN: HUMBOLDT BAY
AT: ROUTE 255, PM 0.2 TO PM 1.9
COUNTY OF: HUMBOLDT
APPLICATION BY: CALTRANS

SHEET 20 OF 28 PREPARED 10/00

296701

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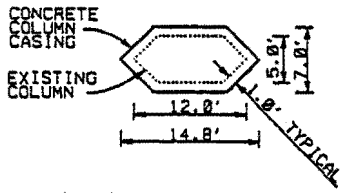
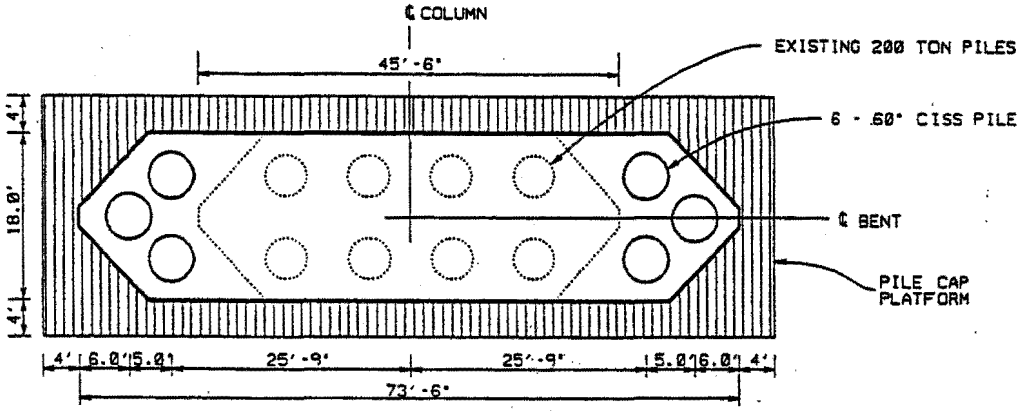
SAMOA CHANNEL BRIDGE

LEGEND

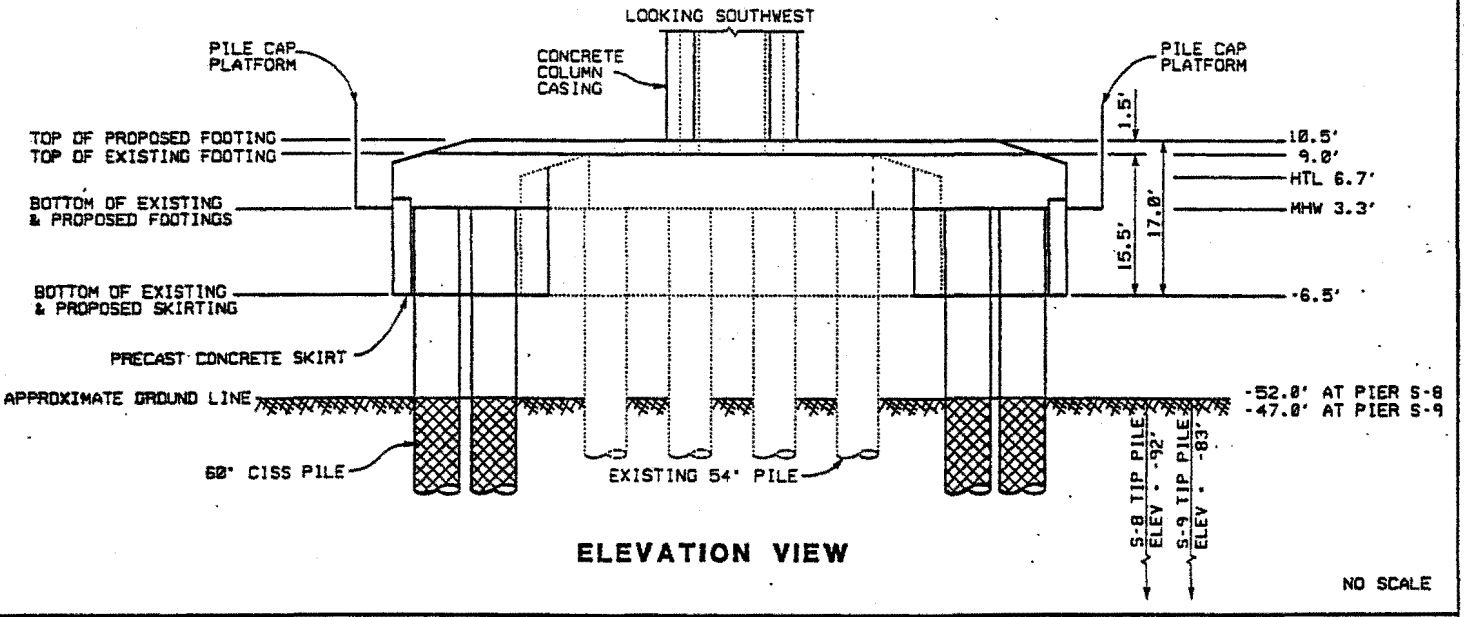
- TOP MAT
- LIMITS OF PROPOSED EXCAVATION
- LIMITS OF PILE CAP PLATFORM
- LIMITS OF EXISTING STRUCTURE
- LIMITS OF PROPOSED STRUCTURE



14'10" HEXAGONAL COLUMN



FOOTING PLAN VIEW



ELEVATION VIEW

NO SCALE

PURPOSE: TO REDUCE SAFETY HAZARD CAUSED BY PROBABLE SEISMIC ACTIVITY BY REINFORCING THE BRIDGE FOOTINGS AND ENCASING THE COLUMNS.

DATUM: 1929 USCS&GS (MSL)

ADJACENT PROPERTY OWNERS:

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Caltrans

Application By Caltrans Dist. 1
Box 3700 Eureka Ca. 95502-3700

PROPOSED CONSTRUCTION PIERS S-8 & S-9

IN: HUMBOLDT BAY

AT: ROUTE 255, PM 0.2 TO PM 1.9

COUNTY OF: HUMBOLDT

APPLICATION BY: CALTRANS

SHEET 21 OF 28 PREPARED 10/00

29670!

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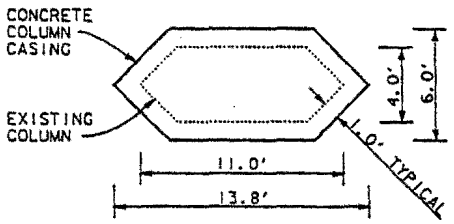
NOTES

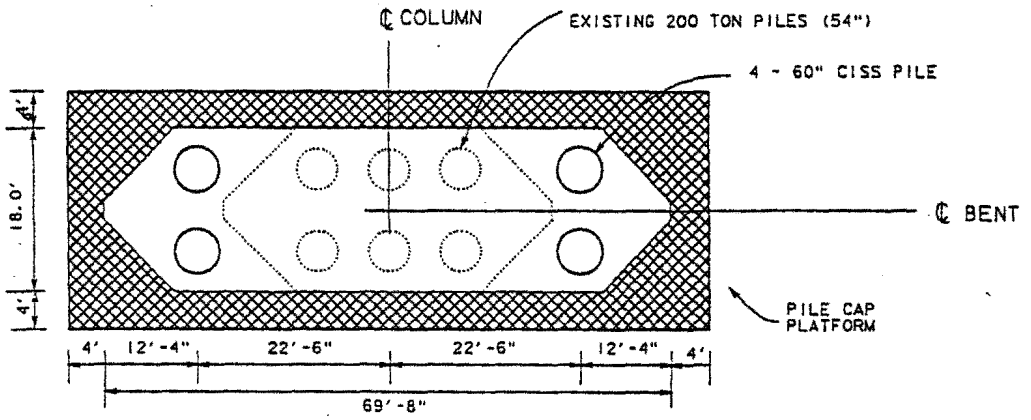
1. SEE DATA TABLES, SHEET 24, FOR FOUNDATION DATA, EXCAVATION QUANTITIES AND CONCRETE QUANTITES

LEGEND

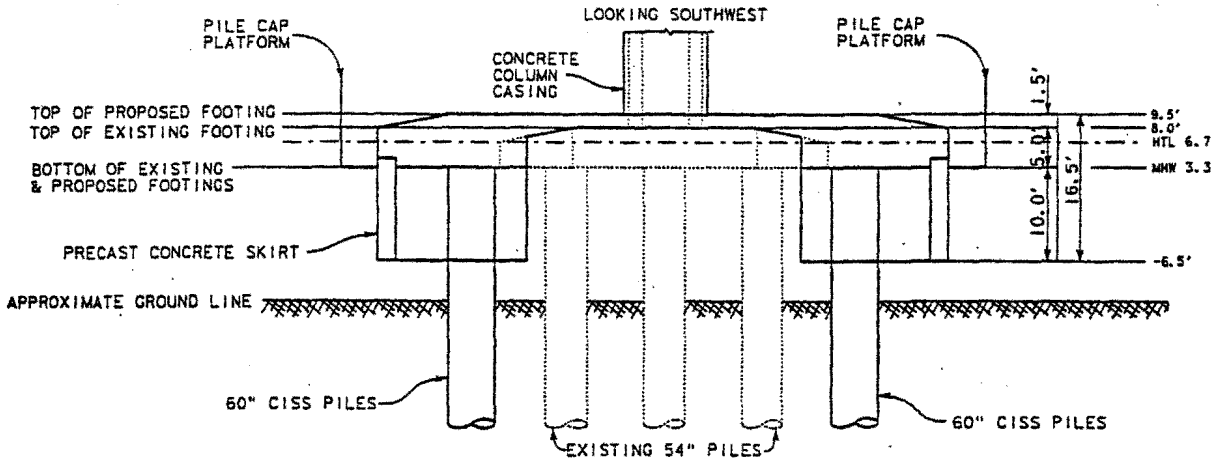
- = LIMITS OF PROPOSED EXCAVATION
- = LIMITS OF EXISTING SEAL COURSE
- = LIMITS OF PROPOSED SEAL COURSE
- = LIMITS OF EXISTING STRUCTURE
- = LIMITS OF PROPOSED STRUCTURE



13'10" HEXAGONAL COLUMN



FOOTING PLAN VIEW



EXCAVATION FOR FOOTING RETROFIT

NO SCALE

PURPOSE: TO REDUCE SAFETY HAZARD CAUSED BY PROBABLE SEISMIC ACTIVITY BY REINFORCING THE BRIDGE FOOTINGS AND ENCASING THE COLUMNS.

DATUM: 1929 USCS&GS (MSL)

ADJACENT PROPERTY OWNERS:

1. CITY OF EUREKA
2. HUMBOLDT BAY HARBOR DISTRICT
3. SIMPSON TIMBER COMPANY
4. NORTHWESTERN PACIFIC RAILROAD

Caltrans

Application By Caltrans Dist. 1
Box 3700 Eureka Ca. 95502-3700

PROPOSED CONSTRUCTION PIERS S-7, S-10, S-11 & S-12

IN: HUMBOLDT BAY

AT: ROUTE 255, PM 0.2 TO PM 1.9

COUNTY OF: HUMBOLDT

APPLICATION BY: CALTRANS

SHEET 22 OF 28 PREPARED 10/00

296701

15 of 17

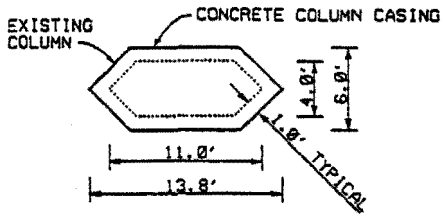
SAMOA CHANNEL BRIDGE

NOTES

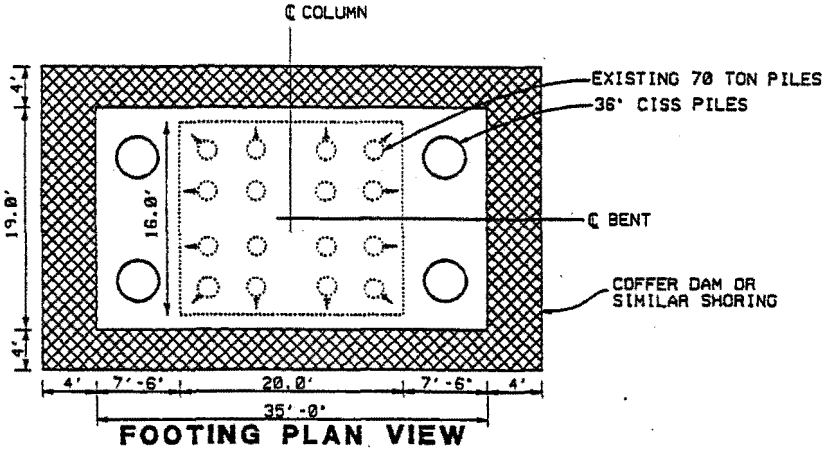
1. THE SEAL COURSE WILL EXTEND TO THE LIMITS OF THE COFFERDAM WALLS.
2. SEE DATA TABLES, SHEET 24, FOR FOUNDATION DATA, EXCAVATION QUANTITIES, AND CONCRETE QUANTITIES.

LEGEND

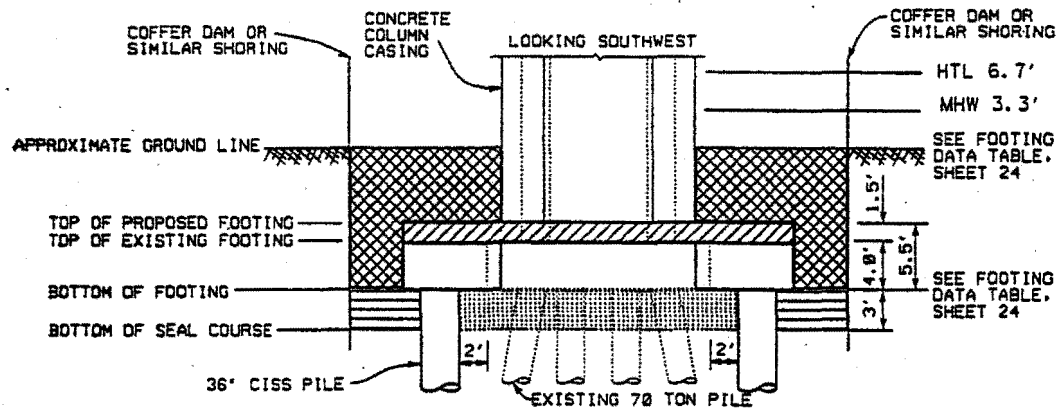
- TOP MAT
- LIMITS OF PROPOSED EXCAVATION
- LIMITS OF EXISTING SEAL COURSE
- LIMITS OF PROPOSED SEAL COURSE
- LIMITS OF EXISTING STRUCTURE
- LIMITS OF PROPOSED STRUCTURE



13'10" HEXAGONAL COLUMN



FOOTING PLAN VIEW



EXCAVATION FOR FOOTING RETROFIT

NO SCALE

PURPOSE: TO REDUCE SAFETY HAZARD CAUSED BY PROBABLE SEISMIC ACTIVITY BY REINFORCING THE BRIDGE FOOTINGS AND ENCASING THE COLUMNS.

DATUM: 1929 USCS&GS (MSL)

ADJACENT PROPERTY OWNERS:

1. CITY OF EUREKA
2. HUMBOLDT BAY HARBOR DISTRICT
3. SIMPSON TIMBER COMPANY
4. NORTHWESTERN PACIFIC RAILROAD

Caltrans

Application By Caltrans Dist. 1
Box 3700 Eureka Ca. 95502-3700

PROPOSED CONSTRUCTION PIERS S-14 & S-15

IN: HUMBOLDT BAY

AT: ROUTE 255, PM 0.2 TO PM 1.9

COUNTY OF: HUMBOLDT

APPLICATION BY: CALTRANS

SHEET 23 OF 28 PREPARED 10/00

296701

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SAMOA CHANNEL BRIDGE

FOOTING DATA (FT)			
LOCATION	PILE TIP	BOTTOM FOOTING ELEVATION	GROUND LINE ELEVATION
PIER S-2	-57.0	-9.0	-1.0
PIER S-3	-57.0	-9.0	-12.0
PIER S-4	-72.0	3.0	-22.0
PIER S-5	-83.0	3.0	-31.5
PIER S-6	-91.0	3.0	-44.0
PIER S-7	-89.0	3.0	-51.5
PIER S-8	-92.0	3.0	-52.0
PIER S-9	-83.0	3.0	-47.0
PIER S-10	-80.0	3.0	-38.0
PIER S-11	-75.0	3.0	-29.5
PIER S-12	-71.0	3.0	-23.5
PIER S-13	-58.0	3.0	-11.0
PIER S-14	-53.0	-8.0	-1.0
PIER S-15	-53.0	-8.0	-1.0
PIER S-16	-48.0	-8.0	0.0
PIER S-17	-46.0	-7.5	-1.0
PIER S-18	-48.0	-7.5	0.0
PIER S-19	-45.0	-5.0	1.0
PIER S-20	-45.0	-5.0	3.0

EXCAVATION QUANTITIES (CY)			
LOCATION	BELOW MHW	BELOW HTL	TOTAL
PIER S-2	490	490	490
PIER S-3	60	60	60
PIER S-4	190	190	190
PIER S-5	190	190	190
PIER S-6	180	180	180
PIER S-7	140	140	140
PIER S-8	220	220	220
PIER S-9	200	200	200
PIER S-10	160	160	160
PIER S-11	170	170	170
PIER S-12	180	180	180
PIER S-13	180	180	180
PIER S-14	500	500	500
PIER S-15	500	500	500
PIER S-16	480	480	480
PIER S-17	410	410	410
PIER S-18	460	460	460
PIER S-19	390	390	390
PIER S-20	480	480	480

CONCRETE QUANTITIES (CY)			
LOCATION	BELOW MHW	BELOW HTL	TOTAL
PIER S-2	149	153	168
PIER S-3	105	132	153
PIER S-4	239	304	328
PIER S-5	271	336	364
PIER S-6	294	359	392
PIER S-7	299	359	394
PIER S-8	446	511	544
PIER S-9	406	471	506
PIER S-10	273	333	371
PIER S-11	258	318	356
PIER S-12	246	306	341
PIER S-13	198	263	297
PIER S-14	155	164	199
PIER S-15	160	164	196
PIER S-16	145	144	173
PIER S-17	138	142	168
PIER S-18	140	144	168
PIER S-19	137	141	162
PIER S-20	137	141	159

NO SCALE

PURPOSE: TO REDUCE SAFETY HAZARD CAUSED BY PROBABLE SEISMIC ACTIVITY BY REINFORCING THE BRIDGE FOOTINGS AND ENCASING THE COLUMNS.

DATUM: 1929 USCS&GS (MSL)

ADJACENT PROPERTY OWNERS:

1. CITY OF EUREKA
2. HUMBOLDT BAY HARBOR DISTRICT
3. SIMPSON TIMBER COMPANY
4. NORTHWESTERN PACIFIC RAILROAD

Caltrans

Application By Caltrans Dist. 1
Box 3700 Eureka Co. 95502-3700

DATA TABLES FOR SAMOA CHANNEL BRIDGE

IN: HUMBOLDT BAY
AT: ROUTE 255, PM 0.2 TO PM 1.9
COUNTY OF: HUMBOLDT
APPLICATION BY: CALTRANS

SHEET 24 OF 28 PREPARED 10/00

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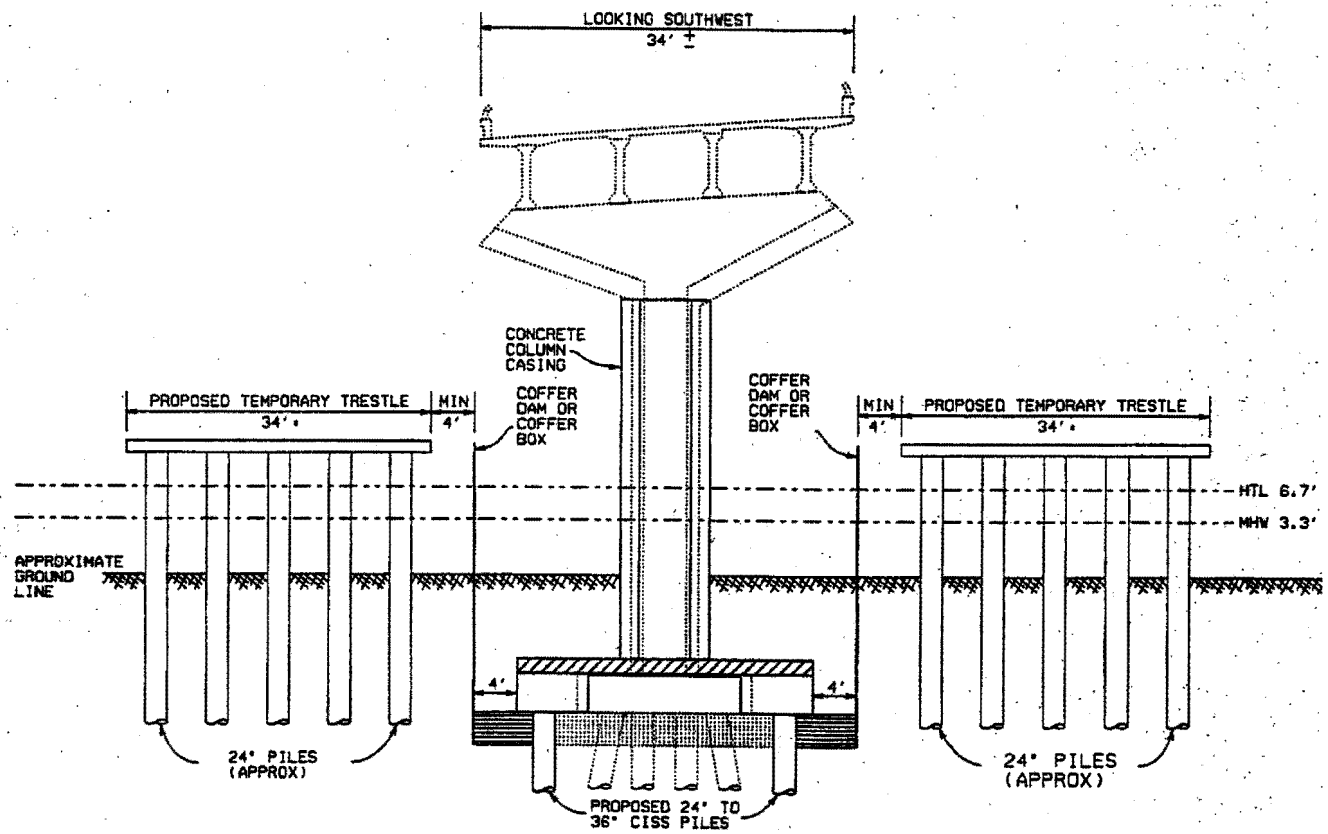
SHALLOW WATER PIERS
EUREKA AND SAMOA CHANNEL BRIDGES

NOTES

1. TRESTLE PILES TO BE DRIVEN APPROX 40' BELOW GROUND.
2. EXACT DIMENSIONS OF THE TRESTLES WILL BE DETERMINED BY THE CONTRACTOR SUBJECT TO APPROVAL BY THE STRUCTURE REPRESENTATIVE AND THE US COAST GUARD.
3. EXACT DIMENSIONS OF THE COFFER DAMS OR SHORING WILL BE DETERMINED BY THE CONTRACTOR. SUBJECT TO APPROVAL BY THE STRUCTURE REPRESENTATIVE.

LEGEND

- TOP MAT
- LIMITS OF EXISTING SEAL COURSE
- LIMITS OF PROPOSED SEAL COURSE
- LIMITS OF EXISTING STRUCTURE
- LIMITS OF PROPOSED STRUCTURE



TYPICAL TRESTLE ELEVATION VIEW

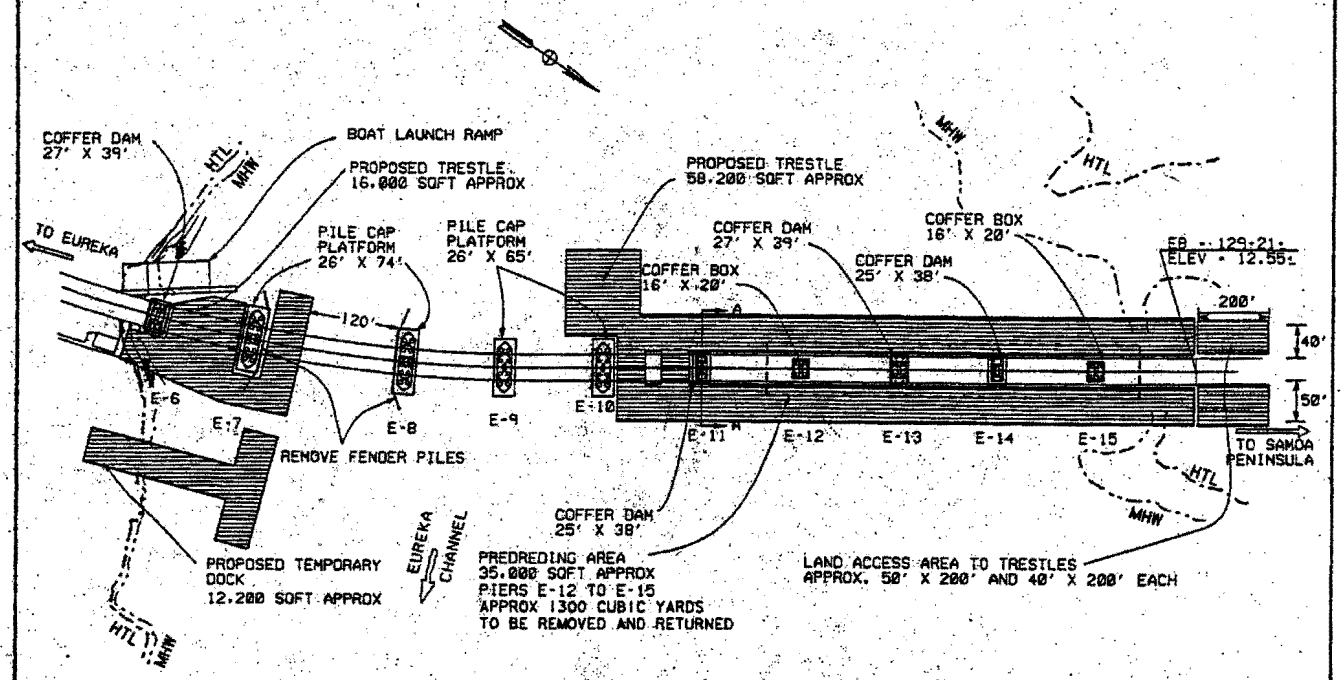
NO SCALE

Proposed Trestle Elevation View

EXHIBIT NO. 8
APPLICATION NO. 1-01-069
CALTRANS
PROPOSED TRESTLE (TYPICAL)

EUREKA CHANNEL BRIDGE

PRELIMINARY: SUBJECT TO
MODIFICATION IN PERMIT PROCESS

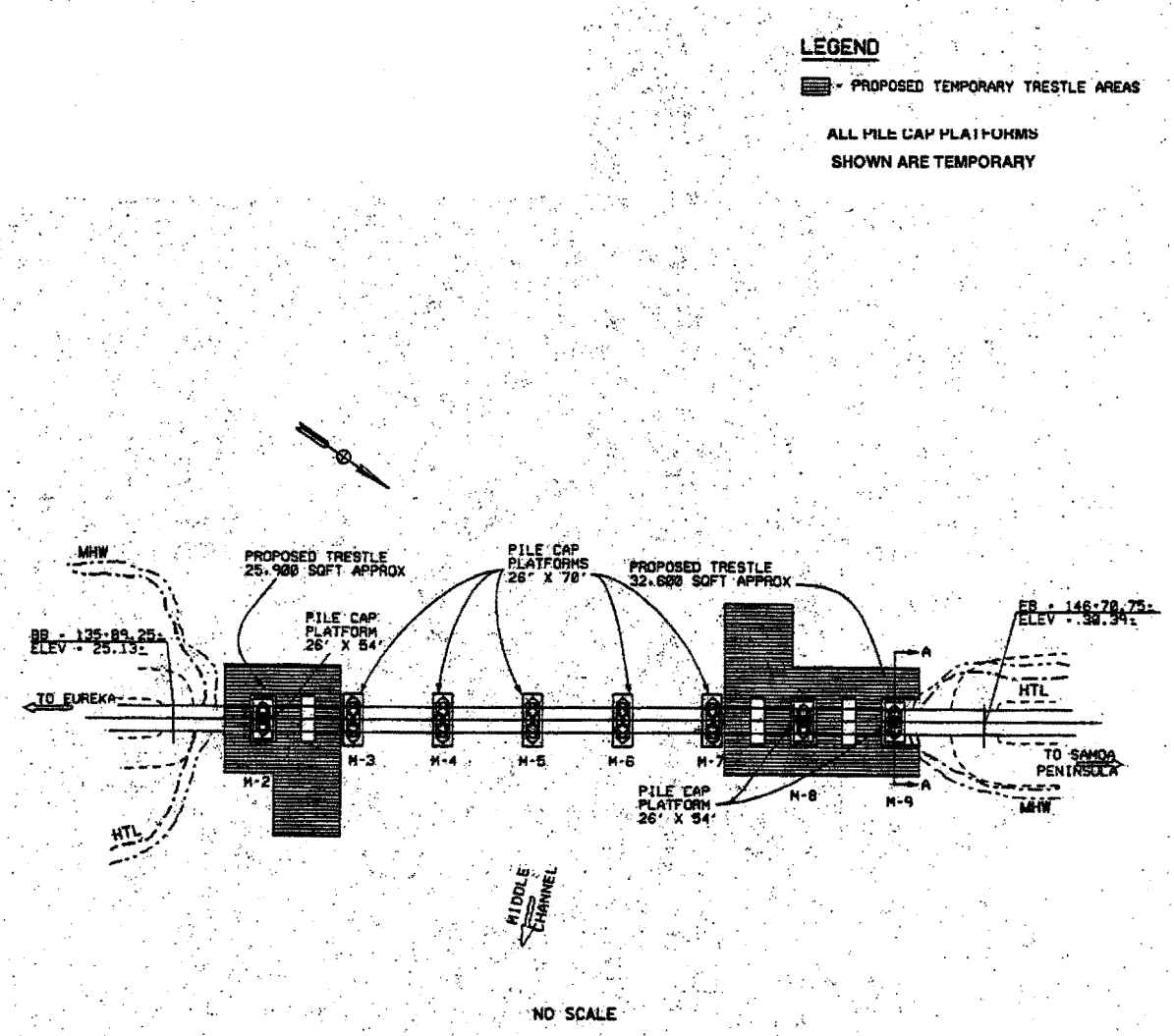


Proposed Access at Eureka Channel Bridge

EXHIBIT NO. 9
APPLICATION NO. 1-01-069
CALTRANS
PROPOSED ACCESS LOCATIONS (1 of 3)

MIDDLE CHANNEL BRIDGE

PRELIMINARY: SUBJECT TO MODIFICATION IN PERMIT PROCESS



Proposed Access at Middle Channel Bridge

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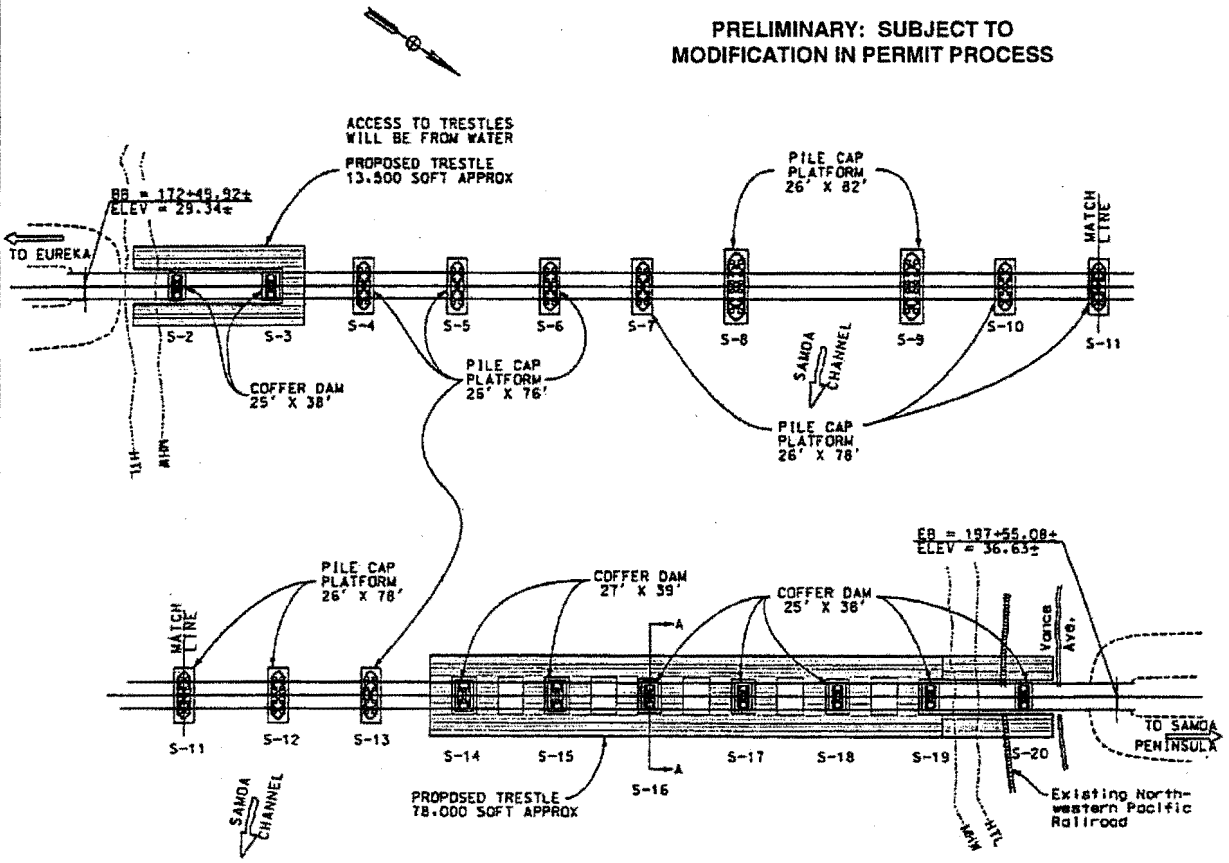
SAMOA CHANNEL BRIDGE

PRELIMINARY: SUBJECT TO
MODIFICATION IN PERMIT PROCESS



LEGEND

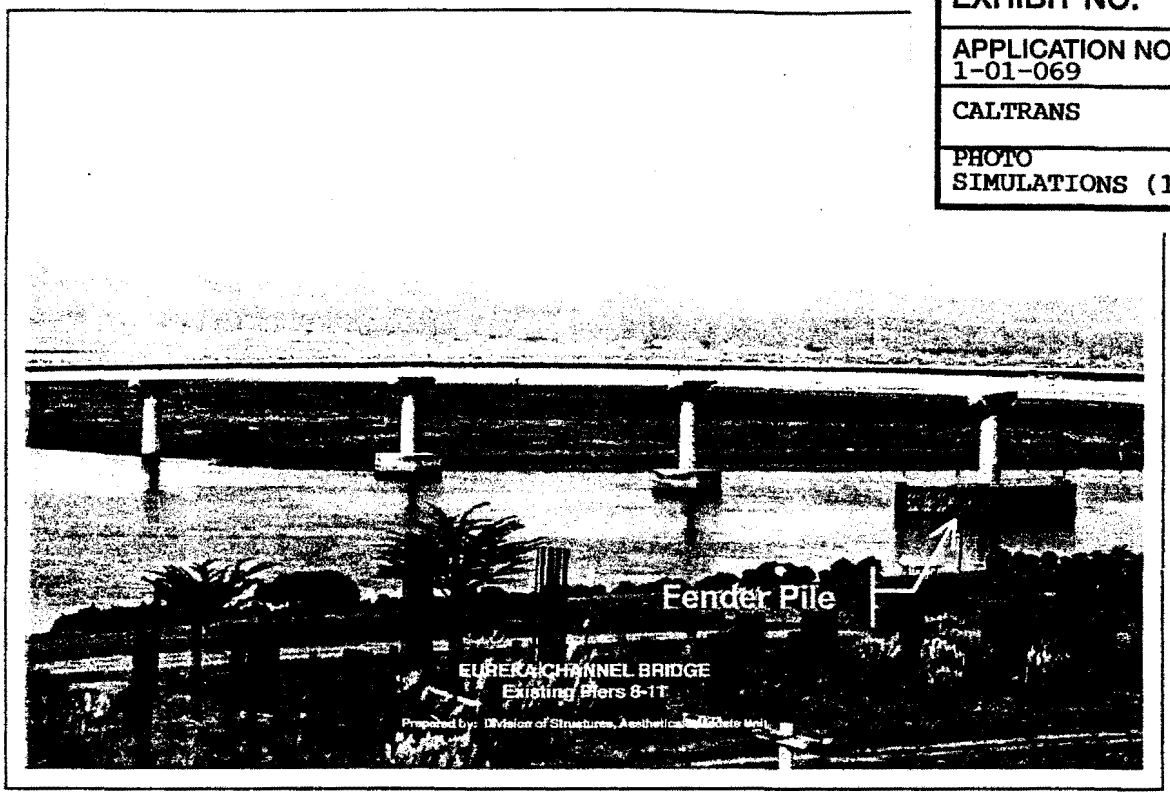
▨ = PROPOSED TEMPORARY TRESTLE AREAS

ALL COFFER DAMS AND PILE CAP
PLATFORMS SHOWN ARE TEMPORARY

Proposed Access at Samoa Channel Bridge

SCBAccess

EXHIBIT NO. 10
APPLICATION NO. 1-01-069
CALTRANS
PHOTO SIMULATIONS (1 of 4)



View of Existing Eureka Channel Bridge
Facing North

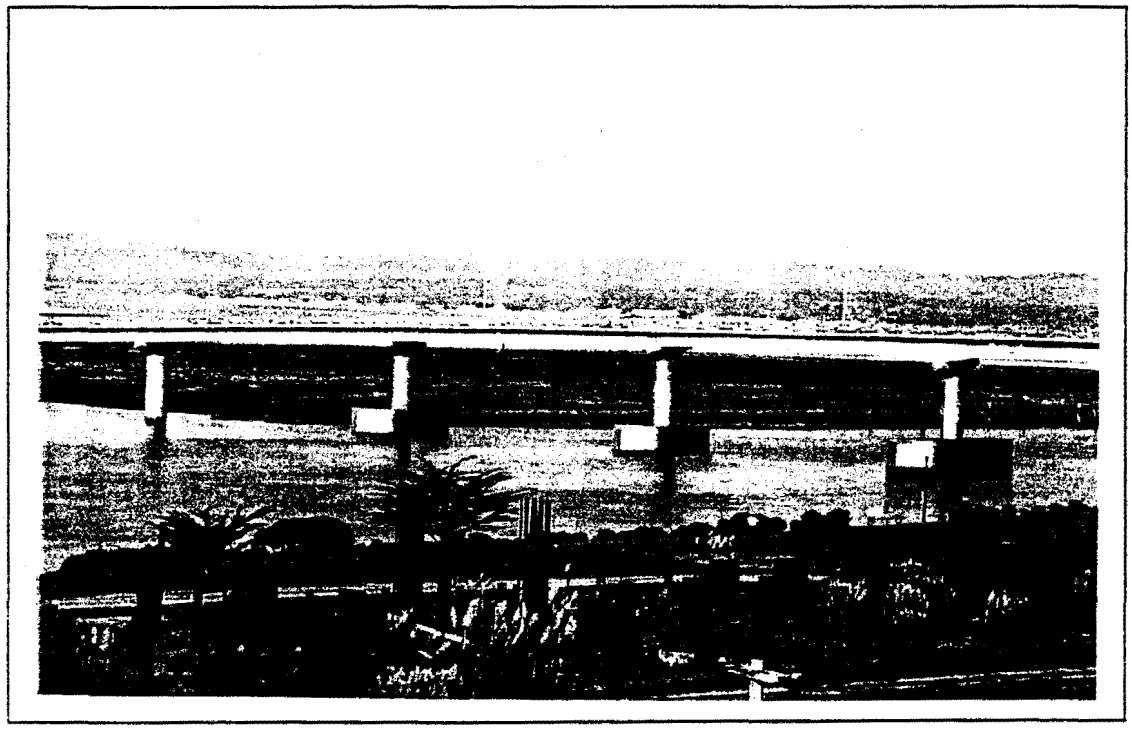


Photo-Simulation of Proposed
Eureka Channel Bridge Seismic Retrofit
Facing North

- Eureka Channel Bridge Photographs As Viewed from Second Street in Eureka

MMH\\EC3GPhotoSim

Existing Eureka Channel Bridge
Facing East

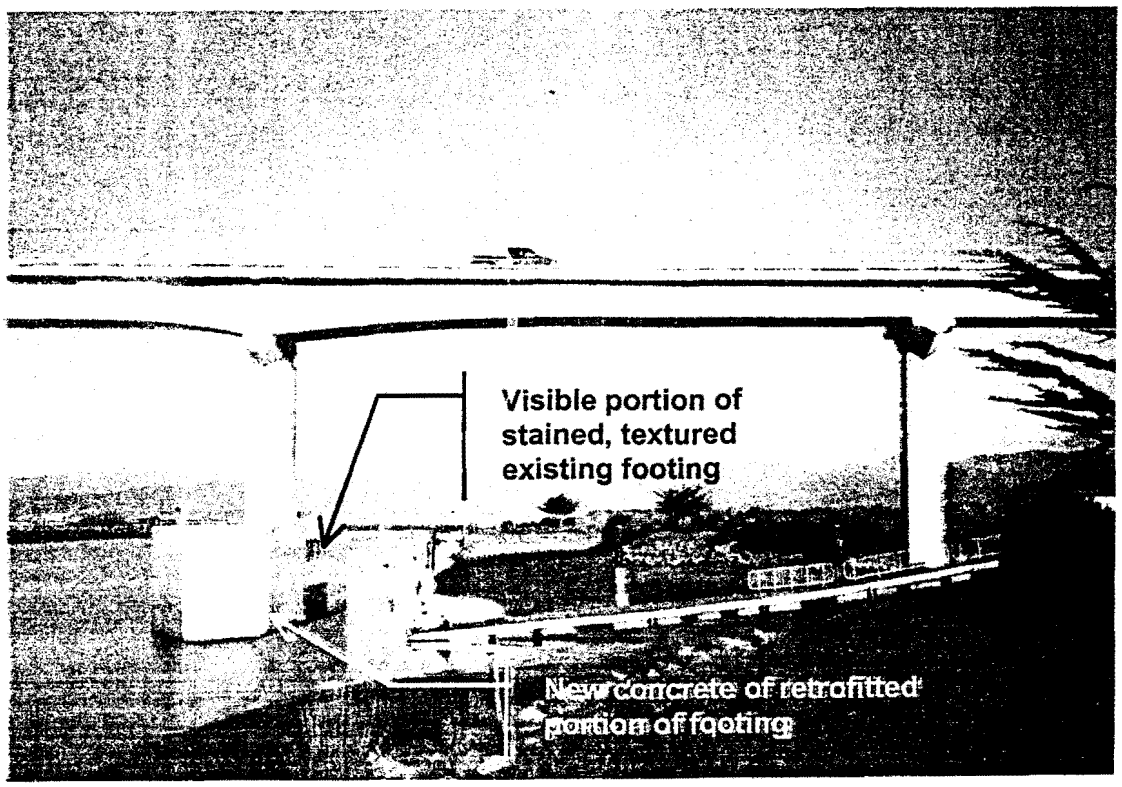
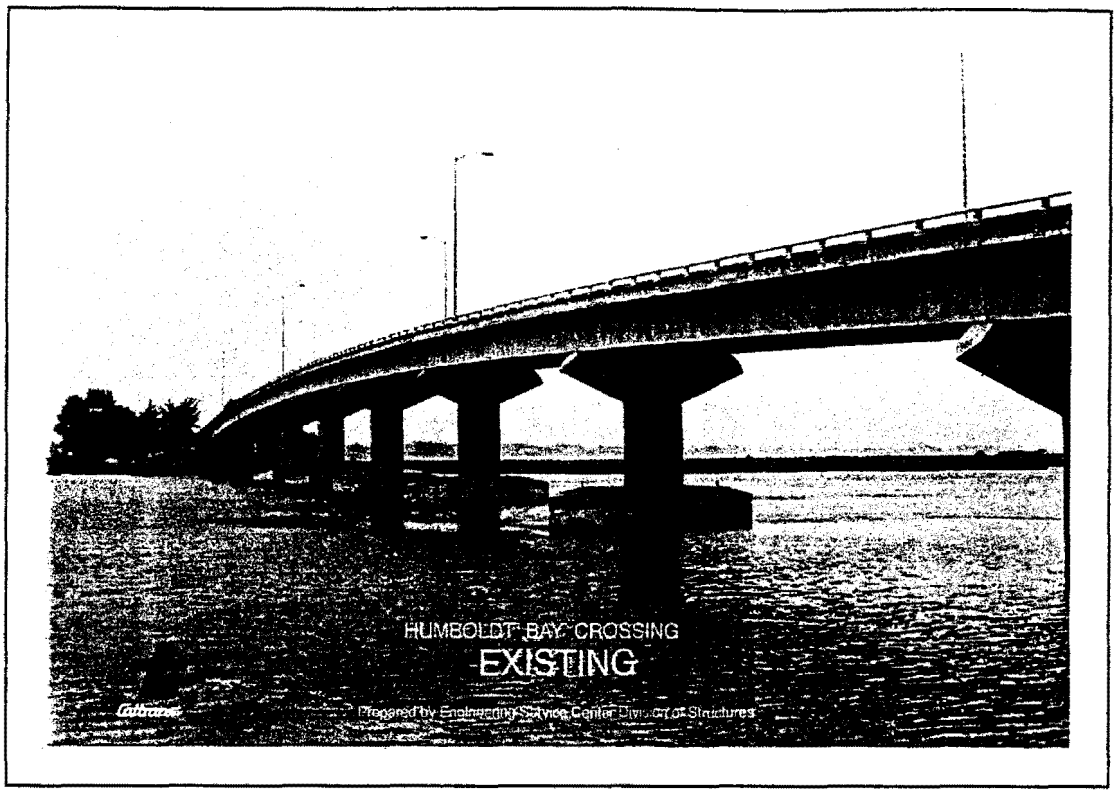


Photo-Simulation of the Proposed
Eureka Channel Bridge Seismic Retrofit Facing East

- Eureka Channel Bridge Photographs
As Viewed From Eureka Waterfront Walkway

PhotoSimECHCU



Existing Middle Channel Bridge
Facing North

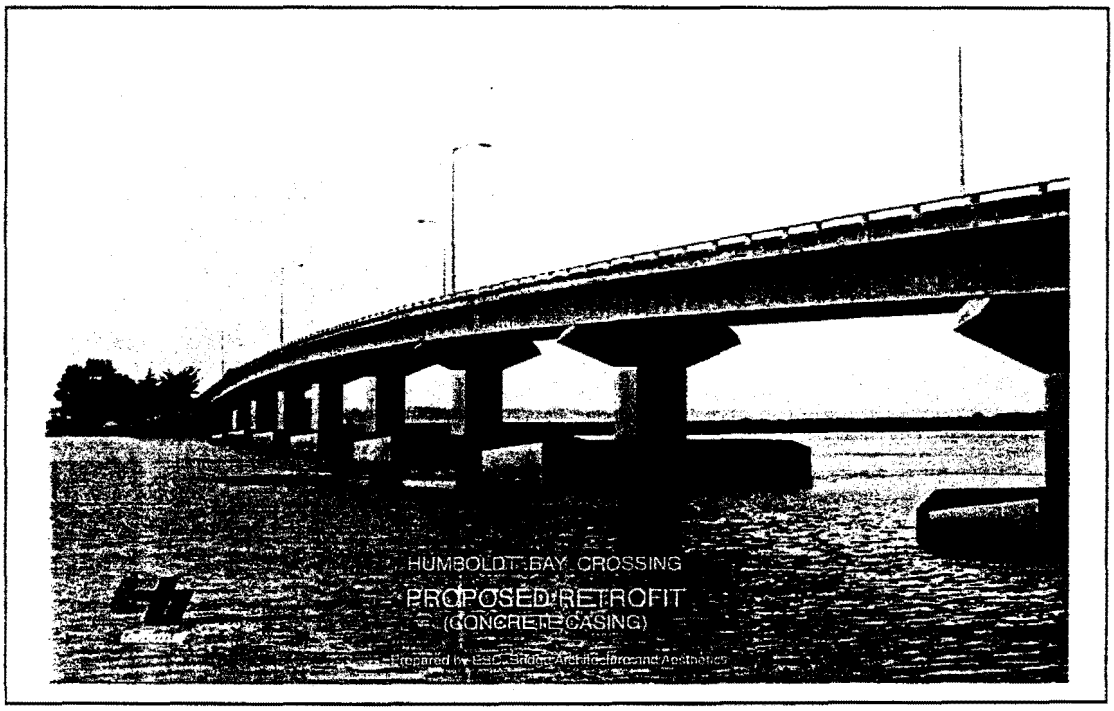
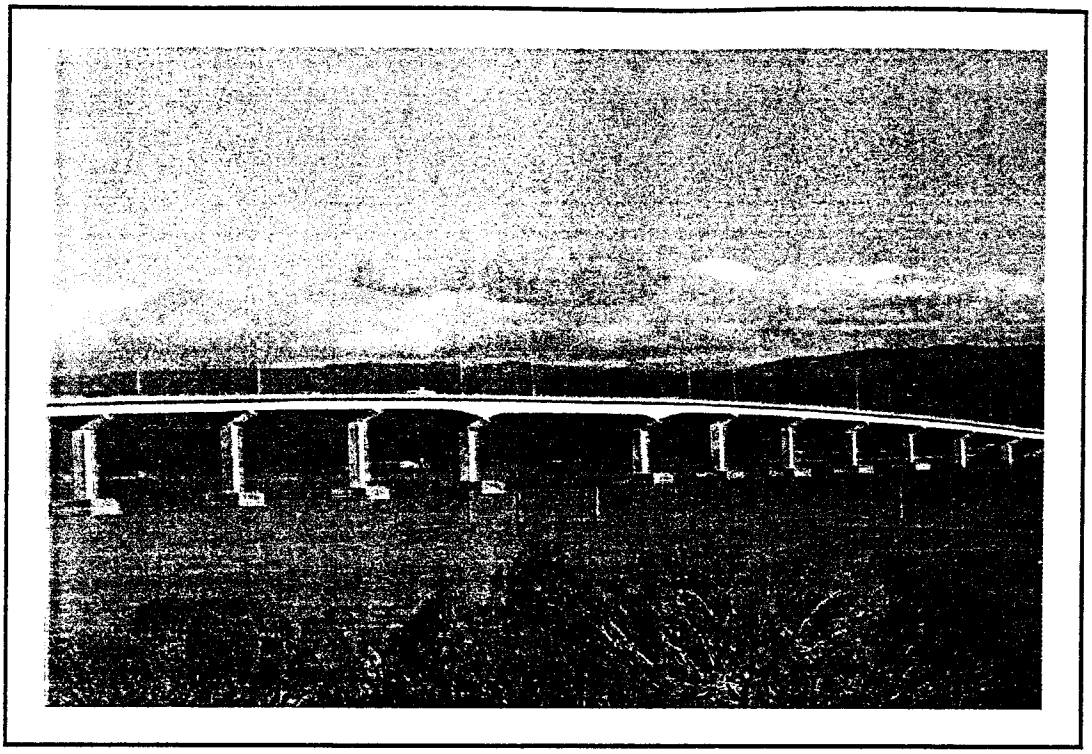


Photo-Simulation of Proposed
Middle Channel Bridge Seismic Retrofit
Facing North

– Middle Channel Bridge Photographs

MMH\\PhotoSimMC



Existing Samoa Channel Bridge
View From Vance Avenue, Facing East

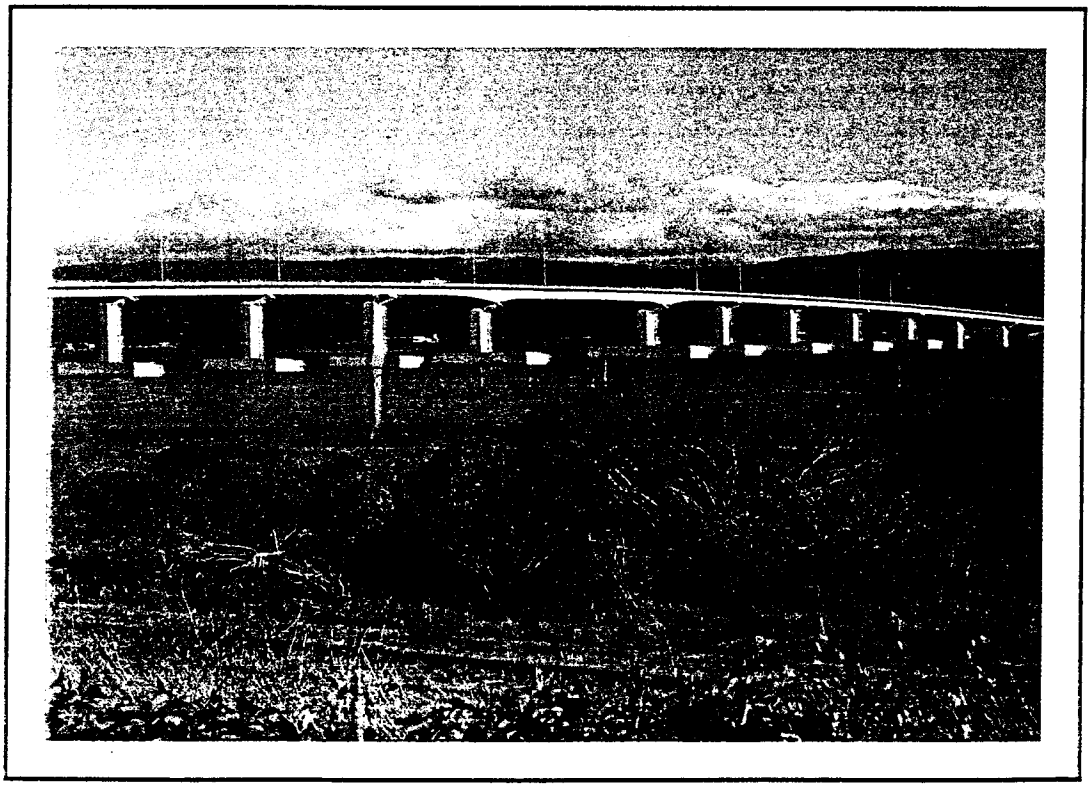


Photo-Simuiation of Proposed Samoa Channel Bridge Seismic Retrofit View From Vance Avenue, Facing East

4 of 4

Samoa Channel Bridge Photographs

California Regional Water Quality Control Board
North Coast Region

Order No. R1-2002-0002
NPDES Permit No. CA0025119
I.D. No. 1B01114NHUM

WASTE DISCHARGE REQUIREMENTS

FOR

CALIFORNIA DEPARTMENT OF TRANSPORTATION SEISMIC RETROFIT PROJECT, HUMBOLDT BAY BRIDGES

Humboldt County

The California Regional Water Quality Control Board, North Coast Region, (hereinafter Regional Water Board) finds that:

1. The California Department of Transportation (hereinafter permittee) submitted a Report of Waste Discharge for Waste Discharge Requirements dated June 4, 2001. Supplemental information to complete the Report of Waste Discharge was submitted on June 6, 2001.

2. The Humboldt Bay Bridges are three bridge structures located in Humboldt County on State Route 255 between the City of Eureka and the Samoa Peninsula from Post Mile (PM) 0.2 to 1.9. The location is shown on "Attachment A," incorporated herein and made a part of this Order. The goal of the project is to retrofit the three bridge structures for protection against partial or complete collapse during a Maximum Credible Earthquake (MCE) event. The project will reinforce each pier column, enlarge and/or reinforce each pier footing, and place additional footing piles as needed at each pier location. Approximately 40 piers over a 1.7-mile distance will be upgraded during a minimum 32-month construction period.

3. The project will require excavation and drilling within Humboldt Bay and adjacent upland (above high tide) areas. Construction activities having potential to contribute sediment to storm water discharges include: transfer and transport of soils and excavated bay sediments, stockpiling and storing excavated soils and bay sediments, discharge of process water, storm water runoff from disturbed areas, and dewatering cofferdam excavations and excavated soils and bay sediments. Total excavation for the project is estimated at a minimum of 5,000 cubic yards. Other potential impacts include wet concrete washing and other chemical materials used during construction activities as well as petroleum products reaching Humboldt Bay and/or its tributaries.

4. Temporary, localized turbidity in Humboldt Bay is expected as a consequence of construction activities. These activities include: excavation of bay sediments; barge movement in shallow waters; installation and removal of approximately 1,115 temporary trestle piles, 19 cofferdams, and Cast-in-Steel-Shell Piles; (CISS Piles), and backfilling excavation sites located within the bay. Barges and temporary trestle piles will be used for construction access to the bridge footings.

5. Turbidity control measures listed for use during excavation activities include use of turbidity silt curtains and/or water bladder walls. Cofferdams will isolate turbidity in localized areas where they are used. Dewatering operations for excavated bay sediments may include the use of tanks equipped with sediment filters, and/or above ground sedimentation basins indirectly discharging water to the bay in a controlled manner. It is expected that Bay water and ground water infiltration will accumulate CISS Piles and sealed cofferdams, after dewatering activities associated with excavation are completed. This water will remain in either the cofferdams or CISS Piles for an extended period of time and is expected to be clear and uncontaminated. Clear water from cofferdams and CISS Piles will be discharged directly to the Bay after analysis for pH, Total Suspended Solids, and Turbidity are conducted. Receiving water limitations and prohibitions will be observed prior to and during the discharge of any clear water from sealed cofferdams and/or CISS Piles.

6. Soil and groundwater contamination has been identified at former mill and foundry sites located on the eastern side of the Eureka Channel. These sites are now owned by the City of Eureka. Excavation will be conducted at three piers located within the former mill site. An area proposed for staging activities also will be located on or near the contamination sites. Elevated levels of petroleum-related chemicals may be present in subsurface soils and groundwater. Potential impacts include transport of contaminated soils suspended in runoff from excavations or disturbed areas and contaminated groundwater reaching Humboldt Bay and/or its tributaries. Groundwater from the contaminated area will be held in tanks, characterized, and disposed off-site as appropriate or discharged into the city of Eureka's sanitary sewer systems. Regional Water Board staff will meet with Cal Trans, City of Eureka and the project contractor to develop a specific Storm Water Pollution Prevention Plan and monitoring program for the contaminated areas. This Order does not authorize discharge or disposal of contaminated soils or dewatered groundwater.

7. Control measures for storm water from the staging area and other disturbed ground include utilization of existing paved and vegetated areas and other best management practices listed on a statewide storm water permit for construction activities previously issued to the permittee. Pumped groundwater will be stored in tanks. Groundwater will be sampled and will be either discharged to the City of Eureka sanitary sewer or transported for disposal at an appropriate site.

8. This project is a minor discharger as defined in 40 CFR 122.21(j). This facility is rated as a category 2 threat to water quality and category B complexity, pursuant to the California Code of Regulations (CCR) §2200.

9. The Water Quality Control Plan for the North Coast Region (Basin Plan) includes water quality objectives, implementation plans for point source and nonpoint source discharges, prohibitions, and statewide plans and policies.

10. The permittee has storm water discharges associated with construction activities, category "ix" as defined in 40 CFR Section 122.26(b)(14). The permittee has been issued a State Wide Storm Water Permit (State Wide Permit) and Waste Discharge

Requirements Order No. 99-06-DWQ (NPDES No. CAS000003). This Permit is intended to address activities that are not covered by the State Wide Permit, and are intended to supplement, not replace, its terms.

11. The permittee has prepared a Conceptual Storm Water Pollution Prevention Plan (CSWPPP). The CSWPPP establishes minimum provisions that will be implemented during the project. The CSWPPP includes source identification, practices to reduce or eliminate pollutant discharge to storm water, an assessment of potential pollutant sources, a materials inventory, a preventive maintenance program, spill prevention and response procedures, general storm water management practices, employee training, record keeping, and elimination of non-storm water discharges to the storm water system. It also includes a storm water monitoring plan to verify the effectiveness of the CSWPPP.

12. The discharge does not contain priority pollutants at levels that will cause, have the reasonable potential to cause, or contribute to an exceedance of any water quality standards. Monitoring of priority pollutants and 2,3,7,8-TCDD equivalents will not be required.

13. The beneficial uses of Humboldt Bay include:

    a. agricultural supply
    b. industrial service supply
    c. navigation
    d. water contact recreation
    e. noncontact water recreation
    f. commercial and sport fishing
    g. cold freshwater habitat
    h. inland saline water habitat
    i. wildlife habitat
    j. preservation of rare, threatened or endangered species
    k. marine habitat
    l. migration of aquatic organisms
    m. spawning, reproduction, and/or early development
    n. shellfish harvesting
    o. estuarine habitat
    p. aquaculture

14. Effluent limitations and toxic standards established pursuant to Sections 208(b), 301, 302, 303(d), 304, 306, and 307 of the CWA and amendments thereto are applicable to the permittee.

15. The permitted discharge is consistent with the antidegradation provision of 40 CFR 131.12 and State Water Board Resolution No. 68-16, *Statement of Policy with Respect to Maintaining High Quality of Waters in California.* The impact on existing water quality will be insignificant.

16 A statutory exemption under Public Resources Code Section 21080(b)(4) exempts this project from meeting the environmental document review provisions of the California Environmental Quality Action (Public Resources Code Section 21000,

et seq.). Section 180.2 of the California Streets and Highways Code stipulates that "...the structural modification of an existing highway structure or toll bridge, or the replacement of a highway structure or toll bridge within, or immediately adjacent to an existing right-of-way" are exempt from CEQA by considering them to be "specific actions necessary to prevent or mitigate an emergency." The Regional Water Board finds that this project will not cause significant water quality impacts if conducted in compliance with this Permit. The Regional Water Board also finds that the potential cumulative loss of wetland, intertidal mudflats, and eel grass would be temporary, and/or avoided, minimized, or mitigated by implementing the terms of this permit and the mitigation measures proposed under the Environmental Assessment.

17. The Regional Water Board has notified the permittee and interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations.

18. The Regional Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.

19. This Order will serve as a National Pollutant Discharge Elimination System Permit pursuant to Section 402 of the Clean Water Act, or amendments thereto, and will take effect upon adoption by the Regional Water Board.

THEREFORE, IT IS HEREBY ORDERED that the permittee, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, shall comply with the following:

A. DISCHARGE PROHIBITIONS

1. The discharge of any waste not specifically regulated by this Permit is prohibited.

2. Creation of pollution, contamination, or nuisance, as defined by Section 13050 of the California Water Code (CWC) is prohibited.

3. The discharge of waste to land that is not under the control of the permittee is prohibited except as authorized under **C. SOLIDS DISPOSAL.**

4. The discharge to Humboldt Bay or its tributaries of untreated water from dewatering activities is prohibited.

5. The discharge to Humboldt Bay of clear water from sealed cofferdams and/or CISS Piles having potential to violate any Receiving Water Limitations is prohibited. The discharge of clear water having a pH of greater than 8.5 or less than 6.5 is prohibited.

6. The discharge of pumped groundwater containing constituents in excess of the background level in waters from Humboldt Bay or its tributaries is prohibited.

7. The discharge of any priority pollutant as listed in the California Toxic Rule (Analytes listed in Appendix A) that would:

   a) Cause,

   b) Have a reasonable potential to cause, or

   c) Contribute to an excursion above any applicable priority pollutant criterion or objective is prohibited.

8. The discharge of pumped groundwater having detectable levels of the constituents listed in the table below and constituents listed in Tables 2a, 2b, and 2d of Appendix A (California Toxics Rule) is prohibited. For the purpose of this Order, the Minimum Level (ML) of detection shall be those listed in the table below and in Tables 2a, 2b, 2c and 2d of Appendix A.

Constituent	Units	Required Minimum Level
Total Petroleum Hydrocarbons	ug/l	50.0
Total Xylenes	ug/l	0.5
Methyl Tertiary-butyl ether (MtBE)[a]	ug/l	0.5
Di-Isopropyl ether (DIPE)[a]	ug/l	0.5
Tertiary-amyl methyl (TAME)[a]	ug/l	0.5
Ethyl tertiary-butyl ether (ETBE)[a]	ug/l	0.5
Tertiary-butyl alcohol (TBA)[a]	ug/l	5.0
Methanol	mg/l	1.0
Ethanol [a]	ug/l	5.0
Volatile Organic Compounds (Other than those listed on Appendix A)	ug/l	0.5

9. The discharge of soil, silt, sawdust, or other organic and earthen materials from any construction associated activity of whatever nature into Humboldt Bay or its tributaries in quantities deleterious to fish, wildlife, or other beneficial uses is prohibited. The placing of such materials at locations where such materials could pass into Humboldt Bay or its tributaries is prohibited.

10. The discharge of waste, including, but not limited to, sandblasting wastes, paint, paint debris and/or chips, wash waters, concrete treatment chemicals, and concrete washwater wastes, into Humboldt Bay or its tributaries, or to locations where these materials could pass into Humboldt Bay or its tributaries, is prohibited.

B. RECEIVING WATER LIMITATIONS

1. The waste discharge shall not cause the dissolved oxygen concentration of the receiving waters to be depressed below 7.0 mg/l. In the event that the receiving waters are determined to have dissolved oxygen concentration of less than 7.0 mg/l, the discharge shall not depress the dissolved oxygen concentration below the existing level.

[a] All fuel oxygenates are to be analyzed using EPA method 8260 (except methanol)

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2. The discharge shall not cause the pH of the receiving waters to be raised above 8.5 or depressed below natural background levels. Additionally, the discharge shall not cause the pH of the receiving waters to be changed at any time more than 0.2 units from that which occurs naturally.

3. The discharge shall not cause the turbidity of the receiving waters to be increased more than 20 percent above naturally occurring background levels, at a distance of 200 feet beyond the point of discharge. Turbidity shall not be increased in the area proximate to the site during times when dredging or dewatering activities are not occurring.

4. The discharge shall not cause the receiving waters to contain floating materials, including solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses.

5. The discharge shall not cause the receiving waters to contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, that cause nuisance, or that adversely affect beneficial uses.

6. The discharge of waste shall not cause esthetically undesirable discoloration of the receiving waters during times when dredging or dewatering activities are not occurring.

7. The discharge shall not cause bottom deposits in the receiving waters to the extent that such deposits cause nuisance or adversely affect beneficial uses.

8. The discharge shall not contain concentrations of biostimulants that promote objectionable aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses of the receiving waters.

9. The discharge shall not cause the receiving waters to contain toxic substances in concentrations that are toxic to, degrade, or that produce detrimental physiological responses in humans or animals or cause acute or chronic toxicity in plants or aquatic life.

10. The discharge shall not cause a measurable temperature change in the receiving waters.

11. The discharge shall not cause bioaccumulation of pesticide, fungicide, wood treatment chemical, or other toxic pollutant concentrations in bottom sediments or aquatic life to levels that are harmful to human health.

12. The discharge shall not cause the receiving waters to contain oils, greases, waxes, or other materials in concentrations that result in a visible film or coating on the surface of the water or on objects in the water that cause nuisance or that otherwise adversely affect beneficial uses.

13. This discharge shall not cause a violation of any applicable water quality standard for receiving waters adopted by the Regional Water Board or the State Water Board as required by the Federal Water Pollution Control Act, and regulations adopted thereunder. If more stringent applicable water quality standards are promulgated or approved pursuant to Section 303 of the Federal Water Pollution Control Act, or amendments thereto, the Regional Water Board will revise and modify this Permit in accordance with such more stringent standards.

14. The discharge shall not cause concentrations of contaminants to occur at levels that are harmful to human health in waters that are existing or potential sources of drinking water.

15. The discharge shall not cause concentrations of toxic pollutants in the water column, sediments, or biota that adversely affect beneficial uses.

16. The discharge shall not cause acute or chronic toxicity in the receiving waters.

C. SOLIDS DISPOSAL

1. Excess earthen, demolition, and organic materials generated during the project and all other solid waste, (as defined in Public Resources Code Section 40191) and hazardous waste, (as defined in Title 27, California Code of Regulations, Section 2521) removed from the job site shall be disposed at a legal point of disposal and in accordance with the provisions of Title 27, Division 2, Subdivision 1 of the California Code of Regulations or as waived pursuant to Section 13269 of the California Water Code. If a disposal site is to be used that has not been approved previously by the Regional Water Board, the permittee shall obtain approval of the new disposal site prior to initiation of the proposed project.

D. PROVISIONS

1. Duty to Comply

   The permittee shall comply with all of the conditions of this Permit. Any Permit noncompliance constitutes a violation of the Clean Water Act and the Porter-Cologne Water Quality Control Act and is grounds for enforcement action; Permit termination, revocation and reissuance, or modification; or denial of a Permit renewal application. [40 CFR 122.41(a)]

   The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if this Permit has not yet been modified to incorporate the requirement. [40 CFR 122.41(a)(1)]

2. Fuel Storage

   The storage and use of any fuels, oils, or toxic substances at the project location or offsite staging areas shall be managed to prevent discharges of waste. All spills and leaks shall be promptly reported to the Regional Water Board Executive

Officer and cleaned up immediately, and all contaminated materials shall be disposed at an approved disposal site.

3. Duty to Reapply

This Permit expires upon completion of the project or on January 24, 2007, whichever occurs first. If the permittee wishes to continue an activity regulated by this Permit after the expiration date of this Permit, the permittee shall apply for and obtain a new Permit. The application, including a report of waste discharge in accordance with Title 23, California Code of Regulations, shall be received by the Regional Water Board no later than July 24, 2006. [40 CFR 122.41(b)]

The Regional Administrator of the U.S. EPA may grant permission to submit an application at a later date prior to the Permit expiration date; and the Regional Administrator of the U.S. EPA may grant permission to submit the information required by paragraphs (g)(7), (9), and (10) of 40 CFR 122.21 after the Permit expiration date. [40 CFR 122.21(d)(2)]

4. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Permit. [40 CFR 122.41(c)]

5. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this Permit that has a reasonable likelihood of adversely affecting human health or the environment. [40 CFR 122.41(d)]

6. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with this Permit. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by a permittee only when necessary to achieve compliance with the conditions of this Permit. [40 CFR 122.41(e)]

7. Permit Actions

This Permit may be modified, revoked and reissued, or terminated for cause, including, but not limited to, the following:

a. Violation of any terms or conditions of this Permit; or

b. Obtaining this Permit by misrepresentation or failure to disclose fully all relevant facts; or

8 of 17

c. A change in any condition that requires either a temporary or a permanent reduction or elimination of the authorized discharge; or

d. A determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by Permit modification or termination.

If any toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under Section 307(a) of the Clean Water Act for a toxic pollutant which is present in the discharge and that standard or prohibition is more stringent than any limitation on the pollutant in this Permit, this Permit shall be modified or revoked and reissued to conform to the toxic effluent standard or prohibition and the permittee so notified. [40 CFR 122.44(b)]

The filing of a request by the permittee for a Permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any Permit condition. [40 CFR 122.41(f)]

8. Property Rights

This Permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. [40 CFR 122.41(g)]

9. Duty to Provide Information

The permittee shall furnish the Regional Water Board, State Water Board, or U.S. EPA, within a reasonable time, any information which the Regional Water Board, State Water Board, or U.S. EPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Permit or to determine compliance with this Permit. The permittee shall also furnish to the Regional Water Board, upon request, copies of records required to be kept by this Permit. [40 CFR 122.41(h)]

The permittee shall conduct analysis on any sample provided by U.S. EPA as part of the Discharge Monitoring Quality Assurance (DMQA) program. The results of any such analysis shall be submitted to U.S. EPA's DMQA manager.

10. Inspection and Entry

The permittee shall allow the Regional Water Board, State Water Board, U.S. EPA, and/or other authorized representatives upon the presentation of credentials and other documents as may be required by law, to:

a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Permit;

b. Have access to and copy, at reasonable times, any records that shall be kept under the conditions of this Permit;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Permit; and

d. Sample or monitor at reasonable times, for the purposes of assuring Permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any locations. [40 CFR 122.41(i)]

11. Monitoring and Records

a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

b. The permittee shall calibrate and perform maintenance procedures in accordance with manufacturer's specifications on all monitoring instruments and equipment to ensure accurate measurements. The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Permit, and records of all data used to complete the application for this Permit, for a period of at least three years from the date of the sample, measurement, report, or application. This period may be extended by request of the Regional Water Board, State Water Board, or U.S. EPA at any time. All monitoring instruments and devices used by the permittee to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary, at least annually to ensure their continued accuracy.

c. Records of monitoring information shall include:

i. The date, exact place, and time of sampling or measurements;
ii. The individual(s) who performed the sampling or measurements;
iii. The date(s) analyses were performed;
iv. The individual(s) who performed the analyses;
v. The analytical techniques or methods used; and
vi. The results of such analyses.
vii. The method detection limit (MDL); and
viii. The practical quantitation level (PQL) or the limit of quantitation (LOQ).

d. Unless otherwise noted, all sampling and sample preservation shall be conducted in accordance with the current edition of "Standard Methods for the Examination of Water and Wastewater" (American Public Health Association). All analyses shall be conducted according to test procedures under 40 CFR Part 136, unless other test procedures have been specified in this Permit or approved by the Executive Officer of the Regional Water Board. Unless otherwise specified, all metals shall be reported as total metals.

12. Signatory Requirements

a. All Permit applications, reports, or information submitted to the Regional Water Board, State Water Board, and/or U.S. EPA shall be signed by either a principal executive officer of the agency or a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency. [40 CFR 122.22(a)]

b. Reports required by this Permit, other information requested by the Regional Water Board, State Water Board, or U.S. EPA, and Permit applications submitted for Group II storm water discharges under 40 CFR 122.26(b)(3) may be signed by a duly authorized representative provided:

i. The authorization is made in writing by a person described in paragraph (a) of this provision;

ii. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company; and

iii. The written authorization is submitted to the Regional Water Board prior to, or together with, any reports, information, or applications signed by the authorized representative. [40 CFR 122.22(b)(c)]

c. Any person signing a document under paragraph (a) or (b) of this provision shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations." [40 CFR 122.22(d)]

13. Reporting Requirements

a. Planned changes: The permittee shall give notice to the Regional Water Board as soon as possible of any planned physical alteration or additions to the permitted facility. Notice is required under this provision only when:

i. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b); or

ii. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are subject neither to effluent limitations in the Permit nor to the notification requirements under Provision 13 (f).

b. Anticipated noncompliance: The permittee shall give advance notice to the Regional Water Board of any planned changes in the permitted facility or activity which may result in noncompliance with Permit requirements.

c. Transfers: This Permit is not transferable.

d. Monitoring reports: Monitoring results shall be reported at the intervals specified in the self monitoring program. The permittee shall submit an annual report to the Regional Water Board such that it is received no later than February 28 following the annual reporting period. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous year. In addition, the permittee shall discuss the compliance record and the corrective actions taken or planned that may be needed to bring the discharge into full compliance with the Permit. If the permittee monitors any pollutant more frequently than required by this Permit, using test procedures approved under 40 CFR Part 136 or as specified in this Permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR.

e. Compliance schedules: Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Permit shall be submitted such that it is received by the Regional Board via fax, e-mail, or postal service no later than 14 days following each schedule date.

f. Noncompliance reporting: The permittee shall report any noncompliance at the time monitoring reports are submitted. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times and, if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate and prevent recurrence of the noncompliance.

In addition, the following events shall be reported orally as soon as the permittee becomes aware of the circumstances, and the written report shall be submitted such that it is received by the Regional Board no later than 14 days of that time.

i. Any unanticipated bypass that violates any prohibition or exceeds any effluent limitation in the Permit.

ii. Any upset that exceeds any effluent limitation in the Permit.

iii. Violation of a maximum daily discharge limitation for any of the pollutants listed by the Regional Water Board in this Permit.

iv. Any noncompliance that may endanger health or the environment.

The Executive Officer may waive the above-required written report.

g. Other information: Where the permittee becomes aware that it failed to submit any relevant facts in a Permit application, or submitted incorrect information in a Permit application or in any report to the Regional Water Board, the permittee shall promptly submit such facts or information. [40 CFR 122.41(1)]

14. Upset

In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof. [40 CFR 122.41(n)]

15. Enforcement

The Clean Water Act provides that any person who violates a Permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Clean Water Act is subject to a civil penalty not to exceed $25,000 per day of violation. Any person who negligently violates Permit conditions implementing Sections 301, 302, 306, 307, or 308 of the Act is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment of not more than one year, or both. Higher penalties may be imposed for knowing violations and for repeat offenders. The Porter-Cologne Water Quality Control Act provides for civil and criminal penalties comparable to, and in some cases greater than, those provided under the Clean Water Act.

16. Availability

A copy of this Permit shall be maintained at the discharge facility and be available at all times to operating personnel.

17. Change in Discharge

In the event of a material change in the character, location, or volume of a discharge, (including any point or nonpoint discharge to land or groundwater) the permittee shall file with this Regional Water Board a new report of waste discharge at least 180 days before making any such change. [CWC Section 13376]. A material change includes, but is not limited to, the following:

a. Significant change in disposal method, e.g., change from a land disposal to a direct discharge to water, or change in the method of treatment which would significantly alter the characteristics of the waste.

b. Significant change in the disposal area, e.g., moving the discharge to another drainage area, to a different water body, or to a disposal area, significantly removed from the original area, potentially causing different water quality or nuisance problems.

c. Increase in area or depth to be used for solid waste disposal beyond that specified in the waste discharge requirements. [CCR Title 23 Section 2210]

18. Severability

Provisions of these waste discharge requirements are severable. If any provision of these requirements is found invalid, the remainder of these requirements shall not be affected.

19. Monitoring

The Regional Water Board or State Water Board may require the permittee to establish and maintain records, make reports, install, use, and maintain monitoring equipment or methods (including where appropriate biological monitoring methods), sample effluent as prescribed, and provide other information as may be reasonably required. [CWC Section 13267 and 13383].

The permittee shall comply with the Contingency Planning and Notification Requirements Order No. 74-151 and the Monitoring and Reporting Program No. R1-2002-0002 and any modifications to these documents as specified by the Executive Officer. Such documents are attached to this Permit and incorporated herein. The permittee shall file with the Regional Water Board technical reports on self monitoring work performed according to the detailed specifications contained in any monitoring and reporting program as directed by the Regional Water Board.

Chemical, bacteriological, and bioassay analyses shall be conducted at a laboratory certified for such analyses by the State Department of Health Services. In the event a certified laboratory is not available to the permittee, analyses performed by a noncertified laboratory will be accepted provided a quality assurance/quality control program is instituted by the laboratory, and a manual containing the steps followed in this program is kept in the laboratory and made available for inspection by staff of the Regional Water Board. The quality assurance/quality control program shall conform to U.S. EPA or State Department of Health Services guidelines.

All Discharge Monitoring Reports shall be sent to:

California Regional Water Quality Control Board
North Coast Region
5550 Skylane Boulevard, Suite A
Santa Rosa, CA 95403

U.S. EPA, Region 9
Attn: WTR-7, NPDES/DMR
75 Hawthorne Street
San Francisco, CA 94105

20. Reopener

The Regional Water Board may modify or revoke and reissue this Order if present or future investigations demonstrate that the permittee governed by this Order is causing, or significantly contributing to, adverse impacts on water quality and/or beneficial uses of receiving waters.

In addition, the Regional Water Board may consider revising this Permit to make it consistent with any State Water Board decisions arising from various petitions for rehearing, and litigation concerning the CWA Section 303(d) list and total maximum daily load (TMDL) program.

21. Subcontractor Oversight

The Department of Transportation has the flexibility to hire subcontractors for completing work associated with Humboldt Bay Bridges Retrofit Project. Both the Department of Transportation and any subcontractors associated with this project shall be independently responsible for meeting all conditions contained in Order No R1-2002-0002.

Certification

I, Susan A. Warner, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, North Coast Region, on January 24, 2002.

Susan A. Warner
Executive Officer

(MAV:js/Samoa Bridge Permit)

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California Regional Water Quality Control Board
North Coast Region

MONITORING AND REPORTING PROGRAM No. R1-2002-0002

FOR

CALIFORNIA DEPARTMENT OF TRANSPORTATION
SEISMIC RETROFIT PROJECT, HUMBOLDT BAY BRIDGES

Humboldt County

MONITORING

The following monitoring program shall be followed whenever any site activities result in a visible increase in turbidity of Humboldt Bay. One sample shall be collected within ten feet of the point of discharge as well as one upstream[1] and one downstream[2] sample.

Samples shall be analyzed for the following:

Constituent	Units	Type of Sample	Frequency
Turbidity	NTU's	Grab	Daily

The following monitoring program shall be followed whenever there is any discharge to Humboldt Bay or its tributaries from temporary storage tank, settling basin systems, or clear water from coffer dams and CISS piles described in Finding 5 of Waste Discharge Requirements Order No. R1-2002-0002. For each sampling frequency and constituent, one upstream[1], and one downstream[2] sample shall be collected.

Samples shall be analyzed for the following:

Constituent	Units	Type of Sample	Frequency
Turbidity	NTU's	Grab	Daily
Temperature	°C	Grab	Daily
Dissolved Oxygen	mg/l	Grab	Daily
pH	pH units	Grab	Daily
Total Suspended Solids[3]	mg/l	Grab	Daily

[1] A sample shall be collected from a location a minimum of 50 feet prior to the incoming/outgoing tide reaching the point of discharge.

[2] A sample shall be collected from the area influenced by the incoming/outgoing tide approximately 200 feet beyond the point of discharge.

[3] TSS analyses are not required for clear water discharges. 12 of 17

REPORTING

Monitoring reports shall be submitted to the Regional Water Board monthly such that they are received by the 1st day of the second month following the monthly monitoring period. Monitoring reports shall be submitted for months where no construction activity or discharges occurred and shall state that no activity occurred.

In reporting monitoring data, the permittee shall arrange the data in tabular form on an 8 1/2 by 11-inch sheet so the date, constituents, and concentrations are readily discernible. The monitoring reports shall contain all new data as well as historical data. The monitoring reports shall contain a detailed map showing the location of sample collection points. If the permittee is unable to collect samples for any reason, the monitoring report shall so indicate. The monitoring data and any necessary narrative reports shall be properly titled and referenced to this Order and shall be submitted to the Regional Water Board and certified to be true and correct under penalty of perjury, signed by either a principal executive officer or a ranking elected official.

NOTIFICATION

The permittee shall submit a notice in writing to the Regional Water Board at least 15 days in advance of any activity which involves the Humboldt Bay. The notice shall include the proposed activity date, location, and activity(s) performed. In the event of an unpermitted discharge to Humboldt Bay, the permittee shall notify the Executive Officer by telephone as soon as he/she or his/her agents have knowledge of the incident and confirm this notification in writing within two weeks of the telephone notification. The written notification shall include pertinent information explaining reasons for the noncompliance and shall indicate the steps taken to correct the problem, the dates thereof, and the steps being taken to prevent the problem from recurring.

Ordered by: _____

Susan A. Warner
Executive Officer

January 24, 2002

(Humbaybrrtf)

17917

California Regional Water Quality Control Board

North Coast Region

William R. Massey, Chairman

Winston B. Hickox
Secretary for Environmental Protection

Gray Davis
Governor

Internet Address: http://www.swrcb.ca.gov/rwqcb1/
5550 Skylane Boulevard, Suite A, Santa Rosa, California 95403
Phone: 1 (877) 721-9203 (toll free) • Office: (707) 576-2220 • FAX: (707) 523-0135

EXHIBIT NO. 12
APPLICATION NO. 1-01-069
CALTRANS SECTION 401 WATER
QUALITY CERTIFICATION (1 of 5)

April 26, 2002

Deborah Harmon
California Department of Transportation
Chief Environmental Branch
1656 Union Street
Eureka, CA 95501

Dear Ms. Harmon:

Subject: Issuance of Clean Water Act Section 401 Certification (Water Quality Certification) and California Code of Regulations Water Quality Certification for California Department of Transportation, Humboldt Bay Bridges Seismic Retrofit Project

File: CDOT, Humboldt Bay Bridges Seismic Retrofit Project
WDID No. 1B02037WNHU

This Order by the California Regional Water Quality Control Board (Regional Water Board), North Coast Region, is being issued pursuant to Section 401 of the Clean Water Act (33 USC 1341) and Article 4 of Chapter 28, Division 3, Title 23 of the California Code of Regulations (23 CCR 3855-3861). It responds to the California Department of Transportation's (CDOT) January 11, 2002 request for a Clean Water Act, Section 401, Water Quality Certification. The Regional Water Board received a processing fee in the amount of $1,000 in April 2001. Information describing the proposed project was noticed for public comment for a 21-day period on the Regional Water Board's website. No comments were received.

Project Description: The proposed project site is located on State Route 255 between post mile 0.2 and post mile 1.9, Humboldt County. CDOT is proposing to seismically retrofit the Eureka Channel, Middle Channel, and Samoa Channel Bridges. The superstructure of the bridges has previously been retrofitted; only the substructure will be undergoing work. Reinforced concrete casings will be placed around all pier columns that match the columns' shapes. In addition, a 450-mm concrete top mat will be placed on each pier footing. All deepwater piers will also be strengthened and enlarged

by driving piles into the channel bottoms, excavating and filling them with concrete. Deepwater piers will be reached by barge, and temporary trestles will be used to reach the piers in shallow water. Project work is anticipated to begin on May 1, 2002 and last for approximately 3 years.

Receiving Water: Humboldt Bay, Eureka Plain Hydrologic Unit No. 110.00

Filled or Excavated Area: Permanent Filled Area: 0.25 acre for enlarged piers
Area Temporarily Impacted: 0.98 acre for piers and 0.13 acre for trestles

Federal Permit: U.S. Army Corps of Engineers permit NWP #15

Compensatory Mitigation: A 1.6-acre area will be planted with eelgrass. Cofferdams will be built surrounding most shallow water piers creating a dry environment so that construction materials are not discharged into the bay. Work in shallow waters will be performed on temporary trestles. Native vegetation will be replanted following removal of the trestles. Turbidity barriers will be in place for low clearance piers. No in-water work will be performed on the Eureka Channel Bridge between April 1 and August 31. This will protect the migration of juvenile salmonids. A temporary gravel or paved access road will be made to minimize sediment transport in storm water runoff from the construction site.

CEQA Compliance: The California Department of Transportation, as the lead agency for this project, has determined that a statutory exemption under Public Resources Code Section 21080 (b) (4) exempts this project from meeting the environmental document review provisions of the California Environmental Quality Act (Public Resources Code Section 21000, et seq.).

Standard Conditions: Pursuant to Section 3860 of Title 23, California Code of Regulations (23 CCR), the following three standard conditions shall apply to this project:

1) This certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to Section 13330 of the California Water Code and Section 3867 of 23 CCR.

2) This certification action is not intended and shall not be construed to apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license unless the pertinent certification application was filed pursuant to 23 CCR Subsection 3855(b) and the application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.

3) The validity of any nondenial certification action (Actions 1 and 2) shall be conditioned upon total payment of the full fee required under 23 CCR Section 3833, unless otherwise stated in writing by the certifying agency.

Additional Conditions: Pursuant to 23 CCR Section 3859(a), the applicant shall comply with the following additional conditions:

1) No debris, soil, silt, sand, bark, slash, sawdust, rubbish, oil or petroleum products, or other organic or earthen material from any logging, construction, or associated activity of whatever nature that is in quantities deleterious to fish, wildlife, or other beneficial uses shall be allowed to enter Humboldt Bay. When operations are completed, any excess material or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any stream.

2) The discharge of waste, including, but not limited to, sandblasting wastes, pain, paint debris and/or chips, wash waters, concrete treatment chemicals, and concrete washwater wastes, into Humboldt Bay or its tributaries, or to locations where these materials could pass into Humboldt Bay or its tributaries, is prohibited.

3) Disturbance or removal of vegetation shall not exceed the minimum necessary to complete operations. The disturbed portions of upland areas shall be restored to as near their original condition as possible. Restoration shall include re-vegetation of stripped or exposed soil areas at the work site by the end of the work period.

4) The discharge to Humboldt Bay of clear water from sealed cofferdams and/or CISS Piles having the potential to violate any Receiving Water Limitations is prohibited. The discharge of clear water having a pH of greater than 8.5 or less than 6.5 is prohibited.

5) The discharge shall not cause turbidity of the receiving waters to be increased more than 20 percent above naturally occurring background levels, at a distance of 200 feet beyond the point of discharge. Turbidity shall not be increased in the area proximate to the site during times when dredging or dewatering activities are not occurring.

Water Quality Certification: I hereby issue an order [23 CCR Subsection 3831(e)] certifying that any discharge from the California Department of Transportation's Humboldt Bay Bridges Seismic Retrofit Project will comply with the applicable provisions of Sections 301 ("Effluent Limitations"), 302 ("Water Quality Related Effluent Limitations"), 303 ("Water Quality Standards and Implementations Plans"), and 306 ("National Standards of Performance"), of the Clean Water Act. [33 USC Subsection 1341(a)(1)]

All certification actions are contingent on (a) the discharge being limited and all proposed mitigation being completed in strict compliance with the applicants' project description, and (b) on compliance with all applicable requirements of the Regional Water Board's Water Quality Control Plan (Basin Plan).

Expiration: This water quality certification expires upon completion of the project or five years after issuance, whichever occurs first.

Please notify Miguel Villicana of our staff at (707) 576-2347 when the construction commences so that we can answer any public inquiries about the work.

Sincerely,

Frank Reichmuth for

Susan A. Warner
Executive Officer

JLP:js/CDOTHUMBDGS

cc: U.S. Army Corps of Engineers, Regulatory Functions, 333 Market Street, San Francisco, CA 94599

Sheryl Freeman and Erik Spiess, SWRCB, Office of Chief Counsel

U.S. Army Corps of Engineers, District Engineer, P.O. Box 4863, Eureka, CA 95502

Director of Water Division (WTR-1), U.S. Environmental Protection Agency, Region 9, 75 Hawthorne Street, San Francisco, CA 94105

Peter Krottje, SWRCB, Regulatory Section, Division of Water Quality, P.O. Box 944213, Sacramento, CA 94244-2130

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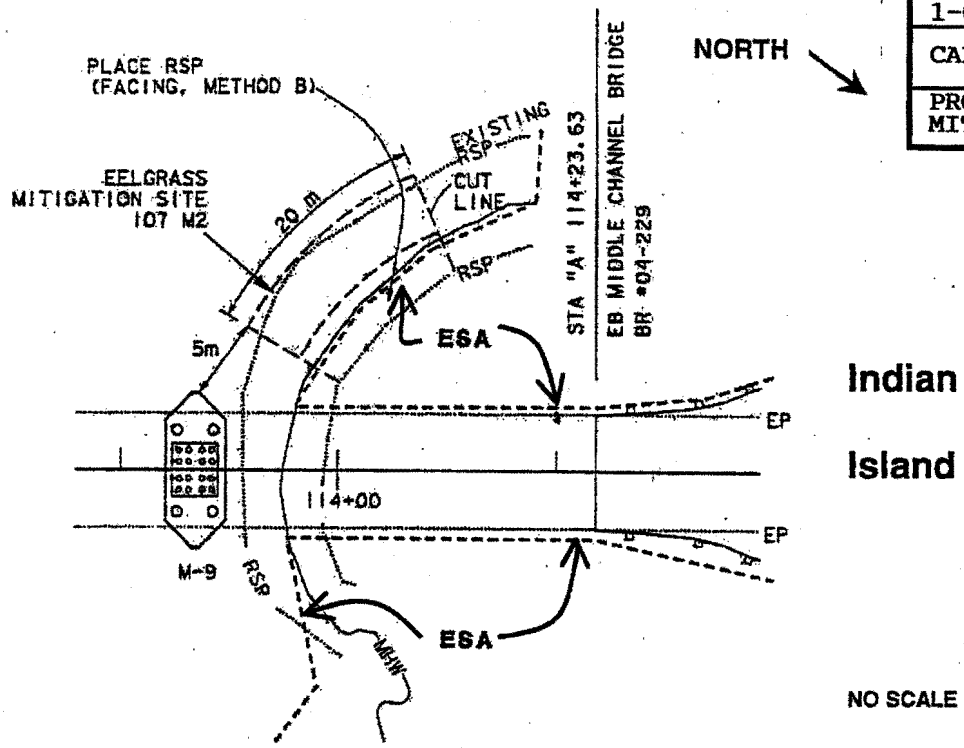
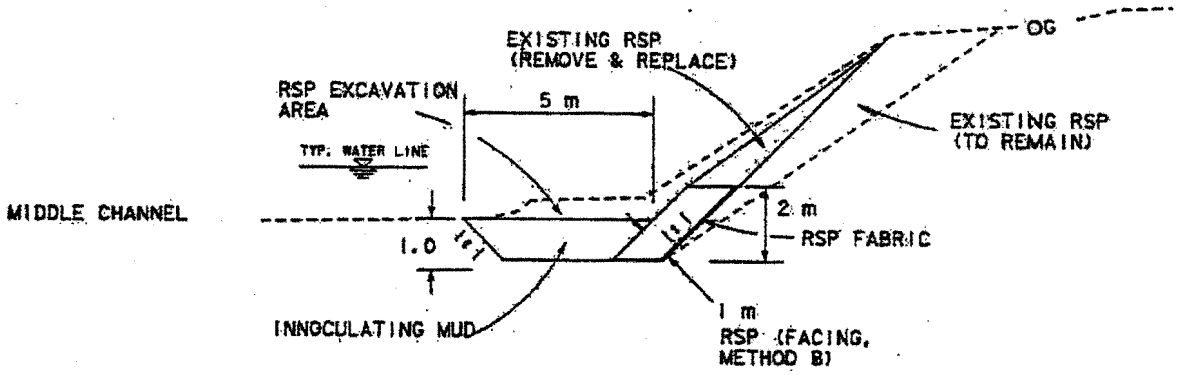
EXHIBIT NO. 13
APPLICATION NO. 1-01-069
CALTRANS
PROPOSED EELGRASS MITIGATION SITE



EELGRASS MITIGATION SITE
PLAN VIEW
(ADJACENT TO PIER M-9)



EELGRASS MITIGATION SITE
TYPICAL SECTION VIEW
(ADJACENT TO PIER M-9)

NO SCALE

Eelgrass Mitigation Site

Legend

ESA - Environmentally Sensitive Area

RSP - Rock Slope Protection

Humboldt Bay Bridges
Seismic retrofit project
Revised June 3, 2002
File Reference: 296701

HUMBOLDT BAY BRIDGES SEISMIC RETROFIT PROJECT

FINAL EELGRASS MITIGATION PLAN

Prepared by: _____
Joel Canzoneri, AICP
California Department of Transportation

Reviewed and
Accepted by: _____
for Deborah Harmon, Chief, Environmental Management Office,
Branch E-1
California Department of Transportation

EXHIBIT NO. 14
APPLICATION NO. 1-01-069
CALTRANS PROPOSED EELGRASS
MITIGATION PLAN (1 of 31)

I. PROJECT BACKGROUND

The California Department of Transportation (the Department) and the Federal Highway Administration (FHWA) are proposing to seismically retrofit the existing State Route 255 segment which spans Humboldt Bay, consisting of the Eureka Channel, Middle Channel and Samoa Channel bridges, collectively referred to as Humboldt Bay Bridges (HBB). The original bridge structures were constructed in 1971. The purpose of this legislatively mandated project is to reinforce the piers supporting these spans to resist bridge collapse and resultant loss of life and environmental damage in the event of a maximum credible earthquake event (magnitude 7.5).

The proposed project consists of seismically retrofitting the existing bridge substructure of the HBB. Every bridge column and corresponding bridge footing is proposed to be strengthened. Except for the northwest Eureka Channel Bridge abutment, the existing bridge abutments will not be strengthened. The existing bridge superstructures (all bridge elements above the bridge columns such as the roadway and girders) have already undergone seismic retrofitting and no further superstructure retrofit is proposed as part of this project.

In 1998, the Department initially proposed a seismic retrofit design to the public and public resource agencies with much larger footings. In response to agency and public concerns, a new design was developed in 1999 that is substantially reduced in scale compared to the 1998 plans. The revised design will be much less costly, excess material disposal quantities will be reduced, and impacts to wetlands, bay and viewshed will be reduced. The 1999 design has become the current proposed project and the 1998 design has been removed from consideration.

Specific details of the proposed retrofit for each individual bridge may be found in the Environmental Assessment prepared for this project

II. SUMMARY OF AREAS IMPACTED BY THE PROJECT

A. Permanent Loss of Eelgrass Habitat (Zostera marina). As discussed in the Environmental Assessment prepared for this project, eelgrass habitat and eelgrass populations exist within the project area and will be replaced by the enlarged bridge pier footings. The new piers and footings will overcover approximately 107 square meters (1152 square feet) of bay land constituting potential eelgrass habitat, defined as bay mud existing between -1 foot and +1 foot MLLW. The actual inventoried eelgrass populations extirpated by this project are less, totaling 38 square meters (408 square feet). This amount is based on visual observations

at a –0.46 meter (-1.5 foot) tide on August 2, 2001 and supported by photographic documentation taken on July 20, 2001 and August 18, 2001. The results of this survey are graphically shown in Attachments C, D, E and F.

Since presentation of initial project designs by the Department in 1998, pier footings have been scaled back in part to reduce the permanent impact to eelgrass habitat. Areas undergoing permanent loss of eelgrass habitat as a result of this project have been identified based on the eelgrass inventory of August 2, 2001 and project designs. 107 square meters (1152 sq. ft.) of potential eelgrass habitat will be permanently overcovered by expanded pier footings, and a new mitigation site will be created to compensate for this permanent loss of habitat.

The locations containing identified eelgrass populations that will be permanently affected by the project are concentrated around piers M-9 (15 square meters adjacent to the abutment on the northeast side of Indian Island) and S-2 (23 square meters adjacent to the abutment on the northwest side of Indian Island) as identified in the Environmental Assessment and visual observations. Visual observations revealed scattered populations of healthy eelgrass within these identified areas.

A table has been included in this Mitigation Plan as Attachment "I" that summarizes the impacts to eelgrass resources on a channel-by-channel basis.

B. Temporary Loss of Eelgrass Populations/Habitat.

Eureka Channel. Temporary loss of eelgrass in the Eureka Channel from Piers E-10 through E-15 may occur as a result of this project. The project includes the installation of temporary trestles for construction activities and the use of small, low draft barges for excavation of areas for the installation of de-watering boxes placed around existing pier footings as shown on Attachment "D". These barges may rest on the bay bottom for short periods associated with these excavation activities. Up to approximately 2,908 square meters (31,301 square feet) of eelgrass could be temporarily impacted by activities associated with the placement of these temporary access and construction measures. Eelgrass exists in the area; the most prolific populations follow a dendritic elevation contour varying no more than 10 cm (4 inches) from the adjacent elevations not supporting eelgrass populations, according to documentation photographs taken July 20, 2001 and August 18, 2001.

The creation of temporary trestles functioning as work platforms in shallow water, low clearance areas, has been selected as the least environmentally damaging option for construction activities in the Eureka Channel low clearance areas. The Department evaluated dredging of these areas to facilitate deep draft barge access similar to efforts used in the 1971 construction protocol. This option has

not been selected as a preferred construction option due to environmental concerns. The Department also evaluated deep draft barge access to these areas with the barges resting on the bay bottom at low tides for extended periods. This option was not selected as the preferred option because deep draft barges and the associated excavation to facilitate vessel access, could affect the 2,908 square meters referenced above.

The selected temporary trestle supported on piles construction option will temporarily overcover potential eelgrass habitat, but these directly impacted areas are less than those areas that would be impacted by dredging for deep draft barge access with the barges resting on the bay bottom.

The temporary trestle piles will directly affect 24 square meters (258 square feet) of eelgrass populations under the Eureka Channel Span proposed for trestle use. This is a temporary impact to these populations, as the piles will be removed after construction to allow for the re-population of these areas.

The shading effects of the temporary trestle structure may affect potential eelgrass habitat and eelgrass populations existing under the trestles, however Department staff noted populations currently growing in the shade of the bridge superstructure. As previously noted, temporary structures used in this project will be removed after completion of the individual phases of the project.

Eelgrass populations existing in Eureka Channel would be affected by pre-excavation activities for coffer box construction around the piers.

Potential effects from propeller scarring are expected to be minimal, as movement of barges in the Eureka Channel will occur at higher tides able to float the barges. The report prepared for NOAA by Fonseca et al., 1998 describes impacts to eelgrass resulting from propeller scarring as occurring in high volume recreation areas with shallow bottoms with most damage attributable to vessels docking in banks and low draft jet skis operating in low water areas. No mitigation for propeller scarring is proposed in this Mitigation Plan.

It is noted that these habitat areas for eelgrass were created by large scale dredging activities associated with construction of the bridge in 1971.

Middle Channel. The work trestles as identified in Attachment "C" will temporarily overcover 38 square meters of eelgrass. The remaining isolated eelgrass clusters existing in this vicinity will be outside the edge of the work trestles and will have access to sunlight. The temporary trestle piles will directly affect 1 square meter (11 square feet) of eelgrass populations under the Middle Channel Span proposed for trestle use. This is a temporary impact to these populations, as the piles will be removed after construction to allow for the re-population of these areas.

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Samoa Channel. The work trestles on the Indian Island side of the Samoa Channel will temporarily shade 264 square meters of eelgrass in this area as identified in Attachments "E" and "F". Eelgrass populations on the Samoa side of the Channel near the edge and parallel with the proposed trestle and under the trestle laterally along the shoreline at Pier S-14 have been identified. The majority of the existing eelgrass populations on the Samoa side of the Channel will not be affected by the work trestles as they exist beyond or under the edge of the trestle where access to sunlight is not impaired. The temporary trestle piles will directly affect 18 square meters (194 square feet) of eelgrass populations under the Samoa Channel Span proposed for trestle use. This is a temporary impact to these populations, as the piles will be removed after construction to allow for the re-population of these areas.

A table has been included in this Mitigation Plan as Attachment "I" that summarizes the impacts to eelgrass resources on a channel-by-channel basis.

III. MITIGATION PLAN

A. Goals and Objectives

The goals of this mitigation plan are to:

1) establish an on-site potential eelgrass habitat of like value and functional equivalency to the areas permanently lost as potential eelgrass habitat, sequenced for completion prior to retrofit activities that could affect eelgrass populations in order to allow for pre-construction mitigation and harvesting of the resource ahead of construction activities, and
2) Limit effects on eelgrass populations in the areas temporarily affected by construction activities in shallow waters, restore these areas to pre-construction elevations conducive to the growth of eelgrass, and replant the excavated areas around the low clearance piers with eelgrass populations.

To accomplish these goals, six objectives have been formulated:

1. Remove 107 square meters (1,152 square feet) of rock and rubble from around the abutment area on the northeast side of Indian Island apparently placed as supporting material for the fill around the abutment. Facing rock will be placed on the face of the excavated slope to mirror existing slope profiles for stability and to prevent erosion of the sidewall of the new eelgrass habitat, consistent with geotechnical recommendations. The wrack zone at the toe of the abutment appears

to have been extended and steepened by rock, which was either placed or has sloughed off into the intertidal zone over the past 30 years. Construction drawings and environmental evaluation will be completed to include this component in the project. This rock will be removed from the site to an upland area away from Humboldt Bay for reuse; and

2. Create a 107 square meter (1,152 square foot) eelgrass habitat cell in this area adjacent to pier M-9 to replace eelgrass habitat permanently overcovered by proposed enlarged bridge footings. This will be accomplished by creating bottom contours of between -1 foot to +2 feet MLLW to mirror adjacent bottom levels where eelgrass populations have been observed in order to create a functionally equivalent site even though the bottom levels are slightly beyond optimum eelgrass growth levels; and
3. Replant the newly created habitat with healthy eelgrass clusters to accelerate the recovery of the proposed eelgrass habitat mitigation site; and
4. Department inspectors and environmental staff will oversee a survey and delineation of the operational area available for the placement of trestles or low draft barge movements, and continually monitor operations to ensure no construction activity occurs outside of this operational area; and
5. Eelgrass populations in the area potentially impacted by shading from temporary structures in the Eureka Channel, Middle Channel, and the Samoa Channel will be avoided to the greatest extent possible; and
6. Backfill the areas excavated for the coffer dams around affected piers in each channel to pre-construction levels with inoculating mud to re-create eelgrass habitat levels and replant the five Eureka Channel low clearance pier areas with eelgrass clusters to promote re-population of this area.

B. Location

A location map of the area has been included as Attachment A, and a Vicinity Map showing the location of the proposed eelgrass mitigation site on Indian Island has been included as Attachment B.

The location for the new eelgrass bed habitat was selected for the following reasons:

- it is an area closest to Pier M-9 where permanent impact to eelgrass populations existing at the base of the pier will occur as a result of enlarged pier footings;
- it proposes on-site mitigation;
- it is within the Department's right-of-way;

- it is a degraded area that was dredged for bridge construction in 1971 and is overlain with rubble placed to support the adjacent bridge abutment which was either placed in or has sloughed off into the intertidal zone;
- it does not contain intertidal vegetation;
- it initiates rehabilitation of the site to correct past dredging actions;
- naturally occurring isolated eelgrass populations exist in the area demonstrating the ability of eelgrass to populate the area, and provides a "control" site for comparison with the proposed mitigation site;
- photographs from past years document the existence of intermittent, seasonal eelgrass populations in the area;
- it will contain rocky intertidal habitat areas around the upland perimeter of the rock slope protection for biologic diversity;
- it is an exposed shoreline location which will further evaluate eelgrass transplant methodology;
- the site can be expanded by the creation of additional eelgrass bed habitat cells for future eelgrass mitigation efforts;
- egrets have been observed in eelgrass beds adjacent to the highway without apparent reaction to highway noise;
- it is in close proximity to the egret rookery on Indian Island;
- it is relatively removed from human occupation and intrusion;
- it is an area of low maximum tidal velocities for spring-neap harmonic tidal conditions, which will remain low after construction activities as determined by the hydrodynamic model prepared by West Consultants for this project.
- It is an area used by herring populations as a food source and spawning location.

C. Alternatives

The Department explored alternatives including the filling of this approximately 6,096 square meter (20,000 square feet) area with excavated mud from the project to return the area to historic upland habitat. The Department also investigated the concept of dredging this 6,096 sq. meter area to bottom contours of between -1 and +1 feet MLLW and armoring the site to protect these elevations from sediment deposition and erosion, thereby creating a large contiguous eelgrass meadow as a mitigation bank for future projects. Neither of these alternatives was selected for inclusion in Mitigation Plan for this project due to permitting constraints.

Off-site areas were investigated as alternatives to the selected mitigation option and were not selected at this time in favor of on-site mitigation. Areas of bay bottom owned by Coast Seafoods comprised of oyster beds

and areas around the Simpson dock on the Samoa Peninsula were included in the preliminary investigation of potential off-site locations.

IV. CHARACTERISTICS OF THE MITIGATION SITES

A. Substrate

1. Permanent Eelgrass Habitat Mitigation Site. The proposed mitigation area was filled with rock as support for the bridge abutment in 1971. This rock extended into the intertidal zone and over the years additional rock appears to have migrated into the intertidal zone by erosion forces. A site review of the area revealed upland soils beneath the debris, and no sand areas were encountered.

2. Temporary Loss of Eelgrass Populations/Habitat.

Eureka Channel
The Eureka Channel area is bay bottom mud created by dredging activities of upland areas to facilitate barge access to the area for bridge construction in 1971. The bay bottom mud elevations have been measured by bathymetry conducted by the Department as follows: +1.91 feet MLLW at Pier E-11; +0.91 feet at Piers E-12 and E-13; +0.41 feet at Pier E-14; and +0.91 feet at Pier E-15. These measurements were taken in conjunction with the calculation of pile excavation quantities.

Middle Channel
The Middle Channel margins consist of bay mud exposed by dredging activities of upland areas to facilitate barge access for bridge construction in 1971. The bay bottom mud elevations have been measured by bathymetry conducted by the Department as follows: +3.59 feet MLLW at Pier M-2; +15.09 feet MLLW at Pier M-7; +5.09 feet MLLW at Pier M-8; and +1.91 feet MLLW at Pier M-9. These measurements were taken in conjunction with the calculation of pile excavation quantities. No cofferdams are proposed for excavation in the Middle Channel.

Samoa Channel
The Samoa Channel margins consist of bay mud exposed by dredging activities associated with bridge construction in 1971. The bay bottom mud elevations have been measured by bathymetry conducted by the Department as follows: +2.91 feet MLLW at Pier S-2; +8.09 feet MLLW at Pier A-3; +2.91 feet MLLW at Pier S-124; +2.91 at Pier S-15; +3.91 feet MLLW at Pier S-16; +2.91 feet MLLW at Pier S-17; +3.91 feet MLLW at Pier S-18; and +4.91 feet MLLW at Pier S-19. These

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measurements were taken in conjunction with the calculation of pile excavation quantities.

B. Hydrology

1. Permanent Eelgrass Habitat Mitigation Site. The site selected to create the eelgrass habitat mitigation site is on the northeast side of Indian Island on the Middle Channel. Tidal velocities have been measured at 1 foot per second (30.48 cm/sec.) in this area (West Consultants Hydrologic Study, 1999) which should prove beneficial to the establishment of eelgrass populations, as tidal erosion effects would be minimal. The report prepared for NOAA by Fonseca et.al., 1998, suggests that sites subject to velocities of below 50 cm/sec. are generally acceptable as a potential mitigation site. This velocity is the lowest of the 7 locations reviewed in the West Consultants Hydrologic Study (Table 4-6, pg.4-18). The area has been significantly altered during bridge construction to accommodate barge access for construction of Pier M-9 in 1971. Pre-bridge historic photos show a smooth shoreline in this area, as can be inferred by reviewing current shoreline maps. The cove created by this dredging currently supports patches of eelgrass.

Isolated eelgrass populations were also observed in the vicinity of Pier M-9 at an elevation of +1.91 feet MLLW, and some of these populations are growing in the shade of the bridge superstructure. Photographs from the late 1990s document the ability of the site to support transient eelgrass populations. As of the date of this mitigation plan, eelgrass populations around piers M-9 and S-2 do not exceed 38 square meters (408 square feet), as documented by mapping included as Attachments "C", and "E" derived from supporting photographs taken at minus tides in July, August, and September 2001. Twenty-three square meters were identified around pier S-2 and fifteen square meters were identified around pier M-9. The proposed eelgrass mitigation cell is designed to uncover 107 sq. meters (1,152 sq. feet) of potential habitat exhibiting the characteristics of adjacent areas known to historically and seasonally support eelgrass populations, this number derived from the environmental assessment prepared for the project.

The creation of the new eelgrass habitat is not expected to contribute to erosion in the area. The Department Hydraulic Engineer has reviewed the proposed location of this mitigation site, and has determined that the creation of the proposed mitigation site will not contribute to scour nor increase erosion in the area.

2. Temporary Loss of Eelgrass Populations/Habitat. The area temporarily affected by construction activities is bay bottom subject to the same hydrologic conditions as adjacent areas.

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C. Habitats

1. Permanent Eelgrass Mitigation Site. The area proposed for creation of the new eelgrass habitat has been overcovered with rock and fill used to armor the bridge abutment since 1971. This armoring has been placed at approximately a 1-foot vertical to 2 foot horizontal slope (1:2) extending well into the intertidal zone. This fill slope is greatly exaggerated and will be modified to perform the same function and at the same time remove 107 square meters of rocky area and convert it into eelgrass habitat. Rocky intertidal habitat will be retained at the base of the rock slope protection to support biologic diversity.

2. Temporary Loss of Eelgrass Populations/Habitat. The areas temporarily impacted by seismic retrofit activities in each channel consist of bay bottom mud of varying elevations. The area potentially impacted currently supports eelgrass populations with many clusters growing in the shade of the bridge superstructure. The substrate composition and tidal influences are the same as the conditions in the area currently supporting eelgrass growth.

V. MITIGATION DETAILS

A. Permanent Eelgrass Habitat Site.

The Department proposes to create a new 107 square meter (1,152 square foot) eelgrass habitat area within the project site, as shown on Attachments "G" and "H". A cove created by the dredging activities associated with bridge construction in 1971 has been chosen as the mitigation site for this component of the Mitigation Plan. This site was selected for the reasons identified in III B. of this Plan. The mitigation proposes the removal of 107 square meters of rock, debris, and fill, and creating an eelgrass habitat to mirror adjacent areas known to have supported eelgrass populations.

Efforts at transplanting eelgrass on the Pacific Coast have achieved limited success in the Pacific Northwest (Pentec Environmental, 1999) and in southern California, but transplantation efforts have met with very little success in Humboldt Bay. Previous efforts in Humboldt Bay were at a variety of sites on the East Side of the Bay and on Indian Island. These sites were chosen based on proximity to existing eelgrass beds and on apparent site conditions. While the transplanting efforts initially appeared successful, it is believed they eventually failed due to a combination of wave action and currents (Newton, 1988; Warner Department of Fish and Game).

Eelgrass growth is highly dependent upon environmental conditions. The following conditions, taken from Phillips (1984), are recommended to ensure a high potential for success of eel grass transplantation:

1. temperature range of 10-20 degrees C;
2. salinity range of 10-30 ppt (parts per thousand);
3. moderate current velocity, not exceeding .31 to .41 meters per second (0.6 to 0.8 knots);
4. protection from direct and/or regular wave shock;
5. consolidated mud/substrate;
6. sufficient light penetration during winter months;
7. protection from desiccation.

The proposed site was chosen for the creation of eelgrass habitat because it is on-site mitigation in the immediate vicinity of scattered clusters of eelgrass that will be impacted by increased pier footing area. The site experiences the lowest tidal velocity (0.3 m/s (1 ft/s)) of any of the 7 areas reviewed in the West Consultants, Inc. Hydrologic Report prepared for this project. It can be deduced, therefore, that conditions 1 through 4 above exist in the general and immediate vicinity. The conditions that need to be created for the proposed eelgrass habitat site by excavation and back-fill, therefore, must be those that provide appropriate substrate as well as allow for sufficient light penetration and protection from desiccation at low tide.

This is proposed to be accomplished in the following manner:

1. A new habitat site will be created in the vicinity of Pier M-9 before initiation of retrofit construction. As a result of this sequence of construction, eelgrass impacted by enlarged pier footings can be harvested ahead of construction activities and immediately transplanted into the permanent bed. It is expected that this work will be completed by March 2003, with the new plantings placed between May 1 and June 30, 2003.
2. A turbidity barrier will be installed adjacent to the proposed mitigation area and between the barge used to create the site in order to capture sediment generated during construction of the mitigation site.
3. 107 square meters (1,152 square feet) of rock, debris, and fill placed or accumulated at the base of the bridge abutment on Indian Island will be removed to uncover substrate. This work will be performed from a low draft barge working at high tides or resting temporarily on the bay bottom. Low draft barges used in this phase will be limited to one week in this area and then removed from the site.
4. The substrate will be removed and overexcavated to a bottom level of approximately -1 foot MLLW.

5. A Tribal representative from the Wiyot Tribe will monitor the excavation activity to establish the proposed mitigation area.
6. Facing rock 11 kg – 34 kg in size will be placed on the excavated slope mirroring existing slope profiles to protect the sidewall of the excavation and prevent erosion into the new eelgrass habitat.
7. Innoculating mud harvested from the vicinity of Pier M-9 will be placed into the proposed eelgrass habitat mitigation site at finish elevations of between -1 foot and +2 feet MLLW to mirror the elevations in this area where eelgrass was detected prior to initiation of construction.
8. The proposed eelgrass habitat mitigation site should be allowed to stabilize for a minimum period of at least one month prior to eelgrass transplanting to allow for tidal refreshment of the site.
9. The new eelgrass habitat site will be planted with eelgrass clusters six inches in diameter planted approximately .3 meters (1 foot) apart in rows 1.8 meters (6 feet) apart. In total, 10 rows will be planted with 8-10 plants in each row for an average overall density of not less than 1 plant per square meter; harvested plants are to be healthy and well established. This protocol is based on past experience with eelgrass planting at the Eureka Public Marina project in 2000. Twenty isolated depression basins with a finish depth of -1 foot to +1 foot MLLW will be created within the eelgrass habitat site for diversification of bottom contours and planted consistent with the above noted planting schedule.
10. Transplanting of eelgrass is to occur in between May and early June, and not later than July 1, as suggested by the California Department of Fish and Game. Eelgrass will be harvested firstly from the project site prior to excavation operations, or, secondly, harvested from other Corps of Engineers, Fish and Wildlife, and Fish and Game approved sites. It is envisioned an alternate harvest site can be utilized from a drainage channel at the Eureka Public Marina that undergoes maintenance clearing. This was the harvest site for the Eureka Small Boat Basin mitigation site, and eelgrass has re-populated this proposed harvest site in the past two years. Eelgrass transplanting efforts will occur at the various elevations within the proposed eelgrass habitat site, and monitored for success to examine the belief that eelgrass tends to populate lower elevations with more continual inundation.
11. Transplanting in clusters or clumps and retaining established mud and root wads is proposed instead of the traditional method of planting eelgrass turions, to further test the theory that the transplanting of established clusters will yield a greater success rate for eelgrass in Humboldt Bay than the planting of individual plugs.

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This creative effort is proposed to test the transplanting theory, and in the hope of gaining knowledge for future anticipated mitigation efforts to offset development impacts in other areas of Humboldt Bay.

The Department recognizes that some aspects of the proposed Mitigation Plan are experimental, particularly the transplanting of eelgrass. While eelgrass planting has met with varying degrees of success along the Pacific Coast, past attempts in Humboldt Bay have for the most part been unsuccessful. Some transplanted beds have survived into the monitoring phases, only to be swept away by natural storms and tidal forces. An exception appears to be a raised eelgrass bed developed by the City of Eureka in conjunction with the Small Boat Basin rehabilitation project in 2000. Eelgrass appears to be elevation sensitive, and the Eureka effort utilized a raised eelgrass bed technology theory designed to inhibit sedimentation as well as wind and water erosion of eelgrass bed elevations. After the first monitoring year this experimental eelgrass bed exhibits encouraging signs of success both in plant size and stem density.

The Department's eelgrass transplanting efforts will be undertaken from an experimental perspective to further evaluate the creation of new eelgrass habitat in a more open water location, and to gather more information on eelgrass preferences that could be used in future mitigation efforts in Humboldt Bay.

It is proposed to harvest eelgrass clusters, if any are present, from the project site ahead of excavation efforts. As an alternative, harvesting from other existing meadows of eelgrass growth, either off the tip of the rock groin adjacent to the Eureka Public Marina or from other parts of Humboldt Bay, can occur with the approval of the Corps of Engineers, U.S. Fish and Wildlife, and the California Department of Fish and Game.

Collection and transplanting should be undertaken during the spring months. All work should be completed by July 1 to allow for sufficient vegetative growth prior to winter exposure.

B. Temporary Loss of Eelgrass Populations/Habitat.

Eureka Channel. Construction activities in the area of Piers E-10 to E-15 will be undertaken from a trestle above water levels of the Bay. Excavation activities to remove mud to allow the construction of coffer boxes may be accomplished from low draft barges, that may at times rest on the bay bottom, or from the trestle. This excavation will affect eelgrass populations existing in this area (as detailed on Attachments "D" and "I") but has been selected as the least environmentally damaging alternative as previously noted. It is anticipated that the direct impacts resulting from the excavation for the placement of coffer dams would be less than the amounts noted in Attachment "I" because excavation efforts are expected to

be reduced to only affect the areas immediately around the piers of a sufficient prism to allow construction of the coffer boxes. The exact height of the trestle will be determined by the contractor but is expected to be at a level of +10 feet MLLW.

At the conclusion of the seismic retrofit project, inoculating mud will be replaced into excavated areas to pre-construction levels, as identified in Section IV (A)2 of this Plan, to assist and facilitate natural eelgrass re-population of the site. Excavations from each channel will be kept separate and inoculating mud will be placed into the channel from which it was removed. For the eelgrass growing areas around piers E-11, E-12, E-13, E-14, and E-15 (with bay bottom elevations a identified in Section IV A(2), these areas will be re-graded to finish elevations within .3 meters of pre-construction elevations to mirror adjacent areas.

Each excavation area around Piers E-11, E-12, E-13, E-14, and E-15 will be replanted with 93 square meters (1000 sq. ft) of eelgrass with the same planting protocol as identified for the proposed permanent mitigation site. No depression basins will be installed at these locations, however. Potential shading effects on existing eelgrass populations under all trestles proposed in this retrofit project would then be monitored for natural re-population after the construction is completed. To accomplish this planting effort, eelgrass in the drainage channel at the Eureka Public Marina will be utilized (as proposed for the mitigation site on Indian Island). If insufficient populations exist in this channel to complete this component of the project, an alternate harvest site will be jointly determined by the Department of Transportation and resource agencies.

Prior to excavation efforts in this area, eelgrass may be harvested for transplanting into the new mitigation site.
Piles supporting the temporary trestle in all channels will be removed at the conclusion of the project.

Middle Channel. Temporary trestle shading of eelgrass amounts to 38 square meters around piers M-2, M-7, M-8, and M-9. No excavation is proposed around these piers to remove mud as work will be performed from the proposed trestles and a pile cap platform. No coffer boxes are proposed. At the conclusion of the seismic retrofit project, inoculating mud will be replaced into excavated areas to pre-construction levels, as identified in Section IV (A)(2) of this Plan, to assist and facilitate natural eelgrass re-population of the site. Excavations from each channel will be kept separate and inoculating mud will be placed into the channel from which it was removed.

Samoa Channel. Temporary trestle shading of eelgrass amounts to 264 square meters around piers S-2, S-3, and S-14 through S-19. Eelgrass populations on the Samoa side of the Channel near the edge and parallel with the proposed

trestle and under the trestle laterally along the shoreline at Pier S-14 have been identified. Excavation is proposed around these Piers to remove mud to allow the construction of coffer boxes. This may be accomplished from low draft barges that may at times rest on the bay bottom, or from the trestle. At the conclusion of the seismic retrofit project, inoculating mud will be replaced into excavated areas to pre-construction levels, as identified in Section III (A)(2) of this Plan, to assist and facilitate natural eelgrass re-population of the site. Excavations from each channel will be kept separate and inoculating mud will be placed into the channel from which it was removed.

VI. MONITORING PROGRAM

A monitoring procedure shall be implemented to document the success of the mitigation program, including the monitoring of the new eelgrass mitigation habitat and under all trestle areas. A monitoring report is to be prepared once per year for 5 successive years in August, and submitted by November 1st of each reporting year. At each field visit, notes shall be made of apparent hydrologic conditions, overall site conditions, and any factors which may contribute to or deter from the potential success of the mitigation program. A monitoring report/letter will be prepared following each site visit. The content of monitoring reports will, at a minimum, include the following information:

- mapping of the permanent mitigation site and temporary impact areas using photo interpretation methods to identify spatial distribution and density, the methodology consisting of air photos at a 1:1200 scale and use of a 1 square meter grid pattern over the temporary impact area in the Eureka Channel combined with land based oblique photos and ground truthing to analyze density coverage and land based photos from fixed photo points to enable counting of eelgrass clusters in the permanent mitigation site;
- a map locating fixed photo points, and photographs taken from these fixed photo points, will be taken annually at approximately the same low tide cycle;
- identification of bottom elevations of the permanent mitigation site and temporary impact area of the Eureka Channel by the placement of two-inch PVC pipes graduated to enable a mud line determination without disruption to the area, should these pipes be vandalized bottom elevations can be taken using a topo foot on a surveying rod from a floating platform with a fixed land-based survey monument;
- results of the field review;
- review of specific permit requirements;
- comparison of the populations in the mitigation site and the recovery site with their respective control sites;
- a determination of mortality, observed vegetative growth;
- recommendations necessary for changes that may be warranted to enhance the potential for success of the mitigation

- location of survey monitoring points (if any) will be shown on the submitted map.

VII. SUCCESS STANDARDS

A. Habitat areas

"Seagrass beds move... Z. marina can exist either as perennials or annuals. The rate at which portions of the seafloor switch from vegetated to unvegetated may vary on a scale of days or decades..." (Fonseca, 1998). This justifies reliance on adjacent "control beds" to gauge the success of the mitigation. Success will be based on creation of a habitat similar to that impacted, as human intervention may not be the cause of less than expected success rates. Following are the proposed success standards based on existing conditions:

- Permanent Eelgrass Habitat Mitigation Site. The new eelgrass habitat site will be planted with eelgrass clusters as detailed in the planting schedule in Section V, MITIGATION DETAILS, resulting in a mitigation ratio of not less than 2.8 to 1 based on the most recent eelgrass survey conducted in July, August, and September 2001. The mitigation site will be successful when eelgrass populations survive to replace the 38 sq. meters (408 sq. ft.) of eelgrass permanently displaced by the enlarged pier footings. It is expected that the individual eelgrass clusters will establish and expand to cover the entire mitigation site at the end of five years, subject to seasonal coverage variations, bioturbation, and other factors. The success of this site will be measured using land based photos from fixed photo points to determine density coverage by counting eelgrass clusters and comparing this data to the planting schedule contained in this Plan.

- Temporary Loss of Eelgrass Populations/Habitat. Eelgrass surviving in under-trestle areas of the project will be monitored for survival through the project, and temporarily affected under-trestle areas in the Eureka Channel will be replanted with a minimum of 93 sq. meters (1000 sq. ft.) each of eelgrass and be monitored for natural re-population and success. The plantings of eelgrass into excavated areas as detailed in Section V under "Temporary Loss of Eelgrass Populations/Habitat" is envisioned to assist in the recovery of this area, as suggested by Fonseca et al. The success of this site will be measured using air photos at a 1:1200 scale and a 1 square meter grid pattern to identify eelgrass growth, supported by ground truthing consisting of the counting of turions in a sample square meter and extrapolating results to similarly vegetated areas identified in the air photos and land based photos. This methodology is consistent with the protocol developed by the Sea Grant Office and the

Humboldt Bay Harbor, Recreation, and Conservation District in their eelgrass inventory of Humboldt Bay. The mitigation site will be successful when eelgrass populations have been inventoried to show that within the five year monitoring period growth has cumulatively covered a 2,908 sq. meter (31,301 sq. ft.) area. In the event natural eelgrass replenishment to pre-construction levels does not occur at the end of the third monitoring year, the Department will transplant eelgrass in an amount equal in area to the difference in the cumulative eelgrass population total and pre-construction inventory levels. These plantings will be harvested from harvest sites within or nearby the project site, upon securing the approval of the U.S. Army Corps of Engineers, the California Coastal Commission, and the Department of Fish and Game.

B. "Control" Site

Control monitoring areas on an undisturbed portion of an adjacent eelgrass meadow at the Eureka Channel and Samoa Channel sites shall be established as part of the monitoring program. This control site will be used as a gauge of relative eelgrass coverage in an area independent of the proposed eelgrass habitat. Variations in coverage in the control site will be evaluated and compared to the mitigation site as part of each monitoring report.

C. Exotics

The important functions of the intertidal habitat shall not be impaired by exotic species. The exotics, such as cord grass and trash, will be recorded and then removed from each of the created habitats during the routine monitoring events. The permanent mitigation site will be monitored for trash removal on a regular basis.

D. Topography

The proposed permanent eelgrass mitigation site and the temporary impact site are not expected to undergo major topographic degradation (such as excessive erosion or sedimentation resulting in bed accretion to greater than +2 feet MLLW or erode to less than -1 foot MLLW) after construction is completed. The potential loss of eelgrass populations from shading effects may contribute to erosion, but this is expected to be minor as tidal flows in this area do not exceed 50 cm/sec. (as recommended by Fonseca et al.) and survival of existing populations and natural re-population is anticipated. The bottom elevation of the permanent eelgrass mitigation site will be monitored each monitoring year using a methodology to remotely accumulate this data and avoid human activities within the mitigation site. The preferred methodology for the identification of

bottom elevations of the permanent mitigation site and temporary impact area of the Eureka Channel includes the placement of two-inch PVC pipes with a graduated scale to enable a mud line determination without disruption to the area. Should these pipes be vandalized bottom elevations can be taken using a topo foot on a surveying rod from a floating platform with a fixed land-based survey monument. Topographic change can then be recorded and evaluated to track erosion or sedimentary trends. Success of the proposed eelgrass mitigation will be related to many factors. Erosion and sedimentation rates will be evaluated along with all other aspects of the eelgrass monitoring in determining the long-term success of the effort. The topography of the Temporary Impact area will be performed by a survey at post-construction to verify that finish elevations conform with pre-construction elevations as detailed in Section IV A(2) of this Plan.

E. Water Quality

Water quality variables, specifically temperature, salinity, dissolved oxygen, suspended solids, and turbidity, are expected to be uniform within the immediate project area, which includes the control site and adjacent restoration or mitigation site. Because of the expected uniformity of water quality parameters within each channel, because water quality is subject to extreme variation depending on tide and weather, and because no manipulation of water quality is possible to affect environmental conditions for the eelgrass, water quality will not be monitored.

VIII. MONITORING AND REPORTING SCHEDULE

A. Construction and Transplanting Monitoring

Each phase of the mitigation procedure will be administered by Department environmental staff, contractors responsible to the Department or consultants under contract to the Department, in conjunction with representatives of the Department of Fish and Game. The contractor of the seismic retrofit project will perform the construction of the mitigation site. A different contractor having experience with transplanting eelgrass in Humboldt Bay will perform the harvesting and transplanting of eelgrass. Monitoring reports will be prepared by Department environmental staff or a qualified biologist familiar with the proposed construction and transplanting techniques acting in the capacity of a consultant. The staff responsible for overseeing the activities undertaken to create and restore habitats and associated values, will not be the personnel responsible for general construction associated with the seismic retrofit project.

Initial monitoring reports will be prepared following completion of the new mitigation site and following completion of the transplanting of the temporary impact site, and subsequent monitoring reports at yearly intervals for five years will be prepared by Department staff. These reports will be submitted to the Chief of the Environmental Management Office, Branch E-1, who will then forward them to the appropriate authorizing agencies, including the U.S. Army Corps of Engineers, Federal Fish and Wildlife, the California Department of Fish and Game, and the California Coastal Commission. The initial monitoring report will be completed and submitted within thirty (30) days of the completion of the new mitigation site in order to demonstrate progress with the mitigation program as well as compliance with permit requirements.

The content of the initial monitoring report shall include, at a minimum, the information detailed in Section VI and the following information:

1. For the new eelgrass mitigation site on Indian Island - include methods, equipment, and personnel employed and the disposition of waste material;
2. For the transplanting of eelgrass - include equipment and personnel employed, source of material, method of gathering and transport, and methods of transplanting, time of year, and planting elevation. Transplanting of eelgrass shall occur in May or early June, and not later than July 1.

B. Subsequent Monitoring

Each phase of the mitigation program shall be monitored once per year in August for five years following completion of the program. Year one shall begin the growing year following completion of the mitigation site construction and transplanting and after preparation of the Initial Monitoring Report. All planted areas will be investigated during the peak of the growing season, identified by Resource Agencies as July, August, or September. An annual, comprehensive biological report will be prepared following completion of all monitoring activities, and will be submitted to permitting agencies, and the local offices of the U.S. Army Corps of Engineers, the Federal Fish and Wildlife Service, the California Department of Fish and Game, and the California Coastal Commission by November 1st of the monitoring year. The annual report shall address each of the habitats created as part of the mitigation, and shall include, at a minimum, the following information:

- Results of quantitative measurements of growth;

Scalable aerial photographs of all sites will be taken annually during low tide in the peak-growing season. These photographs will be analyzed in conjunction with the counting of turions in a representative 1 square meter sample area to

determine the quantity of eelgrass present in the control sites, the restoration sites and the mitigation site. Photographs will also be taken from fixed photo stations to document and verify the presence/absence of eelgrass in the control, restoration and mitigation sites to assist in interpreting the aerial photographs.

Photo documentation will commence in the summer of 2002 (pre-construction) to provide a baseline inventory of eelgrass populations within the proposed construction area. Photos will be taken annually during the peak-growing season at approximately the same time of year during low tide to provide consistent documentation of eelgrass presence and growth.

The area and location of eelgrass will be delineated on the scalable aerial photographs and the quantity of eelgrass present in the control sites and within the construction area and mitigation area will be measured. This information will then be used to compare to later years' aerial surveys to determine the impact and recovery success.

- Comparison of results with prior years results;

The area measured on the aerial photograph for each control site, and for each restoration site will be compared to the previous years' area to determine if annual fluctuations in eelgrass growth are occurring.

- Comparison with control areas identified in the Eureka and Samoa Channels;

The area measured on the aerial photograph for each control site and the adjacent restoration site or mitigation site will be compared to determine the progress of the restoration site or mitigation site in eelgrass growth.

- Apparent progress toward achieving the target success standards for each habitat;

The success criteria (38 square meter coverage of the mitigation site and 100% recovery of the restoration sites) will be used in the photographic interpretation. The annual analysis will provide an acreage and per cent success estimate for both the restoration sites and the mitigation site. The analysis will also include an estimate in the annual change in the area of the control sites.

- Observations of the health and vigor of the individual species and the area in general;

A subjective observation of the health and vigor of the restoration and mitigation sites will be provided as compared to the adjacent control sites. Physical sampling of eelgrass within the restoration, mitigation and control sites will be performed in a sample 1 square meter grid cell to determine biomass, plant density and growth rates and extrapolate results to avoid introducing additional impacts to the plant populations and/or disturbance of the substrate.

- Discussion of invasion by exotic species

  Due to the depth of the proposed restoration and mitigation sites (-1 ft. to +2 ft. MLLW) there is no area suitable for growth of non-native invasive species. However, the site monitoring will include observations of non-native plant species should they attempt to become established. Any non-native plants found within the restoration or mitigation sites will be removed with the least amount of disturbance possible during the annual monitoring.

- A proposal, if warranted, for remedial action for areas showing die-off or insufficient growth

  If the mitigation and/or restoration sites are clearly not meeting performance standards or the trend over the first three years is towards failure, then a proposal will be developed to remediate the failure or to reverse the trend. The plan shall contain an analysis of the trend or failure and include possible causes. The plan shall propose additional measures to correct the failure, which may include re-grading of the mitigation site and replanting. Additional monitoring time shall be implemented to provide 5-years worth of monitoring and reporting after remedial action is taken.

- Erosion and Sedimentation

  The annual monitoring report will include information from graduated monitoring pipes and photographs taken from the photo stations to document erosion and deposition of the substrate within the mitigation site and temporary impact area. If erosion or deposition is apparent, a follow-up survey of site elevations will be done to determine if the site remains within the elevation tolerance for eelgrass. If it does not, then remedial action may be necessary to provide additional mitigation area so that the mitigation commitment can be met.

- Water Quality

  Water quality parameters such as temperature, salinity, dissolved oxygen, turbidity, and pH will not be monitored. These elements can change rapidly daily depending on weather and tides. However, because the control sites are

located adjacent to the restoration and mitigation sites, water chemistry at the control sites and the restoration sites or mitigation site should remain fairly uniform.

VIII. REMEDIAL ACTION

If monitoring data indicate that the success standards in one or more areas of the temporary impact site or the permanent eelgrass habitat site may not be achieved within the five year time period, the Department of Transportation and/or biological consultants shall consult with local representatives of the Corps of Engineers, Fish and Wildlife, the California Coastal Commission, and the Department of Fish and Game. The data will be evaluated and the site examined to determine if modifications could be made to achieve success. If it is determined that habitat modifications will not likely result in the attainment of mitigation goals, alternative site(s) will be investigated and chosen within the Humboldt Bay area for habitat creation. Details of the mitigation strategy on the alternate sites(s) shall be developed in consultation with agency staff and implemented in a timely manner.

The permittee shall be fully responsible for any failure to meet the success standards of the revised mitigation and monitoring plan. Upon a determination by the U.S. Army Corps of Engineers that the standards have not been achieved (based upon supporting recommendations from the California Department of Fish and Game, California Coastal Commission, and Federal Fish and Wildlife staffs after review of the required monitoring reports), the permittee shall submit a corrective action plan prepared or overseen by a qualified biologist, for the review and approval of the Corps of Engineers and the California Coastal Commission. The corrective action plan shall prescribe remedial measures that can reasonably be expected to achieve the success standards of the permit, and could include mitigation in off-site areas to offset project effects. The corrective action plan shall also prescribe a new monitoring report and remedial program to ensure the success of the remediation measures in achieving the success standards.

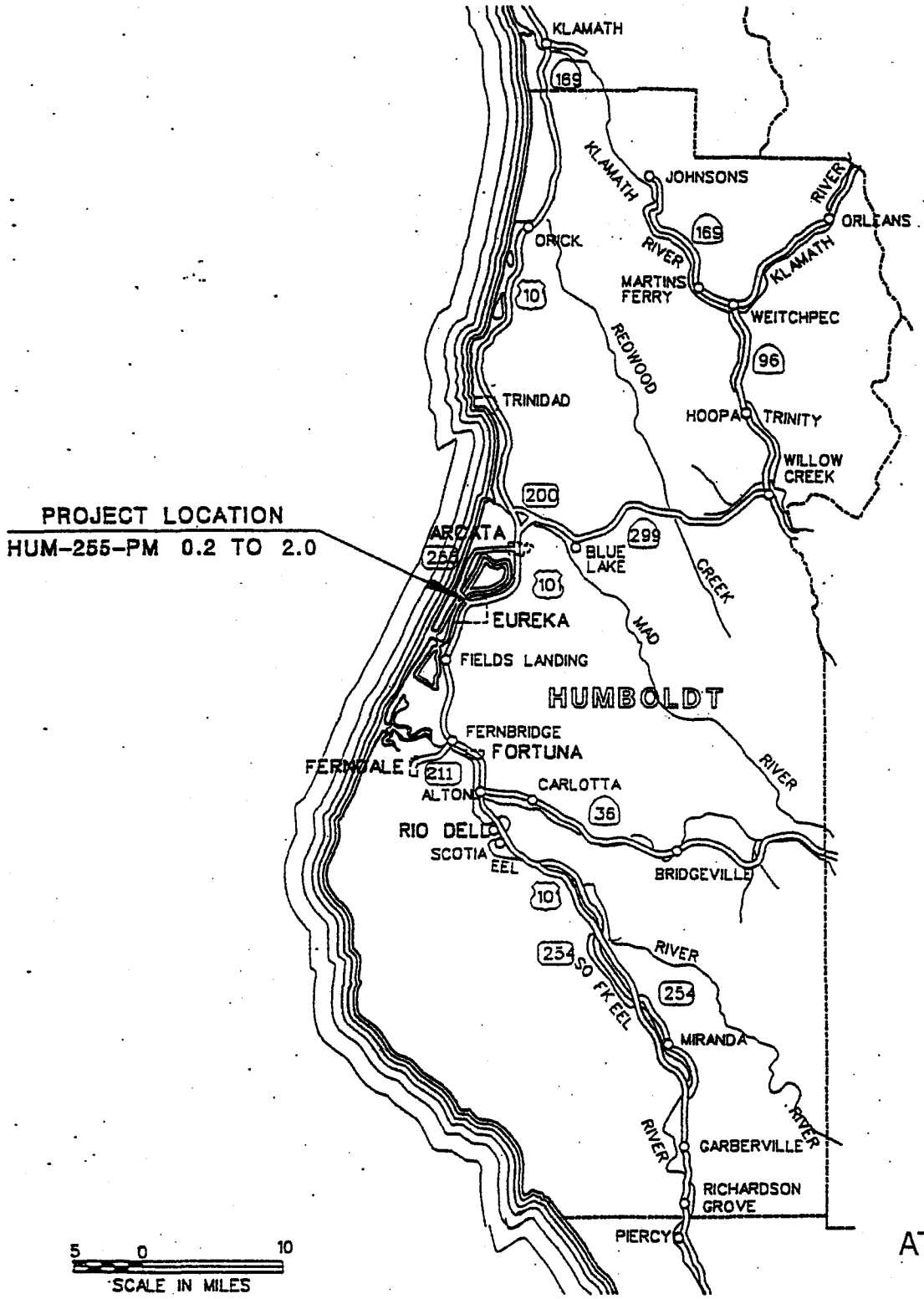
REFERENCES

Fonseca et al NOAA publication, Guidelines for the Conservation and Restoration of Seagrasses in the United States and Adjacent Waters, 1998

Pentec Environmental Can Eelgrass Transplanting Work? - Two Small Victories for the Grass, 1999

West Consultants, Inc., Hydrodynamic, Sedimentation and Bridge Scour Analyses of Samoa Channel, Middle Channel and Eureka Channel Bridges Humboldt Bay, California, 1999

HUMBOLDT BAY BRIDGES SEISMIC RETROFIT



PROJECT LOCATION
HUM-255-PM 0.2 TO 2.0

ATTACHMENT "A"

PURPOSE: TO REDUCE SAFETY HAZARD CAUSED BY PROBABLE SEISMIC ACTIVITY BY REINFORCING THE BRIDGE FOOTINGS AND ENCASING THE COLUMNS.

DATUM: 1929 USCS&GS (MSL)

ADJACENT PROPERTY OWNERS:

1. CITY OF EUREKA
2. HUMBOLDT BAY HARBOR DISTRICT
3. SIMPSON TIMBER COMPANY
4. NORTHWESTERN PACIFIC RAILROAD

Caltrans

Application By Caltrans Dist. 1
Box 3700 Eureka Ca. 95502-3700

LOCATION MAP

IN: HUMBOLDT BAY

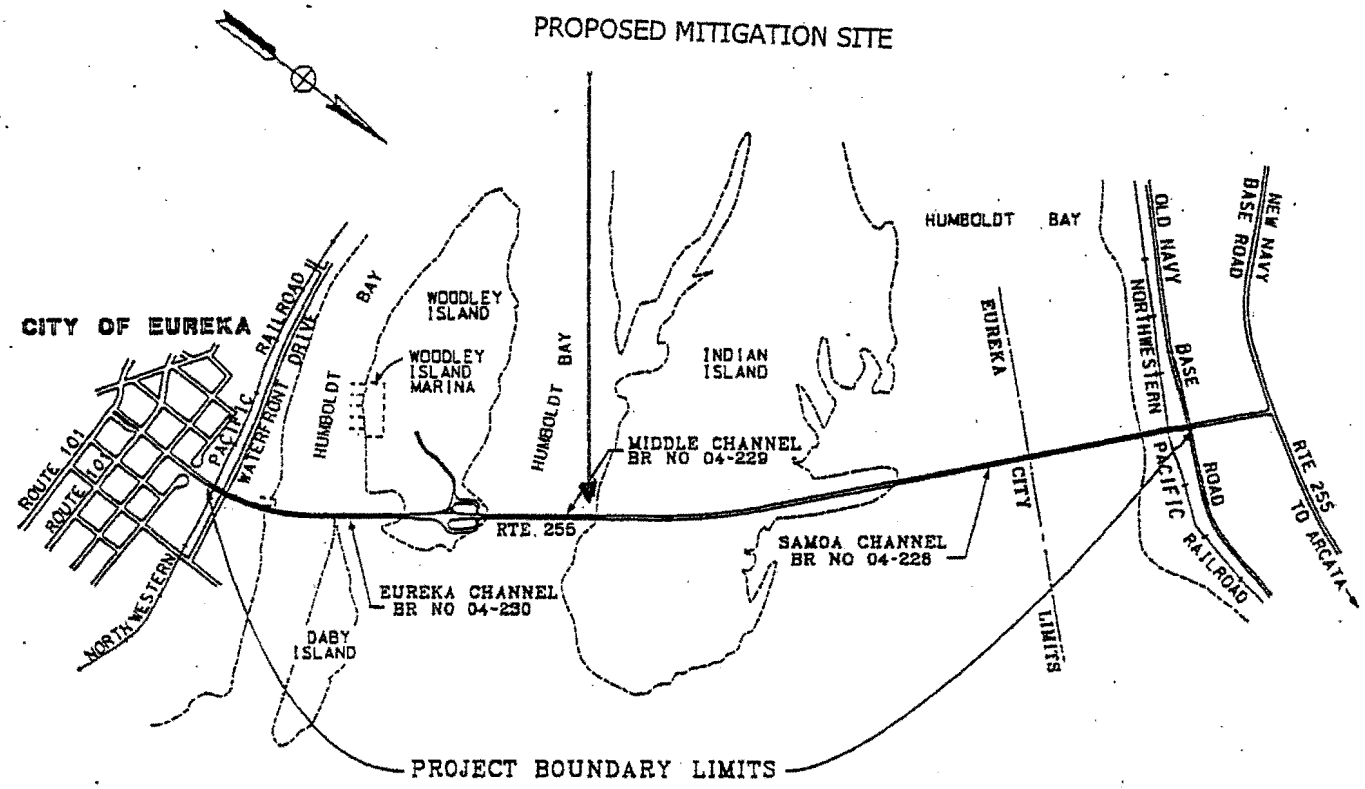
AT: ROUTE 255, PM 0.2 TO PM 1.9

COUNTY OF: HUMBOLDT

APPLICATION BY: CALTRANS

24 of 31

296701



ATTACHMENT "B"

NO SCALE

PURPOSE: TO REDUCE SAFETY HAZARD CAUSED BY PROBABLE SEISMIC ACTIVITY BY REINFORCING THE BRIDGE FOOTINGS AND ENCASING THE COLUMNS.

DATUM: 1929 USCS&GS (MSL)

ADJACENT PROPERTY OWNERS:

1. CITY OF EUREKA
2. HUMBOLDT BAY HARBOR DISTRICT
3. SIMPSON TIMBER COMPANY
4. NORTHWESTERN PACIFIC RAILROAD

Caltrans

Application By Caltrans Dist. 1
Box 3700 Eureka Ca. 95502-3700

VICINITY MAP

IN: HUMBOLDT BAY

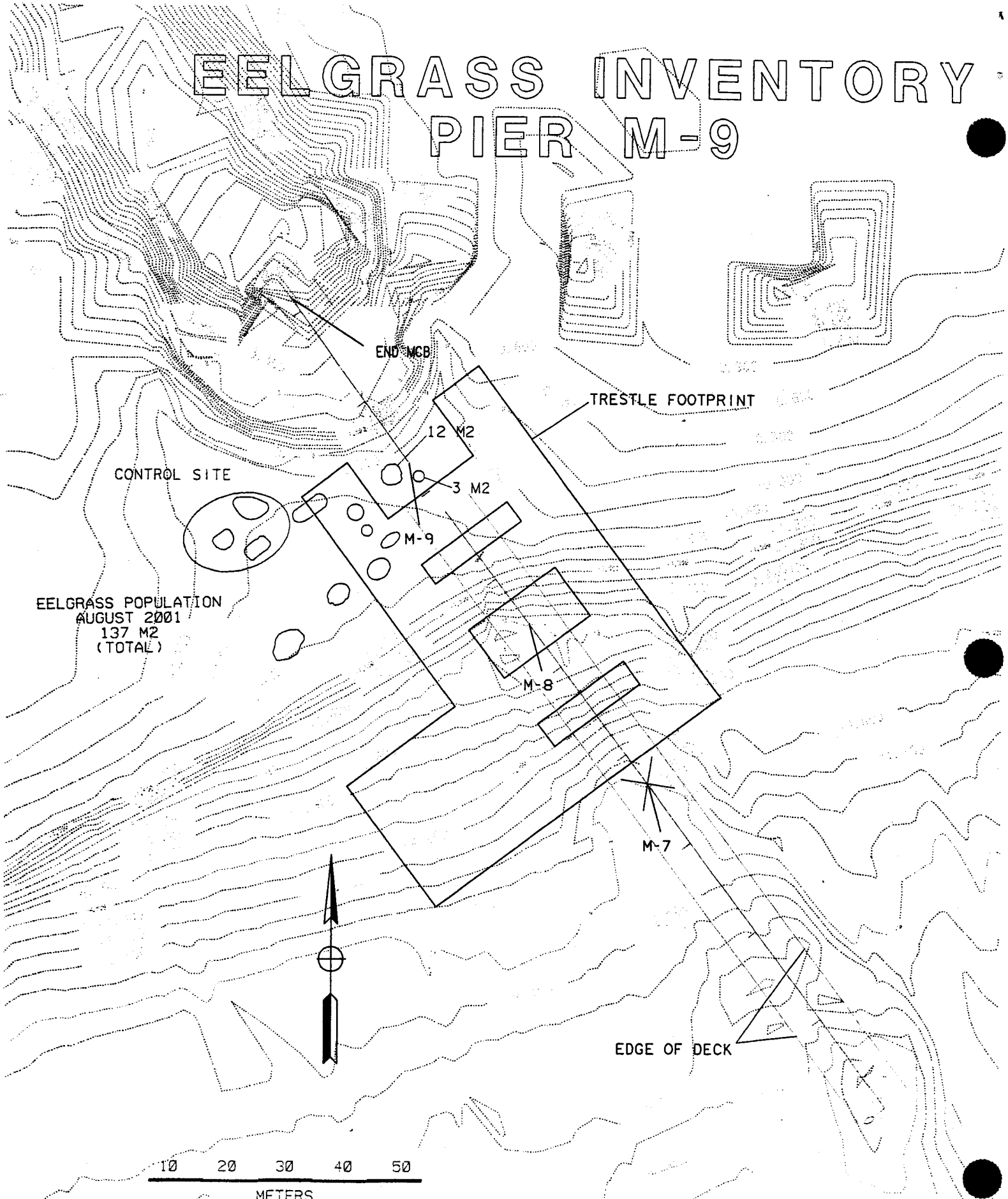
AT: ROUTE 255, PM 0.2 TO PM 1.9

COUNTY OF: HUMBOLDT

APPLICATION BY: CALTRANS

296701

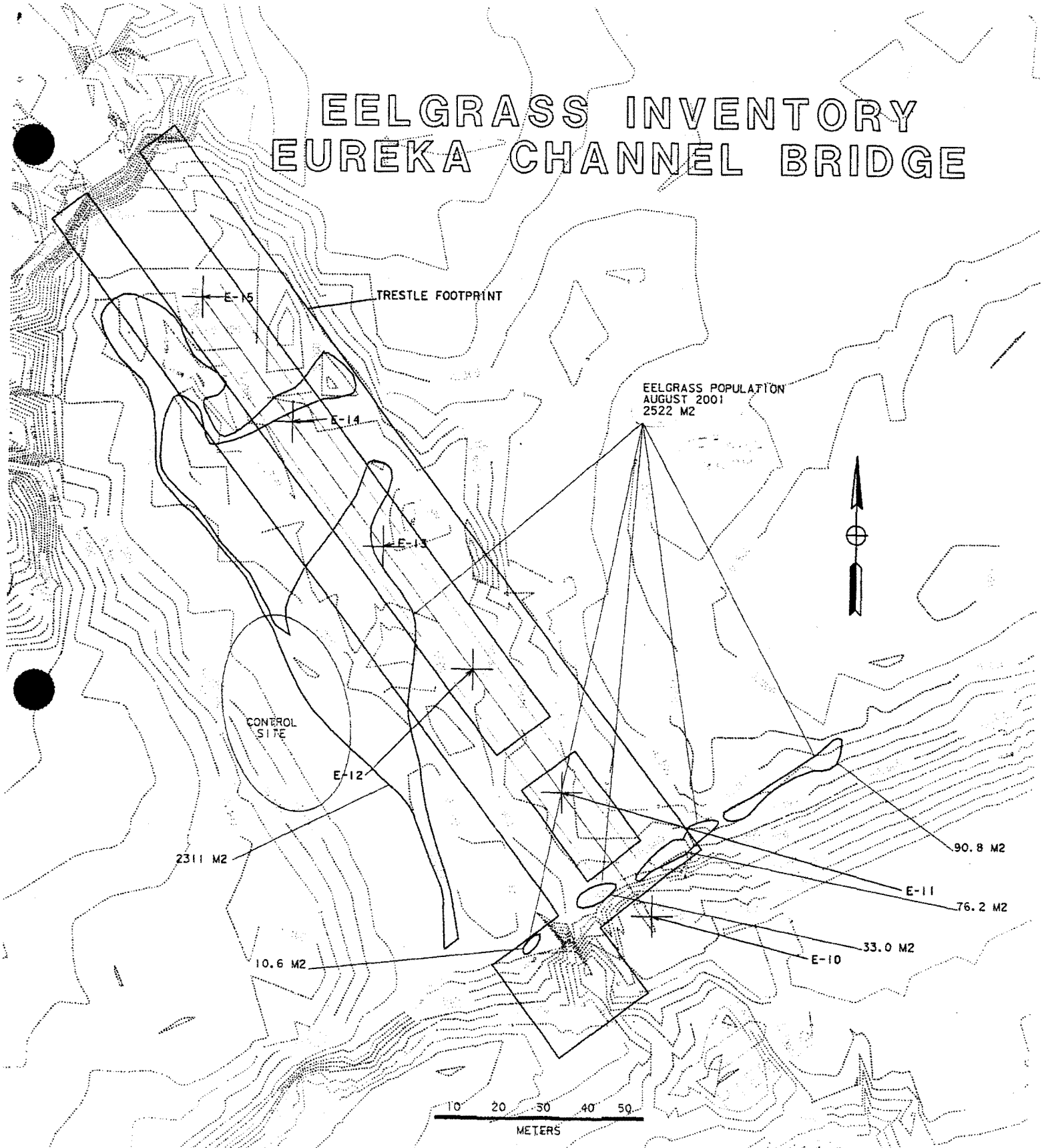
EELGRASS INVENTORY
PIER M-9



ATTACHMENT C

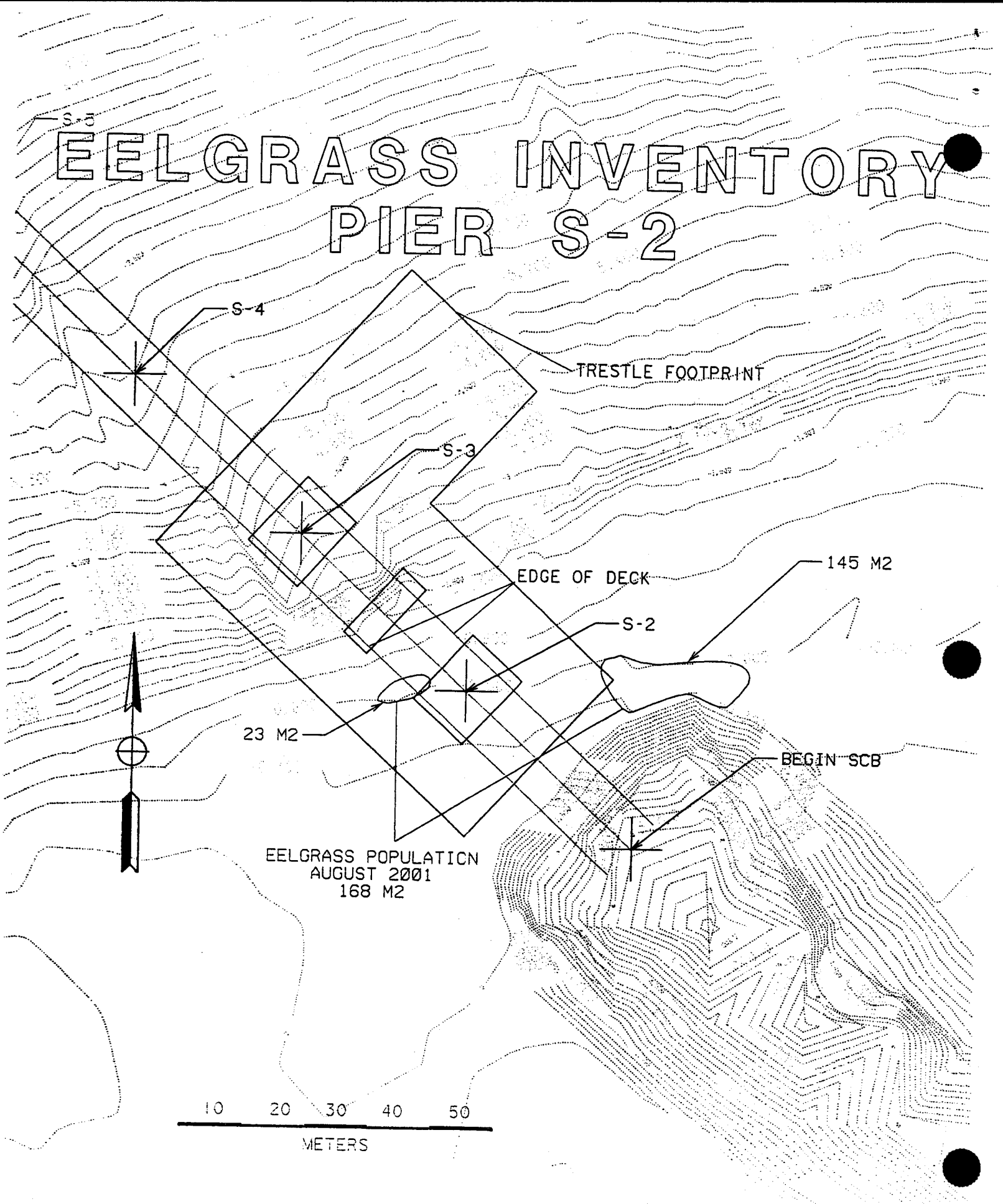
26431

EELGRASS INVENTORY
EUREKA CHANNEL BRIDGE



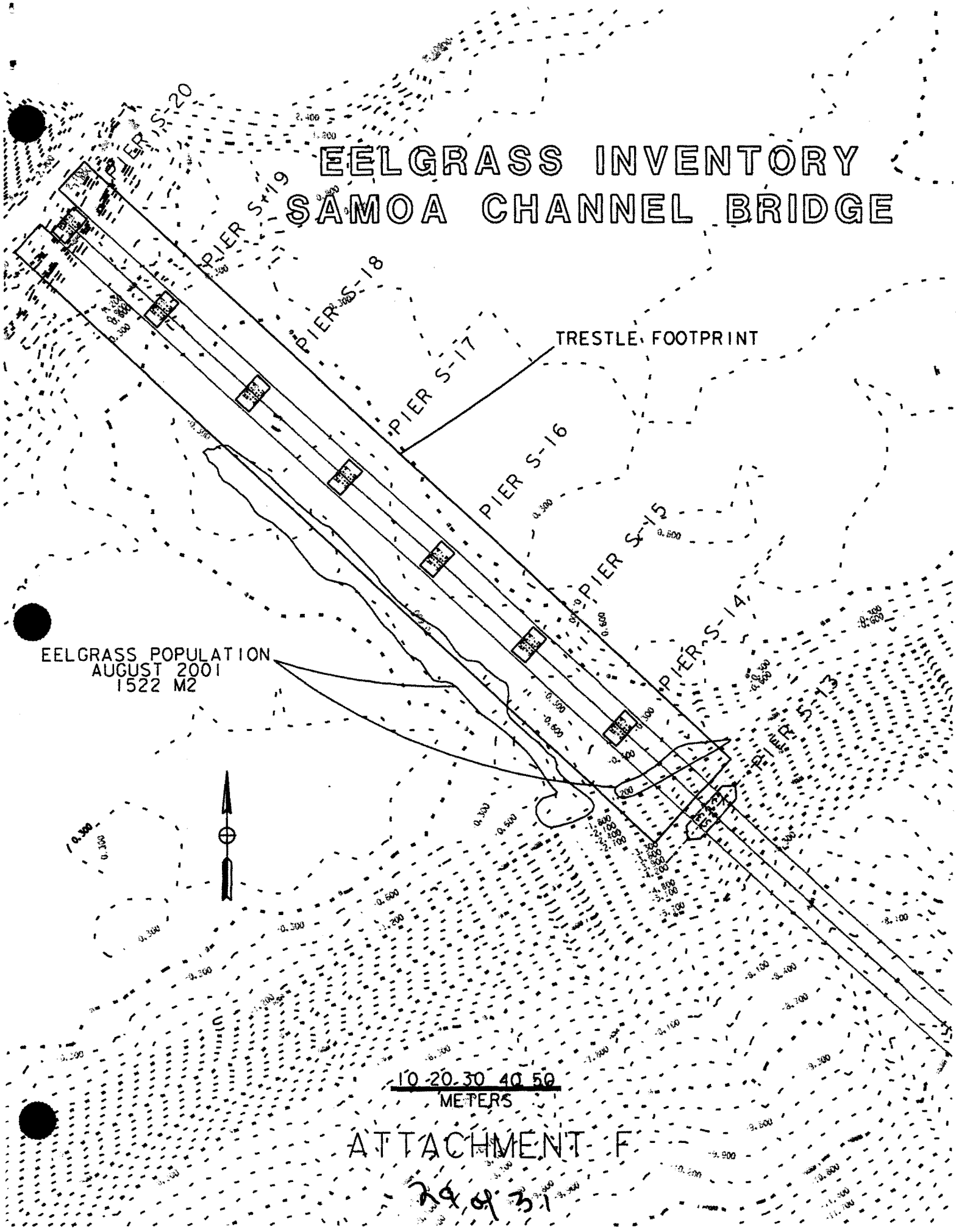
ATTACHMENT D

27431



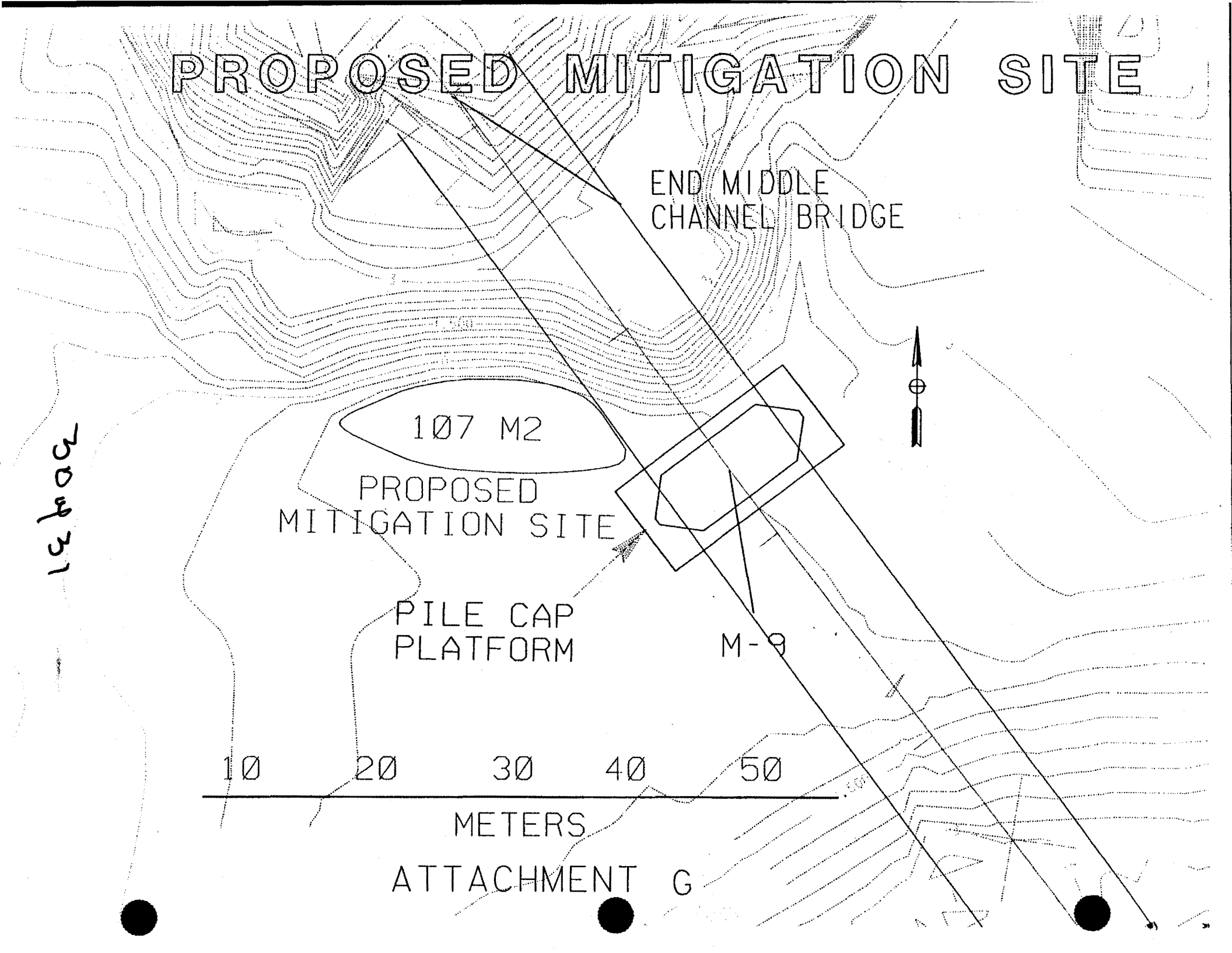
ATTACHMENT "E"

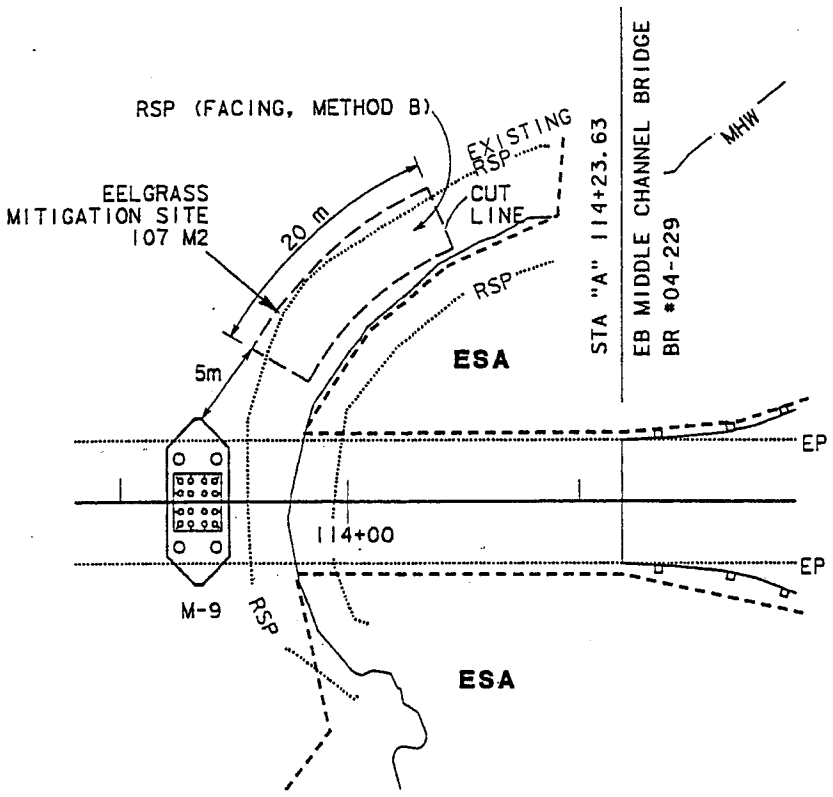
28 of 31



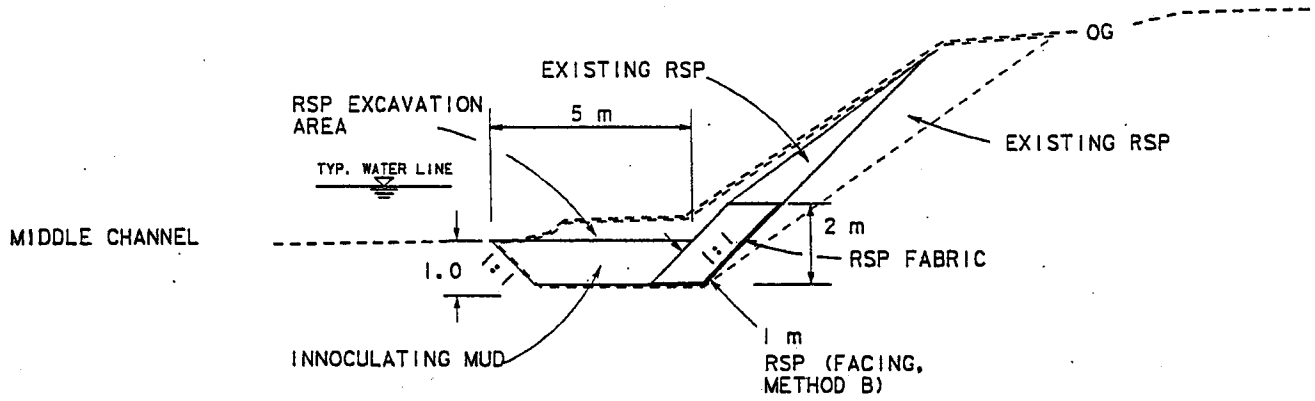
ATTACHMENT F

2493.1


PROPOSED MITIGATION SITE
END MIDDLE CHANNEL BRIDGE
107 M2
PROPOSED MITIGATION SITE
PILE CAP PLATFORM
M-9
10
20
30
40
50
METERS
ATTACHMENT G



EELGRASS
MITIGATION SITE
(ADJACENT TO PIER M-9)



EELGRASS
MITIGATION SITE
(ADJACENT TO PIER M-9)

ATTACHMENT H

NO SCALE

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