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STAFF REPORT: CDP AMMENDMENT

Application No.: **1-98-057-A3**

Applicant: California Department of Transportation (Caltrans)

Location: Coastal bluff along the shoreline at Surfer's Beach, to the west of Highway 1, beginning at PM 32.1 and ending at PM 32.0, Half Moon Bay (San Mateo County) (APN 047-263-020)

Project Description: Construction of a 400-ft. bluff top public access path to connect the Coastal Trail; placement of 175 linear-feet of rock revetment along the bluff face, and removal of 600 to 700 cubic yards of existing fill at Surfer's Beach in Half Moon Bay, San Mateo County.

Staff Recommendation: Approval with conditions

SUMMARY OF STAFF RECOMMENDATION

This Coastal Development Permit amendment (CDP) application is for installation of rock revetment along an approximately 175-linear-foot section of eroding ocean bluff adjacent to Scenic State Highway 1 at Surfer's Beach (also known as El Granada Beach) in the City of Half Moon Bay, in San Mateo County (**Exhibit 1**). The proposed project (Project) also includes construction of approximately 400 linear feet of a new multi-use public access trail to connect with and extend existing California Coastal Trail segments available to the north and south of the project site. The Project will also include the construction of a staircase to provide vertical public access from the top of the bluff to the beach. The 400 feet of new public access trail will be constructed in conformity with the American with Disabilities Act (ADA) of 1990, as amended in 2012.

Section 30235 of the Coastal Act permits shoreline protective structures when required to protect existing structures in danger from erosion and when designed to eliminate or mitigate adverse impacts on local shoreline sand supply. The proposed installation of rock revetment is an interim solution for the purpose of protecting existing State Highway 1 which is a primary north to south highway along the San Mateo County coast that provides vehicular access to the mid-coast area. Currently, erosion due to wave action threatens the stability of Highway 1 and creates hazardous conditions for cyclists and pedestrians that use the adjacent public path. The proposed rock revetment alternative would match the existing rock installed north of the site, has public support as the preferred alternative, provides wave energy dissipation and could be removed more easily once a long-term solution for protection of the Highway is devised. The Project's shoreline sand supply impacts (178 cubic yards over the permitted ten-year-period) translate directly into degradation of public access to and along the beach, particularly in relation to the manner in which project area materials affect nourishment of Surfer's Beach. As such, shoreline sand supply mitigation targeted toward these access impacts is appropriate in this case. Impacts to shoreline sand supply would be mitigated in-kind through construction of a paved bicycle and pedestrian pathway which would function as a seamless transition connecting the California Coastal Trail segments north and south of the Project. The Project would also provide safe vertical access to Surfer's Beach by way of a newly installed staircase.

Staff recommends special conditions which authorize the revetment for a ten-year period and require re-assessment of the Project's impacts if an extension of the permit is sought. **Special Condition 9** also requires a Long-term Plan be submitted to provide for a permanent solution to address erosion in the area for the protection of Highway 1 and the public pathway. Recommended special conditions also ensure that the proposed project is installed in compliance with the proposed plans and properly monitored and maintained to ensure its long-term structural stability. The Applicant acknowledges the site hazards and agrees to waive any claims of liability on the part of the Commission for allowing the development to proceed per the requirements of **Special Condition 10.** As such, the Project, as designed and conditioned, would protect existing structures in danger from erosion, mitigate for adverse impacts to sand supply through public access improvements, minimize risks to life and property, assure stability and structural integrity of the proposed project and the new public access trail, and will neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area consistent with Sections 30235 and 30253 of the Coastal Act.

The Project would result in 0.1 acres of permanent impact to highly disturbed willow scrub wetland habitat. The primary purpose of the project is to provide for protection of State Highway 1, continued public use of Surfer's Beach, and increased and enhanced public access along the trail and from the trail to the beach. As such, the fill of wetlands resulting from the Project is one of the seven enumerated allowable fill uses pursuant to Coastal Act Section 30233 as it would provide for continued public services. The proposed alternative is the least environmentally damaging alternative as it would minimize fill of wetlands and includes construction best management practices to protect marine resources and water quality. Staff recommends **Special Condition 6** which requires the submittal of a Habitat Restoration Plan to mitigate for permanent impacts to wetlands at a ratio of 3:1. Therefore, the Project as conditioned is consistent with the wetlands, marine resource and water quality policies of the Coastal Act.

Access to the beach and the bluff top would be retained during construction activities. The lateral access along the beach will not be impeded by the proposed revetment; however, the proposed project will permanently affect public beach access and recreational opportunity as it would directly cover approximately 1,400 square feet of sand beach area for at least a ten-year period. This impact will be mitigated by the public access benefits built into the project. The proposed rock revetment, while not preferable to a natural coastline, would bend with the existing visual appearance of the area. The topography of the coastline and the location for the shoreline protection structure is such that the rock will not obstruct public views of the ocean from the highway side (north and south of the project site) or from the east side of Highway 1. Thus, the Project is consistent with the public access and recreation, and visual resource policies of the Coastal Act.

Staff recommends **approval** of coastal development permit amendment application 1-98-057-A3 as conditioned. The motion is found on page 4 below.

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APPENDICES

EXHIBITS

I. MOTION AND RESOLUTION

Staff recommends that the Commission, after public hearing, approve a coastal development permit (CDP) amendment for the proposed development. To implement this recommendation, staff recommends a **YES** vote on the following motion. Passage of this motion will result in approval of the CDP amendment as conditioned and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of the Commissioners present.

Motion: *I move that the Commission approve the proposed amendment to Coastal Development Permit No. 1-98-057-A3 pursuant to the staff recommendation.*

Resolution to Approve CDP Amendment: *The Commission hereby approves the coastal development permit amendment on the ground that the development as amended and subject to conditions, will be in conformity with the policies of Chapter 3 of the Coastal Act and will not prejudice the ability of the local government having jurisdiction over the area to prepare a Local Coastal Program conforming to the provisions of Chapter 3. Approval of the permit amendment complies with the California Environmental Quality Act because either 1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the amended development on the environment, or 2) there are no feasible mitigation measures or alternatives that would substantially lessen any significant adverse impacts of the amended development on the environment.*

All terms and conditions of CDP A-98-057 as amended remain in full force and effect. This permit amendment is granted subject to the following additional standard and special conditions:

II. STANDARD CONDITIONS

This permit amendment is granted subject to the following standard conditions:

1. **Notice of Receipt and Acknowledgment**. 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 period 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 or 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.

II. SPECIAL CONDITIONS

This permit amendment is granted subject to the following special conditions:

1. **Approved Project.** This coastal development permit (CDP) Amendment authorizes: 1) placement of a 175 linear foot rock revetment (made up of 2 to 4 ton rock) along the bluff face at 2:1 slope, 2) construction of a staircase for vertical access to the beach, and 3) construction of a public access trail to link two existing segments of the California Coastal Trail on the blufftop, as further described in the project plans (*Project Plans for Construction on State Highway in San Mateo County in and near Half Moon Bay from Coronado Street Intersection to 0.2 mile Northwest of Coronado Street Intersection*, dated 3/20/2015) and as shown in **Exhibits 2 and 3**. All development is located along the shoreline at Surfer's Beach, Half Moon Bay (San Mateo County) (APN 047-263-020).

2. **Final Project Plans.** PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, the Permittee shall submit, for the review and approval of the Executive Director, two sets of 100% design-level Final Project Plans. The Final Project Plans shall be in substantial conformance with the 95% design-level plans used for project approval shown in **Exhibits 2 and 3** and shall depict the location of the temporary beach public accessway to be provided during project construction.

3. **As-Built Plans.** WITHIN NINETY DAYS OF COMPLETION OF CONSTRUCTION, or within such additional time as the Executive Director may grant for good cause, the Permittee shall submit two copies of full size As-Built Plans showing all development completed as part of the approved project. The As-Built Plans shall be substantially consistent with the plans submitted by the Applicant (see **Exhibits 2 and 3**), including providing for all of the same requirements specified in those plans. The As-Built Plans shall include the submittal of color photographs (in hard copy and electronic form) that clearly show all components of the as-built project, accompanied by a site plan that notes the location of each photo point and the date and time of each photograph. At a minimum, the submitted photographs shall provide representative viewpoints of the beach area seaward of the project area, including as seen from the public access trail on either side of the project area, including providing viewpoints directed inland toward the project area from the beach area itself. The As-Built Plans shall be submitted with a certification by a licensed civil engineer with experience in coastal structures and processes and acceptable to the Executive Director verifying that all development was undertaken in conformance with the Approved Project (**Special Condition 1**) and Final Project Plans (**Special Condition 2**).

4. **Monitoring.** The Permittee shall ensure that the condition and performance of the approved as-built shoreline protection project is regularly monitored by a licensed civil or geotechnical engineer with experience in coastal structures and processes. Such monitoring evaluation shall at a minimum address whether significant weathering or damage has occurred that would adversely affect future performance, and identify any structural or other damage requiring repair to maintain the as-built rock revetment in a structurally sound manner and its approved state. Monitoring reports prepared by a licensed civil engineer with experience in coastal structures and processes, and covering the above-described evaluations, shall be submitted to the Executive Director for review and approval at annual intervals by May 1st of each year (with the first report due the first May after initial construction is completed) for as long as the rock revetment exists at this location. The reports shall identify the existing configuration and condition of the rock revetment and shall recommend actions necessary to maintain it in its approved state, and shall include photographs taken from each of the same vantage points required in the As-Built Plans (**Special Condition 3**) with the date and time of the photographs and the location of each photographic viewpoint noted on a site plan.

5. **Maintenance.** It is the Permittee's responsibility to maintain the permitted rock revetment in a structurally sound manner and in its approved state; (b) it is the Permittee's responsibility to retrieve dislodged rock that might otherwise substantially impair the recreational qualities of the beach; and (c) it is the Permittee's responsibility to frequently inspect the permitted rock revetment for signs of failure and or displaced rock. This CDP amendment authorizes maintenance as described below:

   a) **Maintenance.** "Maintenance," as it is understood in this special condition, means development that would otherwise require a CDP whose purpose is to repair and/or to maintain the rock revetment in its approved state (see Approved Final Project Plans (**Special Condition 2**)). Maintenance does not include an enlargement or expansion of the approved rock revetment beyond its existing footprint.

b) Other Agency Approvals. The Permittee acknowledges that these maintenance stipulations do not obviate the need to obtain permits from other agencies for any future maintenance episodes.

c) Maintenance Notification. At least two weeks prior to initiating any future maintenance event, the Permittee shall notify, in writing, staff of the Coastal Commission's North Central Coast District Office. Except for necessary emergency interventions, such notice shall be given by First Class mail. The notification shall include: a detailed description of the maintenance event proposed; any plans, engineering and geology reports describing the event; other agency authorizations; and any other supporting documentation (as necessary) describing the maintenance event. The maintenance event shall not commence until the Permittee has been informed by staff of the Coastal Commission's North Central Coast District Office that the maintenance event complies with this CDP. If the Permittee has not been given a verbal response or sent a written response within 30 days of the notification being received in the North Central Coast District Office, the maintenance event shall be authorized as if Commission staff affirmatively indicated that the event complies with this CDP amendment. The notification shall clearly indicate that the maintenance event is proposed pursuant to this CDP amendment, and that the lack of a response to the notification within 30 days constitutes approval of it as specified in this CDP amendment. In the event of an emergency requiring immediate maintenance, the notification of such emergency episode shall be made as soon as possible, and shall (in addition to the foregoing information) clearly describe the nature of the emergency.

d) Maintenance Coordination. Maintenance events shall, to the degree feasible, be coordinated with other maintenance events proposed in the immediate vicinity, such as may be associated with the public access trail and staircase, with the goal being to limit coastal resource impacts, including the length of time that construction occurs in and around public access areas and shoreline access points. As such, the Permittee shall make reasonable efforts to coordinate the Permittee' maintenance events with other nearby events, including adjusting maintenance event scheduling as directed by staff of the Coastal Commission's North Central Coast District Office.

e) Noncompliance Provision. If the Permittee is not in compliance with the terms and conditions of this CDP as amended that apply to the subject property at the time that a maintenance event is proposed, then the maintenance event that might otherwise be allowed by the terms of this maintenance condition shall not be allowed by this condition until the Permittee is in full compliance with those terms and conditions.

f) Emergency. In addition to the emergency provisions set forth in subsection (c) above, nothing in this condition shall serve to affect the specified rights that may exist in cases of emergency pursuant to Coastal Act Section 30611, Coastal Act Section 30624, and Subchapter 4 of Chapter 5 of Title 14, Division 5.5, of the California Code of Regulations (Permits for Approval of Emergency Work).

g) Duration and Scope of Covered Maintenance. Future maintenance under this CDP amendment is allowed subject to the above terms for ten (10) years from the date of approval of the amended CDP.

6. Habitat Restoration Plan. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION the Permittee shall submit two sets of a Habitat Restoration Plan to the Executive Director for review and approval. The plan shall at a minimum include:

a) Restoration Area. A detailed site plan of all on- or off-site restoration areas, covering a minimum of 0.3 acres, with habitat acreages identified.

b) Baseline. An ecological assessment of the current condition of the restoration areas.

c) Success Criteria. Goals, objectives, and performance standards for successful restoration.

d) Restoration Methods. The final design and construction methods that will be used to ensure the restoration plan achieves the defined goals, objectives, and performance standards.

e) Initial As Builts. Provisions for submittal, within 30 days of completion of initial restoration work, of "as built" plans demonstrating that initial restoration area activities have been completed in accordance with the approved plan.

f) Monitoring and Maintenance. Provisions for monitoring and maintenance, including a schedule, maintenance activities, a quantitative sampling plan, fixed photographic points, interim success criteria, final success criteria for native and non-native vegetative cover, biodiversity and wetland hydrology, and a description of the method by which success will be evaluated.

g) Reporting. Provision for submitting, for the review and approval of the Executive Director, monitoring reports prepared by a qualified specialist that assess whether the restoration is in conformance with the approved plan, beginning the first year after initiation of implementation of the plan, and annually for at least five years. Final monitoring for success will take place no sooner than 3 years following the end of all remediation and maintenance activities other than weeding. If the final report indicates that the restoration project has been unsuccessful, in part or in whole, based on the approved success criteria, the Permittee shall within 90 days submit two sets of a revised or supplemental restoration program for the review and approval of the Executive Director. The revised or supplemental restoration program shall be processed as an amendment to the CDP unless the Executive Director determines that no CDP amendment is legally required. The program shall be prepared by a qualified specialist, and shall be designed to compensate for those portions of the original restoration that did not meet the approved plan's success criteria.

All requirements above and all requirements of the approved Habitat Restoration Plan shall be enforceable components of this CDP. The Permittees shall undertake development in accordance with this condition and the approved Plan.

7. **State Lands Commission Authorization.** PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, the Permittee shall submit, for the review and approval of the Executive Director a copy of the State Lands Commission authorization to allow the approved project, or evidence that no State Lands Commission authorization is necessary. Any changes to the approved project required by the State Lands Commission shall be reported to the Executive Director.

8. **Term of CDP Amendment Authorized.** This CDP amendment authorizes the proposed project at this location for ten years from the date of approval. If the Permittee intends to keep the permitted project in place after that time, the Permittee must apply for a new CDP amendment to allow the permitted project for an additional five (5) years (including, as applicable, any potential modifications to it desired by the Permittee). If the Permittee proposes such an extension, the Permittee must submit a CDP amendment application prior to the expiration date of this CDP amendment.

9. **Plan for Long-term Solution.** The Permittee acknowledges that the project authorized pursuant to this CDP amendment is temporary only, and is permitted to be maintained in order to provide a reasonable period of time for the Permittee to develop and implement a long-term solution to the acute erosion threat to Highway 1 in this area. PRIOR TO COMMENCEMENT OF CONSTRUCTION the Permittee shall submit, subject to the review and approval of the Executive Director, a Long-Term Plan proposal and timeline for a permanent solution to address erosion in this project area and to protect Highway 1 and the public pathway within the next ten years. The Plan shall include, but not be limited to the following:

   a) Options. Identification of options for preserving through access along Highway 1, including the California Coastal Trail (CCT), including at a minimum options to move the Highway and CCT inland. The options shall be described and evaluated in terms of feasibility across the same range of factors developed to a similar level of detail for each option. The Plan shall provide a mechanism and process to choose the preferred long-term solution in coordination with the Executive Director, and shall identify all activities, targets, and target deadlines associated with pursuing the preferred long-term solution.

   b) Reporting. An annual reporting mechanism whereby each annual report is submitted for Executive Director review and approval, identifies progress made towards reaching the preferred long-term solution, and identifies steps necessary to pursue the preferred long-term solution. Progress shall be measured at a minimum by the activities, targets, and target deadlines identified above. If any target has not been achieved by the target deadline, then the annual report shall identify the steps to be taken to achieve the required target, and the anticipated amount of time until the target is to be achieved.

   c) If, in the opinion of the Executive Director, the Permittee is significantly out of compliance with the terms and conditions of this CDP amendment, including meeting

target deadlines established in the Plan, then the matter shall be scheduled for Coastal Commission review and potential action, where such action at the Coastal Commission's discretion may include modifying the terms and conditions of this coastal development permit amendment, including the end of the term of the permit amendment.

10. **Assumption of Risk, Waiver of Liability and Indemnity Agreement.** The Permittee acknowledges and agrees, on behalf of themselves and all successors and assigns:

    a) That the site is subject to coastal hazards including but not limited to episodic and long-term shoreline retreat and coastal erosion, high seas, ocean waves, storms, tsunami, tidal scour, coastal flooding, earthquakes, landslides, and the interaction of same;

    b) to assume the risks to the Permittee and the property that is the subject of this permit of injury and damage from such hazards in connection with this permitted development;

    c) to unconditionally waive any claim of damage or liability against the Commission, its officers, agents, and employees for injury or damage from such hazards;

    d) to indemnify and hold harmless the Commission, its officers, agents, and employees with respect to the Commission's approval of the project against any and all liability, claims, demands, damages, costs (including costs and fees incurred in defense of such claims), expenses, and amounts paid in settlement arising from any injury or damage due to the permitted development; and

    e) That any adverse effects to property caused by the permitted project shall be fully the responsibility of the property owner.

11. **Construction Requirements.** The Permittee shall undertake construction in accordance with following construction requirements:

    a) Construction Areas. All such areas within which construction activities and/or staging are to take place shall be minimized to the maximum extent feasible in order to have the least impact on public access and shoreline resources, including by using inland areas for staging and storing construction equipment and materials as feasible.

    b) Construction Methods and Timing. All methods to be used shall keep the construction areas separated from ocean and public recreational use areas (including using unobtrusive fencing (or equivalent measures) to delineate construction areas). All work shall take place during daylight hours, and lighting of the beach area is prohibited.

    c) Construction BMPs. Construction BMPs shall be used during construction to protect coastal water quality, including the following: (a) silt fences, straw wattles, or equivalent apparatus, shall be installed at the perimeter of the construction site to prevent construction-related runoff and/or sediment from discharging to the ocean; (b) equipment washing, refueling, and/or servicing shall take place at least 50 feet from the bluff edge. All construction equipment shall be inspected and maintained at an off-site location to

prevent leaks and spills of hazardous materials at the project site; (c) the construction site shall maintain good construction housekeeping controls and procedures (e.g., clean up all leaks, drips, and other spills immediately; keep materials covered and out of the rain (including covering exposed piles of soil and wastes); dispose of all wastes properly, place trash receptacles on site for that purpose, and cover open trash receptacles during wet weather; remove all construction debris from the site); and (d) all erosion and sediment controls shall be in place prior to the commencement of construction as well as at the end of each work day.

d) Construction Site Documents. Copies of the signed CDP amendment shall be maintained in a conspicuous location at the construction job site at all times, and such copies shall be available for public review on request. All persons involved with the construction shall be briefed on the content and meaning of the CDP amendment, and the public review requirements applicable to them, prior to commencement of construction.

e) Construction Coordinator. A construction coordinator shall be designated to be contacted during construction should questions arise regarding the construction (in case of both regular inquiries and emergencies), and that their contact information (i.e., address, phone numbers, etc.) including, at a minimum, a telephone number that will be made available 24 hours a day for the duration of construction, is conspicuously posted at the job site where such contact information is readily visible from public viewing areas, along with indication that the construction coordinator should be contacted in the case of questions regarding the construction (in case of both regular inquiries and emergencies). The construction coordinator shall record the name, phone number, and nature of all complaints received regarding the construction, and shall investigate complaints and take remedial action, if necessary, within 24 hours of receipt of the complaint or inquiry.

f) Notification. The Permittee shall notify planning staff of the Coastal Commission's North Central Coast District Office at least 3 working days in advance of commencement of construction, and immediately upon completion of construction.

Minor adjustments to the above construction requirements may be allowed by the Executive Director if such adjustments: (1) are deemed reasonable and necessary; and (2) do not adversely impact coastal resources. All requirements above shall be enforceable components of this CDP amendment.

IV. FINDINGS AND DECLARATIONS

The Commission finds and declares as follows:

A. PROJECT LOCATION AND BACKGROUND

The project site is located at Surfer's Beach between State Route Highway 1 and the Pacific Ocean, on the southwest side of the highway north of the Coronado Street intersection, in the City of Half Moon Bay, just south of Pillar Point Harbor and adjacent to the unincorporated community of El Granada (**Exhibit 1**). The majority of the project site is located within Caltrans'

(Applicant) Right-of-Way (R-O-W); a small portion of the site on the south is owned by the City of Half Moon Bay.

Highway 1 is a conventional two-lane highway with 12-foot lanes and 8-foot shoulders. There is an existing 10-foot-wide, Class I path[1] for pedestrians and cyclists located to the north of the project site. This path, which is a portion of the California Coastal Trail, sits on top of an embankment between Highway 1 and the ocean. The embankment consists of two- to four-ton rock revetment which extends along the ocean side northward from the site toward Pillar Point Harbor. When originally constructed, a portion of this paved path stretched into the project site. However, this portion of the path has since eroded away. Located to the south of the project site is another section of the Coastal Trail. This segment is also a Class I path that was constructed within the Caltrans R-O-W in 2013 (**Exhibit 6**). The proposed bluff top access trail will provide linkage between these two existing Coastal Trail segments.

The dominant vegetation community within the project site is willow/coastal scrub. The willow/coastal scrub habitat is in poor health as cape ivy, a noxious plant species, is growing throughout the willow. The density of cape ivy has suppressed native plant growth in this area. Cape ivy vines are known to form dense mats of vegetation over trees and shrubs that result in killing the plants located underneath. In addition to the willow/coastal scrub there is annual grassland within the project site.

Approximately 132 feet of the previously paved and unpaved path has eroded away. The erosion which is occurring along the shoreline at Surfer's Beach and its vicinity is primarily a result of tidal influence /wave action and a reduction of sediment deposits due to construction of the Pillar Point breakwaters to the north. A recent analysis of the bluff retreat from 1993 to 2012 indicates that the approximately 2,200-foot long unprotected section of coastline in the project vicinity is retreating at a rate of 1.64 feet per year. The eroded conditions at the project site need to be curtailed in order to protect the State highway and the bluff top area (**Exhibits 5 and 6**).

The Commission has issued previous CDPs for various development projects in the immediate vicinity of Surfer's Beach. These include CDP No. 3-93-037 for the placement of rock revetment, CDP No. 1-98-057-A1 for the extension of two drainage structures to accommodate installation of the Coastal Trail, emergency CDP No. 2-1-004-G for repairs to the Coastal Trail and for additional installation of rock revetment, and CDP No. 1-98-057-A2 for additional construction of the Coastal Trail. (**Exhibit 14**) All of the previous projects are located to the north of the proposed project site except for a portion of the improved Coastal Trail which, as discussed above, stretched into a portion of the project site on its northern side. This CDP application is for a third amendment to CDP No. 3-93-037.[2]

[1] A Class I Path provides completely separated right of way for the exclusive use of bicycles and pedestrians with crossflow by motorists minimized.

[2] The original/underlying CDP (No. 3-93-057) was issued in 1993 at a time when San Mateo County permit and planning matters were handled by the Commission's Central Coast District Office in Santa Cruz. After this original CDP action, the subsequent amendments to that CDP and other CDPs for projects in this vicinity have been handled by the Commission's North Central Coast District Office in San Francisco, which is why the first CDP starts with a "3" instead of a "2".

B. PROJECT DESCRIPTION

This application is for installation of rock revetment along an approximately 175-linear-foot section of eroding ocean bluff immediately adjacent to State Highway 1 at Surfer's Beach in the City of Half Moon Bay, in San Mateo County. As a result of erosion, an existing public access trail has been damaged and temporarily interrupted. The project includes construction of approximately 400 feet of replacement and new public access trail to connect the existing California Coastal Trail segments located to the north and south of the project site, as well as the construction of a staircase over the rock revetment to provide vertical access from the top of the bluff to the beach (**Exhibit 7**). The public access trail to be constructed would be in conformity with Americans with Disabilities Act.

The project would remove approximately 600 to 700 cubic yards of existing fill and construct a five-foot deep key so that two to four-ton rock could be installed to reduce erosion of the coastal bluff. The rock revetment would have a top layer of two- to four-ton rock approximately 5.25-feet thick. A 1.8-foot layer of rock and fabric would be placed underneath to prevent fine particles from migrating from underneath the rock revetment. The project design also includes construction of a staircase to provide vertical beach access over the rock revetment to the beach.

The rock revetment would partially absorb and deflect wave energy on the shoreline. Construction would be sequenced to build up the access path embankment simultaneously with placement of the rock for this project. This embankment will blend in with the existing rock revetment located along the beach to the north. A typical section of this alternative and the layout of the project site are shown in **Exhibits 2 and 3**. Approximately 1,400 square feet of beach area will be impacted through the installation of rock revetment. The entire project area is located above the mean higher high water (MHHW) line.

C. STANDARD OF REVIEW

The project is located in both the Commission's and the City of Half Moon Bay's CDP jurisdictions. The City, the Applicant, and the Commission have all agreed to a consolidated CDP review for the project, as allowed by Coastal Act Section 30601.3. As such, the standard of review for a consolidated CDP application is the Chapter 3 policies of the Coastal Act with the City of Half Moon Bay's certified LCP providing non-binding guidance.

D. GEOLOGIC AND FLOOD HAZARDS

The proposed project is to install a shoreline protective device to protect State Highway One and an existing portion of the California Coastal Trail.

Applicable Policies

Coastal Act Section 30253, cited below, states in part that new development shall minimize risks to life and property in areas of high geologic or flood risk and that the development assures stability and structural integrity. Coastal Act Section 30235 only permits shoreline protective devices when required to protect existing permitted structures and when designed to eliminate or mitigate impacts to shoreline sand supply. These applicable Coastal Act policies are as follows:

> **Section 30235.** *Rip-rap, breakwaters, groins, harbor channels, seawalls, cliff retaining walls, and other such construction that alters natural shoreline processes shall be*

permitted when required to serve coastal-dependent uses or to protect existing structures or public beaches in danger from erosion, and when designed to eliminate or mitigate adverse impacts on local shoreline sand supply. Existing marine structures causing water stagnation contributing to pollution problems and fish kills should be phased out or upgraded where feasible.

Section 30253. *New development shall do all of the following:*

(a) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.

(b) 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 landforms along bluffs and cliffs.

Consistency Analysis

Coastal Act Section 30235 acknowledges that sea walls, revetments, cliff retaining walls, groins, and other structural devices that are designed to combat erosion can also alter natural land forms and natural processes. Aside from coastal-dependent uses, Coastal Act Section 30235 limits the construction of shoreline protective structures to those that are needed to protect existing structures and public beaches that are endangered by erosion. This section of the Act provides limitations on the use of shoreline protection structures because they can have a negative effect on the coastal environment, including on sand supply, public access, visual resources, natural landforms, and shoreline beach dynamics on- and off-site, that can result in the loss of public beach areas. Coastal Act Section 30235 allows approval of a shoreline protective device under specific circumstances: 1) if there is an existing legal structure, 2) that existing structure is in danger from erosion, 3) the shoreline-altering construction is required to protect the existing, threatened structure, and 4) the required protection is designed to eliminate or mitigate its adverse impacts to the shoreline sand supply. The first three criteria mentioned relate to whether the proposed structure is necessary; and the fourth applies to required mitigation of some of the impacts.

Existing Structure to be Protected

The Coastal Act discourages armoring of the coast as a solution because of its known adverse impacts on shoreline sand supply. Under Section 30253 of the Act, new development is to be designed, sited, and built to allow for the natural process of erosion to occur at the project site without creating a need for installation of a shoreline protective device that results in an armoring of the coast. Coastal development permittees for new shorefront development are thus making a commitment (through their acceptance of conditionally approved permit actions of the Commission, and its local government counterparts) that, in return for allowing them to build their private shorefront project, the public will not lose available public beach access, recreational access, sand supply, visual resources, and natural landforms as a result, and that the public will not be held responsible for resolving any future stability problems the permittees might have in the future.

The Commission has generally interpreted Section 30235 of the Act to apply only to existing permitted principal structures. The Commission must always consider the specifics of each individual proposed project, but has generally found that existing permitted accessory structures such as patios, decks, gazebos, or stairways are not considered principal structures and can be protected by relocation or other means that do not require shoreline armoring.

Section 30235 allows for the construction of structures that alter the natural shoreline where they are necessary to serve coastal-dependent uses or to protect existing structures or public beaches in danger from erosion. State Highway 1 is the primary north-south highway in the coastal section of San Mateo County and provides roadway access to the coastal area of the Midcoast region of San Mateo County. This roadway serves a vital function in the Bay Area's transportation network and carries a large volume of traffic through San Mateo County. Consequently, the 2001 Countywide Transportation Plan (CTP) has defined State Highway 1, along with other state routes in San Mateo County, as "corridors of regional significance."[3] Aside from providing local access, State Highway 1 is the primary public access route to the coast and its resources available within San Mateo County.

The proposed installation of the rock revetment portion of the Project would protect existing Highway 1, which was constructed prior to the passage of Proposition 20 and the Coastal Act. The rock revetment would also protect the unpaved access path located at the top of the bluff. Both Highway 1 and the existing Coastal Trail constitute existing permitted principal structures worthy of protection under the Coastal Act. Section 30253 of the Act provides that new development shall minimize risks to life and property from geologic and coastal hazards. New development must ensure the stability of a site and cannot create or contribute significantly to erosion. The proposed rock revetment is designed to halt existing and to prevent further erosion of the coastal bluff in order to protect existing Highway 1 and the adjacent public access trail.

Danger from Erosion

The Coastal Act allows shoreline armoring to protect existing structures in danger from erosion, but it does not specifically define the term "in danger The Commission has generally interpreted "in danger" to mean that an existing structure would be unsafe to occupy within the next two or three storm season cycles if nothing were to be done. There is a certain amount of risk involved in maintaining development located along the California coastline that is actively eroding. The State's coastline and existing development located along the coast can be directly subject to violent storms, large waves, flooding, earthquakes, and other geologic hazards. These risks can be exacerbated by such factors as sea level rise and localized geography that can focus storm energy at particular stretches of coastline. As a result, some would say that all development along the immediate California coastline is in a certain amount of "danger." It is a matter of the degree of threat that distinguishes between danger that represents an ordinary and acceptable risk, and danger that requires shoreline armoring per Section 30235 of the Act. Lacking Coastal Act definition, the Commission's long practice has been to evaluate the immediacy of any threat in order to make a determination as to whether an existing structure is "in danger." While each case is evaluated based upon its own particular set of facts, the Commission, as mentioned above, has generally interpreted

[3] City/County Association of Governments (C/CAG), 2001.

"in danger" to mean that an existing structure would be unsafe to occupy within the next two or three storm season cycles (generally, the next few years) if nothing were to be done (i.e., in the "no project" or "no build" alternative).

The dynamics of the coastal environment in this area have been studied and continue to be studied in order to identify and determine the sources and causes of erosion along the Half Moon Bay shoreline, to assess environmental conditions and impacts, and to develop appropriate solutions that can address erosion, flooding, and more recently, sea-level rise. Located northwesterly of the site of the Project is the Pillar Point Harbor outer breakwater comprised of the East and West breakwaters. The East breakwater structure is approximately 4,420 feet long and was constructed by the Army Corps of Engineers (ACOE) in 1959 to provide the harbor area with protection from wave action during large storm events. A new breakwater ("inner breakwater") was constructed inland of the East and West breakwaters in 1982. This new structure was to further resolve a surge problem occurring within Pillar Point Harbor. Recent studies have looked at the role of the Pillar Point Harbor breakwaters and how they function within Pillar Point Harbor and their impacts to the shoreline areas located outside of the Harbor.

Historical observations of Surfer's Beach indicate that the shoreline along Half Moon Bay has been eroding since the 1860s due to natural processes; however the rate of retreat was low due to a permanent broad sandy beach and the shoreline shape relative to the waves. Since the construction of the breakwaters in 1959 and again in 1982, erosion rates have increased. A 2009 appraisal[4] of the area concludes, based on a preponderance of substantiating evidence, that the construction of the outer breakwaters has contributed to a dramatic increase in the erosion rate of the shoreline located to the south of the outer breakwater. Currently, Denniston Creek and Deer Creek both discharge into Pillar Point Harbor and leave sediment deposits within the inner breakwater within the confines of the Pillar Point Harbor. (**Exhibit 4)** Sediment that would have naturally discharged from Denniston and Deer Creeks and accreted along the shoreline to the south has been blocked off and stranded within Pillar Point Harbor by both the inner and outer breakwaters (**Exhibit 10**), leaving Surfer's Beach vulnerable to an increase in the documented erosion. The erosion at Surfer's Beach is also attributed to the direct erosion of material from the low bluffs immediately landward of the beach, and the loss of littoral material from the beach backshore.[5]

San Mateo County attempted to reduce or solve the erosion problem along the El Granada Bluffs and installed rock revetment in the 1960s. This measure greatly reduced the erosion risk to Highway 1 within the limits of the rock revetment that was installed, but erosion continues at an accelerated rate just south of where the rock revetment was placed. Various sources estimate that the shoreline has eroded at least 65 feet from the original shoreline of Half Moon Bay and perhaps as much as 150 feet since the 1962 construction of the outer breakwater.

Currently, erosion due to wave action threatens the stability of the Highway 1 and creates hazardous conditions for bicyclists and pedestrians that use the adjacent public path. In fact, a

[4] Northern Half Moon Bay Shoreline Improvement Project, Pillar Point Harbor, CA, Section 216 Review of Completed Projects, Initial Appraisal. July 2009

[5] Northern Half Moon Bay Shoreline Improvement Project, Pillar Point Harbor, CA, Section 216 Review of Completed Projects, Initial Appraisal. July 2009

portion of the public pathway has already eroded away. The coastal bluff has eroded to as close as 7 feet from the Highway 1 southbound shoulder (**Exhibit 5**). Based on recent survey data, the rate of erosion of the bluff face at the project site is estimated to be approximately 24 inches per year.[6] This high rate of bluff retreat has led to a concern for the future safety of this area which comprises Highway 1 and the adjacent bluff top trail. The project would address on-going coastal erosion by providing an immediate source of protection for the Highway 1 embankment. Without the project, erosion will continue to take place at its current rate which could result in loss of at least one lane of Highway 1 and the adjacent trail within one to five years, as a consequence. The Commission therefore finds that the existing structures proposed for protection, Highway 1 and the public pedestrian pathway, are in danger from erosion.

Feasible Protection Alternatives to a Shoreline Structure

The third Section 30235 test that must be met is that the proposed armoring must be "required" to protect the existing threatened structure. In other words, shoreline armoring can be permitted if it is the only feasible alternative capable of protecting the structure. When read in tandem with other applicable Coastal Act policies cited in these findings, this Coastal Act Section 30235 evaluation is often conceptualized as a search for the least environmentally damaging feasible alternative that can serve to protect existing endangered structures. Other alternatives typically considered include: the "no project" alternative; abandonment of threatened structures; relocation of threatened structures; sand replenishment programs; drainage and vegetation measures on the bluff top; and combinations of each. The Applicant analyzed project alternatives to potentially address erosion at the site for the protection of State Highway 1 and the bluff top public access. Alternatives to the proposed project, as described below include: 1) rock revetment with Geogrid and a dynamic revetment, 2) sheet-pile wall with rock revetment toe protection, including a dynamic revetment at the southern end, 3) a soft solution, and 4) no-build.

The above-described alternatives are based upon those provided by the Applicant. These alternatives align with a National Environmental Policy Act (NEPA) approach for the evaluation. NEPA evaluation of project alternatives gives equal treatment to the preferred alternative as compared to the California Environmental Quality Act (CEQA) evaluation process, which evaluates the proposed project and alternatives.

<u>Alternative 1: Rock Revetment</u>

This alternative involves partially removing and replacing some of the existing fill with rock revetment comprised of two- to four-ton rock placed as a revetment to protect Highway 1 and the bluff top public access trail from wave-generated erosion. This alternative would be the easiest to remove in the future and would blend in with the existing rock revetment located to the north of the project site. The rock revetment proposed for this project would also absorb the majority of the wave energy and reduce the impact to the adjacent bluffs. The construction would be sequenced to build up and improve the public access path embankment simultaneously with the placement of the rock revetment. However, this alternative would result in direct beach area loss due to the placement of rock on sandy beach.

Geogrid could also be used to reinforce the existing embankment to allow for a steeper rock face, thereby reducing the amount of beach area displaced. However, since the proposed design is to

[6] WRECO, *Project Description for Surfer's Beach Shoreline Protection.* March 10, 2015.

match the slope of the existing revetment to the north, in order to minimize visual impacts, the use of Geogrid is not warranted as the design includes less steep slopes of 2:1. A dynamic revetment was considered for the southern terminus of the proposed development to reduce the erosional impacts to the adjacent bluff south of the project without requiring additional hardscape to be installed. A dynamic revetment would be composed of smaller rock. The use of smaller rocks as revetment is often used as end treatments or in lieu of larger revetments. The smaller rocks can be mobilized (thus dynamic) and move to absorb some of the wave energy. This has been very effective on wider beaches with established dune geomorphology or well-vegetated backshores. Surfer's Beach is a relatively narrow beach with a bluff structure rather than a dune structure behind it. Because the stones are not constrained from moving laterally along the shoreline, rocks could be carried down and onto the beach causing interference with the public enjoying the beach. Smaller rocks may also be thrown about in the waves potentially harming surfers and creating hazards below the water surface. In addition, the existing beach does not have a large number of small stones or rocks on the beach. Thus, using a dynamic revetment would spread small rocks up and down the beach, which is not compatible with its existing sandy beach characteristics. Therefore, this design element is not feasible as a treatment option for potential end-effects at the project site.

Alternative 2: Sheet-Pile Wall with Rock Toe Protection

This alternative would involve vibrating sheet piles for approximately 150 feet parallel to Highway 1, approximately 22 feet seaward. A small amount of rock could be placed in a trench along the toe of the sheet-pile wall to prevent under-scouring of the sheet pile wall. Additionally, if erosion of the sandy beach extends to the wall, the rock would be exposed and would provide protection for the toe of the wall. The sheet-pile wall would act as support to build up and retain the embankment during construction. This alternative would not encroach onto the sandy beach and would not result in any displacement of public beach area.

While a sheet-pile wall is feasible and could provide additional support to the shoreline and further protect Highway 1, this alternative would require a column of drain rock on the roadway side so that the soil can be drained to relieve any soil stress, however, this would not have an impact on the trail. Additionally, during the installation of the sheet-piles, nearby marine mammal life would likely be adversely affected by the vibrations from pile driving. This alternative would require a vibratory method of installation to be considered. A dynamic revetment, as with Alternative 1, was also considered for the southern terminus of the sheet-pile wall, to reduce the erosional impacts to the adjacent bluff south of the Project.

This alternative, although feasible, would have more visual impacts than Alternative 1 because there would be approximately six to eight feet of exposed sheet-pile along the Project, creating a vertical face (**Exhibit 9**). This alternative was also rejected by the public as the preferred alternative through the project scoping process due to visual concerns created by the sheet-pile wall. Furthermore, the proposed project is an interim solution and removal of the sheet-pile wall and toe protection would require a greater effort than removal of Alternative 1.

Alternative 3: Soft Solution

The Applicant also considered the use of some form of "soft" treatment in addition to the placement of rock. Use of a soil cover was an option that was looked at, however this is not

practicable at the site. Waves have over-topped the bluff embankment onto Highway 1 in the project site vicinity and soil would not withstand these wave conditions. Larger storm events would quickly remove any placed soil which could affect beach use and affect water quality conditions in the nearshore area.

Alternative 4: No Build
This alternative would involve no action thereby leaving the existing shoreline and adjacent roadway and public pathway in their current condition. Alternative 4 would continue to leave the shoreline susceptible to its current erosional course. As projected, portions of Highway 1 and the public access along the bluff top could be lost within the next one to five years. A loss of a portion of Highway 1 could interfere with the public's ability to access this location and possibly other coastal areas in and about San Mateo County, and potentially create a traffic hazard and damage the marine environment.

Analysis
Alternative 4, the no build alternative, does not fulfill the project's goals of repairing the trail, protecting the beach from erosion, and enabling better access to the beach with the stairway. Selecting a no build, i.e., "do nothing" approach could result in catastrophic impacts to coastal resources and existing transportation corridors used to access coastal resources. Highway 1, which is constructed of asphalt and concrete material, would not be protected. Should the project area be continually exposed to on-going documented erosion the existing highway and public pathway structures would be adversely impacted. Debris from the impacted structures could end up as debris deposited on the beach and ultimately discharged into the adjacent ocean. This debris would be hazardous to the marine environment. Further, public transportation and other modes of public access to and from the area would be interrupted, adversely impacted and possibly eliminated.

The two build alternatives, one proposing a rock revetment and one proposing a sheet pile wall with rock toe protection, (Alternative 1 and 2) are both feasible and each could serve as an interim solution to protecting the existing Highway One and public pathway from current erosional hazards in existence at Surfer's Beach while a long-term solution is identified to adequately protect Highway One and the public pathway from ongoing shoreline erosion and other ocean-related hazardous conditions. Both alternatives are functional during flood events as flood walls and sand bags can be additionally placed to protect the proposed stairway and reconstructed and expanded recreational trail. Also, the proposed stairway for the project can be designed in the middle or at either end of the Project site in both alternatives. Therefore, both build alternatives are viable and each has its advantages. Alternative 1, the rock revetment alternative, would match the existing rock installed north of the site, has public support as the preferred alternative, provides greater wave energy dissipation and could be removed more easily. Alternative 2 would result in less direct impacts to the beach area because less rock would displace sandy beach. Barring a catastrophic event, the interim development proposed in both alternatives can last indefinitely if it is properly monitored and maintained.

As discussed above, Alternatives 2, 3 and 4 are less feasible and are not preferred by the Applicant. Alternative 3 is not feasible and Alternative 4 does nothing to protect the existing structures in danger from erosion. Alternative 1, as modified to exclude the dynamic beach

revetment component, is the preferred alternative by the Applicant and presents the most feasible interim solution of the 4 alternatives. While a sheet pile wall would occupy less sandy beach, actual installation may have adverse impacts on marine life, presents adverse visual impacts to beach users and is more difficult to remove in the future. Thus, Alternative 1 as altered is the preferred alternative and it meets the third test of Section 30235 of the Coastal Act.

Impacts to Sand Supply

The fourth test of Section 30235 that must be met in order to allow Commission approval is that the proposed shoreline structure must be designed to eliminate or mitigate adverse impacts to local shoreline sand supply.

Shoreline Processes

Beach sand material comes to the shoreline from inland areas, carried by rivers and streams; from offshore deposits, carried by waves; and from coastal dunes and bluffs, becoming beach material when the bluffs or dunes lose material due to wave attack, landslides, surface erosion, gullying, et cetera. Coastal dunes are almost entirely beach sand, and wind and wave action often provide an ongoing mix and exchange of material between beaches and dunes. Many coastal bluffs are marine terraces – ancient beaches which formed when land and sea levels differed from current conditions. Since the marine terraces were once beaches, much of the material in the terraces is often beach-quality sand or cobble, and is a valuable contribution to the littoral system when it is added to the beach. While beaches can become marine terraces over geologic time, the normal exchange of material between beaches and bluffs is for bluff erosion to provide beach material. Bluff retreat and erosion is a natural process resulting from many different factors such as erosion by wave action causing cave formation, enlargement and eventual collapse of caves, saturation of the bluff soil from groundwater causing the bluff to slough off, and natural bluff deterioration. When the back-beach or bluff is protected by a shoreline protective device, the natural exchange of material either between the beach and dune or from the bluff to the beach will be interrupted and, if the shoreline is eroding, there will be a measurable loss of material to the beach. Since sand and larger grain material are the most important components of most beaches, only the sand portion of the bluff or dune material is quantified as sandy beach material.

These natural shoreline processes affecting the formation and retention of sandy beaches can be significantly altered by the construction of shoreline armoring structures because bluff retreat is one of several ways that beach quality sand is added to the shoreline, and is also one of the critical factors associated with beach creation/retention. Bluff retreat and erosion are natural processes that result from the many different factors described above. Shoreline armoring directly impedes these natural processes.

Some of the effects of engineered armoring structures on the beach (such as scour, end effects and modification to the beach profile) are temporary or are difficult to distinguish from all the other actions that modify the shoreline. Others are more qualitative (e.g., impacts to the character of the shoreline and visual quality). Some of the effects that a shoreline structure may have on natural shoreline processes can be quantified, however, including: (1) the loss of the beach area on which the structure is located; (2) the long-term loss of beach that will result when the back-

beach location is fixed on an eroding shoreline; and (3) the amount of material that would have been supplied to the beach if the back-beach or bluff were to erode naturally.

Shoreline protection devices can also create end-effects and wave energy, as it hits the shore, dissipates and is transferred through the structure to potentially cause increased erosion on unprotected bluff embankment areas at either end of the structure. The rock material for Alternative 1 would be keyed into the existing bluff embankment, landward of the existing sandy beach. This will reduce the possibility that the project will be flanked in the future and potentially undermined by wave action. The proposed design feature would therefore avoid creating end-effects upon the bluff adjacent to the southeast of the site that currently has no shoreline protection.

Encroachment on the Beach

Shoreline protective devices are all physical structures that occupy space. When a shoreline protective device is placed on a beach area, the underlying beach area cannot be used as beach. This generally results in a loss of public access as well as a loss of sand and/or areas from which sand generating materials can be derived. The area where the structure is placed will be altered from the time the protective device is constructed, and the extent or area occupied by the device will remain the same over time, until the structure is removed or moved from its initial location, or in the case of a revetment, as it spreads seaward over time. The beach area located beneath a shoreline protective device, referred to as the encroachment area, is the area of the structure's footprint.

The Applicant, using the Commission's long-standing methodology (**Exhibit 12**), calculated the amount of beach area the proposed project would cover. In this case, at the Surfer's Beach site, the proposed shoreline protection would cover 1,403 square feet of sandy area.

Fixing the Back Beach

Experts generally agree that where the shoreline is eroding and armoring is installed, the armoring will eventually define the boundary between the sea and the upland. On an eroding shoreline, a beach will exist between the shoreline/waterline and the bluff as long as sand is available to form a beach. As bluff erosion proceeds, the profile of the beach also retreats and the beach area migrates inland with the bluff. This process stops, however, when the backshore is fronted by a hard protective structure such as a revetment or a seawall. While the shoreline on either side of the armor continues to retreat, shoreline in front of the armor eventually stops at the armoring. The beach area will narrow, being squeezed between the moving shoreline and the fixed backshore. Eventually, there will be no available dry beach area and the shoreline will be fixed at the base of the structure. In the case of an eroding shoreline, this represents the loss of a beach as a direct result of the armor that was put in place.

In addition, sea level has been rising slightly for many years. There is a growing body of evidence that there has been an increase in global temperature and that acceleration in the rate of sea level rise can be expected to accompany this increase in temperature (some shoreline experts have indicated that sea level could rise 4.5 to 6 feet by the year 2100). Mean water level affects shoreline erosion several ways, and an increase in the average sea level will exacerbate all these conditions. On the California coast the effect of a rise in sea level will be the landward migration of the intersection of the ocean with the shore. This, too, leads to loss of the beach as

a direct result of the armor, i.e., as the beach is compressed between the landward migrating ocean and the fixed backshore. Such passive erosion impacts can be calculated over the time the proposed armoring is expected to last. The Applicant indicates the proposed rock revetment will have a ten-year lifespan over which time impacts would be evident. This aligns with the Commission's experience that shoreline armoring often tends to be reinforced, augmented, replaced, or substantially changed within twenty years of its original installation.

The other factor that is appropriate to consider when identifying a particular horizon for shoreline protection in an approval is the changing and somewhat uncertain nature of the context affecting coastal development decisions regarding armoring (including due to legislative change, judicial determinations, etc.). The Applicant has proposed this project as an interim solution to be in place for a ten-year period while longer term solutions are explored for implementation. For these reasons, the Commission uses a design life of 10 years for the proposed project in these findings, and implements the 10-year period through **Special Condition 8**. If the Permittee chooses to seek authorization to extend the timeframe for placement of the rock revetment through a coastal development permit amendment application (**Special Condition 8**) the project's impacts to the beach and sand supply shall be re-assessed.

The Commission has established a methodology for calculating passive erosion, or the long-term loss of beach due to fixing the back beach (**Exhibit 12**). The area of beach lost due to long-term erosion is equal to the long-term average annual erosion rate times the number of years that the back beach or bluff will be fixed times the width of the property that will be protected. The long-term loss of beach for the proposed project would be 3,300 square feet of area (a volume of 2,970 cubic feet or 110 cubic yards).

Retention of Potential Beach Material

Some amount of beach material would be added to the beach from the bluffs at this location if the natural erosion process were allowed to continue (absent the proposed armoring). The volume of total material that would have gone into the sand supply system over the lifetime of the shoreline structure would be the volume of material between (a) the likely future bluff face location with shoreline protection; and (b) the likely future bluff location without shoreline protection. Since the main concern is with the sand component of this bluff material, the total material lost must be multiplied by the percentage of bluff material which is beach sand, giving the total amount of sand which would have been supplied to the littoral system for beach deposition if the proposed device were not installed. The Commission has established a methodology for identifying this impact. The Applicant using the Commission's methodology (**Exhibit 12**) calculated the amount of beach material that would have been supplied to the beach if natural erosion continued. The amount for the proposed project is 574 cubic feet or 21 cubic yards.

Beach and Sand Supply Impacts Conclusion

The proposed project would result in quantifiable shoreline sand supply impacts. There would be beach sand loss due to: 1) direct placement of a rock revetment onto 1,403 square feet of sandy area (or in terms of volume 1,263 cubic feet or 47 cubic yards); 2) fixing of the back beach location, resulting in the loss of 3,300 square feet of sandy beach (or in terms of volume, 2,970 cubic feet or 110 cubic yards) that would have been created over the ten-year life of the structure, and 3) retention of 638 square feet (or in terms of volume 574 cubic feet or 21 cubic

yards) of sand over the ten-year life of the proposed project. The total cubic yard calculation is 4,816 cubic feet or 178 cubic yards. If these impacts were to be mitigated through a beach nourishment effort, the impacts would be comparable to the deposition of 1,272 cubic feet or 47 cubic yards of beach-quality sand at the start of the project, and about 13.1 cubic yards of beach-quality sand yearly. Over ten years, these impacts would equate to a total of approximately 4,816 cubic feet or 178 cubic yards of sand.

Conclusion

It has proven difficult to identify appropriate mitigation for beach and sand supply impacts. Partly this is because creating an offsetting beach area is not an easy task, and finding appropriate properties that could be set aside to become beach area over time (through natural processes, including erosion) is difficult both due to a lack of such readily available properties and the cost of such coastal real estate more broadly. As a substitute, other types of mitigation typically required by the Commission for such direct sand supply impacts have been in-lieu fees and beach nourishment, and in some cases compensatory beach access improvements. With regards to beach nourishment, a formal sand replenishment strategy can introduce an equivalent amount of sandy material back into the system over time to mitigate the loss of sand that would be caused by a protective device over its lifetime. Obviously, such an introduction of sand, if properly planned, can perhaps supplement the Surfer's Beach littoral system to mitigate the impact of the project. However, as opposed to other areas with established programs (e.g., SANDAG in San Diego) there is not currently any existing beach nourishment program directed at this beach area, although steps are being taken to investigate such an effort, as beach impacts and erosion along Half Moon Bay's shoreline have been a long time concern.

The Commission often uses an in-lieu fee when in-kind mitigation of impacts is not available. In situations where ongoing sand replenishment or other appropriate mitigation programs are not yet in place, the in-lieu mitigation fee is deposited into an interest-bearing account until such time as an appropriate program is developed, and the fees can then be used to offset the designated impacts. When mitigation funds are pooled in this way for multiple projects in a certain area, the cumulative impacts can also be better addressed inasmuch as the pooled resources can sometimes provide for a greater mitigation solution than a series of smaller mitigation projects based on individual project impacts and fees. Based on an estimated range of costs of $50 to $100 per cubic yard of sand delivered for Surfers Beach, an in-lieu fee in this scenario would range from approximately $8,900 to $17,800.

As stated above, beach access improvements can also be used as beneficial public access mitigation to offset impacts; such mitigation is typically applied by the Commission to public agencies that manage beaches. Although Caltrans does not specifically manage public beaches, it is an active participant in creating and maintaining public access options for pedestrians and bicyclists along its scenic highway. In this case, Caltrans has partnered with San Mateo County in planning, restoring previously available and constructing new bluff top public access that would connect two segments of the California Coastal Trail.

The Commission considers the project, which is an interim protection project, to be self-mitigating in that the Project will restore public access to what had been available before erosional damage occurred, and will also be enhancing public access at Surfer's Beach by completing a portion of the California Coastal Trail that had been segmented previously and by

providing a stairway for access from the trail to the beach. The construction cost for the public access stairs and trail is approximately $36,450 ($2,200 for design and $34,250 to construct) which is more than double the estimated cost of in-lieu fee to replenish sand, as calculated above, e.g., $17,800.[7]

The project's shoreline sand supply impacts translate directly into degradation of public access to and along the beach, particularly in relation to the manner in which project area materials affect nourishment of the beach at Surfer's Beach. As such, shoreline sand supply mitigation targeted toward these access impacts is appropriate in this case. The project would construct a paved bicycle and pedestrian pathway in addition to protecting the existing roadway. The paved path would function as a seamless transition and connect the California Coastal Trail segments to the north and south of the Project site for bicyclists and pedestrians. It would also provide a safe, vertical access to Surfer's Beach by way of a newly installed staircase. Additionally, the project would entail removal of approximately 600 to 700 cubic yards of the existing artificial fill slope portion of the embankment. The existing fill contains debris that includes tires, asphalt concrete, and other materials undesirable in a natural coastal setting. Removal of the debris and placement of the rock revetment will prevent the debris being deposited onto the beach and creating a hazard to the public.

The proposed project is therefore consistent with Section 30235. It is evident, based upon the findings that Highway 1 and the bluff top public pathway are existing structures vulnerable to and in danger of erosion in the project area, and the project is necessary to protect these structures from the threat of erosion. The proposed project as designed would mitigate the impacts to shoreline sand supply described above.

Long-Term Stability, Maintenance, and Risk

Coastal Act Section 30253 requires the project to assure long-term stability and structural integrity, minimize future risk, and avoid additional, more substantial protective measures in the future. For the proposed project, the main Section 30253 concern is assuring long-term stability. This is particularly critical given the dynamic shoreline environment within which the proposed project would be placed. Critical to the task of ensuring long-term stability, as required by Section 30253, is a formal long-term monitoring and maintenance program. If the rock revetment involved in the proposed project was damaged in the future (e.g. as a result of flooding, land sliding, wave action, storms, etc.) it would lead to a degraded public access condition at Surfer's Beach. In addition, such damage could adversely affect nearby beaches by resulting in debris on the beaches and/or creating a hazard to the public using those beaches. Therefore, in order to find the proposed project consistent with Coastal Act Section 30253, the proposed project must be maintained in its approved state. Further, in order to ensure that the Permittee and the Commission know when repairs or maintenance are required, the Permittee must regularly monitor the condition of the subject armoring, particularly after major storm events. Such monitoring will ensure that the Permittee and the Commission are aware of any damage to or weathering of the armoring and can determine whether repairs or other actions are

[7] The cost of sand is based on current data, at $100 per cubic yard. The project would result in 178 cubic yards total volume of sand loss through the reduction in material from the bluff, reduction in nearshore area, and loss of available beach area.

necessary to maintain the rock revetment in its approved state before such repairs or actions are undertaken. To assist in such an effort, the monitoring should provide vertical and horizontal reference distances from armoring structures to surveyed benchmarks for use in future monitoring efforts.

To ensure that the proposed project is installed in compliance with the proposed plans and properly maintained to ensure its long-term structural stability, **Special Conditions 3, 4** and **5** respectively require the Permittee to submit as-built plans and maintain and monitor the as-built project. The maintenance and monitoring provide for evaluation of the condition and performance of the proposed project and overall bluff stability, and shall provide for necessary maintenance, repair, changes or modifications. **Special Condition 5** allows the Permittee to maintain the project in its approved state, subject to the terms and conditions identified by the special conditions, over the ten-year life of the proposed project.

In terms of recognizing and assuming the hazard risks for shoreline development, the Commission's experience in evaluating proposed developments in areas subject to hazards has been that development has continued to occur despite periodic episodes of heavy storm damage and other such occurrences. Development in such dynamic environments is susceptible to damage due to such long-term and episodic processes. Past occurrences statewide have resulted in public costs (through low interest loans, grants, subsidies, direct assistance, etc.) in the millions of dollars. As a means of allowing continued development in areas subject to these hazards while avoiding placing the economic burden for damages onto the people of the State of California, Applicants are regularly required to acknowledge site hazards and agree to waive any claims of liability on the part of the Commission for allowing the development to proceed. Accordingly, this approval is conditioned for the Applicant to assume all risks for developing at this location (**Special Condition 10**).

The proposed project is an interim solution that would address erosion danger occurring at the site for a ten year period. The wave surges and erosional conditions that trigger the need for this project and for shoreline protection along the coast in this area will continue. Sea-level rise is a concern that existing and future development along the coast will confront. Storm events will increase in occurrence and intensity as the climate changes. The proposed project will not solve the issue of sea level rise at this site and eventually, the Applicant must confront the possibility that State Highway 1 and the public trail must be relocated inland or raised to avoid erosional hazards and wave impact. Therefore, the Applicant is required to submit a long-term plan proposal and timeline for a permanent solution to address erosion in this project area and to protect Highway 1 and the public pathway. This CDP amendment is proposed for a ten-year period, so that the Applicant can have time to formulate a more permanent solution consistent with the Coastal Act. The amendment may be extended for additional five year periods, as long as the Applicant is making progress on the long-term solution and as long as there are no changed circumstances that may affect the approved project's consistency with the Chapter 3 hazards policies and that would warrant a re-review of the permit amendment. **Special Condition 9** is included to require the Applicant to develop the plan for a long-term solution and as conditioned the Commission can find this proposed project consistent with Section 30253 of the Coastal Act.

Therefore, the Commission finds that the project as designed and conditioned, would protect existing structures in danger from erosion, minimize risks to life and property, assure stability and structural integrity of the proposed project and the new public access trail, and will neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area. The proposed project, as conditioned is therefore consistent with Sections 30235 and 30253 of the Coastal Act.

E. PUBLIC ACCESS AND RECREATION

Applicable Policies

Coastal Act Section 30604(c) requires that every coastal development permit issued for any development between the nearest public road and the sea "shall include a specific finding that the development is in conformity with the public access and public recreation policies of [Coastal Act] Chapter 3." The project is located seaward of the first through public road. Coastal Act Sections 30210 and 30211 specifically protect public access and recreation. Section 30210 requires that maximum public access and recreational opportunities be provided when consistent with public safety, private property rights and natural resource protection. Section 30211 requires that development not interfere with the public's right of access to the sea where access was acquired through use or legislation. In particular:

> ***30210.*** *In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.*
>
> ***30211.*** *Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.*
>
> ***30213.*** *Lower cost visitor and recreational facilities shall be protected, encouraged, and, where feasible, provided. Developments providing public recreational opportunities are preferred. …*

Consistency Analysis

These policies protect access to and along the shoreline and to offshore waters for public access and recreation purposes. Public access and recreation policies of the Coastal Act ensure continued availability of coastal access opportunities for the public and where possible that such coastal access opportunities are free or low cost opportunities. Surfer's Beach is an existing low cost recreational opportunity. It is primarily used as a surf spot, but there are members of the public who visit Surfer's Beach to view water activities. The area is known to be of importance to the public for access to the beach. (**Exhibit 16)** The California Coastal Trail is also an existing free coastal access amenity. This project will rebuild a missing damaged portion of the trail and will also provide a link to connect two existing segments of the California Coastal Trail.

Currently, Surfer's Beach can only be accessed via an unpaved trail through the project site (**Exhibit 5**). This pathway is the only access point to Surfer's Beach located between the outer Pillar Point Harbor East Breakwater, approximately 900 feet to the north, and Magellan

Avenue, 2,000 feet to the south. It provides the public an opportunity to get to the beach as well as enjoy the views along this stretch of the coast free of cost. Pedestrians are routed from the unpaved path down a steep sloped dirt embankment under precarious conditions. A portion of a segment of the California Coastal Trail is located to the north of the project site. The Commission required the construction of this segment of the Coastal Trail (approximately 260 linear feet) when it first approved the placement of rock to the north of the project site in CDP 3-93-037. The Commission approved the actual trail construction in an amendment to CDP 3-93-037 (CDP Amendment No. 1-98-057-A2). The Coastal Trail at this location consists of a ten foot wide Class I path that is paved and can accommodate bicycle and pedestrian uses. A portion of this trail extended into the project site when first constructed but has since eroded away. The trail to the south, constructed by the County, is also part of the California Coastal Trail. It is heavily used by the public. The proposed project would link the two existing Coastal Trail segments and the connectivity of the existing coastal trail system would be enhanced as a result of the project. The public access element of the project includes construction of a staircase that would provide enhanced and improved vertical beach access. Thus, the project would provide lateral recreational coastal access along the buff top and vertical access between the bluff top and the beach. The new trail and stairs would formalize safe bluff top and bluff face access that meet current design standards, therefore public safety would be protected, enhanced and assured. The proposed staircase and path would be compliant with ADA. Compliance with the ADA maximizes public access opportunities at the site consistent with Section 30210. The project additionally includes temporary access both along the bluff top and to and from the beach during construction activities.

The proposed revetment would protect the access path at the top of the bluff along with the Coastal Trail. It would enhance the access trail and ensure safe conditions for the public between the bluff top public trail and the beach. The bluff is comprised of fill that contains debris including tires, asphalt concrete, and other items undesirable in a natural coastal area. The Project would remove approximately 600 to 700 cubic yards of this debris fill from the eroded bluff face (**Exhibit 8**). Removal of the debris and placement of the rock revetment will prevent the fill slope from further erosion and will reduce the possibility of debris being deposited onto the beach causing unsafe conditions for beach users. **Special Condition 4** requires monitoring of the completed project, including keeping track of any migration or movement of rock that has occurred on the site and making recommendations for repair and maintenance to the project. This will ensure future safe conditions at Surfer's Beach for continued use by the public. Additionally, **Special Condition 5** requires that the rock revetment protection be maintained in its approved condition and that the approved project is restored if pieces of rock have fallen from the revetment onto the beach, blocking any parts of the public beach areas. This monitoring condition ensures that the beach area fronting the rock revetment will remain free from debris; any rock dislodged from the project will be retrieved; and that lateral access along the beach will not be impeded, consistent with Coastal Act Sections 30210 and 30211. The proposed project will permanently affect public beach access and recreational opportunity as it would directly cover approximately 1,400 square feet of sandy beach area for at least a ten year period. This impact, however, will be mitigated by the public access benefits built into the project, as discussed above.

In conclusion, the proposed project will improve existing public access and recreational opportunities along the shoreline and to and from Surfer's Beach, by connecting two segments of the Coastal Trail and by constructing a new vertical stairway to assure safe access to and from the beach. The proposed project will protect the trail and State Highway 1 so that the public can continue to use the trail and the highway to reach public beaches and access and recreational opportunities. Further, because the Commission's approval includes monitoring the condition of the approved project with respect to its impact on public beach areas and a ten-year maintenance authorization limit to ensure that the approved project does not interfere with the public's ability to use the beach and access trail as a condition of approval, as conditioned, the Project is consistent with the public access and recreation policies of the Coastal Act cited above.

F. MARINE RESOURCES AND SENSITIVE HABITATS

Applicable Policies

The Coastal Act protects the marine resources and habitat offshore of this site. Coastal Act Sections 30121, 30230, 30231, 30233, and 30240 state in relevant part:

> ***Section 30121.*** *"Wetland" means land within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens.*
>
> ***Section 30230.*** *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.*
>
> ***Section 30231.*** *The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.*
>
> ***Section 30233(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:*
>
> > *… (4) 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….*

Section 30121 provides the definition of wetlands within the coastal zone. Section 30230 requires that marine resources be maintained and special protections be afforded to areas of special biological or economic significance. Section 30231 of the Coastal Act requires that any adverse effects of runoff be minimized to protect the biological productivity and quality of coastal waters, streams, wetlands, estuaries, and lakes. Coastal Act Section 30233 limits fill in wetlands except for certain purposes where there is no feasible, less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects.

Consistency Analysis
The Coastal Act includes strong protections for marine resources and water quality. As indicated above, the project site is unstable due to erosion caused by wave forces in such a way as to require regular site monitoring and maintenance. As the site is subjected to erosion, its overall stability is weakened, increasing the potential for the bluff face and bluff top to be damaged and to fall seaward onto Surfer's Beach and into ocean waters. The bluff is comprised of fill that contains debris undesirable in a natural coastal area. The project would remove approximately 600 to 700 cubic yards of existing fill from the eroded bluff face. Removal of the debris and placement of the new rock revetment will reduce the likelihood that inappropriate material will be deposited onto the beach impacting marine resources and water quality at the project site.

Construction of the project will occur from the top of the bluff thereby avoiding the need to stage construction on the sandy beach or in or adjacent to the ocean. Thus, construction impacts to marine resources and water quality will be minimized. Further, the monitoring and maintenance conditions required as a part of this CDP amendment (**Special Condition 4 and 5**) assure that when and if rock is dislodged from the approved project in the future, the dislodged rock would be retrieved and replaced within the existing approved project footprint. This will assure that materials from the project, as well as the proposed new lateral access trail and vertical access stairs, would not impact marine resources in the future. The project also includes construction best management practices including temporary fiber rolls, silt fencing, gravel bag berm, street sweeping, temporary construction entrances/exits to the construction site that are stabilized to reduce tracking of mud and dirt. As conditioned, the project is consistent with Coastal Act Sections 30230 and 30231 regarding protection of marine resources and water quality.

The proposed project would result in fill of highly disturbed willow scrub wetland habitat resulting in 0.1 acre of permanent impacts to wetlands, as defined by the Coastal Act Section 30121, cited above. (**Exhibits 13 and 15**) The scrub habitat does not qualify as an Environmental Sensitive Habitat Area. No state or federally-listed rare, threatened, or endangered species are found to occur within the project site. There is no suitable habitat within the project site for federally-listed species with known occurrences in the area. Further, there is a lack of habitat connectivity between suitable habitat located elsewhere and the project site. Several dispersal barriers make it highly unlikely that any special status species occur within the project area. These barriers include the nearby urban development and State Highway 1.

When a project involves fill of wetland habitat, Section 30233(a) allows for such fill to occur if specified criteria are met, including that such projects incorporate feasible mitigation measures and are limited to certain purposes, including incidental public service purposes. The primary purpose of the project is to provide for protection of State Highway 1, continued public use of

Surfer's Beach, and increased and enhanced public access along the trail and from the trail to the beach. As such, the fill of wetlands resulting from the propose project is one of the seven enumerated allowable uses pursuant to Coastal Act Section 30233 as it would provide for continued public services. The Commission has considered what constitutes an incidental public service many times. First and foremost is whether the project is initiated by a public agency for a public purpose and benefit, such as replacement of old railroad bridges (CC-059-09); expansion of a railroad line (CC-052-05, CC-086-03) or modifications to an airport (CC-058-02). The Applicant in this matter is Caltrans, a state agency, undertaking the Project in order to protect State Highway 1, a state-owned public roadway, from the danger of erosion. State Highway 1 serves a vital function in the Bay Area's transportation network and carries a large volume of traffic through San Mateo County. As mentioned previously in this report, State Highway 1 in San Mateo County is a corridor of regional significance. State Highway 1 therefore provides a public service as it is the primary and most used route to the coast and its resources within San Mateo County.

Second, the use must be incidental. The California Court of Appeals case *Bolsa Chica Land Trust* ((1999) 71 Cal.App.4th 493,517) supported the Commission's interpretive guidelines regarding incidental public service purposes and elaborated:

> *In particular we note that under Commission's interpretation, incidental public services are limited to temporary disruptions and do not usually include permanent roadway expansions. Roadway expansions are permitted only when no other alternative exists and the expansion is necessary to maintain existing traffic capacity.*

By analogy, this project is a project for a ten-year period. The construction of the project is a temporary action to maintain existing Highway 1 and bluff top public access in danger from acute erosion. No other feasible less damaging alternative exists that would provide the protection necessary to ensure public safety and access to the scenic and visual resources in this area and the public beach.

The project would provide a valuable service for the public because it not only proposes to protect State Highway 1 but it also proposes to provide a new trail and stairs that allow for safe access to an invaluable resource, i.e., the Pacific Ocean. This benefit would be severely impacted and reduced without the project. Thus, the Commission finds that the uses proposed in wetlands can be characterized as incidental public service uses for the purposes of evaluation under Coastal Act Section 30233(a).

The proposed rock revetment is the least environmentally damaging alternative as discussed in the geologic hazards section above. In addition, the new public access trail is the least environmentally damaging feasible option that would ensure continued lateral access at Surfer's Beach. An alternative that would entail placement of the trail further seaward is not feasible or less damaging because it would result in the removal of more wetlands and impact to sandy beach. Placement of the trail further landward of the current location so as to completely avoid the removal of existing willow scrub habitat would require reducing the highway's shoulder width to less than eight feet. Such a reduction in shoulder-width would constrain the travel way

along this already relatively narrow stretch of roadway (**Exhibit 5**). It would bring pedestrians and bicyclists closer to vehicular traffic thus compromising public safety.

The impacts to wetlands resulting from construction of the public access trail and revetment will be mitigated to the maximum extent feasible. The project includes implementation of construction Best Management Practices (BMPs) that would avoid and minimize the potential for further impacts to the wetlands. No equipment will be allowed on the beach and temporary protective fencing will be put in place to protect all wetland habitats located outside of the project limits. Other avoidance and minimization measures include reducing the spread of invasive, non-native plant species. Non-native, noxious species, such as the existing cape ivy mentioned earlier in this report, that are disturbed or removed during construction-related activities would be disposed of in a manner so as to not promote spreading the species. Areas where non-natives are removed will be replanted (hydro-seeded) with fast-growing, native grasses or erosion control seed mix of native species. The Permittee is required by **Special Condition 6** to mitigate for permanent impacts to wetlands at a ratio of 3:1 by submission of a Habitat Restoration Plan. The Habitat Restoration Plan must include clear and specific descriptions of methodologies to be used, performance goals, success criteria, monitoring, and contingencies to ensure success of the restoration efforts.

The proposed project is consistent with Section 30233 because the new and enhanced public access and the protection of Highway1 will provide a service to the public as allowed by Section 30233(a)(4), it is the least environmentally damaging feasible alternative, and has incorporated feasible mitigation measures to minimize adverse environmental effects.

G. SCENIC AND VISUAL RESOURCES

Applicable Policies

Coastal Act Section 30251, cited below, protects the aesthetic, visual quality of coastal areas.

> ***Section 30251.*** *The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.*

Consistency Analysis

State Highway 1 is an existing two-lane roadway, known as the Cabrillo Highway within San Mateo County, which extends along the seaward edge of the County. Officially designated as a State Scenic Highway, State Highway 1 is a north-to-south travel way that functions as a major thoroughfare in the San Francisco Bay Area and San Mateo County, in particular. It provides a scenic route to numerous attractions along the coast, providing extensive views of the ocean and the surrounding coastal areas located within San Mateo County.

The project area is within a highly scenic area within the context of Coastal Act Section 30251. Pillar Point Harbor can be viewed to the north with typical California coastal views of the ocean and shoreline dominating along this mid-coast area (**Exhibit 11**). The vicinity of the project is semi-developed with views of the Pacific Ocean (on the west) and both rural landscape and urban development, such as the unincorporated community of El Granada to the east. Additionally, the shoreline in this area, as seen from the water looking landward, has portions of eroded, unarmored coastline, some vegetated areas, and a stretch of area armored with rock (**Exhibit 5**). Pillar Point Harbor and the existing breakwater structure can also be seen to the north of the site.

As mentioned previously, there is existing rock immediately to the north of the project site and some existing riparian and wetland vegetation to the south. The proposed rock revetment is designed at a 2:1 slope. Consideration was given to a design with a steeper slope, i.e., 1.5:1, which would have decreased the footprint of the structure. However, having side slopes of 1.5:1 would require using larger than three-ton rock material. The existing rock revetment installed to the north of the project site consists of rock sizes ranging from two- to four-ton; with the majority being two-ton. A steeper slope at the project site would not be aesthetically compatible with the existing rock protection to the north, as it would visually look different and out-of-place relative to the adjacent existing rock revetment. Further, this project site is the public's main vertical access to the beach. The less steep slope would allow for more individuals, such as children, to climb over rock as an alternative to the proposed staircase that would also be available for vertical access.

Rock revetment devices are an unnatural feature along the coastline as it does not reflect the natural substrate that would normally occur. The existing rock protection to the north of the project site is a combination of brown and dark grey sandstone, shale, and mudstone. It is visible from the highway as one travels southerly on the highway and also can be seen from the beach. However, the existing rock does not significantly adversely affect views from the travel way as it is situated at a low elevation and does not interfere with the visibility of the ocean from the landward side. The topography of the coastline and the location for the shoreline protection structure is such that the rock will not obstruct public views of the ocean from the highway side (north and south of the project site) or from the east side of State Highway 1 (**Exhibit 11**).

The shoreline protection along this section of the coast is a dominating element when viewing the shoreline from the beach; and as mentioned above, it is unnatural. As an unnatural feature along the shore area it has an effect that is contradictory to what would be a natural shoreline, which one can see further south of the area where there is no armoring. The Applicant considered the use of some form of "soft" treatment such as a soil cover to be installed over the rock protection; however this is not practicable because waves have over-topped the site and soil would not withstand these conditions. Larger storm events would quickly remove the soil. The negative visual impacts that the public would experience by seeing the rock revetment as opposed to a natural shoreline will be mitigated by the benefits proposed in this project. This project will provide enhanced and improved lateral and vertical access along the shoreline and to and from Surfer's Beach. Given the harsh environment, it appears that there is little that can be done to further limit such visual impacts.

The proposed project, while not preferable to a natural coastline, would blend with the existing visual appearance of the area. Caltrans proposes to remove existing asphalt, concrete, and debris currently visible from the embankment on the beach at some portions of the site. **Special Conditions 4 and 5** requires the Permittee to monitor and maintain the approved project and includes retrieval and re-use of dislodged rock. Proper maintenance of the project will ensure that habitat, e.g., the coastal off shore waters and sandy beach, would thrive and the public would continue to enjoy recreational use of the beach. The visual quality and character of the area would be retained and the dominant scenic view would continue to be the ocean to the west, the rural landscape to the east, and the existing harbor area north of Surfer's Beach.

The project is designed in a manner such that the views of, and from, the shoreline and along the ocean are protected and it is visually compatible with the character of the surrounding area. As conditioned, the project is consistent with Coastal Act Section 30251.

H. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

Section 13096 of the California Code of Regulations requires that a specific finding be made in conjunction with coastal development permit applications showing the application to be consistent with any applicable requirements of 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 which the activity may have on the environment.

Caltrans, acting as lead agency, found that the project is a Class 1, Categorical Exemption, pursuant to PRC 21084, 14 CCR 15300, et. seq. The Coastal Commission's review and analysis of land use proposals has been certified by the Secretary of Resources as being the functional equivalent of environmental review under CEQA. The preceding coastal development permit findings discuss the relevant coastal resource issues with the proposal, and the permit conditions identify appropriate modifications to avoid and/or lessen any potential for adverse impacts to said resources. All public comments received to date have been addressed in the findings above, which are incorporated herein in their entirety by reference. The Commission finds that as modified and conditioned by this permit, there are no additional feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse environmental effects that approval of the Project, as modified, would have on the environment within the meaning of CEQA. As so modified, the Project will not result in any significant environmental effects for which feasible mitigation measures have not been employed consistent with CEQA Section 21080.5(d)(2)(A).

APPENDICES

Appendix A – Substantive File Documents

1. Memorandum summarizing surfer's beach geotechnical investigation, wreco. April 22, 2015.

2. Supplemental sand supply calculations for the surfer's beach shoreline, wreco. April 22, 2015.

3. Northern half moon bay shoreline improvement project, pillar point harbor, ca, section 216 review of completed projects, initial appraisal, July 2009.

4. Water quality assessment report, surfer's beach shoreline protection project, San Mateo county, California, March 2015.

5. Natural environment study – minimal impacts and no effects determination, surfer's beach shoreline protection project, April 2015.

Exhibit 1
1-98-057-A3
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INDEX OF PLANS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PROJECT PLANS FOR CONSTRUCTION ON
STATE HIGHWAY
IN SAN MATEO COUNTY
IN AND NEAR HALF MOON BAY
FROM CORONADO STREET INTERSECTION
TO 0.2 MILE NORTHWEST
OF CORONADO STREET INTERSECTION

TO BE SUPPLEMENTED BY STANDARD PLANS DATED 2010

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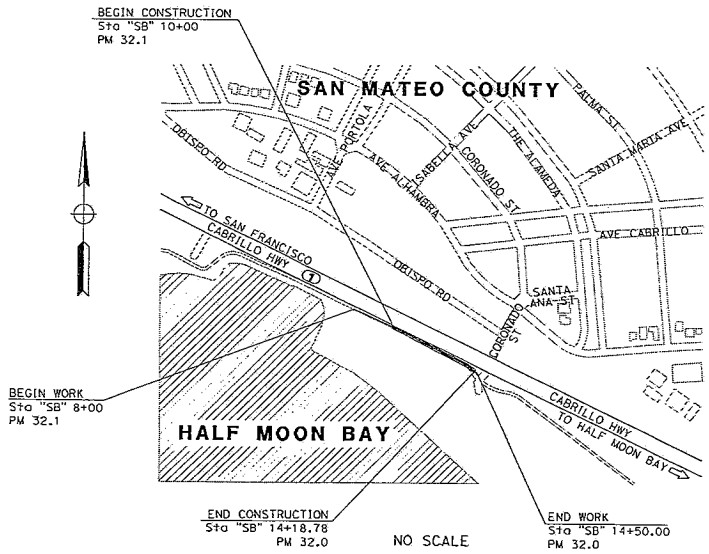

RECEIVED
APR 0 6 2015
CALIFORNIA
COASTAL COMMISSION
NORTH CENTRAL COAST

DESIGN ENGINEER	GRANT WILCOX		
CALTRANS DESIGN OVERSIGHT APPROVAL	WILLIAM GEE		
REGISTRATION No.			
LICENSE EXP DATE			
DATE SIGNED			

APPROVED AS TO IMPACT ON STATE FACILITIES AND CONFORMANCE WITH APPLICABLE STATE STANDARDS AND PRACTICES AND THAT TECHNICAL OVERSIGHT WAS PERFORMED.

PROJECT ENGINEER
REGISTERED CIVIL ENGINEER — DATE
GRANT M. WILCOX
No. C 49875
Exp. 09/30/16
CIVIL
STATE OF CALIFORNIA

PLANS APPROVAL DATE

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1243 ALPINE ROAD
SUITE 108
WALNUT CREEK, CA 94596

COUNTY OF SAN MATEO
455 COUNTY CENTER
2ND FLOOR
REDWOOD CITY, CA 94063

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PROJECT ID	04140028601

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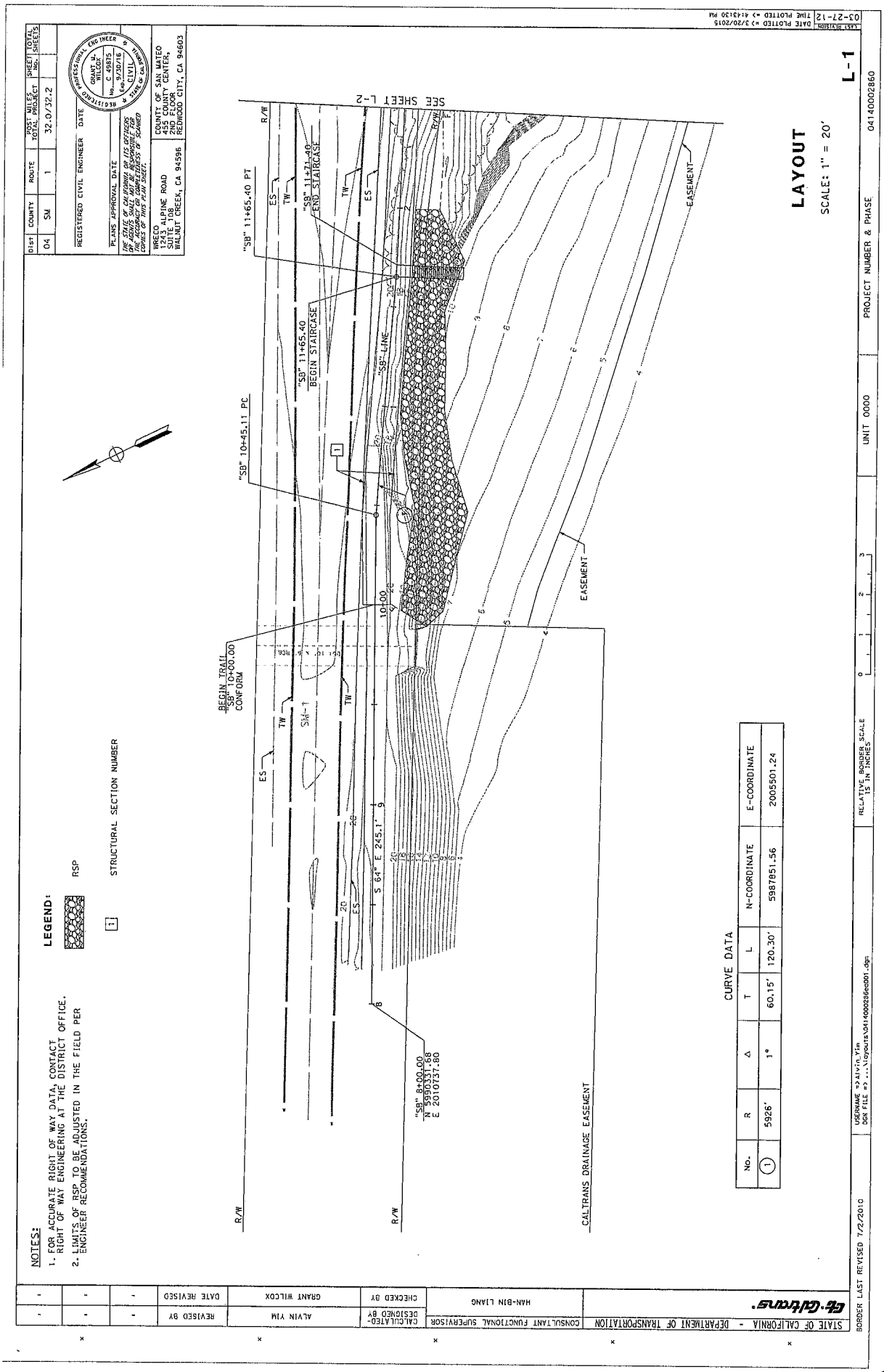
Exhibit 2
1-98-057-A3
Page 1 of 13



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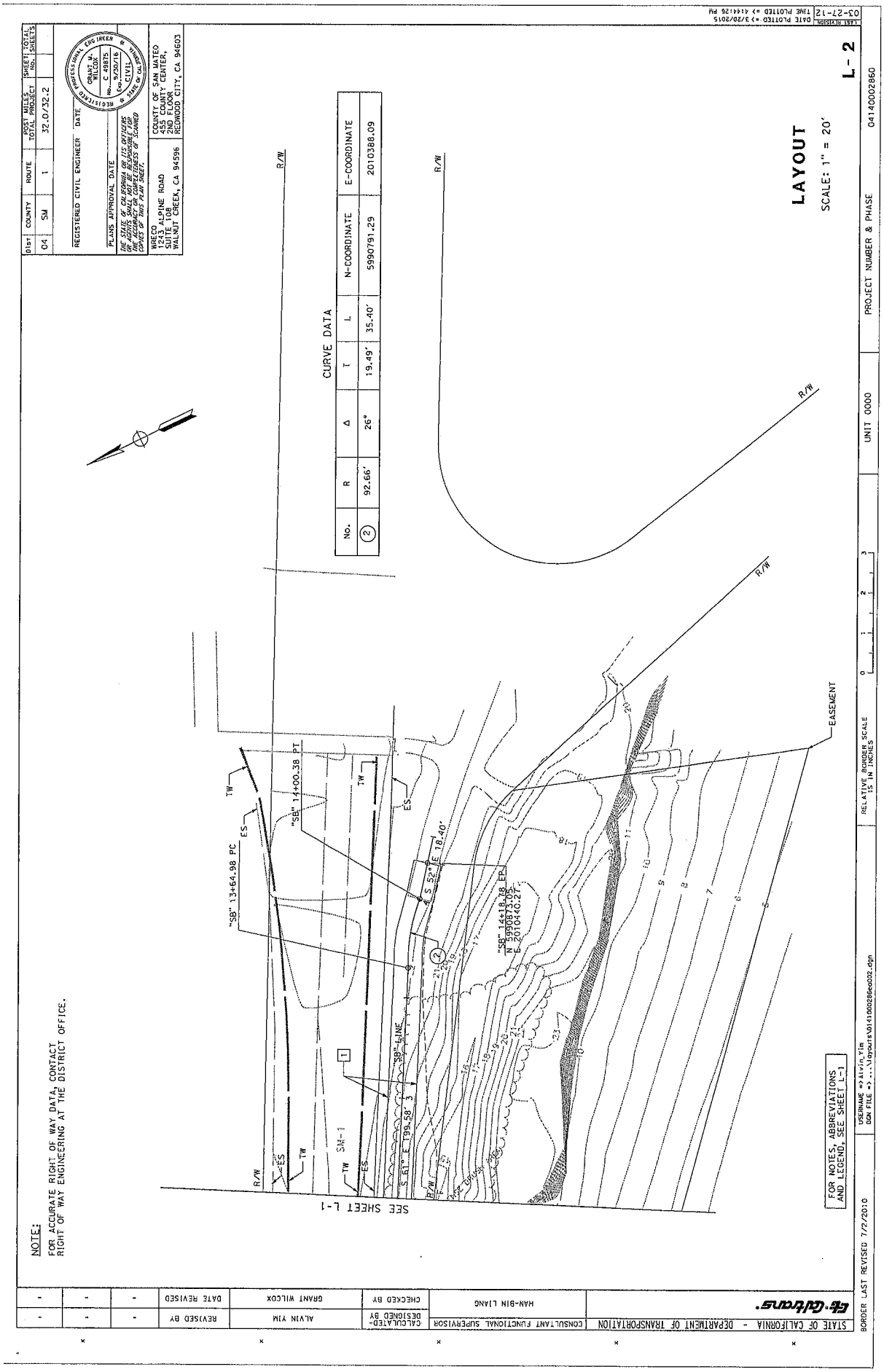
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S 61° E 199.58'
SB" LINE
EASEMENT
R/W
TW
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SM-1
SEE SHEET L-1
NOTE:
FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET L-1
REGISTERED CIVIL ENGINEER DATE
PLANS APPROVAL DATE
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COUNTY OF SAN MATEO
455 COUNTY CENTER,
2ND FLOOR
REDWOOD CITY, CA 94603
Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET TOTAL NO. SHEETS
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CONSULTANT FUNCTIONAL SUPERVISOR: HAN-BIN LIANG
CALCULATED-DESIGNED BY: ALVIN YIM
CHECKED BY: GRANT WILCOX
DATE REVISED
REVISED BY
DATE PLOTTED => 3/20/2015
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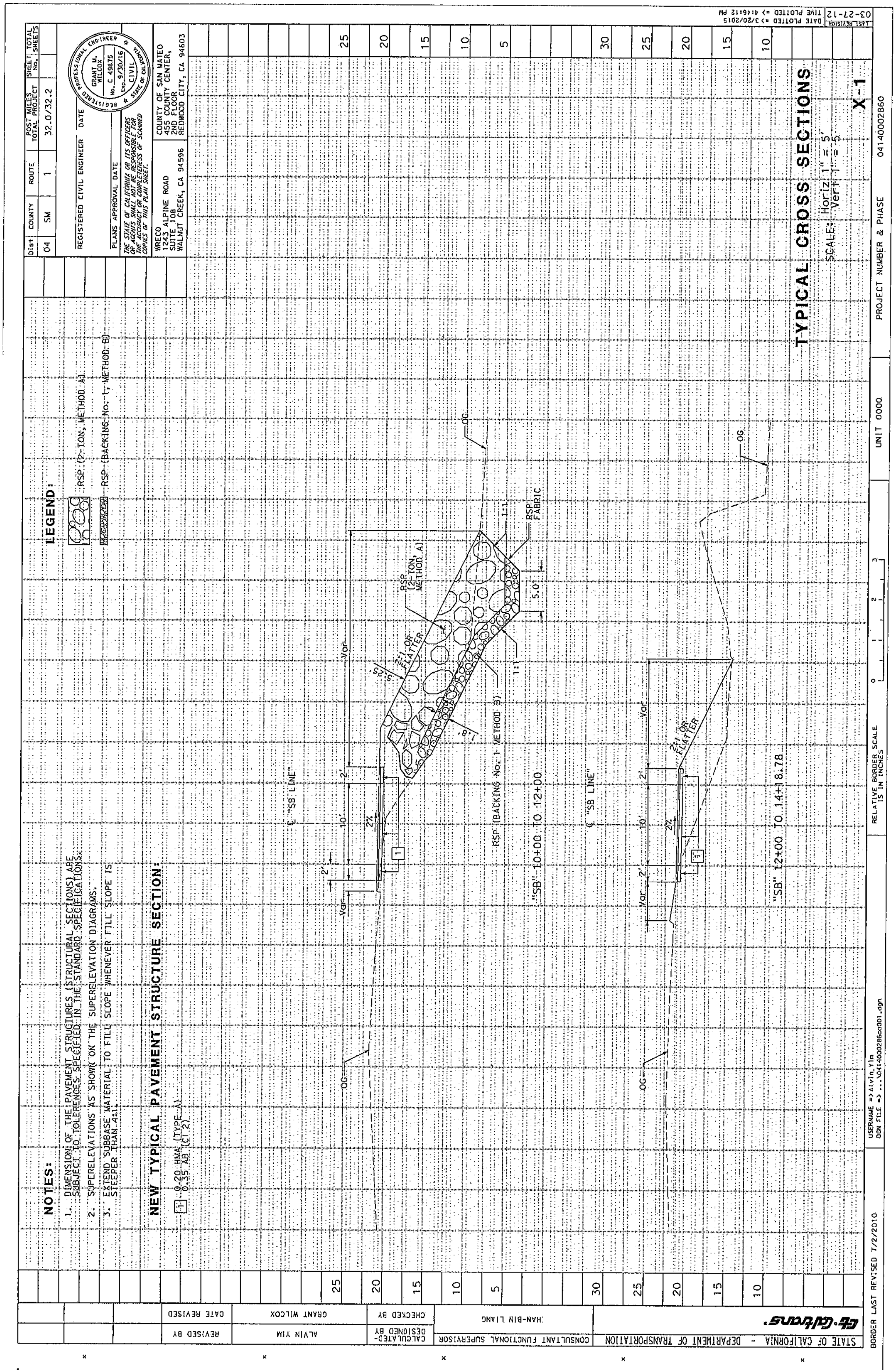
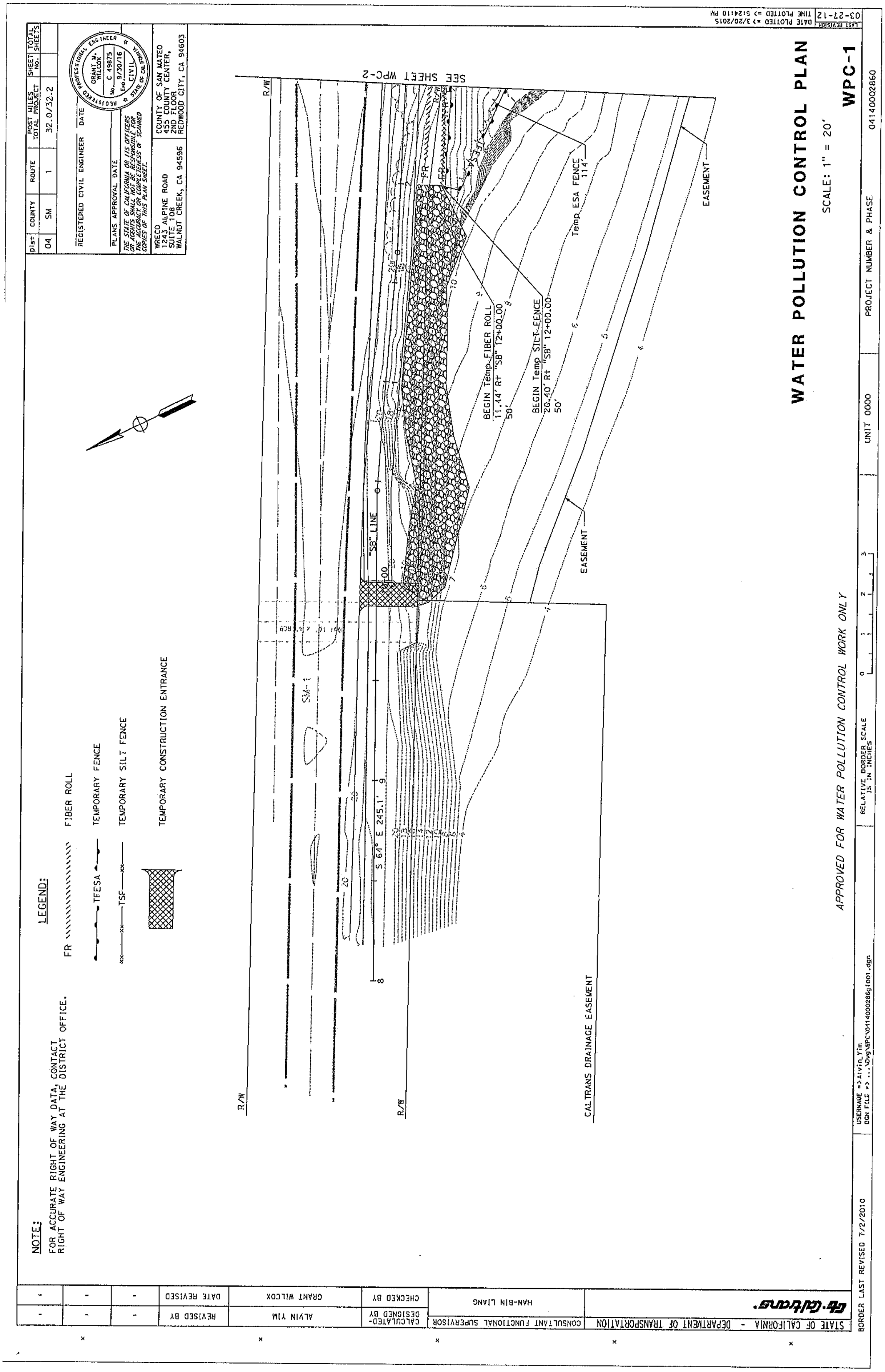
03-27-12 DATE REVISION


TYPICAL CROSS SECTIONS
SCALE: Horiz 1" = 5'
Vert 1" = 5'
X-1
NOTES:
1. DIMENSION OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTIONS) ARE SUBJECT TO TOLERENCES SPECIFIED IN THE STANDARD SPECIFICATIONS.
2. SUPERELEVATIONS AS SHOWN ON THE SUPERELEVATION DIAGRAMS.
3. EXTEND SUBBASE MATERIAL TO FILL SLOPE WHENEVER FILL SLOPE IS STEEPER THAN 4:1.
NEW TYPICAL PAVEMENT STRUCTURE SECTION:
1 0.20 HMA (TYPE A)
0.35 AB (CI 2)
LEGEND:
RSP (2-TON, METHOD A)
RSP (BACKING No. 1, METHOD B)
"SB" 10+00 TO 12+00
"SB" 12+00 TO 14+18.78
℄ "SB LINE"
2:1 OR FLATTER
RSP FABRIC
OG
Dist 04 COUNTY SM ROUTE 1 POST MILES TOTAL PROJECT 32.0/32.2
REGISTERED CIVIL ENGINEER DATE
PLANS APPROVAL DATE
WRECO 1243 ALPINE ROAD SUITE 108 WALNUT CREEK, CA 94596
COUNTY OF SAN MATEO 455 COUNTY CENTER, 2ND FLOOR REDWOOD CITY, CA 94603
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
PROJECT NUMBER & PHASE 04140002860
UNIT 0000
ALVIN YIM
GRANT WILCOX
HAN-BIN LIANG


WATER POLLUTION CONTROL PLAN
SCALE: 1" = 20'
WPC-1
SEE SHEET WPC-2
NOTE:
FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
LEGEND:
FR FIBER ROLL
TFESA TEMPORARY FENCE
TSF TEMPORARY SILT FENCE
TEMPORARY CONSTRUCTION ENTRANCE
BEGIN Temp FIBER ROLL 11.44' Rt "SB" 12+00.00 50'
BEGIN Temp SILT FENCE 20.40' Rt "SB" 12+00.00 50'
Temp ESA FENCE 114'
EASEMENT
CALTRANS DRAINAGE EASEMENT
"SB" LINE
S 64° E 245.1'
R/W
APPROVED FOR WATER POLLUTION CONTROL WORK ONLY
REGISTERED CIVIL ENGINEER
PLANS APPROVAL DATE
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.
WRECO 1243 ALPINE ROAD SUITE 108 WALNUT CREEK, CA 94596
COUNTY OF SAN MATEO 455 COUNTY CENTER, 2ND FLOOR REDWOOD CITY, CA 94603
04 SM 1 32.0/32.2
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
CONSULTANT FUNCTIONAL SUPERVISOR HAN-BIN LIANG
CALCULATED-DESIGNED BY ALVIN YIM
CHECKED BY GRANT WILCOX
REVISED BY
DATE REVISED
PROJECT NUMBER & PHASE 0414000286
UNIT 0000
RELATIVE BORDER SCALE IS IN INCHES
BORDER LAST REVISED 7/2/2010
03-27-12
DATE PLOTTED => 3/20/2015
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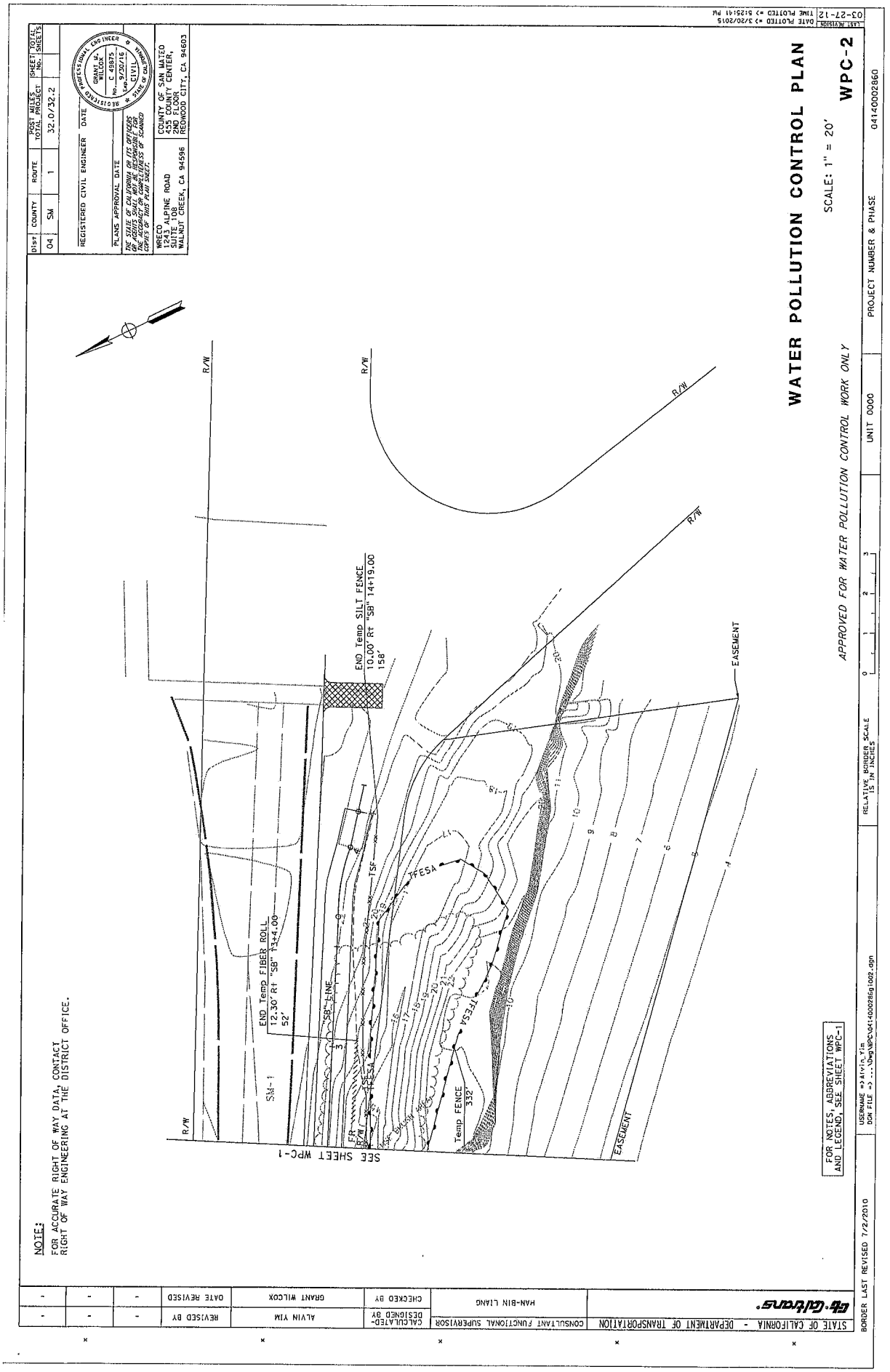
WATER POLLUTION CONTROL PLAN
SCALE: 1" = 20'
WPC-2
APPROVED FOR WATER POLLUTION CONTROL WORK ONLY
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
CONSULTANT FUNCTIONAL SUPERVISOR
HAN-BIN LIANG
CHECKED BY
CALCULATED-DESIGNED BY
ALVIN YIM
GRANT WILCOX
DATE REVISED
REVISED BY
BORDER LAST REVISED 7/2/2010
RELATIVE BORDER SCALE IS IN INCHES
UNIT 0000
PROJECT NUMBER & PHASE
0414000286
FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET WPC-1
NOTE:
FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
SEE SHEET WPC-1
END Temp FIBER ROLL
12.30' Rt "SB" 13+4.00
52'
END Temp SILT FENCE
10.00' Rt "SB" 14+19.00
158'
Temp FENCE
332'
TFESA
EASEMENT
R/W
SB-1 LINE
SM-1
Dist 04
COUNTY SM
ROUTE 1
POST MILES TOTAL PROJECT 32.0/32.2
SHEET TOTAL Nos. SHEETS
REGISTERED CIVIL ENGINEER
DATE
PLANS APPROVAL DATE
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED OR DIGITIZED PLAN SHEETS.
GRANT M. WILCOX
No. C 49875
Exp 9/20/16
CIVIL
STATE OF CALIFORNIA
PROFESSIONAL ENGINEER
WRECO
1243 ALPINE ROAD
SUITE 108
WALNUT CREEK, CA 94596
COUNTY OF SAN MATEO
455 COUNTY CENTER,
2ND FLOOR
REDWOOD CITY, CA 94603
LAST REVISION 03-27-12
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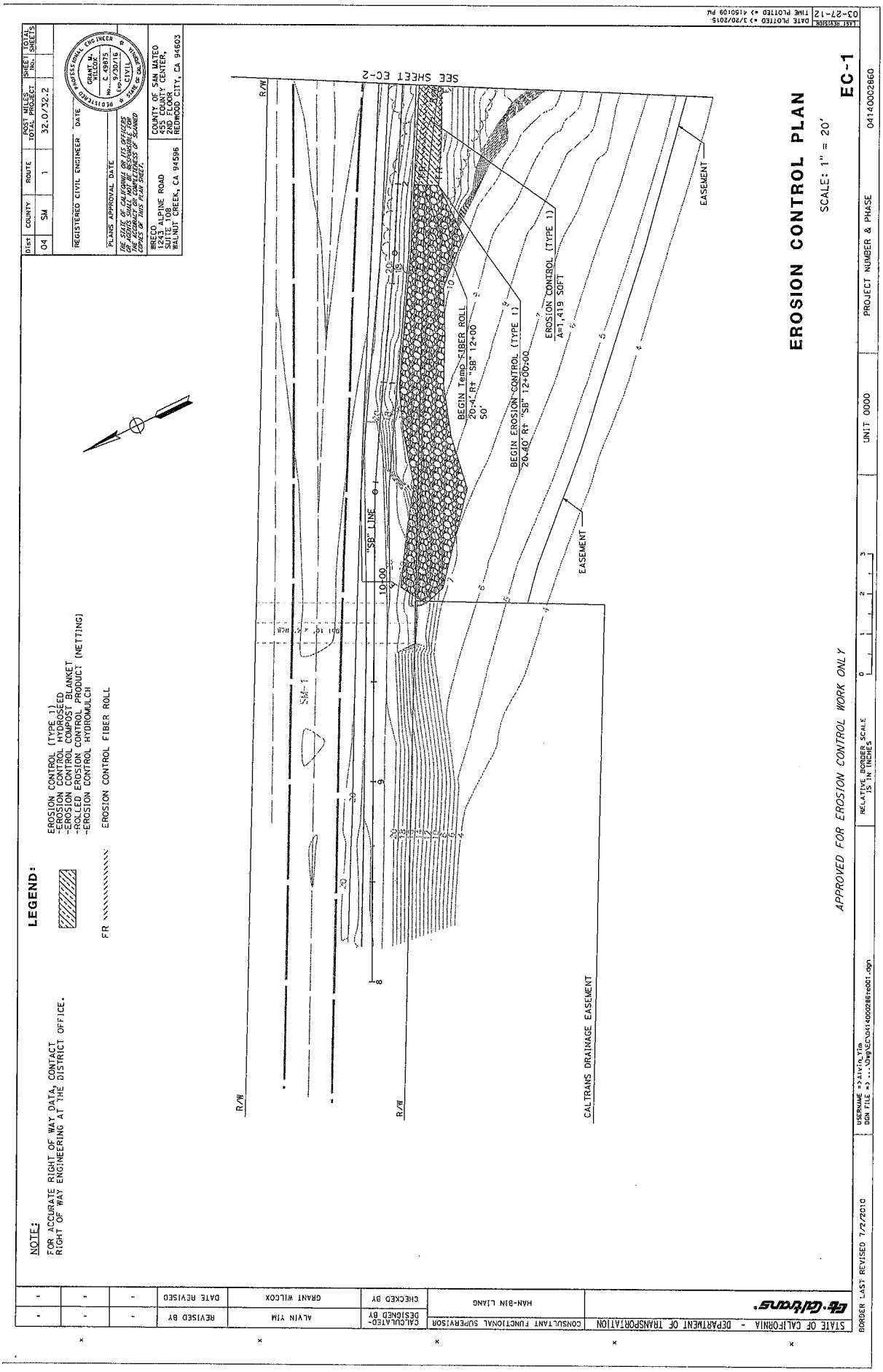
EROSION CONTROL PLAN
SCALE: 1" = 20'
EC-1
APPROVED FOR EROSION CONTROL WORK ONLY
LEGEND:
EROSION CONTROL (TYPE 1)
-EROSION CONTROL HYDROSEED
-EROSION CONTROL COMPOST BLANKET
-ROLLED EROSION CONTROL PRODUCT (NETTING)
-EROSION CONTROL HYDROMULCH
EROSION CONTROL FIBER ROLL
NOTE:
FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
SEE SHEET EC-2
R/W
"SB" LINE
BEGIN Temp. FIBER ROLL
20+41 Rt "SB" 12+00
50'
BEGIN EROSION CONTROL (TYPE 1)
20+40' Rt "SB" 12+00+00
EROSION CONTROL (TYPE 1)
A=1,419 SQFT
EASEMENT
CALTRANS DRAINAGE EASEMENT
REGISTERED CIVIL ENGINEER
PLANS APPROVAL DATE
WRECO
1243 ALPINE ROAD
SUITE 206
WALNUT CREEK, CA 94596
COUNTY OF SAN MATEO
455 COUNTY CENTER,
2ND FLOOR
REDWOOD CITY, CA 94603
Dist 04
COUNTY SM
ROUTE 1
POST MILES TOTAL PROJECT 32.0/32.2
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
CONSULTANT FUNCTIONAL SUPERVISOR HAN-BIN LIANG
CALCULATED/DESIGNED BY ALVIN YIM
CHECKED BY GRANT WILCOX
DATE REVISED
REVISED BY
BORDER LAST REVISED 7/2/2010
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RELATIVE BORDER SCALE IS 1 IN INCHES
UNIT 0000
PROJECT NUMBER & PHASE 04140002860
LAST REVISION 03-27-12
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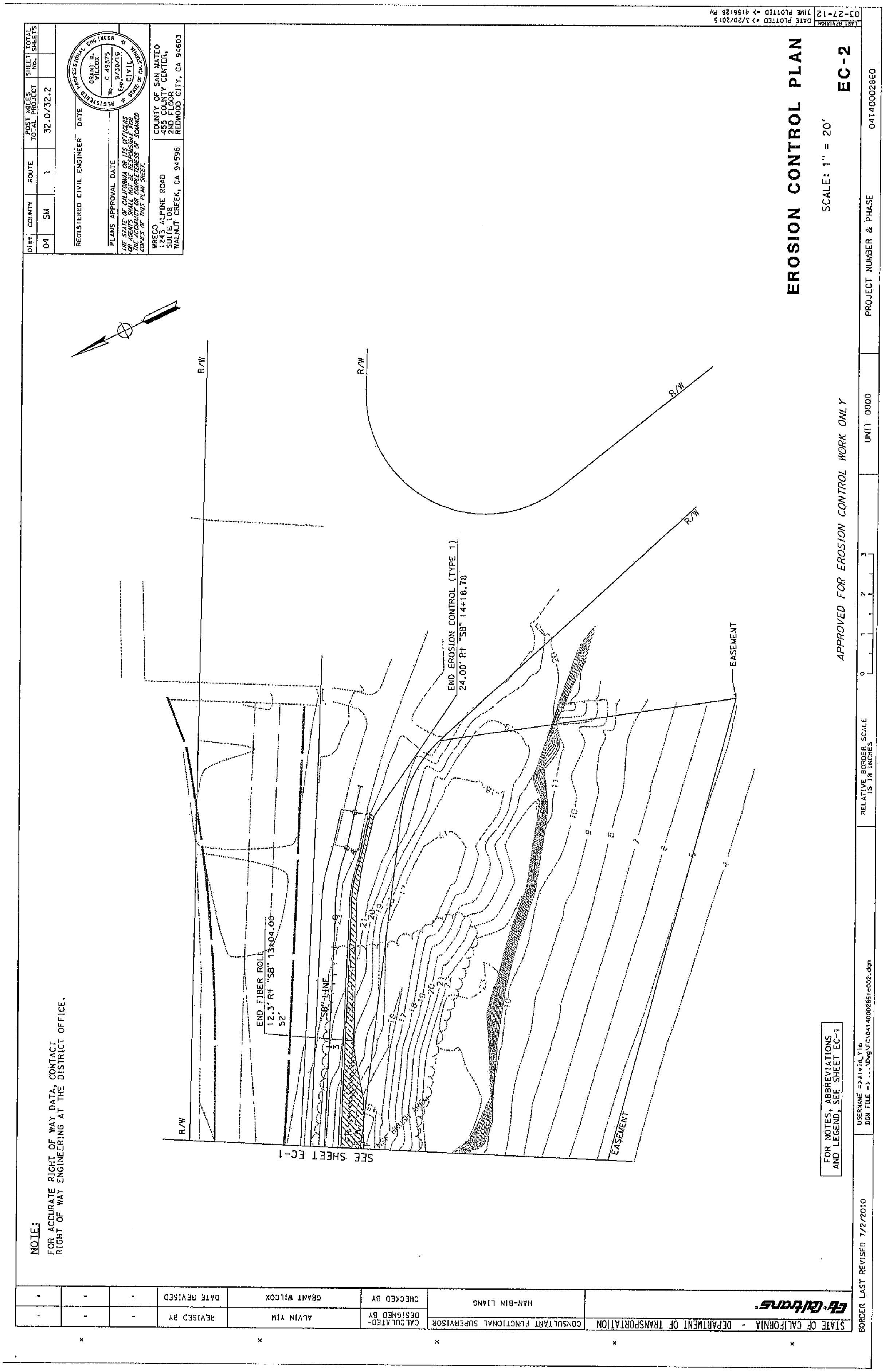
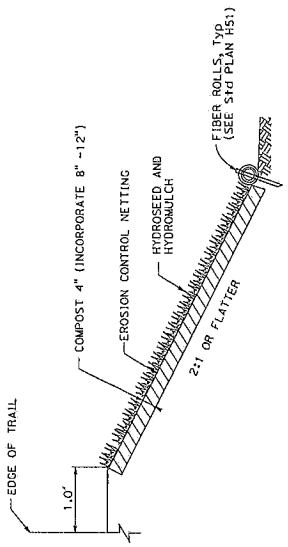

EROSION CONTROL PLAN
SCALE: 1" = 20'
EC-2
APPROVED FOR EROSION CONTROL WORK ONLY
PROJECT NUMBER & PHASE
0414000286
UNIT 0000
RELATIVE BORDER SCALE IS IN INCHES
FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET EC-1
SEE SHEET EC-1
END EROSION CONTROL (TYPE 1)
24.00' Rt "SB" 14+18.78
EASEMENT
R/W
"SB" LINE
NOTE:
FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
DIST 04 COUNTY SM ROUTE 1 POST MILES TOTAL PROJECT 32.0/32.2
REGISTERED CIVIL ENGINEER
PLANS APPROVAL DATE
WRECO
1243 ALPINE ROAD
SUITE 108
WALNUT CREEK, CA 94596
COUNTY OF SAN MATEO
455 COUNTY CENTER, 2ND FLOOR
REDWOOD CITY, CA 94603
GRANT U. WILCOX
C 49875
CIVIL
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
CONSULTANT FUNCTIONAL SUPERVISOR
HAN-BIN LIANG
CALCULATED-DESIGNED BY
ALVIN YIM
CHECKED BY
GRANT WILCOX
REVISED BY
DATE REVISED
BORDER LAST REVISED 7/2/2010

EROSION CONTROL DETAIL

ECD-1



SECTION

EROSION CONTROL TYPE 1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SM	1	32.0/32.2		

REGISTERED CIVIL ENGINEER — DATE

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF CHANGES TO OR ERRORS THAT MAY APPEAR ON COPIES OF THIS PLAN SHEET.

GRANT M. WILCOX — No. C 49815 — 9/30/16 — CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

WRECO
1243 ALPINE ROAD
SUITE 206
WALNUT CREEK, CA 94596

COUNTY OF SAN MATEO
455 COUNTY CENTER,
2ND FLOOR
REDWOOD CITY, CA 94603

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LAST REVISION 03-27-12

BORDER LAST REVISED 7/2/2010

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RELATIVE BORDER SCALE IS 1 IN. INCHES — 0 — 1 — 2 — 3

UNIT 0000

PROJECT NUMBER & PHASE 04140002860

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans.

CONSULTANT FUNCTIONAL SUPERVISOR	HAN-BIN LIANG	CHECKED BY	GRANT WILCOX	DATE REVISED	-	-	-
		CALCULATED-DESIGNED BY	ALVIN YIM	REVISED BY	-	-	-

NOTE:
FOR NOTES, ABBREVIATIONS, AND LEGEND, SEE SHEET EC-1.

EROSION CONTROL QUANTITIES

SHEET No.	DESCRIPTION	COMPOST (SQFT)	ROLLED EROSION CONTROL PRODUCT (NETTING) (SQFT)	HYDROSEED (SQFT)	HYDROMULCH (SQFT)	FIBER ROLLS (LF)
EC-1	EROSION CONTROL (TYPE 1)	623	623	623	623	
	FIBER ROLLS					99
EC-2	EROSION CONTROL (TYPE 1)	806	806	806	806	
	FIBER ROLLS					54
TOTAL		1,429	1,429	1,429	1,429	153

EROSION CONTROL QUANTITIES

ECQ-1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SM	1	32.0/32.2		

REGISTERED CIVIL ENGINEER — DATE

PROFESSIONAL ENGINEER — GRANT M. WILCOX — No. C 49815 — Exp. 9/30/16 — CIVIL — STATE OF CALIFORNIA

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED DATA ON THIS SHEET.

WRECO
1243 ALPINE ROAD
SUITE 108
WALNUT CREEK, CA 94596

COUNTY OF SAN MATEO
455 COUNTY CENTER,
2ND FLOOR
REDWOOD CITY, CA 94603

LAST REVISION 03-27-12 TIME PLOTTED => 5:05:29 PM
DATE PLOTTED => 3/20/2015

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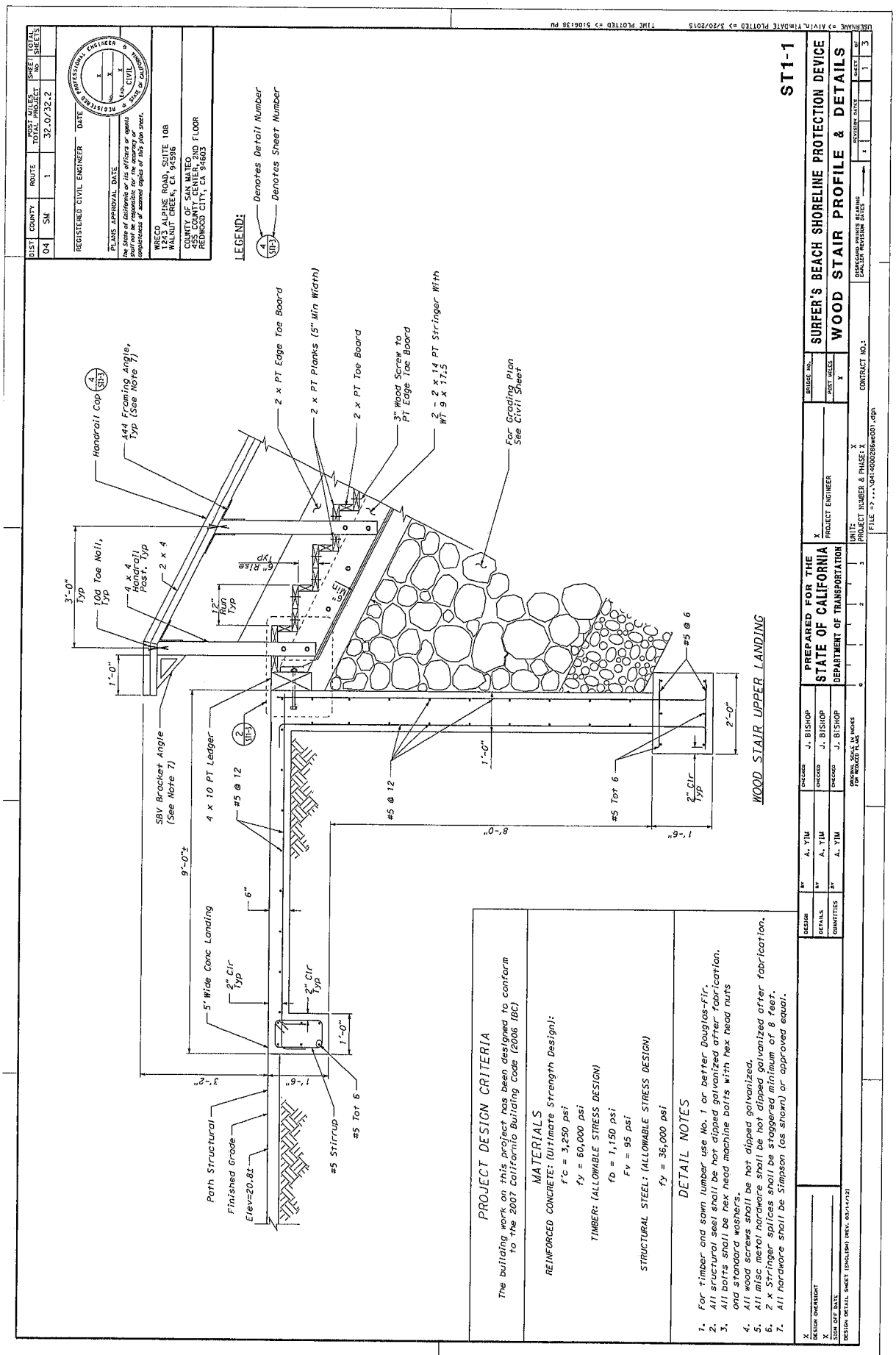
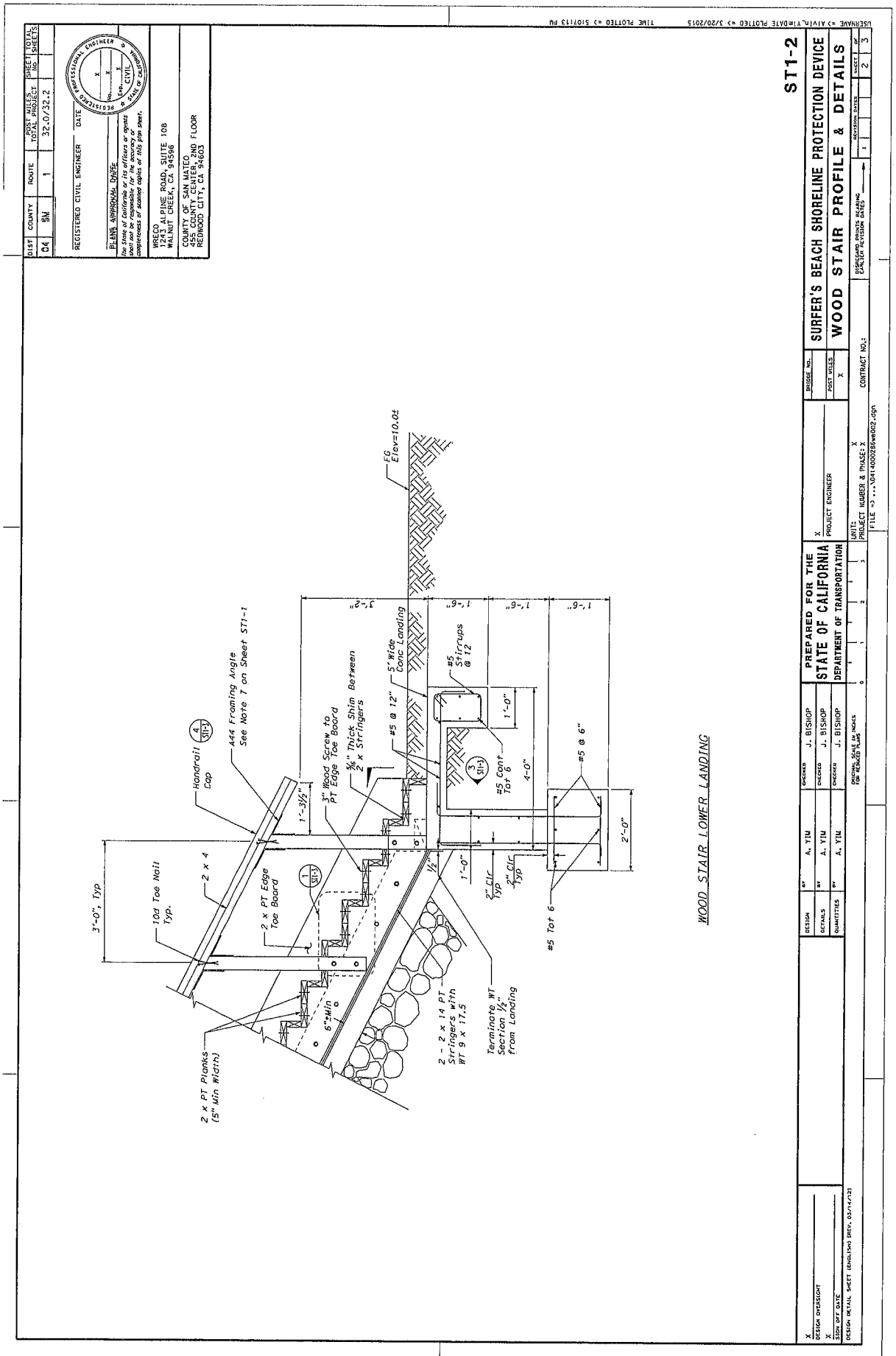
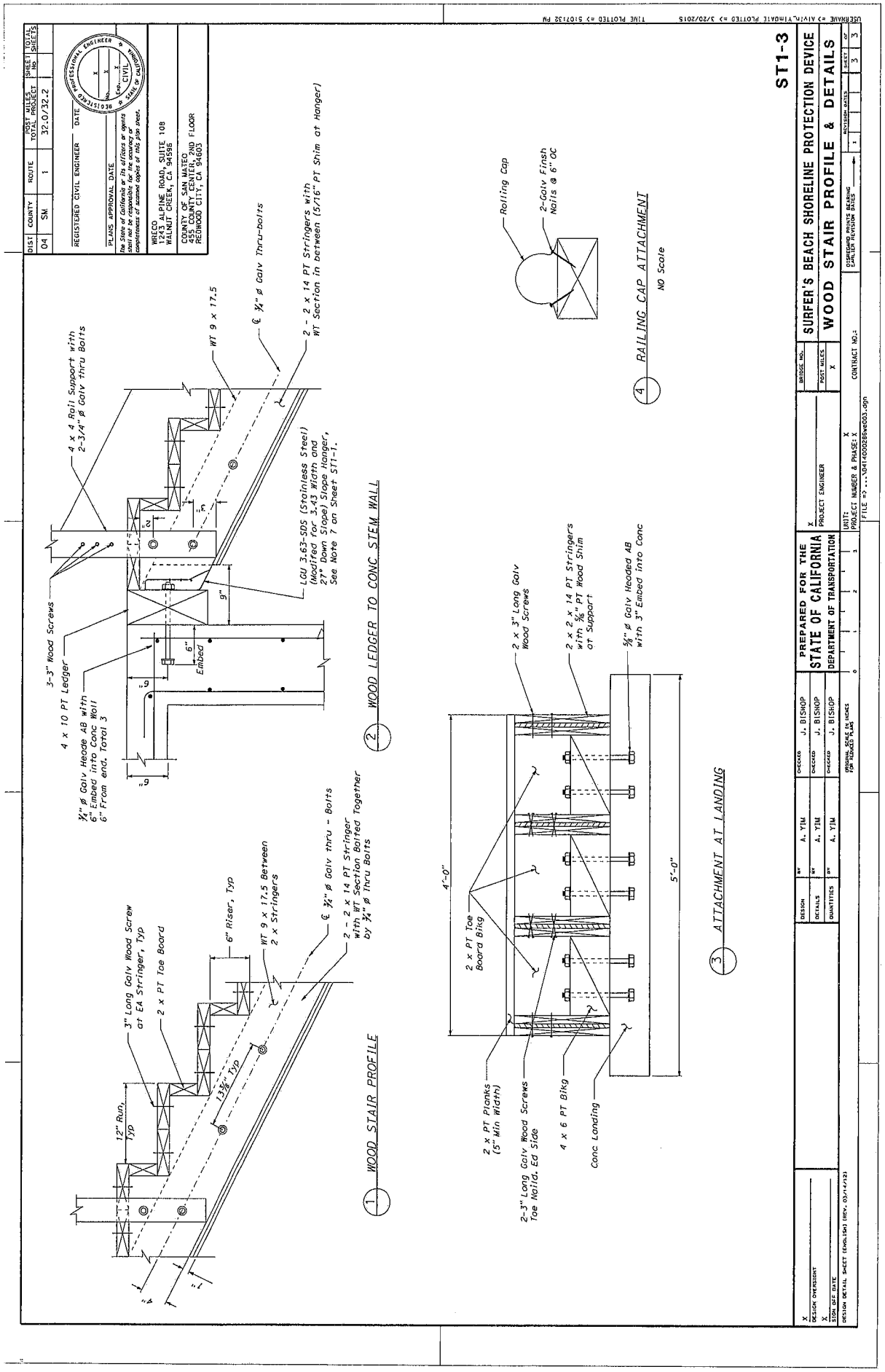
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION | CONSULTANT FUNCTIONAL SUPERVISOR: HAN-BIN LIANG | CALCULATED-DESIGNED BY: ALVIN YIM | CHECKED BY: GRANT WILCOX

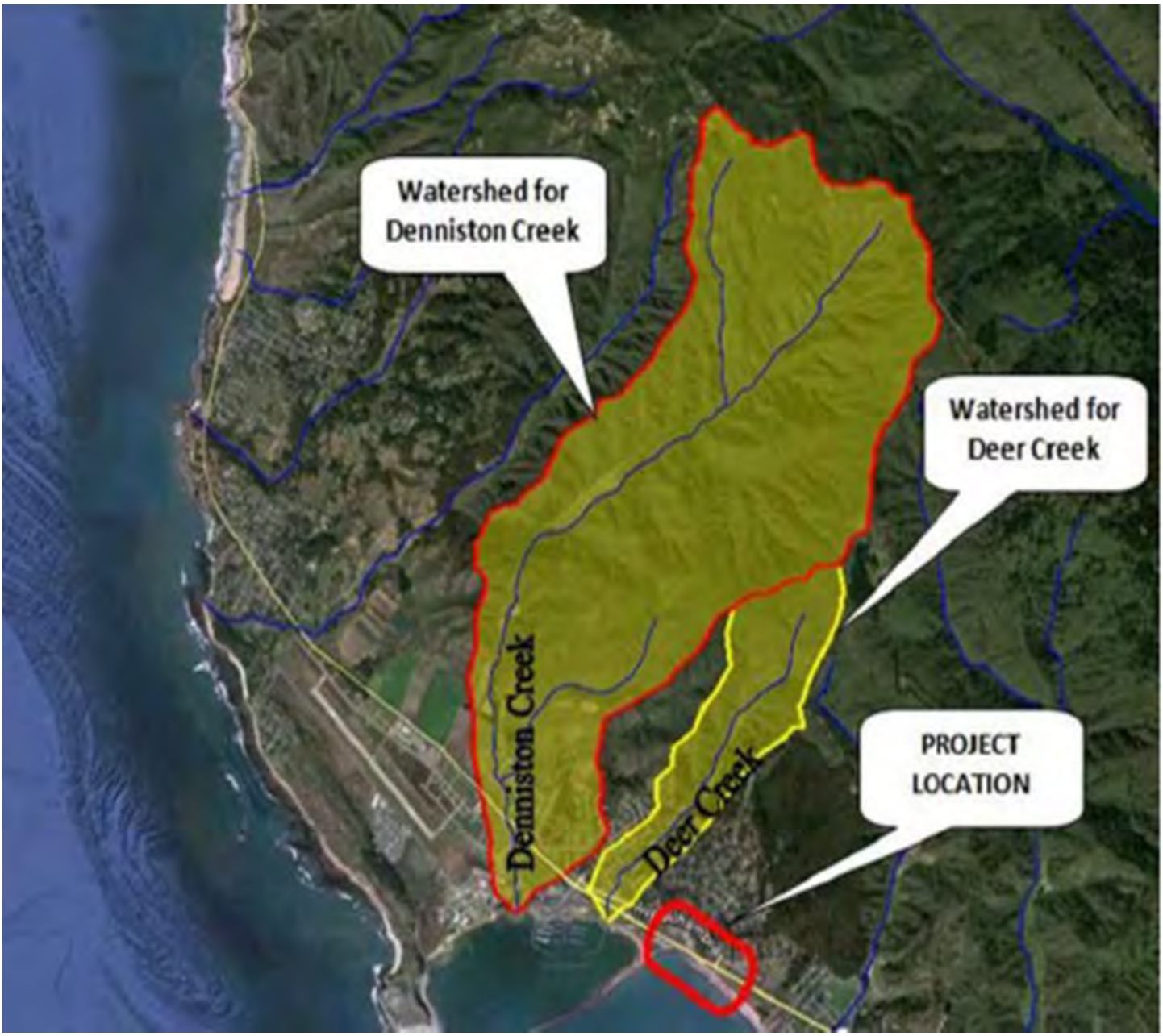
-	-	-	DATE REVISED	REVISED BY
-	-	-		


LEGEND:
Denotes Detail Number
Denotes Sheet Number
Handrail Cap
A44 Framing Angle, Typ (See Note 7)
2 x PT Edge Toe Board
2 x PT Planks (5" Min Width)
2 x PT Toe Board
3" Wood Screw to PT Edge Toe Board
2 - 2 x 14 PT Stringer With WT 9 x 17.5
For Grading Plan See Civil Sheet
3'-0" Typ
10d Toe Nail, Typ
4 x 4 Handrail Post, Typ
2 x 4
6" Rise Typ
12" Run Typ
1'-0"
SBV Bracket Angle (See Note 7)
4 x 10 PT Ledger
#5 @ 12
5' Wide Conc Landing
2" Clr Typ
6"
9'-0"±
#5 Stirrup
#5 Tot 6
Path Structural Finished Grade
Elev=20.8±
WOOD STAIR UPPER LANDING
#5 @ 6
2'-0"
8'-0"
9'-1"
PROJECT DESIGN CRITERIA
The building work on this project has been designed to conform to the 2007 California Building Code (2006 IBC)
MATERIALS
REINFORCED CONCRETE: (Ultimate Strength Design):
f'c = 3,250 psi
fy = 60,000 psi
TIMBER: (ALLOWABLE STRESS DESIGN)
fb = 1,150 psi
Fv = 95 psi
STRUCTURAL STEEL: (ALLOWABLE STRESS DESIGN)
fy = 36,000 psi
DETAIL NOTES
1. For timber and sawn lumber use No. 1 or better Douglas-Fir.
2. All structural steel shall be hot dipped galvanized after fabrication.
3. All bolts shall be hex head machine bolts with hex head nuts and standard washers.
4. All wood screws shall be hot dipped galvanized.
5. All misc metal hardware shall be hot dipped galvanized after fabrication.
6. 2 x Stringer splices shall be staggered minimum of 8 feet.
7. All hardware shall be Simpson (as shown) or approved equal.
DESIGN
DETAILS
QUANTITIES
CHECKED J. BISHOP
PREPARED FOR THE STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
PROJECT ENGINEER
DISTRICT
COUNTY
ROUTE
POST MILES TOTAL PROJECT
SHEET NO.
TOTAL SHEETS
04 SM 1 32.0/32.2
REGISTERED CIVIL ENGINEER DATE
PLANS APPROVAL DATE
WRECO 1243 ALPINE ROAD, SUITE 108 WALNUT CREEK, CA 94596
COUNTY OF SAN MATEO 455 COUNTY CENTER, 2ND FLOOR REDWOOD CITY, CA 94603
BRIDGE NO.
POST MILES
CONTRACT NO.:
SURFER'S BEACH SHORELINE PROTECTION DEVICE
WOOD STAIR PROFILE & DETAILS
ST1-1
DESIGN OVERSIGHT
SIGN OFF DATE
DESIGN DETAIL SHEET (ENGLISH) (REV. 03/14/12)


ST1-2
SURFER'S BEACH SHORELINE PROTECTION DEVICE
WOOD STAIR PROFILE & DETAILS
PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION
REGISTERED CIVIL ENGINEER
PLANS APPROVAL DATE
PROFESSIONAL ENGINEER
CIVIL
WRECO
1243 ALPINE ROAD, SUITE 108
WALNUT CREEK, CA 94596
COUNTY OF SAN MATEO
455 COUNTY CENTER, 2ND FLOOR
REDWOOD CITY, CA 94063
WOOD STAIR LOWER LANDING
F.G. Elev=10.0±
5" Wide Conc Landing
#5 @ 12"
#5 Stirrups @ 12
#5 Cont Tot 6
#5 @ 6"
#5 Tot 6
4'-0"
1'-0"
2'-0"
3'-0", Typ
10d Toe Nail Typ.
2 x 4
2 x PT Edge Toe Board
Handrail Cap
A44 Framing Angle See Note 7 on Sheet ST1-1
3" Wood Screw to PT Edge Toe Board
3/8" Thick Shim Between 2 x Stringers
2 x PT Planks (5" Min Width)
6" Min
2 - 2 x 14 PT Stringers with WT 9 x 17.5
Terminate WT Section 1/2" from Landing
2" Clr Typ
2" Clr Typ


ST1-3
SURFER'S BEACH SHORELINE PROTECTION DEVICE
WOOD STAIR PROFILE & DETAILS
PREPARED FOR THE STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
REGISTERED CIVIL ENGINEER
PLANS APPROVAL DATE
WRECO
1243 ALPINE ROAD, SUITE 108
WALNUT CREEK, CA 94596
COUNTY OF SAN MATEO
455 COUNTY CENTER, 2ND FLOOR
REDWOOD CITY, CA 94603
1 WOOD STAIR PROFILE
2 WOOD LEDGER TO CONC STEM WALL
3 ATTACHMENT AT LANDING
4 RAILING CAP ATTACHMENT
NO Scale
4 x 4 Rail Support with 2-3/4" ø Galv thru Bolts
WT 9 x 17.5
℄ ¾" ø Galv Thru-bolts
2 - 2 x 14 PT Stringers with WT Section in between (5/16" PT Shim at Hanger)
3-3" Wood Screws
4 x 10 PT Ledger
¾" ø Galv Heade AB with 6" Embed into Conc Wall 6" From end, Total 3
LGU 3.63-SDS (Stainless Steel) (Modified For 3.43 Width and 27° Down Slope) Slope Hanger, See Note 7 on Sheet ST1-1.
6" Embed
9"
3" Long Galv Wood Screw at EA Stringer, Typ
2 x PT Toe Board
12" Run, Typ
6" Riser, Typ
WT 9 x 17.5 Between 2 x Stringers
13⅜" Typ
℄ ¾" ø Galv thru - Bolts
2 - 2 x 14 PT Stringer with WT Section Bolted Together by ¾" ø thru Bolts
Rolling Cap
2-Galv Finsh Nails @ 6" OC
2 x 3" Long Galv Wood Screws
2 x 2 x 14 PT Stringers with ⅜" PT Wood Shim at Support
⅝" ø Galv Headed AB with 3" Embed into Conc
4'-0"
5'-0"
2 x PT Toe Board Bkg
2 x PT Planks (5" Min Width)
2-3" Long Galv Wood Screws Toe Nailed, Ea Side
4 x 6 PT Bkg
Conc Landing

Beach Cross Section



Denniston Creek and Deer Creek Watersheds

PHOTO OF PROJECT SITE

Aerial Photo
Project Site and Vicinity

Exhibit 6
1-98-057-A3
Page 1 of 1

Visual Simulation
Proposed RSP and Public Access Trail

Visual Simulation
Proposed Stairs for Beach Access
(Looking toward Northwest from southern end of Site)

Existing Fill in Bluff
(Includes tire, asphalt, and other debris)

ALTERNATIVE 1: ROCK SLOPE PROTECTION

ALTERNATIVE 2: SHEET PILE WALL WITH RSP TOE PROTECTION

Simulation

Alternatives for Shoreline Protection

(Looking toward North from Southern End of Site)

Pillar Point Harbor Breakwaters

VIEW OF AREA
FROM EAST OF HIGHWAY 1

VIEW OF AREA FROM NORTH OF
SURFER'S BEACH PROJECT SITE
(During storm conditions)


Project Site
Surfer's Beach
VIEW FROM NORTH OF
SURFER'S BEACH PROJECT SITE


Project Site is Located to Northeast and
Landward of Eroded Bluff Outcrop
VIEW FROM ERODED AREA SOUTH OF
SURFER'S BEACH PROJECT SITE

Beach Sand Replenishment
In-lieu Fee Worksheet
Address
CDP #

V_e = Volume of sand to rebuild the area of beach lost due to encroachment by the seawall; based on the seawall design and beach and nearshore profiles (cubic yards)

V_e = **A_e** x v

A_e = The encroachment area which is equal to the width of the properties which are being protected (W) times the seaward encroachment of the protection (E)

A_e = W x E

W = Width of property to be armored (ft.)

E = Encroachment by seawall, measured from the toe of the bluff or back beach to the seaward limit of the protection (ft.)

v = Volume of material required, per unit width of beach, to replace or reestablish one foot of beach seaward of the seawall; based on the vertical distance from the top of the beach berm to the seaward limit of reversible sediment movement (cubic yards/ft. of width and ft. of retreat). The value of v is often taken to be 1 cubic yard per square ft. of beach. If a vertical distance of 40 feet is used for the range of reversible sediment movement, v would have a value of 1.5 cubic yards/square ft. (40 feet x 1 foot x 1 foot/27 cubic feet per cubic yard). If the vertical distance for a reversible sand movement is less than 40 feet, the value of v would be less than 1.5 cubic yards per square foot. The value of v would be less that 1.5 cubic yards per square foot. The value of v will vary from one coastal region to an another. A value of 0.9 cubic yards per square foot has been suggested for the Oceanside Littoral Cell (Oceanside Littoral Cell Preliminary Sediment Budget Report, December 1997, prepared as part of the Coast of California Storm and Tide Wave Study)

V_w = Volume of sand to rebuild the area of beach lost due to long-term erosion (**V_w**) of the beach and near-shore, resulting from stabilization of the bluff face and prevention of landward migration of the beach profile; based on the long-term regional bluff retreat rate, and beach and nearshore profiles (cubic yards)

$\mathbf{V_w} = \mathbf{A_w} \times v$

$\mathbf{A_w}$ = The area of beach lost due to long-term erosion is equal to the long-term average annual erosion rate (R) times the number of years that the back beach or bluff will be fixed (L) times the width of the property that will be protected (W) (ft./yr.)

$$\mathbf{A_w} = R \times L \times W$$

R = The retreat rate which must be based on historic erosion, erosion trends, aerial photographs, land surveys, or other acceptable techniques and documented by the applicant. The retreat rate should be the same as the predicted retreat rate used to estimate the need for shoreline armoring

L = The length of time the back beach or bluff will be fixed or the design life of the armoring without maintenance (yr.). For repair and maintenance projects, the design life should be an estimate of the additional length of time the proposed maintenance will allow the seawall to remain without further repair or replacement

$\mathbf{V_b}$ = Amount of beach material that would have been supplied to the beach if natural erosion continued, or the long-term reduction in the supply of bluff material to the beach, over the life of the structure; based on the long-term average retreat rate, design life of the structure, percent of beach quality material in the bluff, and bluff geometry (cubic yards)

$$\mathbf{V_b} = (S \times W \times L) \times [(R \times h_s) + (1/2h_u \times (R + (R_{cu} - R_{cs})))]/27$$

S = Fraction of beach quality material in the bluff material, based on analysis of bluff material to be provided by the applicant

h_s = Height of the seawall from the base of the bluff to the top (ft.)

h_u = Height of the unprotected upper bluff, from the top of the seawall to the crest of the bluff (ft.)

R_{cu} = Predicted rate of retreat of the crest of the bluff, during the period that the seawall would be in place, assuming no seawall were installed (ft./yr.). This value can be assumed to be the same as R unless the applicant provides site specific geotechnical information supporting a different value

R_{cs} = Predicted rate of retreat of the crest of the bluff, during the period that the seawall would be in place, assuming the seawall has been installed (ft./yr.). This value will be assumed to be zero unless the applicant provides site specific geotechnical information supporting a different value

V_t = Total volume of sand required to replace losses due to the structure, through reduction in material from the bluff, reduction in nearshore area and loss of available beach area (cubic yards). Derived from calculations provided above

V_t = $V_b + V_w + V_e$

M = V_t x C

C = Cost, per cubic yard of sand, of purchasing and transporting beach quality material to the project vicinity ($ per cubic yard). Derived from the average of three written estimates from sand supply companies within the project vicinity that would be capable of transporting beach quality material to the subject beach, and placing it on the beach or in the near shore area

V_e = **A_e** x v

V_e = XXX x XX = XX cubic yards

V_w = **A_w** x v

V_w = XX x XX = XX cubic yards

V_b = (S x W x L) x [(R x h_s) + (1/2h_u x (R + (R_{cu} - R_{cs})))]/27

V_b = (XX x XX x XX) x [(XX x XX) + (XX/2 x (XX + (XX – XX)))]/27 = XX cubic yards

V_t = **V_b** + **V_w** + **V_e**

V_t = XXX + XXX + XXX = XXX cubic yards

M = **V_t** x C

M = XXX x $XXX = $XXX.XX

Project Area Habitat Types

Willow/Coastal Scrub (wetlands), Annual Grassland, and Invasive (ice plant)

Exhibit 13
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Exhibit 14
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LEGEND:

PROPOSED PAVED PATH

EXISTING CAPE IVY

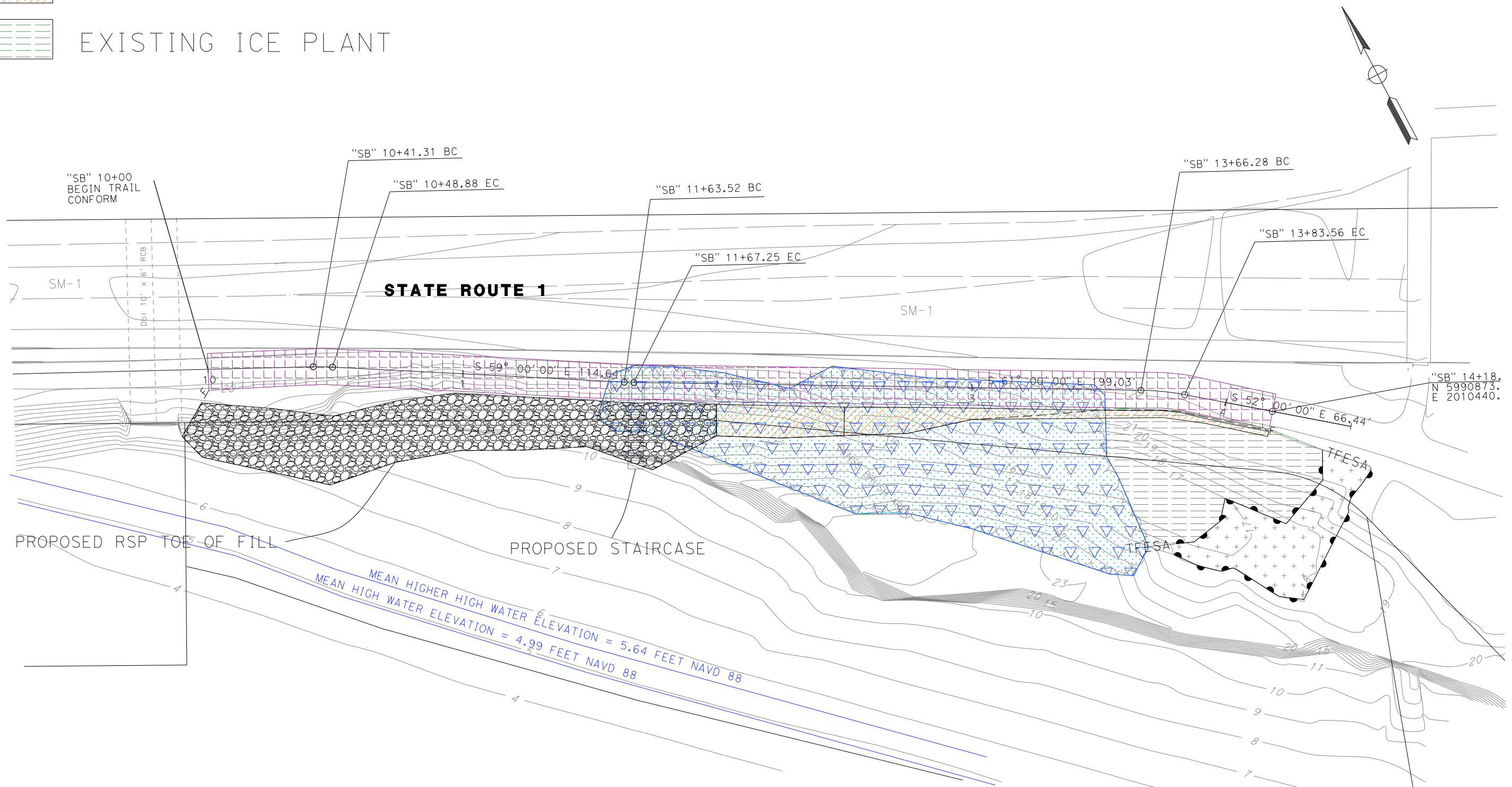
PROPOSED EMBANKMENT ON EXISTING WILLOW SCRUB

EXISTING ICE PLANT

EXISTING WILD STRAWBERRY

COASTAL COMMISSION WETLAND AREA

TFESA TEMPORARY ESA FENCE



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CALIFORNIA
COASTAL COMMISSION

SURFER'S BEACH SHORELINE PROTECTION PROJECT

Project: Repair and stabilization of approximately 175 feet of bluff area adjacent to Highway 1 and approximately 400 feet of a portion of the Coastal Trail at Surfer's Beach, due to erosion. Funded in partnership between the City ($100,000), San Mateo County ($400,000), Caltrans ($1.17 million). Improvements anticipated to include a combination of retaining wall and rip-rap, and a new staircase to Surfer's Beach.

Update: Project is on Coastal Commission website, listed as a "future agenda item."

Dear California Coastal Commission,

I am writing to you as a concerned citizen of San Mateo County. Since this picture was taken, the small bluff next to Highway 1 has eroded away more. This is the main access to Surfer's Beach in El Granada. I am dismayed that the Coastal Commission has listed this project as a "future agenda item," as reported by the Half Moon Bay City Council.

Please know that this little stretch of land is very important to many people. The City of Half Moon Bay, San Mateo County and Caltrans have allocated money to help fix the erosion. Please review this project so that they can move forward before more of the cliff erodes away.

Thank you, Jamie McEachen

Jamie McEachen
P.O.Box 2735
El Granada, CA 94018