CALIFORNIA COASTAL COMMISSION
NORTH CENTRAL COAST DISTRICT OFFICE
45 FREMONT STREET, SUITE 2000
SAN FRANCISCO, CA 94105
PHONE: (415) 904-5260
FAX: (415) 904-5400
WEB: WWW.COASTAL.CA.GOV

Click here to go to original staff report

F8b

Prepared July 9, 2014 for July 11, 2014 Hearing

To: Commissioners and Interested Persons

From: Nancy Cave, District Manager
Joseph Street, Coastal Planner

Subject: STAFF REPORT ADDENDUM for F8b
CDP Application Number 2-11-009 (City of Pacifica Shoreline Protection)

The purpose of this addendum is to modify the staff recommendation for the above-referenced item. In the time since the staff report was distributed, staff has received new input and information that suggests certain changes to the staff recommendation are appropriate. These changes include a minor change in condition language (in terms of defining the approved project) and some refinement to armoring impact findings. The Applicant is in agreement with the staff recommendation and the matter is being moved to the consent calendar. These changes do not modify the basic staff recommendation, which is still approval with conditions, but the changes require some discussion.

In terms of the change to the conditions, the reference to removing rock supporting the drain pipe is deleted as there is no such rock in that area. With respect to the armoring impact findings, staff's proposed findings included a level of detail that inadvertently caused some confusion between the Applicant and other parties involved in this project. Although all parties agreed with the final impact conclusion numbers, the intermediate steps provided in the findings served to over-complicate the matter unnecessarily. Thus, the intermediate steps of these findings are simplified, and the conclusion numbers remain the same.

Thus, with these changes, the Applicant and the Staff are in agreement on the staff recommendation, and the Applicant has asked that this item be moved to the Consent Calendar portion of the agenda. Staff is unaware of any opposition to the project or to hearing this item on the Consent Calendar. Thus, the staff report is modified as shown below (where applicable, text in underline format indicates text to be added, and text in ~~strikethrough~~ format indicates text to be deleted):

1. Modify Special Condition 1c on staff report page 6 as follows:

Drain Pipe. *The above-ground portion of the drain pipe shall be removed, consistent with the project authorized under CDP waiver 2-11-030-W.* ~~*All rock supporting the drain pipe*~~

~~*shall be removed, and only rock authorized by this CDP and described in part (a) above shall be allowed to remain.*~~

2. Modify text near the bottom of staff report page 31 as follows:

…In this case, the existing revetment runs from the adjacent Aimco revetment along ~~almost 200~~ some 174 feet of bluff. The revetment covers areas of sandy beach, and but for the revetment new beach area would result from landward retreat of the bluff in the absence of the proposed project.

3. Modify text starting at the top of staff report page 32 as follows:

The shoreline is irregular, but the area affected by passive erosion can be approximated as a 174-foot-long curvilinear bluff, extending from the revetment junction with the Aimco project on the north end to the tip of the 2011 extended revetment on the south end.[17] ~~*Of this total distance, approximately 44 feet is covered by areas of the original revetment and engineered fill that has remained intact since 1997 (the northern end). The remaining 130 feet (the southern end) includes the area of original revetment and fill that was essentially removed by the 2010 failure, and in 2011 was filled and extended with the new revetment. The southern portion of the original*~~ *The 1997 revetment prevented passive erosion of the bluff from 1997-2010, but in 2010 failed catastrophically **(Exhibits 9,10)**, leaving behind a remnant extending 44 feet from the junction with the Aimco project to about 10 feet south of the drain pipe. The 2011 emergency project replaced and expanded the washed-out southern portion of the revetment, extending to a point approximately 140 feet south of the drain pipe.* ~~*Since the magnitude of the 2010 bluff retreat was similar to or in excess of that which would have been predicted for 1997-2010 in the absence of shoreline protection (using a site-specific erosion rate, see below), we calculate the passive erosion impacts of the southern portion of the revetment only from 2011 forward.*~~

In terms of the duration of impact evaluation, in this case it is appropriate to tie this evaluation (and mitigation requirements emanating from it) to the same time frame as the Aimco project (CDP 2-08-020) as the projects are functionally and physically related and connected, including because the improvements are partially located on Aimco property, protect Aimco existing structures, and Aimco must also agree to the terms and conditions of this CDP.[18] *That project was approved in 2011 with a 20-year initial impact mitigation period, ending on October 7, 2031. Therefore, as a practical matter, it is appropriate to require the ~~evaluation of~~ mitigation reevaluation time frame to match for both projects (i.e., the shoreline protection authorized here, as well as the shoreline protection authorized under CDP 2-08-020) ~~for the entire structure (including the shoreline proection authorized here as well as the shoreline protection under CDP 2-08-020) at the same time in the future.~~ …*

4. Modify text starting near the top of staff report page 33 as follows:

…~~The Commission's analysis indicates that the proposed project would retain 1,892 cubic yards of beach quality sand during the authorization period.~~ In this case, *the various*

---

[17] ~~*The alongshore length of the project north of the outfall pipe was measured based on the project plans included in CDP 156-99 (**Exhibit 11**) and corrected for the Aimco revetment overlap based on the project plans submitted in support of CDP 2-08-020 (**Exhibit 13**); the width south of the outfall pipe was measured from 2012 and 2013 aerial photographs (**Exhibits 7, 9**).*~~

armoring components (i.e., revetments, fill slope, seawall), installed at several points in time, cover and retain materials over a total of 9,251 square feet of bluff face. Based on an average erosion rate of 1 foot per year and 20% sand content, and converting to cubic yards, the Commission's analysis indicates that the proposed project would retain 1,892 cubic yards of beach quality sand through the 2031 mitigation period.~~onsists of the intact portions of the 1997 revetment and reconstructed slope, and can be divided into the following segments: (i) a 7-foot long section of original revetment between the junction with the Aimco revetment and the 1996 bluff failure area extending to an average of 30 feet above mean sea level (MSL); (ii) a 37-ft. long section of original revetment below the reconstructed slope extending to 35 feet above MSL; and (iii) the intact portion of the original 1997 reconstructed slope covering approximately 2,866 square feet of the bluff face between the top of the revetment and the top of the bluff. This armoring covers 4,371 square feet of bluff and would be authorized to do so for 35 years (i.e., 1997 to 2031). The newer armoring consists of the reconstructed/extended revetment and the bluff face soil nail wall, and can be divided into three additional segments: (iv) a 45-foot long, 35-foot high section of reconstructed revetment extending from the northern edge of the 2010 failure area to the southern edge of the soil nail wall; (v) a 76-foot long section of reconstructed/extended revetment south of the soil nail wall in front of natural bluff with an average height of 20 feet; and (vi) the soil nail wall covering approximately 1470 square feet of the bluff face between the top of the revetment and the bluff top. This armoring covers 4,880 square feet of bluff and would be authorized to do so for 21 years (i.e., 2014-2031). Thus the Commission's analysis indicates that the proposed project would retain 1,892 cubic yards of beach quality sand during the authorization period (i.e., 4, 371 square feet of erosion for 35 years and 4,880 square feet for 21 years; at 1 foot of erosion per year; multiplied by 20% sand content; and converted to cubic yards).~~

*~~The reduced size revetment included in the revised project (see **Special Condition 1**) differs from the proposed project in that the southernmost portion of the revetment will be removed, resulting in a somewhat lower impact on bluff-derived sand supply. With respect to the reduced project alternative, the oldest armoring, same as described and calculated above, would cover 4,371 square feet of bluff and would be authorized to do so for 35 years (i.e., 1997-2031). For the newer armoring, two sections (i.e., the 45-foot long, 35-foot high section of reconstructed revetment extending from the northern edge of the 2010 failure area to the southern edge of the soil nail wall (section (iv), above0 and the soil nail wall covering approximately 1,470 square feet of the bluff face between the top of the revetment and the bluff top (section (vi), above) would remain unaltered, covering 3,360 square feet and authorized for 21 years (i.e., 2011-2031). The remaining section of reconstructed revetment (section (v), above), extending 76 feet south of the soil nail wall in front of natural bluff, with an average height of 20 feet, thus covering 1,520 square feet, has been in place for 3 years (i.e., 2011-2014).~~ As modified under **Special Condition 1,** ~~this portion of~~ the southern portion of the reconstructed revetment would be reduced in length ~~to 40~~ by 36 feet, ~~would cover 800 square feet~~ resulting in a 720 square foot reduction in the area of bluff face (to 8,531 square feet) covered by armoring. Using the same erosion rate, bluff sand content, and time frames as above, ~~and would be authorized to do so for 18 years (i.e. 2014-2031). Thus, T~~ the Commission's analysis indicates that the revised project would retain 1,796 cubic yards of beach quality sand over the authorization period. ~~, (4371 square feet for 35 years, 3,360 square feet for 21 years, 1,520 square feet for 3 years, and 800 square feet for 18 years; at 1~~*

~~*foot of erosion per year; multiplied by 20% san content; and converted to cubic yards.*~~

Section 30235 Conclusion

In conclusion, the proposed project has had, and if retained would continue to have, quantifiable shoreline sand supply impacts. Beach sand loss has or would ~~will~~ occur due to: (1) placement of a riprap revetment onto approximately 7,658 square feet of sandy beach that otherwise would be available for public use ~~(converted to a sand volume of 7,658 cubic yards)~~; (2) fixing of the back beach location, resulting in the loss of 4,096 square feet of sandy beach ~~(4,096 cubic yards of sand)~~; and, when combined with the soil-nail wall fronting a portion of the upper bluff, (3) retention of 1,892 cubic yards of sand. When combined, these impacts sum to 11,754 square feet of beach area loss and an additional 1,892 cubic yards of sand during the project authorization period (until 2031).

*The ~~revised~~ reduced scale project being approved here, including the modifications required under **Special Condition 1,** ~~would~~ will reduce the encroachment and passive erosion impacts of the project, to 4,520 square feet ~~(4,520 cubic yards)~~ and 3,424 square feet ~~(3,424 cubic yards)~~ of beach area, respectively, for a total of 7,944 square feet ~~(7,944 cubic yards). Of this total area of beach that will be lost as a result of the revised project, 19% is attributable to passive erosion between 1997-2010, while the remaining 81% is attributable to the 2011 project, which includes installation of new rip rap and the soil nail wall, and retention of the residual 1997 structures, during the period 2011-2031~~. The revised project will~~would~~ also result in a slightly smaller impact on sand supply related to bluff erosion (1,796 cubic yards). ~~Of this total sand retention impact, 23% is attributable to the volume retained by the currently intact portions of the original structures between 1997-2010, and 77% is attributable to the 2011 project (including both new structures and retained older structures) from 2011-2031.~~*

~~*Thus, to conclude, the reduced scale project being approved here will lead to the lost of 4,520 square feet of beach due to physical encroachment and the los of 3,424 square feet of beach that would have been created absent the project due to passive erosion, for a total loss of beach area of 7,944 square feet. In addition, the reduced scale project will lead to the loss of 1,796 cubic yards of sand that would have been delivered to the sand supply system absent the project.*~~

CALIFORNIA COASTAL COMMISSION
NORTH CENTRAL COAST DISTRICT OFFICE
45 FREMONT ST, SUITE 2000
SAN FRANCISCO, CA 94105-2219
VOICE (415) 904-5260
FAX (415) 904-5400
TDD (415) 597-5885

F 8b

Filed: 2/08/2013
Staff: J. Street/N.Cave - SF
Staff Report: 6/26/2014
Hearing Date: 7/11/2014

STAFF REPORT: CDP APPLICATION

Application:	**2-11-009**
Applicant:	**City of Pacifica**
Project Location:	Along the bluff and shoreline seaward of 380 Esplanade Avenue, Pacifica, San Mateo County (APNs 009-131-060 and 009-131-010).
Project Description:	Consolidated coastal development permit (CDP) application to authorize previously constructed shoreline protection, including authorization for an approximately 170-foot long rock riprap revetment, installation of a new soil nail wall and reconstruction of a failed upper bluff slope.
Staff Recommendation:	Approval with conditions

SUMMARY OF STAFF RECOMMENDATION

The proposed project is located largely on City-owned beach and bluff seaward of an apartment building and parking lot at 380 Esplanade Avenue, in the Edgemar neighborhood of northern Pacifica, in San Mateo County. The uppermost portions of the project occur within the privately-owned 380 Esplanade parcel (on which the apartment complex lies) and a public drainage easement running along the southern edge of that parcel. The original development on the site consisted of a riprap revetment, an engineered reconstructed slope, and an elongated storm drain outfall pipe and support structure first installed in 1997 in response to a major bluff failure in December 1996. Further development occurred under emergency coastal development permit (CDP) authorization (CDP 2-10-034-G) after the southern portion of the revetment and part of the engineered slope failed as a result of intense winter storms and wave activity in

March-April 2010. Under emergency CDP 2-10-034-G, the revetment was repaired and enlarged, and a portion of the upper bluff, including both the engineered slope and the natural bluff, was stabilized/covered with a soil nail wall. The present application proposes to obtain follow-up authorization for the entire shoreline protection system in place now.

The proposed project is inconsistent with several Chapter 3 policies of the Coastal Act and will cause significant adverse impacts to protected resources, including substantial alteration and destruction of natural landforms, as well as significant adverse impacts to public shoreline access and recreation and marine resources. Nonetheless, staff is recommending the project for approval based on Section 30235 of the Coastal Act, which instructs the Commission to approve shoreline protective devices to protect existing structures if specified criteria are satisfied.

Staff finds that the project meets the armoring need tests of the Coastal Act, and that impacts to sand supply, public access and visual character can be mitigated to the maximum extent feasible consistent with the requirements of Section 30235 through project revisions contained in the conditions of approval. With regard to project need, staff, including the Commission's senior coastal engineer and geologist, have evaluated the relevant project materials, have visited the site multiple times, and have determined that both the public storm drain infrastructure and private apartment structures were and are in danger from erosion, as understood under the Coastal Act. The poorly-cemented bluff materials at the site offer little resistance to wave-driven erosion; absent shoreline protection, just one or two significant storm events could result in the loss of structures and public infrastructure at the site.

With respect to beach area impacts, the proposed project would result in the loss of 11,754 square feet of sandy beach area throughout the initial mitigation period (until 2031), contributing directly to the diminishment of public access and recreational opportunities along the shoreline at the site. Based on the Commission's senior coastal engineer's recommendation, Special Condition 1 requires that a portion of the existing riprap revetment be removed, and the slope of the remainder increased. These revetment modifications will reduce the beach area impact of the project by more than 30% to 7,944 square feet of sandy beach area, minimizing the impairment of public access and scenic quality at the project site as much as possible while still providing for the protection necessary. Nevertheless, there will still be beach area impacts even after a portion of the existing riprap is removed and the revetment restacked in a more compact configuration. Therefore, staff also recommends that the Commission find it appropriate to mitigate for the revised project's impacts on public shoreline access and recreation either by having the Applicant pay: (1) an in-lieu mitigation fee commensurate to the project's impacts that would be used to purchase land and/or pay for other improvements that provide access and recreational opportunities along the shoreline in the vicinity of the proposed development; *or* (2) develop and implement a Public Access Management Plan to occur on the City-owned property located at 400 Esplanade Avenue, as detailed in Special Condition 2. If the Applicant chooses to develop and implement a Public Access Management Plan, Special Condition 2 requires the Applicant to develop and implement public access improvements to the City-owned 400 Esplanade parcel. These improvements will, at a minimum, include the installation of lateral access along the bluff, two overlook areas, interpretive/educational signage, benches and other amenities.

To the extent the Applicant chooses to mitigate for the project's impacts on public shoreline

access and recreation by paying an in lieu mitigation fee rather than developing and implementing a Public Access Management Plan, Staff has calculated the proposed in-lieu fee by using a real estate model tied to specific land values in the vicinity of the project. Staff compared the sales price of nineteen coastal properties in an approximate 1.5 mile area containing the subject property, adjusted for value and improvements, in order to calculate an average value of the adjusted price per square foot. The average value of the adjusted price per square foot is $33.18. This average value of the adjusted price per square foot serves as a proxy to gauge the cost of an equivalent amount of beach area to that which will be lost for the specified time frame as a result of the armoring.

The Applicant has suggested a different approach than the Staff's approach. The Applicant does not feel it is necessary to compile a list of similarly situated properties in order to come up with an average value per square foot when there is an unimproved parcel in similar size immediately adjacent to the subject property. The Applicant proposes to use only 400 Esplanade as a comparable property which has a land value of $25.84 per square foot.

Staff does not believe that the in-lieu fee for replacement of lost public shoreline recreational access should be calculated by using only one parcel, even if located adjacent to the project site. In fact the Staff's approach includes 400 Esplanade as one of several blufftop parcels reviewed along this approximately 1.5 mile stretch of coast, and Staff's methodology took into consideration and deducted improvement value, in order to calculate comparable land-only values. Staff believes the Applicant's proposed use of one lot is too narrow a field from which to derive land value. The use of multiple lots to derive land value is consistent with real estate valuations and with the Commission's past practices in the vicinity, including the Commission's action on the nearby Land's End seawall and armoring project in August of 2013, and more accurately reflects market value than does the use of a single property.

In order to define the approved project, and to minimize and mitigate for project impacts, Staff is recommending a series of conditions, including: (1) an approval that (a) ties the length of armoring authorization to the life of the existing development (i.e., storm drain infrastructure and 380 Esplanade apartment complex) that the armoring is required to protect; (b) requires the Applicant to submit a complete permit amendment application to remove the armoring when the development warranting armoring is no longer present, or no longer requires armoring; and (c) requires the Applicant to submit a complete permit amendment application to retain the structure and propose mitigation for impacts attributable to the armoring beyond the initial mitigation evaluation period; (2) in-kind public access and recreational improvements or payment of an in-lieu fee to mitigate for the impacts on public shoreline access and recreation ; (3) payment of an in-lieu fee to mitigate for the loss of sand and materials that would otherwise contribute to the nearshore littoral system; (4) shoreline protection device maintenance and monitoring program; (5) submittal of revised project plans; (6) submittal of a construction plan; (7) addition of water quality protection measures; and (8) restrictions on future development, indemnification, and other related conditions to address coastal resource impacts and issues.

As conditioned, staff recommends that the Commission approve a CDP for the proposed project. The motion to act on this recommendation is found on page 5 below.

TABLE OF CONTENTS

I. MOTION AND RESOLUTION 4
II. STANDARD CONDITIONS 5
III. SPECIAL CONDITIONS 5
IV. COASTAL DEVELOPMENT PERMIT DETERMINATION 18
A. PROJECT LOCATION 18
B. PROJECT BACKGROUND 20
C. PROJECT DESCRIPTION 20
D. GEOLOGIC CONDITIONS AND HAZARDS 21
E. PUBLIC ACCESS AND RECREATION 38
F. PUBLIC VIEWS 48
G. MARINE RESOURCES & WATER QUALITY 50
H. OTHER AGENCY APPROVALS 52
I. ALLEGED VIOLATION 52
J. REIMBURSEMENT IN CASE OF CHALLENGE 52
K. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) 53

APPENDICES
Appendix A – History of armoring at the site
Appendix B – Substantive File Documents

EXHIBITS
Exhibit 1: Project Location - Regional
Exhibit 2: Project Location - Vicinity
Exhibit 3: Parcel Maps
Exhibit 4: Submitted Project Plans
Exhibit 5: Revetment Reconfiguration
Exhibit 6: Project Components
Exhibit 7: Overhead Aerial Photograph, 2013
Exhibit 8: Topographic Survey of Project Site, 2010
Exhibit 9: Aerial Photographs, 1972-2013
Exhibit 10: Site Photographs, 2010
Exhibit 11: Project Plans from local CDP 156-99
Exhibit 12: Project Plans from Emergency CDP 2-10-034-G
Exhibit 13: Project Plans from CDP 2-08-020
Exhibit 14: Average Adjusted Sales Price Calculations
Exhibit 15: Properties Used in Market Valuation
Exhibit 16: City Engineer's Estimate of Cost of Improvements at 400 Esplanade

I. MOTION AND RESOLUTION

Staff recommends a **YES** vote on the following motion. Passage of this motion will result in conditional approval of the permit 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 coastal development permit number 2-11-009 pursuant to the staff recommendation, and I recommend a yes vote.*

Resolution: *The Commission hereby approves a coastal development permit for the proposed development and adopts the findings set forth below on grounds that the development as conditioned will be in conformity with the policies of Chapter 3 of the Coastal Act. Approval of the permit complies with the California Environmental Quality Act because either 1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the development on the environment, or 2) there are no further feasible mitigation measures or alternatives that would substantially lessen any significant adverse impacts of the development on the environment.*

II. 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 or 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.

III. SPECIAL CONDITIONS

1. **Revised Project Plans.** PRIOR TO ISSUANCE OF THE CDP, the Permittee shall submit two full-size sets of Revised Project Plans to the Executive Director for review and approval. The Revised Project Plans shall be in substantial conformance with the plans submitted to the Coastal Commission (dated received in the Coastal Commission's North Central Coast District Office on November 18 and 21, 2013, and titled "City of Pacifica Storm Drain

Revetment Reconfiguration"; see Exhibit 5) except that they shall be revised and supplemented to comply with the following requirements:

a. Revetment Slope. The revetment slope shall be modified so that it is at 1.5:1 (horizontal/vertical). The revised plans shall show the corresponding landward reduction in the revetment footprint.

b. Rock Removal. All rock not utilized in the approved modified revetment, and as described in part (a) above, shall be removed and properly disposed of at an inland location approved by the Executive Director.

c. Drain Pipe. The above-ground portion of the drain pipe shall be removed, consistent with the project authorized under CDP waiver 2-11-030-W. All rock supporting the drain pipe shall be removed, and only rock authorized by this CDP and described in part (a) above shall be allowed to remain.

d. Property Lines. All property lines for the subject property and all adjacent properties shall be clearly and accurately identified.

e. Landscaping. Landscaping shall fully screen the fill slope and wire mesh, and shall screen the revetment and soil nail wall to the maximum extent feasible. All landscaping shall utilize native and noninvasive plant species that are tolerant of salt air and salt spray, with a preference for species capable of trailing vegetation that can colonize steeper bluff areas and also screen the top of the revetment as seen from the top of the bluffs and the beach as much as possible. All invasive and non-native species in the project area, including iceplant, shall be removed and shall not be allowed to persist. All plants shall be kept in good growing condition and shall be replaced as necessary to maintain the approved vegetation over the life of the project, including to maintain some visual screening of the top of the revetment if possible. Regular monitoring and provisions for remedial action (such as replanting as necessary) shall be identified to ensure landscaping success.

f. Geogrid fabric. Visible geogrid fabric at the bottom of the fill slope shall be removed, unless the fabric (or some portion thereof) is found to be integral to the structure of the fill slope, in which case such portion of said fabric shall be screened with landscaping, pursuant to subsection (e) above, covered with soil, and/or camouflaged to match the color and texture of the upper reconstructed slope and natural bluff.

g. Concrete Surfacing. All concrete surfaces shall be faced with a sculpted concrete surface that mimics natural undulating bluff landforms in the vicinity in terms of integral mottled color, texture, and undulation to the maximum extent feasible, and that seamlessly blends with the natural and existing bluff face. Any protruding concrete elements (e.g., corners, edges, etc.) shall be contoured in a non-linear manner designed to mimic natural bluff undulations. The color, texture, and undulations of the seawall surface shall be maintained throughout the life of the structure. All drainage and related elements within the sculpted concrete shall be camouflaged (e.g., randomly spaced, hidden with overhanging or otherwise protruding sculpted concrete, etc.) so as to be hidden from view and/or inconspicuous as seen from the top of the bluffs and the beach.

h. Schedule. The plans shall be submitted with a schedule for completing those elements shown on the plans that: (1) have not yet been constructed/completed (e.g., rock restacking and removal, landscaping, etc.); and/or (2) have been constructed/completed but for which modifications are required to meet the terms and conditions of this approval. Such schedule shall be predicated on completion of construction as quickly as possible, and in no case later than the first Saturday of the Memorial Day weekend in 2015 (i.e., by May 23, 2015) unless, due to extenuating circumstances (such as tidal issues or other environmental concerns), the Executive Director authorizes completion later than May 23, 2015.

All requirements above, and all requirements of the approved Revised Project Plans, shall be enforceable components of this CDP. The Permittee shall undertake all development in accordance with this condition and the approved Revised Project Plans.

2. Shoreline Recreational Access Mitigation. PRIOR TO ISSUANCE OF THE CDP, the Permittee shall do either (a) or (b) as beach recreational access mitigation:

a. Shoreline Recreational Access Mitigation Fee. The Permittee shall provide evidence, in a form and content acceptable to the Executive Director, that a fee of $263,581 has been deposited into an interest bearing account designated by the Executive Director, and held by the Coastal Conservancy, or an Executive Director approved alternate entity. The purpose of the account, including all interest earned, shall be to provide, restore and enhance public recreational access in the City of Pacifica. The funds shall be used solely to implement projects or purchase lands that provide or will provide public access or recreational opportunities along the shoreline in the City of Pacifica including but not limited to, public access improvements, recreational amenities, and/or acquisition of privately-owned beach or beach-fronting property for such uses. The funds shall be released only upon approval of an appropriate project by the Executive Director, and subject to a Memorandum of Agreement (MOA) with the Coastal Conservancy, or an Executive Director-approved alternate entity, setting forth terms and conditions to assure that the funds will be expended in the manner intended by the Commission. If the MOA is terminated, the Executive Director may appoint an alternate entity to administer the funds

b. Public Access Management Plan. The Permittee shall submit two copies of a Public Access Management Plan to the Executive Director for review and approval. The Public Access Management Plan shall clearly describe the manner in which public access on the City-owned property at the 400 block of Esplanade Avenue (APN 009-131-030) is to be provided and managed, with the objective of maximizing public access to the site. The Public Access Management Plan shall at a minimum include the following:

1. Clear Depiction of Public Access and Amenities. All public access areas and amenities, including all of the areas and amenities described in this special condition, shall be clearly identified as such on the Public Access Management Plan (including in site plan view with hatching and closed polygons so that it is clear what areas are available for what types of public access use). These areas shall at a minimum include

a meandering access trail atop and along the bluff with at least three connections to the street, at least two overlook areas, and at least two interpretive signs.

2. **Public Access Amenities.** All public access areas shall be designated and maintained to facilitate public use and enjoyment, including providing adequate public access amenities such as benches, interpretative/educational panels, bicycle racks, doggie mitt stations, and trash and recycling receptacles in appropriate locations all sited, designed and sized to accommodate current and future foreseeable demand.

3. **Access Trail and Overlooks.** An access trail and overlook system shall be provided that seamlessly connects to Esplanade Avenue at either end of the property and at an appropriate roughly mid-point location; is at least five feet wide and made up of a wooden boardwalk (or appropriate and similar coastal construction); that meanders curvilinearly through the property roughly parallel to the shoreline orientation; that includes at least two offshoots to overlooks of approximately 300 square feet each situated near the blufftop edge (also constructed of a wooden boardwalk or similar surface) sited and designed to eliminate the need for railings (e.g., setback a sufficient distance from the blufftop edge so as to not necessitate such railing features) as much as possible. In addition, the existing construction ramp that leads from the blufftop to the beach shall be maintained for public access purposes.

4. **Public Access Signs/Materials.** The Public Access Management Plan shall identify all signs and any other project elements that will be used to facilitate, manage, and direct public access users, including identification of all public education/interpretation features that will be provided on the site (educational displays, interpretive signage, etc.). Informational and directional signage (that clearly identify that the public access areas are available for general public use and how connections can be made laterally and vertically) shall be placed where the path intersects Esplanade Avenue and the adjacent upcoast property. Interpretive/educational signage shall be placed at each overlook location and shall describe Pacifica and the Pacific Ocean, the issues related to shoreline erosion and sea level rise, and the Commission's and the City's role in addressing these issues. All signs shall be sited and designed so as to provide clear information without adversely impacting public views and site character, and sign details (showing the location, materials, design and text of all signs) shall be provided. Signs shall include the California Coastal Trail and California Coastal Commission emblems, and recognition of the Coastal Commission's role in providing public access at this location.

5. **Fence Removal.** All existing fencing on the site shall be removed. Replacement fencing shall only be authorized if it is proven necessary for public health and safety, and if it is sited and designed to limit view degradation as well as designed to maximize public access as much as possible.

6. **Landscaping.** All landscaping shall utilize native and noninvasive plant species that are tolerant of salt air and salt spray. To the extent feasible, invasive and non-native

species in the project area, including iceplant, shall be removed and not be allowed to persist. All plants shall be kept in good growing condition and shall be replaced as necessary to maintain the approved vegetation over the life of the project. Regular monitoring and provisions for remedial action (such as replanting as necessary) shall be identified to ensure landscaping success.

7. **No Public Access Disruption.** Development and uses within the public access areas that disrupt and/or degrade public access including areas set aside for private uses, barriers to public access (such as furniture, planters, temporary structures, private use signs, fences, barriers, ropes, etc.) shall be prohibited. The public use areas shall be maintained consistent with the approved Public Access Management Plan and in a manner that maximizes public use and enjoyment.

8. **Public Access Use Hours.** All public access areas and amenities shall be available to the general public free of charge 24 hours a day.

9. **Public Access Areas and Amenities Maintained.** All of the public access components of the project shall be constructed in a structurally sound manner and maintained in their approved state in perpetuity including through ongoing maintenance of all public access improvements, including access paths, benches, and overlooks, to ensure that public access is always continuous from Esplanade Avenue across the blufftop portion of the site and to the overlook areas, even if that means modifying, moving, and/or replacing access improvements in light of changing circumstances, including shoreline erosion. Prior to any modification, movement, and/or replacement of access improvements, the Permittee shall obtain an amendment to this CDP to authorize such development, unless the Executive Director determines that no amendment is legally necessary.

Construction of the improvements and related development identified in the Approved Public Access Management Plan shall be undertaken and made available to the public as soon as possible, and in no case later than three years from the date of CDP approval (i.e., by July 11, 2017).

All requirements above and all requirements of the approved Public Access Management Plan shall be enforceable components of this CDP. The
Permittee shall undertake development in accordance with this condition and the approved Public Access Management Plan, which together shall govern all general public access to the site pursuant to this CDP.

3. **Sand Supply Mitigation Fee.** PRIOR TO ISSUANCE OF THE CDP, the Permittee shall submit to the Executive Director three valid bids for the cost of delivered beach quality sand for 1,796 cubic yards of sand. WITHIN 90 DAYS OF RECEIVING EXECUTIVE DIRECTOR APPROVAL OF THESE BIDS (or within such additional time as the Executive Director may grant for good cause), the Permittee shall provide evidence, in a form and content acceptable to the Executive Director, that a fee in an amount equal to the average of the three approved bids has been deposited into an interest bearing account designated by the

Executive Director, and held by the Coastal Conservancy, or an Executive Director approved alternate entity, for the purposes of beach nourishment projects in the vicinity of the project site. If the funds and any accrued interest aren't all used for beach nourishment projects within five years of the funds being deposited into the account, then any remaining funds and accrued interest may also be used for provision, restoration and enhancement of public access and recreational opportunities along the shoreline in the City of Pacifica, including but not limited to public access improvements, recreational amenities, and/or acquisition of privately-owned beach or beach-fronting property for such uses. All of the funds and any accrued interest shall be used for the above-stated purposes, in consultation with the Executive Director, within ten years of the funds being deposited into the account. The funds shall be released only upon approval of an appropriate project by the Executive Director, and subject to a Memorandum of Agreement (MOA) with the Coastal Conservancy, or an Executive Director-approved alternate entity, setting forth terms and conditions to assure that the funds will be expended in the manner intended by the Commission. If the MOA is terminated, the Executive Director may appoint an alternate entity to administer the funds.

4. **Construction Plan.** PRIOR TO ISSUANCE OF THE CDP, the Permittee shall submit two copies of a Construction Plan to the Executive Director for review and approval. The Construction Plan shall, at a minimum, include the following:

   a. **Construction Areas.** The location of all construction areas, all staging areas, and all construction access corridors shall be clearly identified (in site plan view) and described. 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 beach/ocean resources, including by using inland areas for staging and storing construction equipment and materials as much as possible. Construction (including but not limited to construction activities, and materials and/or equipment storage) is prohibited outside of the defined construction, staging, and storage areas.

   b. **Construction Methods.** All construction methods to be used, including all methods to be used to keep the construction areas separated from public recreational use areas (including using unobtrusive temporary fencing (or equivalent measures) to delineate construction areas) shall be clearly identified and described.

   c. **Property Owner Consent.** The plan shall be submitted with evidence indicating that the owners of any properties on which construction activities are to take place, including properties to be crossed in accessing the site, consent to such use of their properties.

   d. **Construction Requirements.** The Construction Plan shall include the following construction requirements specified by written notes on the Construction Plan:

      1. All work shall take place during daylight hours and lighting of the beach/ocean area is prohibited.

      2. Construction work or equipment operations shall not be conducted below the mean high tide line unless tidal waters have receded and the area is part of the authorized work area.

3. Grading of intertidal areas is prohibited, unless the area is part of the authorized work area.

4. Only rubber-tired construction vehicles are allowed on the beach, except track vehicles may be used if the Executive Director agrees that they are required to safely carry out construction. When transiting on the beach, all such vehicles shall remain as high on the upper beach as possible and avoid contact with ocean waters and intertidal areas.

5. All construction materials and equipment placed on the beach during daylight construction hours shall be stored beyond the reach of tidal waters. All construction materials and equipment shall be removed in their entirety from the beach area by sunset each day that work occurs. The only exceptions shall be for erosion and sediment controls and/or construction area boundary fencing where such controls and/or fencing are placed as close to the base of the revetment/bluff as possible, and are minimized in their extent.

6. No work shall occur during weekends and/or the summer peak months (i.e., from the Saturday of Memorial Day weekend through Labor Day, inclusive) unless, due to extenuating circumstances (such as tidal issues, extensive delays due to severe weather or other environmental concerns), the Executive Director authorizes such work.

7. Equipment washing, servicing, and refueling shall not take place on the beach, and shall only be allowed at a designated inland location (that shall be identified). Appropriate best management practices shall be used to ensure that no spills of petroleum products or other chemicals take place during these activities.

8. The construction site shall maintain good construction site 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 beach; etc.).

9. All erosion and sediment controls shall be in place prior to the commencement of construction as well as at the end of each workday. At a minimum, silt fences, or equivalent apparatus, shall be installed at the perimeter of the construction site to prevent construction-related runoff and/or sediment from being deposited on the beach or into the ocean.

10. All public recreational use areas and all beach access points impacted by construction activities shall be restored to their pre-construction condition or better within three days of completion of construction. Any beach sand impacted shall be filtered as necessary to remove all construction debris from the beach.

11. The Permittee shall notify planning staff of the Coastal Commission's North Central Coast District Office at least three working days in advance of commencement of

construction or maintenance activities, and immediately upon completion of construction or maintenance activities.

e. Construction Site Documents. The plan shall provide that copies of the signed CDP and the approved Construction Plan shall be maintained in a conspicuous location at the construction job site at all times, and that such copies are available for public review upon request. All persons involved with the construction shall be briefed on the content and meaning of the CDP and the approved Construction Plan, and the public review requirements applicable to them, prior to commencement of construction.

f. Construction Coordinator. The plan shall provide that a construction coordinator 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.

Minor adjustments to the above Construction Plan requirements may be allowed by the Executive Director if such adjustments: (1) are deemed reasonable and necessary; (2) do not adversely impact coastal resources and (3) are consistent with the terms and conditions of this CDP. All requirements above and all requirements of the approved Construction Plan shall be enforceable components of this CDP. The Permittee shall undertake construction in accordance with this condition and the approved Construction Plan.

5. Other Agency Review and Approval. PRIOR TO COMMENCEMENT OF CONSTRUCTION, the Permittee shall submit to the Executive Director written evidence that all necessary permits, permissions, approvals, and/or authorizations for the approved project have been granted by all applicable agencies, including by the U.S. Army Corps of Engineers and the State Lands Commission. Any changes to the approved project required by these agencies shall be reported to the Executive Director. No changes to the approved project shall occur without a Commission amendment to this CDP unless the Executive Director determines that no amendment is legally necessary.

6. Duration of Armoring Approval:

a. Duration. This CDP authorizes the armoring (consisting of the revetment, bluff fill, and soil-nail wall) until either: (1) the time when the currently existing development requiring armoring, including the public storm drain infrastructure and previously approved modifications to it (authorized under CDP 2-11-030-W) located on both private and City-owned property (APNS 009-131-010 and 009-131-060), and the privately owned apartment building complex and parking lot at 380 Esplanade (APN 009-131-060)

(Exhibits 3 and 6) are: (i) redeveloped as that term is defined in Special Condition 10; (ii) no longer present or (iii) no longer require armoring, whichever occurs first. If, during the duration of armoring approval, some portion of the existing development requiring armoring is removed, while some portion is retained, the revetment shall be reduced or modified so that it is the minimum necessary to protect the portion of development that is retained. When the existing development requiring armoring is removed or no longer requires armoring, the Permittee shall submit a complete CDP amendment application to the Coastal Commission to remove the approved armoring and to appropriately restore the affected area.

b. Modifications. If the Permittee applies for a CDP or an amendment to this permit to enlarge the armoring or to perform repair work affecting more than 50 percent of the armoring, the Permittee shall provide additional mitigation for the impacts of the enlarged or reconstructed armoring on public views, public recreational access, shoreline processes, and all other affected coastal resources that have not already been mitigated through this CDP.

c. Mitigation Period. Mitigation for impacts due to the armoring have been calculated and applied in this CDP through October 7, 2031 to coincide with the mitigation period applied to the Aimco armoring (by CDP 2-08-020). If the Permittee intends to keep the armoring in place after October 7, 2031, the Permittee must submit a complete CDP amendment application prior to October 7, 2031, proposing mitigation for the coastal resource impacts associated with retention of the armoring beyond October 7, 2031 which shall include consideration of alternative feasible measures in which the Permittee can modify the approved armoring to lessen impacts on coastal resources as well as any potential modifications to the approved project desired by the Permittee at that time that may be part of such CDP application.

7. As-Built Plans. WITHIN 90 DAYS OF COMPLETION OF CONSTRUCTION PURSUANT TO THE APPROVED REVISED PROJECT PLANS (SPECIAL CONDITION 1), the Permittee shall submit two full-size sets of revised As-Built Plans to the Executive Director for review and approval. The As-Built Plans shall clearly identify all components of the constructed project, shall be in substantial conformance with the approved Revised Project Plans described in Special Condition 1 (including providing for all of the same requirements specified in those plans), and shall account for all of the parameters of Special Condition 8 (Monitoring and Reporting) and Special Condition 9 (Future Maintenance). The As-Built Plans shall include a graphic scale and all elevation(s) shall be described in relation to National Geodetic Vertical Datum (NGVD). The plans shall include color photographs (in hard copy and jpg format) that clearly show all components of the as-built project, and that are accompanied by a site plan that notes the location of each photographic viewpoint and the date and time of each photograph. At a minimum, the photographs shall be from a sufficient number of upcoast, downcoast, inland and seaward viewpoints as to provide complete photographic coverage of the permitted project at this location.

8. Monitoring and Reporting. The Permittee shall ensure that the condition and performance of the approved as-built project are regularly monitored and maintained. Such monitoring

evaluation shall at a minimum address whether any significant weathering or damage has occurred that would adversely impact future performance, and identify any structural or other damage or wear and tear requiring repair to maintain in a structurally sound manner and its approved state, including at a minimum with regards to the following:

a. Armoring. The revetment and the engineered fill and soil nail wall shall be monitored by a licensed civil engineer with experience in coastal structures and processes to ensure structural and cosmetic integrity, including evaluation of concrete competence, spalling, cracks, movement, and outflanking.

b. Public Access Improvements. If the Permittee chooses to construct the off-site public access improvements described in Special Condition 2, these improvements shall be monitored to ensure that public access is maintained, even if that means modifying access improvements in light of changing circumstances, including shoreline events, to ensure continued access.

c. Landscaping. The landscaping on the reconstructed bluff and in the public access improvement property, if applicable, shall be monitored to ensure that invasive and nonnative plants (e.g., iceplant) are kept out and that native noninvasive landscaping continues to thrive and, in the case of the armoring, continues to cover the slope as well as provide some visual screening of the top of the revetment if possible.

d. Reporting. Monitoring reports covering the above-described evaluations, shall be submitted to the Executive Director for review and approval at five year intervals by May 1st of each fifth year (with the first report due May 1, 2019, and subsequent reports due May 1, 2024, May 1, 2029, and so on) for as long as the approved as-built project exists at this location. The reports shall evaluate whether or not the approved armoring is still required to protect the currently existing development requiring armoring identified in Special Condition 6. The reports shall also identify the existing configuration and condition of the armoring, the public access improvements (if applicable), and the landscaping and drainage, and shall recommend actions necessary to maintain these project elements in their approved and/or required state, and shall include photographs taken from each of the same vantage points required in the As-Built Plans (Special Condition 7) with the date and time of the photographs and the location of each photographic viewpoint noted on a site plan. Actions necessary to maintain the approved as-built project in a structurally sound manner and its approved state shall be implemented within 30 days of Executive Director approval, unless a different time frame for implementation is identified by the Executive Director.

9. Future Maintenance Authorized. This CDP authorizes future maintenance and repair subject to the following:

a. Maintenance. "Maintenance," as it is understood in this special condition, means development that would otherwise require a CDP whose purpose is to maintain in the approved state the following: (1) the revetment, engineered slope and fill, and soil nail wall; (2) landscaping and drainage elements; and (3) the public access improvements, if applicable.

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 and/or repair episodes.

c. Maintenance Notification. At least two weeks prior to commencing any maintenance event, the Permittee shall notify, in writing, planning staff of the Coastal Commission's North Central Coast District Office. The notification shall include: (1) a detailed description of the maintenance event proposed; (2) any plans, engineering and/or geology reports describing the event; (3) a construction plan that complies with all aspects of the approved construction plan (see Special Condition 4); (4) other agency authorizations; and (5) any other supporting documentation describing the maintenance event. The maintenance event shall not commence until the Permittee has been informed by planning staff of the Coastal Commission's North Central Coast District Office that the maintenance event complies with this CDP. If the Permittee has not received a response within 30 days of receipt of the notification by the Coastal Commission's North Central Coast District Office, the maintenance event shall be authorized as if planning staff affirmatively indicated that the event complies with this CDP. The notification shall clearly indicate that the maintenance event is proposed pursuant to this CDP, and that the lack of a response to the notification within 30 days of its receipt constitutes approval of it as specified in the CDP. 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 with the goal being to limit coastal resource impacts, including the length of time that construction occurs in and around the beach and bluff area and beach/blufftop access points. As such, the Permittee shall make reasonable efforts to coordinate the Permittee's maintenance events with other adjacent events, including adjusting maintenance event scheduling as directed by planning staff of the Coastal Commission's North Central Coast District Office.

e. Restoration. All blufftop, bluff, and beach areas and all beach/blufftop access points impacted by construction activities shall be restored to their pre-construction condition or better within three days of completion of construction. Any beach sand impacted shall be filtered as necessary to remove all construction debris from the beach. The Permittee shall notify planning staff of the Coastal Commission's North Central Coast District Office upon completion of restoration activities to allow for a site visit to verify that all beach-area restoration activities are complete. If planning staff should identify additional reasonable measures necessary to restore blufftop, bluff, beach areas, or access points, such measures shall be implemented as quickly and reasonably as possible.

f. Noncompliance Provision. If the Permittee or landowner is not in compliance with the terms and conditions of any CDPs or other coastal authorizations that apply to the subject properties at the time that a maintenance event is proposed, then the maintenance event that might otherwise be allowed by the terms of this future maintenance condition shall

not be allowed until the Permittee or landowner is in full compliance with all the terms and conditions of such CDPs or other coastal authorizations.

g. Emergency. In addition to the emergency provisions set forth in subsection (c) above, nothing in this condition shall affect the emergency authority provided by 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).

h. Duration of Covered Maintenance. Future maintenance under this CDP is allowed subject to the above terms for the duration of the authorization period (see Special Condition 6). The intent of this CDP is to allow for maintenance to occur without obtaining an otherwise necessary CDP throughout the period of development authorization (see Special Condition 6) unless there are changed circumstances that may affect the consistency of this maintenance authorization with the policies of Chapter 3 of the Coastal Act.

10. Future Development. No future development which is not otherwise exempt from CDP requirements, or redevelopment on the blufftop portion of the subject properties, including redevelopment of the existing apartment complex, shall rely on any of the armoring (consisting of the revetment, bluff fill, and soil nail wall) to establish geologic stability or protection from hazards. Such future development and redevelopment on the properties shall be sited and designed to be safe without reliance on shoreline armoring. As used in this condition, "redevelopment" is defined to include alterations including: (1) additions to an existing structure, (2) exterior and/or interior renovations, and/or (3) demolition of an existing structure, or portions thereof, which results in:

a. Alteration of 50% or more of major structural components including exterior walls, floor and roof structure, and foundation, or a 50% increase in floor area. Alterations are not additive between individual major structural components; however, changes to individual major structural components are cumulative over time from the date of CDP approval (i.e., from July 11, 2014).

b. Demolition, renovation or replacement of less than 50% of a major structural component where the proposed alteration would result in cumulative alterations exceeding 50% or more of a major structural component, taking into consideration previous alterations approved on or after the date of CDP approval (i.e., on or after July 11, 2014); or an alteration that constitutes less than 50% increase in floor area, where the proposed alteration would result in a cumulative addition of greater than 50% of the floor area, taking into consideration previous additions approved on or after the date of CDP approval (i.e. on or after July 11, 2014). Shoreline armoring intended to protect ancillary improvements (i.e., patios, decks, fences, landscaping, etc.) located between the principal structures and the ocean shall be prohibited.

11. Assumption of Risk, Waiver of Liability, and Indemnity Agreement. By acceptance of this CDP, the Permittee acknowledges and agrees on behalf of itself and all successors and assigns:

a. **Coastal Hazards.** That the site (including the properties known as APNs 009-131-010 and 009-131-060) is subject to extreme coastal hazards including but not limited to episodic and long-term shoreline retreat and coastal erosion, high seas, ocean waves, storms, tsunami, coastal flooding, landslides, bluff and geologic instability, and the interaction of same;

b. **Assume Risks.** To assume the risks to the Permittee and the properties that are the subject of this CDP of injury and damage from such hazards in connection with this permitted development;

c. **Waive Liability.** 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. **Indemnification.** To indemnify and hold harmless the Coastal 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 such hazards; and,

e. **Property Owner Responsible.** That any adverse effects to properties caused by the permitted project shall be fully the responsibility of the property owners.

12. **Liability for Costs and Attorney Fees.** The Permittee shall reimburse the Coastal Commission in full for all Coastal Commission costs and attorneys' fees (including but not limited to such costs/fees that are: (1) charged by the Office of the Attorney General; and (2) required by a court that the Coastal Commission incurs in connection with the defense of any action brought by a party other than the Permittee against the Coastal Commission, its officers, employees, agents, successors and assigns challenging the approval or issuance of this CDP, the interpretation and/or enforcement of permit conditions, or any other matter related to this CDP. The Permittee shall reimburse the Coastal Commission within 60 days of being informed by the Executive Director of the amount of such costs/fees. The Coastal Commission retains complete authority to conduct and direct the defense of any such action.

13. **Landowner Authorization.** PRIOR TO ISSUANCE OF THE CDP, the Permittee shall provide written evidence, for the review and approval of the Executive Director, that the private landowner of APN 009-131-060: (1) has provided the Permittee with the legal authority to undertake development on APN 009-131-060 subject to the terms and conditions of this CDP; (2) acknowledges that, as owner of APN 009-131-060 on which a portion of the development covered by this CDP will be undertaken (specifically, the area within 009-131-060 near the top of the bluff, encompassing the uppermost parts of the reconstructed fill slope and soil nail wall), is bound by all terms and conditions of the CDP, including but not limited to the restrictions and obligations imposed by Special Conditions 2, 3, 6, 10 and 14; and (3) acknowledges that the armoring authorized by this CDP is only authorized according to the terms and conditions of this CDP, including the limitations set forth in Special Conditions 6 and 10.

14. **Deed Restriction.** PRIOR TO ISSUANCE OF THE CDP, the Permittee shall submit for Executive Director review and approval documentation demonstrating that the landowner of

APN 009-131-060, which includes the 380 Esplanade apartment complex and associated parking lot, has executed and recorded against APN 009-131-060 a deed restriction in a form and content acceptable to the Executive Director: (1) indicating that pursuant to this CDP, the California Coastal Commission has authorized development on a portion of APN 009-131-060 subject to terms and conditions that restrict the use and enjoyment of that property; and (2) imposing the special conditions of this CDP as covenants, conditions and restrictions on the use and enjoyment of that property. The deed restriction shall include a legal description and graphic depiction of APN 009-131-060. The deed restriction shall also indicate that, in the event of an extinguishment or termination of the deed restriction for any reason, the terms and conditions of this CDP shall continue to restrict the use and enjoyment of the subject property so long as either this CDP or the development it authorizes, or any part, modification, or amendment thereof, remains in existence on or with respect to the subject property.

15. **Condition Compliance.** WITHIN 180 DAYS OF CDP APPROVAL, or within such additional time as the Executive Director may grant for good cause, the Permittee shall satisfy all requirements specified in the conditions hereto that the Permittee is required to satisfy prior to issuance of this CDP. Failure to comply with this requirement or any other aspect of the CDP and its conditions may result in the institution of enforcement action under the provisions of Chapter 9 of the Coastal Act.

IV. COASTAL DEVELOPMENT PERMIT DETERMINATION

The proposed project involves development both in an area of the Commission's retained CDP jurisdiction as well as development in an area of CDP jurisdiction delegated to the City of Pacifica by the Commission through the City's certified Local Coastal Program. Coastal Act Section 30601.3 authorizes the Commission to process a consolidated CDP application in such cases when the local government, the applicant and the Executive Director all agree to such consolidation. The standard of review for a consolidated CDP application is the policies of Chapter 3 of the Coastal Act. The local government's certified LCP may also be used as non-binding guidance.

A. PROJECT LOCATION

The proposed project is located on and in front of the bluffs on the seaward side of 380 Esplanade Avenue in the Edgemar neighborhood of the City of Pacifica, San Mateo County (**Exhibits 1 and 2**). Most of the shoreline protection included in the project occurs within a City-owned parcel (APN 009-131-010), zoned for public recreation, that consists largely of beach area but extends to near the top of the steep, approximately 85-foot high, eroding coastal bluff. A smaller portion of the project occurs on the seaward edge of a privately-held blufftop parcel (APN 009-131-060) which is developed with a multi-story, 39-unit apartment complex (380 Esplanade) dating from the 1960s. This property is currently owned by Aimco, a corporation which owns and operates numerous apartment complexes in several states. A 48-inch diameter, high-density polyethylene (HDPE) storm drain pipe runs beneath the southern portion of Aimco parcel, within a 26-foot wide public drainage easement (**Exhibit 3**). The pipe

runs beneath the apartment complex's parking lot before emerging from the bluff face and extending out horizontally above a reconstructed slope (composed of engineered rock and soil fill) and riprap revetment. Bluff heights in the area range from approximately 85 feet near the project site to greater than 300 feet in the vicinity of Mussel Rock (where the San Andreas fault extends offshore into the Pacific Ocean) about 1.5 miles to the north. The bluffs in the project vicinity are composed largely of moderately-cemented fine sand and poorly-consolidated marine terrace material, and are subject to extreme wave forces, landslides and erosion, among other coastal hazards.

Neighboring properties to the north (310 – 360 Esplanade Avenue) are developed with six separate multi-unit structures. Further north is the Land's End multi-family development (at 100 Esplanade) and its vertical and lateral public accessways. Directly to the south of 380 Esplanade is a private undeveloped parcel (APN 009-131-050) known informally as "390 Esplanade". Just south of that lies a larger undeveloped parcel (APN 009-131-030, "400 Esplanade") that occupies the seaward side of the 400 block, and is owned by the City of Pacifica (**Exhibit 2**). This 400 Esplanade parcel was acquired by the City in part through a grant from the State Coastal Conservancy "for the purpose of protecting prime coastal and scenic resources and providing public access, including access on the Cali**f**ornia Coastal Trail."[1] The Conservancy retains a permanent, 5-foot wide easement on the property, running parallel to the coastline, for the purpose of constructing a segment of the Coastal Trail. In addition, a rudimentary dirt vertical access road has been constructed down the bluff at this City-owned property and has been used for staging and construction access to the beach during emergency shoreline work performed at several properties, including the project site. This City-owned parcel and the dirt road are also used informally by the public to access the shoreline and beach.

The adjacent and nearby beaches are hampered in many areas by large rock revetments. In addition to the shoreline armoring at issue here, the bluff immediately to the north (in front of 360 and 380 Esplanade) has been armored with a 475-foot long rock revetment ("Aimco revetment") and a 70-foot long, 50-foot tall upper bluff seawall, installed under emergency CDPs (Emergency CDPs 1-98-083-G, 1-98-106-G, 1-98-109-G, and 1-99-005-G) and later formalized under a regular CDP (CDP 2-08-020). Rock revetments have also been installed along the toe of the bluff fronting 310-330 Esplanade (Emergency CDPs 2-09-002-G, 2-09-021-G, and 2-10-002-G) and portions of the Land's End development (Emergency CDPs 2-10-005-G, 2-10-007-G, and CDP 2-10-039). The Pacifica coastline north of Land's End is mostly unarmored, except for sections of riprap at the base of the bluffs fronting the Pacific View Villas condominium complex (200 – 224 Palmetto Ave.) and the historic residential home known as "Dollar Radio" (100 Palmetto Avenue). North of Pacifica city limits in Daly City is a large revetment (2,600-feet long) fronting the Mussel Rock landfill site. The majority of the Pacifica coastline south of the project site is also armored with riprap and seawalls, with the notable exception of the parcels immediately to the south of 380 Esplanade (390-400 Esplanade), which remain unarmored.

Refer to **Exhibits 1 and 2** for project location, **Exhibit 3** for parcel map, **Exhibits 4 and 5** for project plans and **Exhibits 4, 6, 7, 9 and 10** for site photographs.

[1] City of Pacifica Grant of Easement #2006-006769, December 23, 2005.

B. PROJECT BACKGROUND

As described in further detail in the Project Description, the proposed project involves a request to authorize prior development at the site dating back to 1997, which included installation of a 170-foot long riprap revetment and reconstruction and fill of a failed bluff slope, as well as to authorize work performed under an emergency permit issued in 2010, including repair and extension of the original revetment and the installation of a soil nail wall along a section of the middle and upper bluff. Emergency CDP 2-10-034-G was issued on November 5, 2010, and it authorized (1) the temporary installation of 40 new ten-ton stones and placement of smaller rock retrieved from the beach immediately fronting the storm drain in order to stabilize the storm drain pipe; (2) placement of slurry/asphalt in cracks in the parking lot at the top of the bluff to prevent further subsidence; (3) installation of an approximately 30-foot wide, 40-foot high soil-nail wall over the mid- and upper bluff to provide lateral support to the storm drain. The emergency CDP specifically authorized only limited repair of the revetment as necessary to stabilize the storm drain. Project plans submitted with the emergency CDP application portrayed a repaired revetment with a footprint largely conforming to that of the original, extending a similar distance south along the bluff, but with more riprap material deposited inland to fill a part of the 2010 bluff failure area (**Exhibit 12**).

The emergency work authorized by emergency CDP 2-10-034-G was completed during the first week of January, 2011. As discussed in greater detail in the Project Description, the southern arm of the revetment that was built at that time is significantly larger than either the original revetment or the structure depicted in project plans submitted for the either the emergency CDP or the regular CDP applications (see **Exhibits 4, 6, 7, 8, 9, 12**).

In a related permit action, on March 6, 2013, the Commission authorized the City of Pacifica's storm drain replacement and upgrade project, which includes, in part, the abandonment of the 48-inch diameter storm drain outfall at 380 Esplanade Avenue (through CDP waiver 2-11-030-W). Under this project, the above-ground portion of the existing drain pipe will be cut off and sealed at the bluff face. The portion of the drain pipe buried beneath the 380 Esplanade parking lot will then be retrofitted (with a concrete plug, pumps, new small-diameter piping and other infrastructure) to redirect storm runoff from the 380 Esplanade property inland toward a new storm drain pipe that has been installed beneath Esplanade Avenue, carrying stormwater from the Edgemar neighborhood to a new outfall location between 548 and 552 Esplanade. According to City staff, work on the storm drain replacement and upgrade project is now well underway, and should be complete in 2014.

A history of the development and armoring of the site can be found in Appendix A.

C. PROJECT DESCRIPTION

This CDP application constitutes the required regular follow up for emergency CDP 2-10-034-G, issued in November 2010, and also the after-the-fact CDP application for the original project, built in 1997, without permit authorization.

Combining the original 1997 elements with the emergency work temporarily authorized in 2011,

the proposed project includes the following: (1) a wedge-shaped reconstructed bluff slope composed of rock and soil fill, extending approximately 44 vertical feet from the top of the revetment to the top of the bluff, on either side of the outfall pipe; (2) a 196-foot long, 13- to 40-foot high rock riprap revetment; (3) a 50-foot tall, 10- to 30-foot wide soil nail wall extending from +35 feet mean sea level (MSL) to near the top of the bluff along a portion of the 2010 failure scarp, just to the south of the storm drain outfall pipe; and (4) a 55-foot tall, 11-foot wide all-weather wire rock-fall mesh, installed over the exposed upper south-facing flank of the engineered fill, parallel to the soil nail wall (see **Exhibits 4, 5)**.

The original 1997 revetment extended approximately 168 feet alongshore, and was approximately 45- to 55-feet in cross-shore width, with a substantial (and variable) portion buried beneath a veneer of sand (**Exhibit 11**). The northern 60 feet of the 1997-98 revetment was later overlapped (and possibly reconstructed) during installation of the southern portion of the Aimco revetment in 1999 (**Exhibits 11, 13**).[2] After the revetment and bluff failure in 2010, the southern portion of the revetment was replaced and extended to a point approximately 140 feet south of the drain pipe (67 feet beyond the original) (**Exhibits 5, 6, 7, 9**). The southern arm of the revetment that was built at this time is significantly larger than either the original revetment or the structure depicted in project plans submitted for either the emergency CDP or the follow-up CDP applications (**Exhibits 4, 6, 7, 8, 9, 12**). The toe of the revetment is located between -2.5 and +10 feet MSL, depending on the location (**Exhibits 4, 5**).

The 2011 emergency work included the installation of a soil-nail wall in order to stabilize the eroded flank of the engineered slope and natural bluff south of the drain pipe. As built, the soil nail wall is approximately trapezoidal in shape, 30 feet wide at the base, 10 feet wide at the bluff top, and about 50 feet high (**Exhibits 4, 5**). The wall consists of reinforced shotcrete secured with 30- to 50-foot long soil nails embedded in the bluff.

See **Exhibits 1 and 2** for site location; **Exhibit 4** for As Built project plans; **Exhibit 5** for reconfigured project plans; **Exhibit 6** for delineation of project components**;** and **Exhibits 7, 8, 10** for site photographs.

D. GEOLOGIC CONDITIONS AND HAZARDS

Applicable Policies

The Applicant is requesting authorization for the 174-foot long revetment, reconstructed bluff slope, and soil nail wall. These structures constitute shoreline protective structures that alter natural shoreline processes, and thus, must be analyzed for consistency with Coastal Act Section 30235. Coastal Act Section 30235 addresses the use of shoreline protective devices and states:

> ***Section 30235 Construction altering natural shoreline.*** *Revetments, 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*

[2] Commission ECDP 2-98-109-G and CDP 2-08-020, and City of Pacifica CDP 156-99.

sand supply. Existing marine structures causing water stagnation contributing to pollution problems and fish kills should be phased out or upgraded where feasible.

Coastal Act Section 30253 addresses the need to ensure long-term structural integrity, minimize future risk, and to avoid landform altering protective measures. Section 30253 provides, in applicable part:

Section 30253 Minimization of adverse impacts. *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.…

(e) Where appropriate, protect special communities and neighborhoods that because of their unique characteristics, are popular visitor destination points for recreational uses.

Coastal Act Sections 30235 and 30253 acknowledge that seawalls, revetments, cliff retaining walls, groins and other such structural or "hard" methods designed to forestall erosion also alter natural landforms and natural shoreline processes. Accordingly, with the exception of new coastal dependent uses, Section 30235 limits the construction of shoreline protective works to those required to protect existing structures or public beaches in danger from erosion. The Coastal Act provides these limitations because shoreline structures can have a variety of negative impacts on coastal resources including adverse effects on sand supply, public access, coastal views, natural landforms, and overall shoreline beach dynamics on and off site, including ultimately resulting in the loss of beach.

Specifically, armoring impedes public access to and along the shoreline, adversely impacts beaches and related habitats, increases erosion on adjacent properties, and visually impairs coastal areas. A portion of the proposed project is located below the mean high tide line within public trust lands, and much of the rest of the project is located within a City-owned public recreation area. The proposed armoring is inconsistent with several Chapter 3 policies of the Coastal Act and, as detailed herein, will cause impermissible adverse impacts to coastal resources that are protected by the Coastal Act, including but not limited to substantial alteration and destruction of natural landforms inconsistent with the public access and recreation requirements of the Coastal Act and with Coastal Act Sections 30230-30231, 30240(b), 30251 and 30253. Additionally, although design modifications and access improvements can help mitigate impacts on sand supply and public shoreline access and recreation, these impacts can never be entirely eliminated or mitigated.

As stated above, the only applicable basis for the Commission to approve proposed armoring such as this that is otherwise inconsistent with the Coastal Act is pursuant to Section 30235 of the Coastal Act because it is required to protect an existing structure in danger from erosion. If

there was no existing structure in danger from erosion and the armoring was not required to protect it, the armoring would be denied. Therefore, the proposed project must satisfy the tests of Section 30235 in order to be authorized despite its other impacts.

Under Coastal Act Section 30235, shoreline protective structures can be authorized if: (1) there is an existing structure; (2) the existing structure is in danger from erosion; (3) shoreline altering construction is required to protect the existing threatened structure; and (4) the required protection is designed to eliminate or mitigate the adverse impacts on shoreline sand supply. The first three questions relate to whether the proposed armoring is necessary. The fourth question applies to mitigation for the sand supply impacts of armoring specifically identified in Section 30235. Other impacts resulting from the proposed armoring are addressed in subsequent sections of the report.

Existing Structures to be Protected

The Coastal Act distinguishes between development for which shoreline armoring is permissible, and development for which it is not. Under Section 30253, new development is to be designed, sited, and built to allow the natural process of erosion to occur without creating a need for a shoreline protective device. Coastal Act Section 30235 allows for shoreline protection in certain circumstances (if warranted and otherwise consistent with Coastal Act policies) for "existing" structures, such as structures that were in place prior to the CDP requirements. Coastal zone development approved and constructed prior to the time when CDPs started to be required was not subject to Section 30253 and predecessor statute requirements. Although some local hazard policies may have been in effect prior to that time, these pre-CDP requirement structures have not necessarily been built in such a way as to avoid the future need for shoreline protection (in contrast to those evaluated through CDP applications).

The shoreline protection structures were built to protect the storm drain infrastructure, and also serve to protect the parking lot above the storm drain infrastructure, as well as the apartment building itself. The apartment complex was built in the 1960s and thus pre-dates the coastal permitting requirements of 1972's Proposition 20[3] and the 1976 Coastal Act. The public stormwater infrastructure has also existed at this location for almost 60 years. Therefore, both qualify as existing structures for purposes of Section 30235.

Danger from Erosion

The Coastal Act allows shoreline armoring to protect existing structures in danger from erosion, but it does not define the term "in danger". There is a certain amount of risk involved in maintaining development along a California coastline that is actively eroding and can be directly subject to violent storms, wave attack, flooding, earthquakes, and other 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, it can be argued that all development along the immediate California coastline is in a certain amount of "danger". The Commission evaluates the immediacy of any threat in order to make a determination as to whether an existing structure is "in 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 pursuant to Section 30235. Lacking Coastal Act definition, the Commission's long practice has been to

[3] Proposition 20 introduced CDP requirements in February 1973.

evaluate the immediacy of any threat in order to make determinations as to whether an existing structure is "in danger." While each case is evaluated based upon its own particular set of facts, the Commission has previously interpreted "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" alternative).

Bluff retreat along the Pacifica shoreline is highly episodic, with large sections of bluff being eroded during large winter storms or wave events. Earthquakes can also trigger bluff failures along the seismically active, heavily faulted San Mateo County coastline. Pacifica's LCP (certified in 1984) estimates an average bluff erosion rate of 1-3 feet per year, but these average rates mask the fact that several tens of feet of bluff retreat can occur during individual storm events. During these events, bluff erosion typically occurs in the form of near-vertical slabs wasting from the bluff face. For example, severe erosion events during the El Niño winters of 1982-1983 and 1997-1998 led to the abandonment and demolition of homes on the ocean side of Esplanade Avenue to the south of the subject site, while bluff loss in front of the 360-380 Esplanade apartment buildings during the storms of February 1998 triggered the installation of rock revetments at the bluff toe under emergency authorization (emergency CDPs 1-98-083-G, 1-98-106-G, 1-98-109-G, and 1-99-005-G). More recently, apartment complexes at 310-330 Esplanade have been threatened by bluff erosion.

Large bluff failures have occurred repeatedly at the project site, and indeed were the immediate triggers for both the 1997-98 and 2010-11 shoreline protection developments. The failure of the older concrete storm drain in December 1996 resulted in major bluff erosion (20+ feet of blufftop retreat). Severe winter storms in 2010 resulted in the complete failure of the southern portion of the 1997 revetment, and significant erosion of both engineered fill and native bluff immediately to the south of the drain outfall pipe (more than 40 feet of blufftop retreat). During the 2010 event, erosion of the revetment and engineered fill undermined the storm drain pipe itself.

At present, the 380 Esplanade apartment building is approximately 40 feet from the edge of the bluff at a point just to the north of the storm drain outfall, and approximately 50 feet from the bluff edge within the City drainage easement. The southwestern corner of the parking lot lies within a few feet of the bluff edge (**Exhibits 8, 9**). Given the relatively low degree of cohesion in the bluff materials, and as indicated by the magnitude of recent erosion events, it is clear that the current apartment complex setbacks are insufficient to protect the structures from erosion, and that without protection, the existing primary development could be damaged or made unusable within the next two or three storm cycles. The danger to the existing storm drain outfall pipe is even more pronounced, as evidenced by the partial loss of its rock and fill foundations in 2010. Storm drain infrastructure situated beneath the parking lot is also in close proximity to the bluff edge and would be at risk of damage in the absence of shoreline protection. The Commission's senior coastal engineer and geologist have visited the site on several occasions, have reviewed the relevant project materials, and have determined that the existing structures at 380 Esplanade are in danger from erosion for purposes of Section 30235.

Is the Proposed Armoring Required Given Feasible Protection Alternatives

The third Section 30235 test that must be met is that the proposed armoring must be "required"

to protect the existing threatened structures. In other words, shoreline armoring shall only be permitted if it is the only feasible alternative capable of protecting the existing endangered structures.[4] Other alternatives typically considered include: the "no project" alternative; planned retreat, including abandonment and demolition of threatened structures; relocation of threatened structures; beach and sand replenishment programs; foundation underpinning; drainage and vegetation measures on the blufftop; and combinations of each.

"No Project" Alternative

Because this application includes a request to authorize existing but unpermitted or temporary armoring devices, the "no project" alternative in this case would involve the removal of the revetment, reconstructed slope, and soil-nail wall, returning the project site to a state resembling that following the storm drain failure of late 1996. As indicated above, there are existing structures in danger from erosion (per Coastal Act Section 30235) at this location. Removal of the armoring would exacerbate the risk of bluff failure and expose existing structures to damage or destruction in the near future, and therefore is not a feasible non-armoring alternative.

On-Site Relocation Alternative

Relocation is another alternative that is typically considered a reasonable and feasible alternative to consider in some cases, particularly where the relocation envisioned is relatively minor in relation to the structure and the site. In this case, the site is fully developed with a multi-unit apartment complex and parking facilities, as well as the City-owned storm drain infrastructure. Although the exposed portion of the storm drain outfall pipe is in the process of being removed and the underground portion repurposed (pursuant to CDP #2-11-030-W), some amount of storm drain infrastructure is required in order to collect runoff from the 380 Esplanade property, and given the site topography, which slopes seaward, some of this infrastructure will necessarily be located near the bluff edge. Further, even if it was feasible to relocate the storm drain infrastructure and/or portions of the parking lot, the main apartment complex would still be in danger from erosion, and given the size and configuration of the property, there is no space onsite to relocate the apartment complex further inland. The Commission's Coastal Engineer has evaluated the proposed shoreline protection, and has determined that even if the storm drain infrastructure and parking lot were relocated, a similar level of protection is required to protect the existing apartment complex. Therefore, in this case, based on the site constraints, the existing development present on site and the infeasibility of abating the danger for an extended period of time through relocation, and given that a similar level of shoreline protection would be required to protect the main apartment complex, regardless of the location of the storm drain infrastructure and parking lot, the relocation alternative is not a feasible non-armoring alternative for protecting the endangered existing structures.

Drainage and Landscaping Alternative

Improved blufftop drainage and landscaping is another potential option for reducing bluff erosion. Appropriate drainage measures coupled with planting long-rooted native bluff species can help to stabilize some bluffs and extend the useful life of setbacks. This option can be applied as a stand-alone alternative, but it is most often applied in tandem with other measures. In this case, the steep bluffs, the relatively unconsolidated nature of the bluff materials, and the

[4] Coastal Act Section 30108 defines feasibility as follows: "Feasible" means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.

level of wave-driven erosion indicate that drainage and landscaping alone is unlikely to be able to protect existing structures in danger at this site. For example, the presence of vegetation on both the engineered slope and natural bluff south of the storm-drain pipe did not prevent major wave-driven erosion during the winter of 2010. Therefore, drainage and landscaping improvements are not a feasible non-armoring alternative to hard shoreline protection in this case.

Managed Retreat Alternative

Another option often considered is planned or managed retreat. This option has been debated and discussed more generally as a regional planning strategy as well as in terms of specific individual sites. In this case, planned retreat would involve not only the abandonment and removal of the storm drain infrastructure, but also the eventual abandonment and demolition of the threatened parking lot and apartment building. This concept posits that instead of allowing continued armoring, once the existing structures have been removed then the shoreline is allowed to retreat. Beach formation in this respect is partly assisted by the sand-generating material in the bluffs as they erode, but more importantly there is space for the natural equilibrium between the shoreline and the ocean to establish itself and for beaches to form naturally. Over the longer run, a more comprehensive strategy to address shoreline erosion and the impacts of armoring along the Pacifica coastline may be developed (e.g., planned or managed retreat, relocation of structures inland, abandonment of structures, etc.). However, including as discussed above, and also given the extent of armoring at adjacent and nearby beaches, such options are not feasible at this location at this time.[5]

In summary, there are no feasible non-armoring alternatives that could be applied in this case to protect the existing endangered structures.

Seawall Alternative

In terms of armoring alternatives, there are a variety of measures that must be considered. One common option is use of a vertical or sloped seawall to protect the bluff face. A seawall is often preferable to a riprap revetment because it can occupy a smaller area of beach. A seawall at this site would have a smaller beach footprint than the existing revetment, reducing encroachment onto the beach, and thus could potentially enhance beach wrack habitat and shoreline marine resources (reflecting objectives of Sections 30230 and 30231). The reduced footprint of a seawall would also reduce impacts to public access and recreation and allow for safer lateral access along the beach (more in line with the requirements of Sections 30210 and 30211). In addition, a seawall could be contoured and sculpted to approximate the slope, texture and color of the natural bluff, reducing adverse impacts to the scenic and visual qualities of the coastline resulting from the riprap revetment (per Sections 30240(b) and 30251).

However, in this case, a stand-alone vertical or sloped seawall, without the need for riprap toe protection, is not feasible due to site-specific geologic constraints. This issue was considered carefully during staff review of the CDP application for the Aimco revetment (CDP 2-08-020), which is contiguous with the northern end of the outfall revetment and subject to similar

[5] If they were to become more feasible in the future, the removal of a hard armoring structure at the project location would be a small part of a planned retreat program inasmuch as many miles of hard armoring would need to be removed and other shore-fronting development retired to allow for such a strategy to work comprehensively.

constraints. The sub-surface materials underlying the beach at this location consist of weakly-cemented beach sands and marine terrace material, with a lack of stable bedrock within about 5-8 feet of the surface. Aimco's engineering consultant has estimated that the placement of a vertical seawall without toe protection in front of 380 Esplanade would require an 18- to 19-foot vertical cut at the toe of the bluff, creating a risk of slope instability and failure.[6] Thus, the structural viability of a vertical or sloped seawall at this location would depend on the placement of a large amount of rock as toe protection to prevent undermining due to wave scour. The Commission's senior coastal engineer has agreed with these conclusions. Based on the dimensions of the seawall and revetment projects built immediately upcoast in front of 360 and 380 Esplanade, a seawall installed to replace the existing shoreline protection system in front of the storm drain outfall would require riprap toe protection encroaching 20 to 25 feet onto the beach to prevent undercutting and scour. Additionally, both the Applicant's and Commission's engineers agree that the loose rock fill material of the reconstructed bluff slope is not a suitable substrate for the drilling of soil nails or tie-backs, and that the installation of a large seawall at this site would first require the complete removal of the reconstructed upper bluff.

Reduced Revetment Alternative

Another armoring alternative that could reduce impacts to coastal resources relative to the proposed project is to strategically reduce the size of the existing revetment. Under this alternative, the reconstructed slope and soil-nail wall would be retained, but the existing revetment would be shortened and narrowed to better approximate the minimum structure necessary to protect the existing structures in danger from erosion.

The existing revetment, proposed for retention, includes both original components constructed in 1997 and new components added in 2011. The revetment and reconstructed slope north of the drain pipe have remained intact since 1997, and are contiguous with the neighboring Aimco revetment. As described previously, the section of the original revetment beginning approximately 10 feet south of the drain pipe was almost completely washed out in the early spring of 2010, and reconstructed under emergency authorization the following winter. The emergency work that followed significantly expanded the length and width of the revetment. In the reconstructed area south of the drain pipe, the revetment is up to 70 feet wide, and extends approximately 140 feet south of the pipe (**Exhibits 5, 7**).[7] For comparison, the original revetment, measured from near the drain pipe, was approximately 55 feet wide and extended approximately 73 feet to the south (**Exhibit 11**). The Aimco revetment immediately to the north ranges from 40 to 50 feet in width, with a slope of approximately 1.5:1.[8] The enlarged revetment fills most of the area eroded from the bluff in 2010, and while it will likely retard further erosion in this area, the protection it offers at present is to the undeveloped 390 Esplanade parcel rather than existing structures at 380 Esplanade. The Commission's senior coastal engineer has found that the southern arm of the revetment exceeds the dimensions necessary to protect existing development at 380 Esplanade from erosion hazards, and that this excess rock can be removed without jeopardizing the existing development.

[6] Adopted findings for CDP 2-08-020, Exhibit 4.

[7] These dimensions are significantly greater than what is depicted in the as built plans submitted with the CDP application (**Exhibit 4**), in part because the plans failed to account for areas of rock that are at times covered with a veneer of sand.

[8] Adopted findings for CDP 2-08-020 and project plans (**Exhibit 13**); 2013 overhead aerial photograph (**Exhibit 7**).

The Applicant's engineer believes, and the Commission's engineer concurs, that the maximum revetment slope that can be achieved at this site, without compromising the stability of the revetment structure, is approximately 1.5:1. Thus, under the reduced revetment alternative, the toe of the existing revetment would be moved northward and inland, and the excess rock removed, in order to achieve a uniform slope of 1.5:1, effectively reducing the revetment's beach footprint. It is estimated that this alternative would result in the recovery of approximately 3,138 square feet of sandy beach. The smaller revetment contemplated under this alternative is depicted in **Exhibit 5**.

Preferred Alternative

In comparison to the proposed project, the seawall and reduced revetment alternatives have similar impacts on shoreline sand supply, but each would reduce the impacts resulting from beach encroachment, fixing of the back-beach, and curtailment of bluff erosion by about 30-40% compared to the existing/proposed project. The reduced revetment would occupy a larger area of the beach, while the seawall would prevent a greater amount of bluff-derived sand from reaching the beach over the life of the project. In terms of visual impacts and landform alteration, neither alternative is clearly superior to the other. While the reduced revetment alternative would retain a greater amount of unsightly riprap on site, the vertical seawall would cover a larger area of the natural bluff while still requiring a substantial amount of rock toe protection; phrased differently, the vertical seawall would extend one type of visual impact without eliminating the other. Though technically feasible if supported by rock toe protection, a seawall is the more costly and more permanent structure, and as a result places larger constraints on future shoreline management options. In contrast, a rock revetment is more easily removed, for instance if the City of Pacifica were to adopt a comprehensive, long-term shoreline management strategy centered on managed retreat. Therefore, because the Commission finds that the reduced revetment will have similar impacts on shoreline sand supply, public access and visual resources as the vertical seawall with toe protection, and represents the more flexible long-term solution to erosion hazards at the site, the Commission finds that a reduced-size revetment, along with retention of the existing reconstructed slope and soil nail wall, is the least environmentally-damaging feasible alternative to the proposed shoreline protection development.

Consistent with this finding, the southern portion of the revetment extension, as depicted in **Exhibit 5**, is not required to protect an existing structure per Section 30235, results in unnecessary landform alteration and other coastal resource impacts, and is not approved. As stated above, the southern arm of the revetment that was built is significantly larger than either the original revetment or the structure depicted in project plans submitted for the emergency CDP and the follow-up CDP applications (**Exhibits 4, 6, 7, 8, 9, 12**). **Special Condition 1** requires the modification of the existing revetment to achieve a slope of 1.5:1 along all transect lines south of the storm drain pipe, and the removal of all excess riprap from this portion of the revetment. Only as conditioned to remove the southern portion of the revetment extension can the proposed project be considered the least environmentally damaging alternative "required" to protect the existing endangered apartment complex and public storm drain infrastructure, and thus meet the third test of Section 30235 of the Coastal Act. Without the removal of the excess riprap required by **Special Condition 1**, the proposed project would be denied because the requirements of Section 30235 would not be satisfied and approval would not be permissible.

Beach and Sand Supply Impacts

The fourth test of Section 30235 (previously cited) that must be met in order to allow Commission approval is that shoreline structures 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, moderately and weakly compacted, 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 that 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. While 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.

The project site is located in Pacifica where average annualized bluff erosion rates are generally estimated at 1 to 3 feet per year.[9] However, as previously indicated, this is an average annualized rate; actual erosion is more episodic, and can increase dramatically as a result of winter storm events; sections of bluff material can slough off in tens of feet at a time. This sandy beach material is carried off and redistributed through wave action along the shoreline.

As further discussed in the Public Access and Recreation findings, shoreline structures can have a variety of negative impacts on coastal resources, including adverse effects on beaches which result in the loss of public recreational access opportunities. Some of the effects of engineered armoring structures on the beach (such as scour, end effects and modification to the beach

[9] In the last 40 years the blufftop has retreated approximately 120 feet, resulting in an average annual bluff erosion rate of 3 feet per year over that time frame. Past studies (USACOE) in the early 1970s estimated between 1 to 2 feet of average annual bluff erosion.

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.[10]

In the subsequent analysis, the Commission draws on a variety of information sources, including plans and materials submitted by the Applicant, project plans for the neighboring 380 Esplanade (Aimco) armoring project, historical and contemporary aerial photographs, and observations made during site visits.

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. The beach area located beneath a shoreline protective device, referred to as the encroachment area, is the area of the structure's footprint.

The existing project, proposed for retention, covers approximately 7,658 square feet of public beach area. The revised project, as conditioned to reduce the size of the existing revetment, would cover approximately 4,520 square feet of public beach (a reduction of 3,138 sq. ft.).[11] The loss of a square foot of beach area can be roughly converted to the volume of sand that would be required to nourish an equivalent area of beach. There is a rough rule of thumb that it takes between 0.7 to 1.5 cubic yards of sand to establish 1 square foot of dry beach through nourishment.[12] The Commission has not been able to establish an actual conversion factor for the Pacifica vicinity. However, if a 1.0 conversion factor is used that assumes that the active range of sand transport is at the lower limit of the expected range (i.e., the low end of the spectrum of values typically assumed by coastal engineers), a conservative estimate of the amount of cubic yards needed to create beach in terms of square feet can be calculated.[13] Using the conversion

[10] The sand supply impact refers to the way in which the project impacts creation and maintenance of beach sand. Although this ultimately translates into beach impacts, the discussion here is focused on the first part of the equation and the way in which the proposed project would impact sand supply processes.

[11] This calculation was performed by the Applicant's engineer and is depicted graphically in **Exhibit 5**.

[12] This conversion value is based on regional beach and nearshore profiles, and overall characteristics. When there is not regional data to better quantify this value, it is often assumed to be between 1 and 1.5, the basis being that to build a beach seaward one foot, there must be enough sand to provide a one-foot wedge of sand through the entire region of onshore-offshore transport. If the range of reversible sediment movement is from -30 feet msl to +10 feet msl, then a one-foot beach addition must be added for the full range from -30 to +10 feet, or 40 feet total. This 40-foot by 1-foot square parallelogram could be built with 1.5 cubic yards of sand (40 cubic feet divided by 27 cubic feet per cubic yard). If the range of reversible sediment transport is 27 feet, it will take 1 cubic yard of sand to rebuild one square foot of beach; if the range of reversible sediment transport is larger than 40 feet, it will take more than 1.5 cubic yards of sand to rebuild one square-foot of beach.

[13] A 1.0 conversion factor has typically been applied by the Commission in cases where site specific values have not been identified.

factor, the sand volume equivalent for the direct loss of public beach due to 7,658 square feet of encroachment by the existing project would be 7,658 cubic yards of beach-quality sand; the 4,520 square feet of encroachment under the revised project would require 4,520 cubic yards.[14]

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. This effect is also known as passive erosion. 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.

In addition, sea level has been rising gradually for many years. There is also 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 2 to 6 feet by the year 2100).[15] Mean sea 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 as the beach is squeezed between the landward migrating ocean and the fixed backshore.

The Commission has established a methodology for calculating passive erosion, or the long-term loss of beach due to fixing the back beach. This impact is equivalent to the footprint of the bluff area that would have become beach due to erosion and is equal to the long-term average annual erosion rate multiplied by the width of property that has been fixed by a resistant shoreline protective device.[16] In this case, the existing revetment runs from the adjacent Aimco revetment along almost 200 feet of bluff. The revetment covers areas of sandy beach, and but for the revetment new beach area would result from landward retreat of the bluff in the absence of the proposed project.

---

[14] Per the Commission's methodology, this is calculated as a one-time encroachment impact as opposed to a yearly impact.

[15] The California Climate Action Team (2010) has evaluated possible sea level rise for the California coast and, based on several of the Intergovernmental Panel on Climate Change (IPCC) scenarios, projected sea level rise up to 1.4 meters (4.5 feet) by 2100. A 2012 analysis by a National Research Council committee (http://www.nap.edu/catalog.php?record_id=13389) projects sea level for the central California could rise up to 5.5 feet from 2000 to 2100. The Commission's own Draft Sea Level Rise Policy Guidance (http://www.coastal.ca.gov/climate/SLRguidance.html) recommends the use of the NRC projections in local coastal planning and CDP analyses. A 2012 NOAA Technical Report (NOAA Tech Memo OAR CPO-1) projects, with high confidence, that global sea level will rise at least 0.6 feet (0.2 meters) and no more than 6.6 feet (2.0 meters) from 1992 to 2100. The recent 2013 IPCC report conservatively projects a global sea level rise of 1.7 - 3.2 feet (0.52 - 0.98 meters) by 2100.

[16] The area of beach lost due to long-term erosion (Aw) 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). This can be expressed by the following equation: Aw = R x L x W. The annual loss of beach area can be expressed as Aw' = R x W.

The shoreline is irregular, but the area affected by passive erosion can be approximated as a 174-foot-long curvilinear bluff, extending from the revetment junction with the Aimco project on the north end to the tip of the 2011 extended revetment on the south end.[17] Of this total distance, approximately 44 feet is covered by areas of the original revetment and engineered fill that has remained intact since 1997 (the northern end). The remaining 130 feet (the southern end) includes the area of original revetment and fill that was essentially removed by the 2010 failure, and in 2011 was filled and extended with the new revetment. The southern portion of the original revetment prevented passive erosion of the bluff from 1997-2010, but in 2010 failed catastrophically. Since the magnitude of the 2010 bluff retreat was similar to or in excess of that which would have been predicted for 1997-2010 in the absence of shoreline protection (using a site-specific erosion rate, see below), we calculate the passive erosion impacts of the southern portion of the revetment only from 2011 forward.

In terms of the duration of impact evaluation, in this case it is appropriate to tie this evaluation (and mitigation requirements emanating from it) to the same time frame as the Aimco project (CDP 2-08-020) as the projects are functionally and physically related and connected, including because the improvements are partially located on Aimco property, protect Aimco existing structures, and Aimco must also agree to the terms and conditions of this CDP.[18] That project was approved in 2011 with a 20-year initial impact mitigation period, ending on October 7, 2031. Therefore, as a practical matter, it is appropriate to require the evaluation of mitigation for the entire structure (including the shoreline protection authorized here, as well as the shoreline protection under CDP 2-08-020) at the same time in the future. Therefore, the Commission has used this 2031 time frame to calculate the sand supply impacts of the project. The Applicant's geotechnical consultant estimated the average bluff recession for this site at 1 foot per year, which is within the regional range of 1 to 3 feet per year. Therefore, the impact from fixing the back beach over the 1997 – 2031 period for the proposed project is estimated to be 4,096 square feet of beach that would have otherwise been created. Using the same conversion factor applied above, this translates to 4,096 cubic yards of beach sand. Under the reduced project (see **Special Condition 1**), the impact from fixing the back beach is estimated to be 3,424 square feet of beach that would otherwise have been created. This translates to 3,424 cubic yards of beach sand.

Retention of Potential Beach Material

If natural bluff erosion were allowed to continue (absent the shoreline armoring) at this location, some amount of beach material would be added to the beach fronting the bluff, as well as to the larger littoral cell sand supply system operating along the Pacifica coast. Because littoral drift at this location travels in a north to south manner (i.e., towards the downcoast area of Pacifica) the impact would be relatively more towards Pacifica State Beach than upcoast along the Mussel Rock area. The volume of total material that would have gone into the sand supply system over the lifetime of the shoreline structure is the volume of material between (a) the likely future

[17] The alongshore length of the project north of the outfall pipe was measured based on the project plans included in CDP 156-99 (**Exhibit 11**) and corrected for the Aimco revetment overlap based on the project plans submitted in support of CDP 2-08-020 (**Exhibit 13**); the width south of the outfall pipe was measured from 2012 and 2013 aerial photographs (**Exhibits 7, 9**).

[18] In addition, pursuant to a settlement agreement between Aimco and the City, though the City acts as the Applicant to the Commission for the proposed project, AIMCO is solely responsible for satisfying any conditions of approval, and/or any mitigation requirements imposed by the Commission.

bluff-face location with shoreline protection; and (b) the likely future bluff-face 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 fraction of bluff material that is beach sand, giving the total amount of sand that would have been supplied to the littoral system for beach deposition if the proposed devices were not installed.[19] The Commission's analysis indicates that the proposed project would retain 1,892 cubic yards of beach quality sand during the authorization period. In this case, the armoring covers several bluff areas where materials have been and will be retained in the future, each of which is subject to slightly different time frames based on when the bluff area was first covered, and extending through the 2031 mitigation period. The oldest armoring consists of the intact portions of the 1997 revetment and reconstructed slope, and can be divided into the following segments: (i) a 7-foot long section of original revetment between the junction with the Aimco revetment and the 1996 bluff failure area extending to an average of 30 feet above mean sea level (MSL); (ii) a 37-ft. long section of original revetment below the reconstructed slope extending to 35 feet above MSL; and (iii) the intact portion of the original 1997 reconstructed slope covering approximately 2,866 square feet of the bluff face between the top of the revetment and the top of the bluff. This armoring covers 4,371 square feet of bluff and would be authorized to do so for 35 years (i.e., 1997 to 2031). The newer armoring consists of the reconstructed/extended revetment and the bluff-face soil nail wall, and can be divided into three additional segments: (iv) a 45-foot long, 35-foot high section of reconstructed revetment extending from the northern edge of the 2010 failure area to the southern edge of the soil nail wall; (v) a 76-foot long section of reconstructed/extended revetment south of the soil nail wall in front of natural bluff with an average height of 20 feet; and (vi) the soil nail wall covering approximately 1470 square feet of the bluff face between the top of the revetment and the bluff top. This armoring covers 4,880 square feet of bluff and would be authorized to do so for 21 years (i.e., 2011-2031). Thus the Commission's analysis indicates that the proposed project would retain 1,892 cubic yards of beach quality sand during the authorization period (i.e., 4,371 square feet of erosion for 35 years and 4,880 square feet for 21 years; at 1 foot of erosion per year; multiplied by 20% sand content; and converted to cubic yards).

The reduced-size revetment included in the revised project (*see* **Special Condition 1**) differs from the proposed project in that the southernmost portion of the revetment will be removed, resulting in a somewhat lower impact on bluff-derived sand supply. With respect to the reduced project alternative, the oldest armoring, same as described and calculated above, would cover 4,371 square feet of bluff and would be authorized to do so for 35 years (i.e., 1997-2031). For the newer armoring, two sections (i.e., the 45-foot long, 35-foot high section of reconstructed

[19] The equation is Vb = (S x W x L) x [(R x hs) + (1/2hu x (R + (Rcu - Rcs)))]/27. Where: Vb is the volume of beach material that would have been supplied to the beach if natural erosion continued (this is equivalent to the long-term reduction in the supply of bluff material to the beach resulting from the structure); S is the fraction of beach quality material in the bluff material; W is the alongshore width of property to be armored; L is the design life of structure, if assumed a value of 1, an annual amount is calculated; R is the long term average annual erosion rate; hs is the height of the shoreline structure; hu is the height of the unprotected upper bluff; Rcu is the predicted rate of retreat of the crest of the bluff during the period that the shoreline structure would be in place, assuming no seawall were installed (this value can be assumed to be the same as R unless the Applicant provides site-specific geotechnical information supporting a different value); Rcs is the 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 (this value will be assumed to be zero unless the Applicant provides site-specific geotechnical information supporting a different value); and divide by 27 (since the dimensions and retreat rates are given in feet and volume of sand is usually given in cubic yards, the total volume of sand must be divided by 27 to provide this volume in cubic yards, rather than cubic feet). The applicant's consultant indicates that the bluff in this location consists of about 20% sand-sized material.

revetment extending from the northern edge of the 2010 failure area to the southern edge of the soil nail wall (section (iv), above) and the soil nail wall covering approximately 1, 470 square feet of the bluff face between the top of the revetment and the bluff top (section (vi), above) would remain unaltered, covering 3,360 square feet and authorized for 21 years (i.e., 2011-2031). The remaining section of reconstructed revetment (section (v), above), extending 76 feet south of the soil nail wall in front of natural bluff, with an average height of 20 feet, thus covering 1,520 square feet, has been in place for 3 years (i.e., 2011-2014). As modified under **Special Condition 1**, this portion of the reconstructed revetment would be reduced in length to 40 feet, would cover 800 square feet of bluff face and would be authorized to do so for 18 years (i.e., 2014-2031). Thus, the Commission's analysis indicates that the revised project would retain 1,796 cubic yards of beach quality sand over the authorization period (4,371 square feet for 35 years, 3,360 square feet for 21 years, 1,520 square feet for 3 years, and 800 square feet for 18 years; at 1 foot of erosion per year; multiplied by 20% sand content; and converted to cubic yards.

Section 30235 Conclusion

The proposed project has had, and if retained would continue to have, quantifiable shoreline sand supply impacts. Beach sand loss has or will occur due to: (1) placement of a riprap revetment onto approximately 7,658 square feet of sandy beach that otherwise would be available for public use (converted to a sand volume of 7,658 cubic yards); (2) fixing of the back beach location, resulting in the loss of 4,096 square feet of sandy beach (4,096 cubic yards of sand); and, when combined with the soil-nail wall fronting a portion of the upper bluff, (3) retention of 1,892 cubic yards of sand. When combined, these impacts sum to 11,754 square feet of beach area loss and an additional 1,892 cubic yards of sand during the project authorization period (until 2031). The revised project, including the modifications required under **Special Condition 1**, would reduce the encroachment and passive erosion impacts of the project, to 4,520 square feet (4,520 cubic yards) and 3,424 square feet (3,424 cubic yards) of beach area, respectively, for a total of 7,944 square feet (7,944 cubic yards). Of this total area of beach that will be lost as a result of the revised project, 19% is attributable to passive erosion between 1997 – 2010, while the remaining 81% is attributable to the 2011 project, which includes installation of new rip rap and the soil nail wall, and retention of the residual 1997 structures, during the period 2011 – 2031. The revised project would also result in a slightly smaller impact on sand supply related to bluff erosion (1,796 cubic yards). Of this total sand retention impact, 23% is attributable to the volume retained by the currently intact portions of the original structures between 1997 – 2010, and 77% is attributable to the 2011 project (including both new structures and retained older structures) from 2011-2031.

Thus, to conclude, the reduced scale project being approved here will lead to the loss of 4,520 square feet of beach due to physical encroachment and the loss of 3,424 square feet of beach that would have been created absent the project due to passive erosion, for a total loss of beach area of 7,944 square feet. In addition, the reduced scale project will lead to the loss of 1,796 cubic yards of sand that would have been delivered to the sand supply system absent the project.

In order to be approvable under Section 30235, these impacts must be mitigated. In this case, the Commission finds it is appropriate to mitigate for the project's impacts on sand supply and on public shoreline access and recreation in two ways: (1) first by addressing the sand retention loss through the provision of an in lieu fee based on the cost to replace the retained sand; and (2)

second, by addressing the beach area itself that would be lost due to encroachment and passive erosion either through the provision of an in-lieu fee that is based on the cost of nearby land values or by provision of a Public Access Management Plan that provides public access amenities and improvements for the City-owned 400 Esplanade property south of the project site.

First, with regard to sand kept out of the littoral cell, 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. Such an introduction of sand, if properly planned, can feed into the offshore system to mitigate the impact of the project. However, in contrast to other areas with established programs (e.g., SANDAG in San Diego County) there are not currently any existing beach nourishment programs directed at Pacifica beaches. Absent a comprehensive program that provides a means to coordinate and maximize the benefits of mitigation efforts in the area now and in the future, piecemeal mitigation efforts, such as an Applicant-only project to drop equivalent amounts of sand over time at this location, are likely to be ineffective.

As an alternative mitigation mechanism, the Commission has often determined that the use of an in-lieu fee is desirable, especially when in-kind mitigation measures, such as the creation of new beach areas or beach nourishment, are not available to fully offset a project's impacts. 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 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 in as much as the pooled resources can sometimes provide for a greater mitigation impact than a series of smaller mitigations based on individual impacts and fees.

In order to mitigate for the impacts of sand retention, the Commission has often applied an in-lieu fee based on the cost of providing such sand because the cost of replacing the lost sand is directly related to the impact. For example, this approach was used by the Commission as part of the mitigation package in the Li permit in 2010 (CDP 6-07-133), the Aimco permit in 2011 (CDP 02-08-020) and the Land's End permit in 2013 (CDP 2-10-039). In the present case, the proposed project, as modified by **Special Condition 1**, is expected to prevent 1,796 cubic yards of sand from being deposited on the beach and entering the littoral cell over the 1997 – 2031 evaluation period. Based on an estimated range of costs for beach quality sand of $5 to $40 per cubic yard delivered, an in-lieu fee to address this sand supply impact would range from $8,980 to $71,840. This is a broad range, on the order of a ten-fold difference. In cases of uncertainty like this, the Commission typically allows the Applicant to submit three bids for the cost of delivered beach quality sand, and allows the in-lieu fee to be adjusted to the average for these three bids. **Special Condition 3** describes the procedure for identifying these beach sand costs and submitting the required in-lieu fee.

Thus, the project's sand supply impacts translate directly into a loss sand volume that would otherwise have been delivered to the beach and littoral cell. The in-lieu fee included in **Special Condition 3** serves as sand supply mitigation for the sand supply impacts in this case. Also, conditions discussed in the next 4 sections further below also assure that the project will be consistent with the requirements of Section 30235 of the Coastal Act. As so conditioned, the

project meets all Section 30235 tests for allowing such armoring.

Regarding impacts of the armoring on public shoreline access and recreation, in this case, as discussed further below, the Commission finds that the Permittee can mitigate for such impacts in one of two alternative ways: (1) either through the provision of an in-lieu fee that is based on the average value of the adjusted price per square foot of impact, or (2) by provision of a Public Access Management Plan that provides public access amenities and improvements for the City-owned property south of the project site (see **Special Condition 2**). As discussed further below in the section on Public Access and Recreation, the Commission calculates the mitigation fee based on the area of beach that is no longer accessible to the public due to direct physical encroachment by a seawall; or area that would otherwise have been available for public access in the future had the armoring not blocked natural bluff retreat.[20] The Commission no longer bases the mitigation fee only on the cost of the volume of sand beneath a seawall or beneath the area of beach that would have been created. As described in greater detail below in the Public Access and Recreation finding, the encroachment and passive erosion impacts of the proposed project, as modified by **Special Condition 1**, summed over the permit authorization period (until 2031), would equate to a beach area of 7,944 square feet, with an average land value of $263,581.

Evaluation of Mitigation for Impacts of Shoreline Protection Devices After 2031
As described previously, the shoreline protection structures at issue here are physically connected with the adjacent structures protecting the development immediately north of the public drainage easement and storm drain outfall, and the initial mitigation period has been timed to coincide with that of . the Aimco project (CDP 2-08-020) that was approved in 2011 with a 20-year period of development authorization[21] and an initial period for evaluating project impacts and mitigation ending in 2031. Therefore, as a practical matter, it is appropriate to require the evaluation of mitigation for the entire structure (including the shoreline protection authorized here, as well as the shoreline protection under CDP 2-08-020) at the same time in the future. Therefore, the Commission has used the 2031 time frame to calculate the sand supply impacts of the project. These impacts will continue to occur, however, for the full time period that the approved armoring system is in place, including beyond 2031 if it continues to be necessary to protect the existing endangered structures identified. This CDP approval requires the Applicant to submit a complete permit amendment application to propose mitigation for impacts attributable to the armoring beyond 2031. As such, additional mitigation will be required after the initial mitigation evaluation period.

The initial mitigation timeframe prior to 2031 uses available information on historic trends for the projection of future erosion. In siting new development, proposed setbacks attempt to anticipate future acceleration of erosion through using the highest historic erosion rate or by developing relationships between erosion and sea level. And, on an eroding coastline, if the proposed erosion rate is higher than the actual rate, the result is only that the development will be safe from erosion for a longer time period than initially assumed. However, for shoreline armoring mitigation, the Commission has often based the calculations upon average or moderate

[20] See, for example CDP 6-07-133 and, more recently, CDP 2-10-039 for the Land's End apartments at 100 Esplanade.

[21] Special Condition 5 also specifies that the authorization will expire when the structures requiring protection are removed, and therefore, the authorization could expire prior to the expiration of 2-08-020.

historic erosion rates so that the mitigation is unlikely to cover unanticipated impacts over the mitigation period (e.g., associated with higher actual erosion rates and associated problems than anticipated and applied in a mitigation context). While long-term erosion rates for mitigation calculations can be expected to provide a reasonable estimate of future erosion for the coming one or two decades, projections much farther into the future are far more uncertain; and the uncertainty concerning future erosion only increases with time. Dividing the mitigation evaluation periods into timeframes before and after 2031 better ensures that the mitigation calculations will cover the likely initial impacts from the armoring, and then allows a recalculation of the impacts based on more precise knowledge of future erosion rates and associated impacts accruing to the armoring when the initial evaluation period has elapsed. Efforts to mitigate for longer time periods would require the use of much higher erosion rates and would bring a higher amount of uncertainty into a situation where a single, long-term mitigation effort is not necessary to be effective. Therefore, **Special Condition 6** requires the Applicant to submit an application for a permit amendment in 2031, proposing mitigation to address the impacts of the armoring beyond this period.

Duration of Authorization

Section 30235 only authorizes shoreline protection devices when necessary to protect an existing structure in danger of erosion, and shoreline protective devices are no longer authorized by Section 30235 after the existing structures they protect are redeveloped, no longer present, or no longer require armoring.

As discussed herein, the proposed armoring is inconsistent with several Chapter 3 policies of the Coastal Act and, as detailed herein, will cause impermissible adverse impacts to coastal resources that are protected by the Coastal Act, including but not limited to reduced public access, substantial alteration and destruction of natural landforms, and adverse impacts on public views inconsistent with the requirements of Sections 30210-30212, 30230-30231, 30240(b), 30251 and 30253. Additionally, although design modifications can help reduce sand supply and beach access impacts, these impacts cannot be entirely eliminated or mitigated through such modifications.

In this circumstance, the only applicable basis for the Commission to approve proposed armoring such as this, that is otherwise inconsistent with the Coastal Act, is pursuant to Section 30235 because it is required to protect an existing structure in danger from erosion. Here, if there was no existing structure in danger from erosion and the armoring was not required to protect it, the proposed armoring would be denied. Thus, the only way the project satisfies the Section 30235 tests, as described above, is because it is based on the existence of a legally authorized existing structure that the armoring is required to protect. Absent the existing endangered structures, approval of the proposed project pursuant to Section 30235 would no longer be warranted. Accordingly, it is necessary to limit the length of a shoreline protective device's development authorization to ensure that the armoring being authorized under Section 30235 is only being authorized as long as it is required to protect these legally authorized existing structures. Once the existing structures that the armoring is required to protect are demolished or redeveloped, the armoring is no longer authorized by Section 30235 of the Coastal Act.

Another reason to limit the authorization of shoreline protective devices is to ensure that the

Commission can properly implement Coastal Act Section 30253 together with Section 30235. If a landowner is seeking new development along the shoreline, Section 30253 requires that such development be sited and designed such that it will not require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs. Sections 30235 and 30253 prohibit such armoring devices for new development and require new development to be sited and designed so that it does not require the construction of such armoring devices. These sections therefore should not be read to permit landowners to rely on such armoring devices when siting new structures on blufftops and/or along shorelines. If a shoreline protective device exists in front of a lot, but is no longer required to protect the existing structure it was authorized to protect, it is no longer consistent with the provisions of 30235, so it should not form the basis for approving new development that would not meet geologic and other 30235-related setback requirements. Otherwise, if a new structure is able to rely on shoreline armoring which is no longer required to protect an existing structure, then the new structure could be sited without a sufficient setback, perpetuating an unending reconstruction/redevelopment loop that prevents proper siting and design of new development, as required by Section 30253, and that frustrates Coastal Act objectives associated with protecting natural processes, including with respect to sand supply processes and beach formation. By limiting the length of development authorization of the armoring project to the existing structures it is required to protect, the Commission can more effectively apply Section 30253 when new development is proposed.

Therefore, the Commission authorizes the armoring in this case coincident with the existing structures it is authorized to protect, and requires removal of the armoring when the structures it was authorized to protect are no longer present, demolished or redeveloped through **Special Condition 6**. **Special Condition 6** also requires the Applicant (or its successors) to submit a complete permit amendment application to remove the armoring when the existing structures warranting armoring are redeveloped, are no longer present, or no longer require armoring.

Redevelopment of the Site

Special Condition 10 limits the way in which redevelopment of the site can use the approved armoring as a basis to satisfy applicable coastal hazard requirements. The intent of this condition is to limit further encroachment within public resources and to allow for potential removal of the approved armoring when it is no longer necessary to protect the development that required protection. The conditions are also to put the property owners on notice that redevelopment of the parcels should not rely on bluff or shoreline protective works for stability and such alternatives as removing the seaward portions of the structure, relocation inland, and/or reduction in size should be considered to avoid the need for bluff or shoreline protective devices in this hazardous area. Such options are all feasible for new development/redevelopment and would stop the perpetuation of development in non-conforming locations that would eventually lead to complete armoring of the bluffs and long-term, adverse impacts to the adjacent public beach and State tidelands. In addition, **Special Condition 10** recognizes that the shoreline protection proposed for retention is being approved under Section 30235 to protect *existing* structures in danger from erosion. Any future new development or redevelopment of the affected properties will need to re-evaluate then current conditions and must be sited safely and independently of any shoreline protection. In such a situation, the approved armoring is no longer required to protect the existing endangered structures and must be removed per Special Condition 6.

Special Condition 10 defines redevelopment to include additions and expansions, or any

demolition, renovation or replacement which would result in alteration of 50 percent or more of an existing structure.[22] The definition also defines redevelopment to include additions and expansions, or any demolition, renovation or replacement which would result, cumulatively, in alteration of 50 percent or more of an existing structure. Thus, the definition requires that if the Applicant submits an application to remodel 30% of an existing structure, then, for example, five years later seeks approval of an application to remodel an additional 30% of the structure, this would constitute redevelopment, triggering the requirement to ensure that the redeveloped structure is sited safely, independent of the approved armoring. In terms of major structural components, these too are meant to be understood on a cumulative basis within each component (i.e., they are not additive between different components). For example, if an applicant proposed to modify 25% of the exterior walls and 30% of the roof structure, even though together these add up to more than 50%, this would not be considered redevelopment because it relates to two different major structural components. However, if the applicant were to come back for a subsequent CDP to modify an additional 25% of the exterior walls or an additional 20% of the roof structure, the project would be considered redevelopment because it would result in a cumulative alteration to 50% for both of these two major structural component, either of which is sufficient to trigger "redevelopment" and the need for the entire structure to be safe from hazards without reliance on the approved armoring.

The Applicant has chosen to pursue shoreline armoring at this time over the options that would revise the blufftop development to decrease the risks over the remaining life of these structures. However, new or redevelopment of these parcels that would rely on the approved armoring for protection is not consistent with Section 30253. Special Conditions 6 and 10 acknowledge that future development/redevelopment on the site beyond repair and maintenance to the existing structures must be accompanied by removal of the approved armoring, and must meet the requirements of Section 30253 and not require bluff or shoreline protective devices that alter the natural landform of the bluffs.

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 past ensuring that new development/redevelopment is appropriately considered (as discussed above) is assuring long-term stability. This is particularly critical given the dynamic shoreline environment within which the proposed project is located. In this case, the approved armoring, as revised by **Special Condition 1**, can be expected to be subject to heavy wave action on a fairly regular basis. Rising sea level and its associated consequences will tend to exacerbate this situation, exposing the back bluff to wave attack more frequently. Along natural, unaltered bluffs, sea level rise is expected to increase the rate of erosion, which will allow beaches to migrate inland in rough parallel with the shoreline. Along armored bluffs, in contrast, sea level rise will lead to a more rapid loss of the beach as it is squeezed between the landward-migrating ocean and the fixed backshore, with the armoring itself subject to higher water levels and more frequent wave attack.

[22] The definition acknowledges the Commission's regulations which identify the 50% threshold as the point at which the replacement of 50% or more constitutes a new replacement structure (CCR Section 13252(b)).

In light of the significant stressors facing any shoreline protection device tasked with ensuring long-term stability, as required by Section 30253, a formal long-term monitoring and maintenance program is crucial. If the various project components, including the revetment, bluff fill, and soil nail wall are damaged in the future (e.g. due to erosion, bluff failure, wave action, storms, etc.), it could endanger blufftop development and adversely affect beaches by resulting in debris on the beaches and/or creating a hazard to the public using the beaches or the offshore area.

Therefore, in order to find the project consistent with Coastal Act Section 30253, the project must be maintained in its approved state. Further, in order to ensure that the Applicant and the Commission know when repairs or maintenance are required, the Applicant must regularly monitor the condition of the approved project, particularly after major storm events. Such monitoring will ensure that the Applicant and the Commission are aware of any damage to or weathering of the armoring and other project elements and can determine whether repairs or other actions are necessary to maintain the project in its approved state before such repairs or actions are undertaken. To assist in such an effort, monitoring plans 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 properly maintained to ensure its long-term structural stability, **Special Condition 8** requires monitoring and reporting plans. Such plans shall 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 9** requires the Applicant to maintain the project in its approved state, subject to the terms and conditions of this approval, including as identified by the special conditions. Such future monitoring and maintenance activities must be understood in relation to clear as-built plans. Therefore, **Special Conditions 1** and **7** of this approval require the submittal of revised final and as-built plans.

In terms of recognizing and assuming the hazard risks for shoreline development, the Commission's experience in evaluating proposed development 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 (see **Special Condition 11**).

To ensure that future property owners are properly informed regarding the terms and conditions of this approval, this approval is also conditioned for a deed restriction to be recorded against the private properties involved in the application (see **Special Condition 14**). This deed restriction will record the conditions of this permit as covenants, conditions and restrictions on the use and enjoyment of the property.

In this case and for this site and this fact set, the proposed project, as conditioned, can be found consistent with Coastal Act Section 30253 to the maximum extent feasible consistent with the requirements of Coastal Act section 30235.

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 proposed project is located seaward of the first through public road (Esplanade Ave.). Coastal Act Sections 30210 through 30214 and 30220 through 30224 specifically protect public access and recreation. 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.*
>
> ***30212.*** *Public access from the nearest public roadway to the shoreline and along the coast shall be provided in new development projects*
>
> ***30213.*** *Lower cost visitor and recreational facilities shall be protected, encouraged, and, where feasible, provided. Developments providing public recreational opportunities are preferred. …*
>
> ***30221.*** *Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and foreseeable future demand for public or commercial recreational activities that could be accommodated on the property is already adequately provided for in the area.*
>
> ***30223.*** *Upland areas necessary to support coastal recreational uses shall be reserved for such uses, where feasible.*

Coastal Act Section 30240(b) also protects parks and recreation areas, such as the adjacent beach area. Section 30240(b) states:

> ***30240(b).*** *Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

These include the beach (and access to and along it) and offshore waters adjacent to the project for public access and recreation purposes, particularly free and low cost access.

Analysis
As discussed in the previous findings, shoreline structures can have a variety of adverse impacts on coastal resources, including adverse effects on beaches and sand supply, which ultimately result in the reduction or loss of the beach with associated impacts to public recreational access. The proposed project's impacts to beach area and sand supply, and ultimately to public access and recreation, were identified in the preceding finding. These impacts are caused by the placement of the riprap revetment, reconstructed slope and soil-nail wall onto the beach and the upper bluff, and the resulting reductions in sand supply and beach area, as discussed above. The revised project, as modified by **Special Condition 1**, reduces (but does not eliminate) adverse impacts to beaches and shoreline sand supply by reducing the size of the existing revetment.

Beaches in the project vicinity serve both the dense residential neighborhoods of Pacifica as well as visitors, but are not universally accessible. In many areas, access to and along the beach is hampered by rock revetments and other armoring, and the area available for public enjoyment is much reduced, particularly at high tide. Lateral access on the public (City-owned) beach seaward of 380 Esplanade is especially restricted, and is likely to become more so over time with continued beach erosion, rising sea level, and the continued curtailment of natural bluff retreat by shoreline armoring. The high, steep and fragile bluffs that characterize the area also limit vertical access. Commission staff has visited this beach on numerous occasions and has observed that, despite the challenging terrain, the beach is well-used, including by dog walkers, surfers and fishermen. This area is therefore important to protect for current and future recreational use.

There is no vertical access to the beach from the 380 Esplanade property itself. The nearest formal beach access point is a stairway several blocks upcoast, at the Land's End apartments, located at 100 Esplanade. Other formal beach access points exist at Fort Funston (about 5 miles to the north) and near the Pacifica Pier (about 1.5 miles to the south). There are several informal vertical accessways closer to the site along the 400 and 500 blocks of Esplanade Avenue. The undeveloped, City-owned blufftop property located south of 380 Esplanade (at 400 Esplanade) has the potential to become a valuable public access point, with spectacular views of the coast, but this open space is currently underutilized. This is due in part to the presence of a tall chain-link fence running along the eastern edge of the open space, restricting access from Esplanade Avenue, and also due to a lack of amenities, such as benches, trails, signage and overlook points, that would encourage safe public use of the area while protecting (and allowing the restoration of) sensitive blufftop habitat. As noted previously, the 400 Esplanade parcel was acquired by the City, with assistance from the State Coastal Conservancy, for the express purpose of improving public shoreline access.

Project Impacts on Public Shoreline Access and Recreation
As discussed above, the project's impacts to public beach area and shoreline sand supply result in the loss of public beach area and the degradation of public shoreline access and recreation to and along the beach.. Therefore, these impacts to public access and recreational opportunities must be mitigated. As discussed earlier, the sand retention impacts are mitigated through a sand

supply in lieu fee (Special Condition 3). Mitigation for beach loss impacts are discussed further here.

The most appropriate beach loss mitigation for the subject development would be to compensate for the public beach area that would be lost (due to encroachment and the effects of passive erosion) by providing for an identical area of new public beach in close proximity to the eliminated beach area. Under the proposed project, this lost area would amount to 11,754 square feet. As conditioned, the revised project would result in the loss of 7,944 square feet. The loss of this sandy beach in an urban area such as Pacifica represents an incremental but significant impact to public access and recreation, including a loss of the socio-economic value of this recreational opportunity. However, most of the beach areas in the project vicinity, and Pacifica as a whole, are already in public ownership; private beach area that is not available to the public and that could be made public is simply not available. And, in contrast to the 360 Esplanade apartment site immediately upcoast where a shoreline structure was recently authorized (CDP 2-08-020),[23] there is no "private" beach area available at this location for dedication to public use because the beach at the project site is already City property.

In the absence of options for directly replacing areas of beach that would be lost to public use due to the effects of shoreline armoring, the Commission has often found that imposing an in-lieu fee to purchase or fund replacement of public recreational property and/or other improvements that provide public access and recreational opportunities along the shoreline is an appropriate way to mitigate a project's impacts on sandy beach area. The Commission has previously examined several methods of valuing beach areas in order to determine appropriate in-lieu mitigation fees, including evaluating the recreational value of the beach as a component of the larger economy, as well as assessing the real estate value of the beach land that will be taken from public use.

In terms of the beach recreational value, the Commission has recognized that in addition to the more qualitative social benefits of beaches (recreational, aesthetic, habitat values, etc.), beaches provide significant direct and indirect revenues to local economies, the state, and the nation. Most people recognize that the ocean and the coastline of California contribute greatly to the California economy through activities such as tourism, fishing, recreation, and other commercial activities. There is also value in just spending a day at the beach and having wildlife and clean water at that beach, the aesthetics of an ocean view, and being able to walk along a stretch of beach. Over the past few decades, economists have developed tools and methods to value many of these commercial and "non-market" environmental resources, to quantify their values, and to include these values in cost-benefit equations. The results of a number of studies to quantify the economic value of beaches to the state have been published in recent years.[24]

[23] The applicant in that case proposed a 14,171 square foot public access dedication at 360 Esplanade and a $289,014.96 payment to mitigate the impacts of the development which included a 475-foot long revetment.

[24] Pendleton, L., 2001. Managing Beach Amenities to Reduce Exposure to Coastal Hazards: Storm Water Pollution. *Coastal Management* 29: 239-252; Lipton, D. January/February 2001. How Much is This Beach Worth? Calculating the Value of the Environment. NOAA Coastal Services Magazine; Houston, J.R. 2002. The Economic Value of Beaches – A 2002 Update. Shore & Beach 70-1:9-12; King, P. 1999. The Fiscal Impact of Beaches in California. San Francisco State University: Public Research Institute; Chapman, D. & W. M. Hanemann. 2001. Environmental Damages in Court: The American Trader Case. The Law and Economics of the Environment 319-367; Leeworthy, Vernon R. & Peter C. Wiley. March 1993. Recreational use value for three southern California beaches. NOAA Strategic Environmental Assessments Division, Rockville, MD. Office of Ocean Resources

There is no doubt that recreational beach resources in Pacifica generally have a significant market and non-market social value. However, in the absence of beach valuation studies specific to the Pacifica shoreline, use of a real estate evaluation model, tied to the specific land values in the vicinity of the project, is the most feasible method for determining an appropriate in-lieu fee. Overall, though, such a fee would be considered only partial mitigation for the impacts of the proposed project, since no measure can mitigate for the loss of the existing recreational beach currently fronting 380 Esplanade. Further still, application of economic valuation methods for the long-term recreational value of the beach to the public suggests that such a fee would be conservative (and therefore an underestimate). *Ocean Harbor House Homeowners Assoc. v. Cal. Coastal Com.* (2008) 163 Cal.App.4th 215.

Since physical impediments are adversely impacting public access and creating a private benefit for the property owners, mitigation conditions are necessary in order for the development to be found consistent with the public access and recreation policies of the Coastal Act. As mentioned previously, the most appropriate mitigation for the subject development would be the creation of additional public beach area in close proximity to the impacted beach area. However, in the present case, and in contrast to the Aimco permit (CDP 2-08-020), in which the privately-owned beach area fronting 360 Esplanade was dedicated for public access, there is no longer any private beach area available for purchase or dedication, so that direct form of mitigation is unavailable. As a proxy, land that would be capable of being utilized for public access and recreation in the vicinity can be used to approximate an appropriate mitigation.

To this end, Commission staff reviewed the sales of a number of coastal properties in order to estimate the value of the beach area lost as a result of the shoreline protection project. In order to use similarly situated properties with the shoreline and steep coastal bluffs characteristic of the northern area of Pacifica, this evaluation focused on properties within the vicinity of Esplanade Avenue for which sales information was available in the period between April 1996 and November 2013. The nineteen properties used in this analysis are either located directly on the coastline or west (and seaward) of Palmetto Ave. and Highway 1 and located within the approximately 1.5 acre area bounded by 700 Palmetto (009-074-030) to the south of the project site and 4000 Palmetto (009-401-030) to the north (see **Exhibit 15**).[25] Six of these properties have existing development, including the 380 Esplanade apartment complex; for these properties the value was adjusted to discount the improvements. The remaining thirteen properties are undeveloped: one is privately owned (4000 Palmetto), and the others are owned by the City of Pacifica. These properties taken together can provide an estimate of the market value of property (See full range of estimated property values in **Exhibit 14**).The analysis seeks to arrive at the market value[26] using a sales comparison approach. Specifically, this review was conducted by looking at the sales of property in this specific area of Pacifica in the period between April 1996

& Conservation; Lew, Daniel. 2002. Valuing Recreation, Time, and Water Quality Improvements Using Non-Market Valuation: An Application to San Diego Beaches. Doctoral Dissertation, University of California, Davis.

[25] The properties at 310 - 320 and 330 - 350 Esplanade have not been included in this evaluation. Currently, the apartment building at 310 is occupied, but the buildings at 320 and 330 have been abandoned and red-tagged by the City. Previously, balconies had to be removed and the buildings were evacuated following severe coastal bluff failures in 2010. Therefore, the values of these properties could not be considered viable for the purposes of this valuation method.

[26] Market value is defined as the most probable price which a property should bring in the competitive and open market under all conditions requisite to a fair sale, the buyer and seller each acting prudently and knowledgeably, and assuming the price is not affected by undue stimulus as defined by the economic definition agreed upon by the Federal financial institutions in the United States of America, as set forth in the Uniform Standards of Professional Appraisal Practice 2002 (page 219).

and November 2013, and then adjusting this amount for time. The adjustment in sales price was determined by utilizing the median sales price to account for the market changes between April 1996 and November 2013.[27] The calculated value reflects the land value and not the improvement value or County Assessor value.

Commission staff evaluated the land value and acreage for the properties[28] that were sold between April 1996 and November 2013 in order to determine an average adjusted cost per square foot. The range of values starts at the low end for the 5,460 square foot condemned property at 568 Esplanade with an adjusted value of $137,055.78. At the high end, is the 9.8 acre property at 100 Esplanade, with an adjusted value of $21,129,442.61. The sum of the adjusted values for all nineteen properties was then divided by the sum of square footage of these properties to arrive at the average adjusted price per square foot. The average value of the adjusted price per square-foot for these properties is $33.18 per square-foot. Applying this value to the 7,944 square feet of sandy beach lost during the evaluation period (1997-2031) results in a mitigation fee of $263,581.92 ($33.18 x 7,944). The Applicant has proposed that the Commission only use one parcel to determine appropriate land value for calculating the in-lieu fee. The Applicant states that there is an unimproved parcel of similar size adjacent to the project site. The Applicant proposes to use only 400 Esplanade as a comparable property which has a land value of $25.84 per square foot. The Commission finds that the in-lieu fee for replacement of lost public shoreline recreational access should not be calculated by using only one parcel, even if located adjacent to the project site. The Commission finds that the use of one lot is too narrow a field from which to derive land value. The use of multiple lots to derive land value is consistent with real estate valuation practices and with the Commission's past practices in the vicinity, including the Commission's action on the Land's End armoring project upcoast last year, and more accurately reflects market value than does the use of a single property. Further, the methodology used by the Commission includes 400 Esplanade as one of the similarly situated parcels reviewed.

Thus, the Commission relies on a real estate value estimate, based on the adjusted price per square-foot of land in the vicinity of the project, for the amount of beach area that would have been available for public use but for the shoreline armoring for the specified time period. The in-lieu fee will be used to purchase other shoreline recreational property and/or pay for other improvements to public access and recreational opportunities along the shoreline in the vicinity of the project. The Commission's analysis is based on evidence that the public will lose 7,944 square feet of public recreational beach as a result of the shoreline protective device. The in-lieu fee of $263,581 calculated here provides a measure of the value of the beach area that will be lost as a result of the shoreline protection development, and thus unavailable for public use, over the initial mitigation evaluation period (until 2031). This methodology ensures that the fee is roughly proportional to the square footage of impacts attributable to the proposed shoreline

[27] The median sales price information for Pacifica came from Zillow.com at http://www.quandl.com/ZILLOW/MCITY MEDIANSOLDPRICE ALLHOMES PACIFICACA-Zillow-Metrics-Cities-Median-Sale-Price-Pacifica-CA, and the earliest period for which Zillow provides this information is April 1996. The median sales price for each month from April 1996 to October 2013 was compared to the median sales price for November 30, 2013; using this percentage, the sale price of each property was adjusted to its November 2013 value. If the property includes an improvement, the San Mateo County Tax Collector's 2013 assignment of the proportional value of the land versus the improvement was used to arrive at a land-only unimproved value.

[28] See EXHIBIT 14.

armoring for the length of its authorization. As discussed previously, sand-supply and beach area impacts of the project have been quantified only for the permit evaluation period, ending in 2031, and will need to be re-evaluated, should the life of the project extend past 2031. Thus, the Commission finds that the adoption of an in-lieu fee as partial mitigation is both reasonably related and roughly proportional to the anticipated impact of the shoreline protection development on the public beach area because the amount of the calculated fee is based on the square footage of beach lost during the initial period of the project's life.

Further, since the current project applicant is a public entity (City of Pacifica) that currently engages in shoreline management, encompassing multiple public beaches and coastal properties, and the City owns a parcel at 400 Esplanade that was purchased for the express purpose of improving public access, in this case, the Commission finds it appropriate to give the Applicant the option of either paying the in-lieu fee or submitting a Public Access Management Plan for 400 Esplanade. If the Applicant chooses to develop and implement a Public Access Management Plan, **Special Condition 2** requires the Applicant to develop and implement public access improvements to the City-owned 400 Esplanade parcel. These improvements will, at a minimum, include the installation of lateral access along the bluff, two overlook areas, interpretive/educational signage, benches and other amenities, elimination of fencing, and landscaping using native shoreline plants.[29] The Public Access Plan mitigation option is based on projected project impacts through the end of the evaluation period for the current CDP in 2031. At the end of this period, current conditions in the project area (e.g., erosion rates, beach conditions, etc.) will be reassessed and the need for additional mitigation will be evaluated.

Thus, **Special Condition 2** requires the Applicant either to deposit an in-lieu mitigation fee of $263,581 into an interest-bearing account to be established and managed by the State Coastal Conservancy, or another appropriate entity, or to develop and implement a Public Access Management Plan for 400 Esplanade. If the Applicant chooses to pay the in-lieu fee, the funds in the account may only be used for public shoreline recreational access acquisitions and/or other improvements that provide public access and recreational opportunities along the shoreline within Pacifica's city limits (including potentially acquiring beachfront property, providing blufftop access trails both up and down coast of the site, public access improvements, etc.).The mitigation is based on projected project impacts through the end of the evaluation period for the current CDP in 2031, as described in **Special Condition 6**. At the end of this period, current conditions in the project area (e.g., erosion rates, beach conditions, etc.) will be reassessed, and the need for additional mitigation will be evaluated.

In conclusion, the proposed project would have significant impacts on public shoreline access and recreation. However, as modified and conditioned, the revised project would mitigate those impacts to the maximum extent feasible, consistent with the requirements of Section 30235, by the Applicant either paying in-lieu fees to mitigate the loss of beach area, or by developing and implementing a Public Access Management Plan for 400 Esplanade Avenue. Finally, as described in the preceding finding, these mitigation measures are sufficient to cover project impacts for the initial mitigation evaluation period through October 7, 2031, and this time frame

[29] See Exhibit 16 for City Engineer's Estimate of Cost of Improvements at 400 Esplanade.

ensures that the public access impacts can be appropriately assessed at the end of initial mitigation evaluation period. (see **Special Condition 6**).

Construction Impacts

With respect to construction impacts, this project required the movement of large equipment, workers, materials, and supplies on the adjacent undeveloped public access property, as well as in and around Esplanade Avenue and the beach area, resulting in the temporary loss of recreational beach and other public access use areas near the construction zone. During the 2010-11 emergency work (emergency CDP 2-10-034-G), these impacts were minimized through the special conditions of the emergency permits, which included construction parameters that limited the area of construction and for work to take place in a time and manner to minimize any potential damages to resources, including intertidal species; to minimize beach disturbance and limit construction to lowest possible tides; to prohibit construction activities that result in discharge of materials, polluted runoff, or wastes to the beach and marine environment; to keep beach area, and areas used for construction staging and access, free of debris and trash; to limit the times when work can take place (to avoid both weekends and peak summer use months when recreational use is highest); to prohibit construction equipment or materials from being stored on the beach; to immediately stop work in the event of marine mammals being located on or seaward of the project site; to display copies of the signed emergency permits; to clearly fence off the minimum construction area necessary; to keep equipment out of coastal waters and require off-beach equipment and material storage during non-construction times; to minimize impacts to public access and clearly delineate and avoid to the maximum extent feasible public use areas; and to restore all affected public access areas at the conclusion of construction, as well as being responsible for removing or re-depositing any rock or other material dislodged after completion of the temporary construction authorized by emergency permit as soon as possible after such displacement occurs.

Thus, prior to commencement of additional construction activities related to the modifying the existing revetment and armoring (**Special Condition 1**) the Applicant is required to submit for review and approval a Construction Plan with BMPs similar to those described above, that would serve to protect public access during future construction (**Special Condition 4**). These construction mitigations can help minimize construction impacts on public recreational access, but cannot eliminate them.

Conclusion

The project has and would continue to cause significant adverse impacts to public shoreline access and recreation, including through impacts to local sand supply and the loss of a significant area of sandy beach that is located on public property. However, project conditions avoid and minimize these impacts to the maximum extent feasible consistent with the requirements of Section 30235 of the Coastal Act, including by requiring the removal of unnecessary riprap added in 2010-11, and by requiring the implementation of mitigation measures designed to improve public access and recreational opportunities adjacent to the project site. As conditioned, the project is consistent with the Coastal Act access and recreation policies cited above to the maximum extent feasible consistent with the requirements of Section 30235 of the Coastal Act.

F. PUBLIC VIEWS

Applicable Policies
Coastal Act Section 30251 states:

> ***Section 30251: Scenic and Visual Qualities.*** *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.*

Coastal Act Section 30240(b), previously cited, also protects the aesthetics of beach recreation areas such as those located directly adjacent to and at the project site.

> ***Section 30240(b):*** *Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

Analysis
As discussed in the Public Access and Recreation finding, the project site is located along an important beach recreation area in Pacifica and is a significant coastal access location for residents and visitors alike. Although much of the Pacifica shoreline has already been armored with rip rap revetments and (in places) seawalls, the remaining natural areas, including the bluffs, beaches and coastal ocean, represent a significant visual resource that must be protected. Construction of the existing project, including the 1997-98 components (reconstructed slope, extended storm drain pipe, rip rap revetment) and 2011 emergency components (extended revetment, soil nail wall), altered coastal landforms and replaced natural features with artificial shoreline armoring, degrading the scenic qualities of an area that is visible from public blufftop and beach recreation areas, public tidelands, and the ocean.

Reconstructed Slope
Following the December 1996 bluff failure, the eroded area of bluff was partially reconstructed using rock and engineered soil fill, which was then revegetated to improve its stability and visual appearance. While this reconstructed slope is readily distinguishable from the natural bluff (see **Exhibit 9**), the vegetation cover is similar to that of the surrounding bluffs, and overall its visual appearance is reasonably compatible with surrounding natural landforms. However, the soil fill and vegetation cover has degraded along the lower portion of the slope and the eroded southern flank (**Exhibit 9**). In addition, an apron of black, tattered geogrid fabric, emerging from the bottom of the reconstructed slope, is clearly visible. This fabric is incompatible with the visual

character of both the vegetated reconstructed slope and the surrounding natural bluff, and draws additional attention to the alterations that have been made to the natural shoreline. In order to minimize the visual impacts associated with the reconstructed slope, and to maximize its compatibility with the character of the surrounding area, **Special Condition 1** requires that degraded portions of the fill slope be re-landscaped and that the visible black geogrid fabric be removed, or, if it is integral to the structure of the reconstructed slope, be covered or camouflaged to match the color and texture of the upper reconstructed slope and natural bluff.

Storm Drain Pipe

The existing 48-inch diameter storm drain outfall pipe at the project site includes an approximately 40-foot long, above-ground section that extends down much of the bluff face. Along with its large diameter and black coloring, the sheer length of this pipe makes it the single-most visually-obtrusive component of the development in the bluff face area. The drain pipe is no longer used as the outfall for the Edgemar neighborhood, with stormwater flow having recently been diverted to a new outfall on the 500 block of Esplanade Avenue. The highly visible, above-ground portion of the drain pipe is slated to be removed (cut at the bluff face, sealed, and camouflaged) as part of the stormwater system renovations included in CDP waiver 2-11-030-W, with an estimated project completion date of June 2014, greatly improving views of the site.[30] To ensure completion of the pipe removal, **Special Condition 1** requires that the above-ground portion of the drain pipe be removed, sealed and camouflaged, in order to enhance the visual quality of the shoreline and minimize the impacts of the proposed project on scenic coastal resources.

Soil Nail Wall

The upper bluff soil nail wall, installed under emergency authorization in 2011, alters the natural appearance of the bluff and shoreline at the site (**Exhibits 6, 7, 9, 10**). However, as described above, the wall has been deemed necessary to stabilize the flank of the reconstructed slope and portion of natural bluff that was eroded during the winter of 2010, and to protect existing structures at the site. As constructed, the existing wall is textured to mimic the natural surface of the bluff face, and is similar to the soil nail walls installed upcoast at 360 Esplanade and approved by the Commission in CDP 2-08-020. However, the color of the existing wall is significantly different than the surrounding natural bluff. Therefore, **Special Condition 1** requires the wall to be treated to match the surrounding natural bluffs as much as possible.

Rip Rap Revetment

The existing revetment, consisting of jagged 1 to 10 ton rip rap boulders, extends approximately 174 feet along the shore and, in places, up to 70 feet seaward of the bluff. As discussed previously, the revetment occupies a large portion of the narrow beach at this site, and at certain times of year and/or during portions of the tidal cycle, occupies the entire beach. From a visual standpoint, the scenic qualities of the natural sandy beach are significantly degraded by the revetment. The revetment also obscures a significant portion of the natural bluff face, and contributes an uninviting, unnatural and visually obtrusive element to the shoreline at this site. The revetment can be seen from the north and south at the top of the bluff, and from the beach, and clearly detracts from the aesthetic quality of the coast at this site. The fact that much of the surrounding shoreline is already armored with riprap does not negate the direct and cumulative

[30] Phone conversation between Commission coastal planner Joe Street and City of Pacifica senior engineer Van Ocampo, January 16, 2014.

impacts of the proposed project. In addition, potential future degradation of the revetment, soil nail wall, and reconstructed slope could result in continued adverse visual impacts if the beach were to become littered with dislodged rock debris, shotcrete, metal, textile fabric and other construction materials. Therefore, the Commission imposes **Special Condition 1**, which requires that the footprint of the existing revetment be reduced by approximately 3,138 square feet, reducing its cross-shore width by a variable amount and its alongshore length by approximately 55 feet (**Exhibit 5**); **Special Condition 8,** which requires the Applicant to prepare monitoring and reporting plans and to evaluate the condition and performance of the proposed shoreline armoring; and **Special Condition 9**, which requires the Applicant to maintain the project in its approved state, subject to the terms and conditions identified by the special conditions. Such future monitoring and maintenance activities must be understood in relation to clear as-built plans. Therefore, **Special Conditions 1** and **7** of this approval require the submittal of revised final and as-built plans.

However, even as conditioned, the Commission finds that the visual impacts of the reconstructed slope, soil nail seawall and revetment are significant and will continue to degrade a public access and recreation area inconsistent with Sections 30240(b) and 30251 of the Coastal Act. However, Section 30235 of the Coastal Act requires the Commission to approve shoreline protective devices even where coastal resources will be adversely impacted if the requirements of Section 30235 are met. As discussed above, the project, as conditioned, meets the criteria of Section 30235. Therefore, the Commission finds that the proposed armoring, as conditioned, is consistent with Sections 30240(b) and 30251 of the Coastal Act, to the maximum extent feasible consistent with the requirements of Section 30235 of the Coastal Act .

G. MARINE RESOURCES & WATER QUALITY

Applicable Policies

The Coastal Act protects the marine resources and habitat offshore of this site. Coastal Act Sections 30230 and 30231 provide:

> ***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.*

Construction Impacts

In accordance with emergency permit conditions, construction took place on the beach at low tides to ensure that equipment and construction activities did not enter the ocean (emergency CDP 2-10-034-G). In addition, prior to commencement of additional construction associated with carrying out **Special Condition 1**, the Applicant is required to submit for review and approval a Construction Plan with BMPs to avoid and minimize impacts to water quality and marine resources (see **Special Condition 4**).

Ongoing Project Impacts

As discussed above, the existing development has fundamentally altered the shoreline to the benefit of the protected structures and the detriment of sandy beach areas. Coastal armoring, including seawalls and rock revetments, has been shown to reduce intertidal beach widths through the processes of placement loss, passive erosion, and increased erosion directly seaward of structures.[31] These changes to the physical environment may translate directly into adverse impacts to shoreline ecosystems. For example, exposed sandy beaches, even relatively narrow bluff-backed beaches, can provide important sources of prey for shorebirds during migration and wintering.[32] Loss of sandy beach due to encroachment and/or increased erosion related to shoreline armoring will reduce prey abundances, foraging opportunities, and habitat values for shorebirds, and may ultimately reduce the diversity and abundance of the avian fauna at a site.[33] Similarly, the loss of dry beach area resulting from the proposed project has limited the accumulation of beach wrack habitat, which refers to the piles of seaweed, terrestrial plants and animal remains that are deposited at or above the tideline, particularly after storms. Beach wrack is a valuable food source for a number of animals, and supports a major proportion of intertidal biodiversity in sandy beach environments.

In this case, the reduced project alternative described above and required in **Special Condition 1** would result in a smaller (and narrower) encroachment footprint and reduced loss of beach over time than the existing project, but would not eliminate project impacts to sandy beach habitat. Waves would continue to surmount the toe of the revetment during portions of the tidal cycle, meaning that the area of dry beach, and the accumulation of beach wrack, natural ocean debris, and habitats supporting a number of shoreline species, will continue to be limited. Therefore, the Commission finds that the proposed project is inconsistent with Sections 30230 and 30231, since the shoreline armoring will continue to disrupt the identified shoreline habitats and fails to maintain or enhance marine resources. However, Section 30235 requires the Commission to approve shoreline protective devices even where coastal resources will be adversely impacted if the requirements of Section 30235 are met. As discussed above, the project, as conditioned, meets the criteria of Section 30235. Therefore, the Commission finds the proposed project consistent with Sections 30230 and 30231 of the Coastal Act, to the maximum extent feasible consistent with the requirements of Section 30235 of the Coastal Act .

[31] For example, see Griggs 1998, 2005; Hall and Pilkey 1991, Tait and Griggs 1990, Dugan et al. 2008, Dugan and Hubbard 2011.

[32] Hubbard and Dugan 2003.

[33] Dugan and Hubbard 2011, Dugan et al. 2008.

H. OTHER AGENCY APPROVALS

California State Lands Commission
The California State Lands Commission (CSLC) has not been contacted by the Applicant for a jurisdictional determination as required. The permit is conditioned to require written evidence either of SLC approval of the project or evidence that such approval is not required (see **Special Condition 5)**.

Army Corps of Engineers
The U.S. Army Corps of Engineers (ACOE) may have regulatory authority over the proposed project under Section 10 of the Rivers and Harbors Act of 1899 (*33 U.S.C. 1344*) and Section 404 of the Clean Water Act. Section 10 of the Rivers and Harbors Act regulates the diking, filling and placement of structures in navigable waterways. Section 404 of the Clean Water Act regulates fill or discharge of materials into waters and ocean waters. Portions of the project may be located within the jurisdiction of the Army Corps of Engineers, including the use of equipment and machinery on the beach up to the high tide line. Accordingly, this approval is conditioned to ensure that the project (as conditioned and approved by this CDP) has received all necessary authorizations (or evidence that none are necessary) from the U.S. Army Corps of Engineers (see **Special Condition 5**).

I. ALLEGED VIOLATION

Although development has taken place prior to Commission review of this permit application, consideration of the application by the Commission has been based solely upon the Chapter 3 policies of the Coastal Act. Commission review and action on this permit does not constitute a waiver of any legal action with regard to the alleged violations, nor does it constitute an implication of the legality of any development undertaken on the subject site without a coastal permit, or that all aspects of the violation have been fully resolved.

J. REIMBURSEMENT IN CASE OF CHALLENGE

Coastal Act Section 30620(c)(1) authorizes the Commission to require applicants to reimburse the Commission for expenses incurred in processing CDP applications.[34] Thus, the Commission is authorized to require reimbursement for expenses incurred in defending its action on the pending CDP application in the event that the Commission's action is challenged by a party other than the Applicant. Therefore, consistent with Section 30620(c), the Commission imposes **Special Condition 12** requiring reimbursement for any costs and attorneys fees that the Commission incurs in connection with the defense of any action brought by a party other than the Applicant challenging the approval or issuance of this permit.

[34] See also California Code of Regulations Title 14 Section 13055(g).

K. 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 that the activity may have on the environment.

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 in this staff report has discussed the relevant coastal resource issues with the proposal, and the permit conditions identify appropriate mitigations to avoid and/or lessen any potential for adverse impacts to said resources consistent with the requirements of Section 30235 of the Coastal Act. The Commission incorporates these findings as if set forth here in full. Further, all public comments received to date have been addressed in the findings which are incorporated herein in their entirety by reference.

As such, there are no additional feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse environmental effects which approval of the proposed project, as conditioned, would have on the environment within the meaning of CEQA. Thus, if so conditioned, the proposed 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).

APPENDIX A: HISTORY OF ARMORING AT THE SITE

The history of armoring at the site is summarized as follows.

As described in further detail in the Project Description, the proposed project involves authorization for work, dating back to 1997, which included installation of a 170-foot riprap revetment and reconstruction and fill of a failed bluff slope, as well as authorization for work performed under an emergency permit issued in 2010, including repair and extension of the original revetment and the installation of a soil nail wall along a section of the middle and upper bluff.

The apartment building at 380 Esplanade was originally constructed in the 1960s, prior to the passage of Proposition 20 (1972) and the Coastal Act (1976). The building is visible in aerial photographs of the area as early as 1972 (**Exhibit 9**). The storm drain pre-dates the apartment complex, having been in its present location since at least 1955.[35] The original outfall consisted of a 51-inch diameter concrete pipe protruding from the bluff,[36] and was thus markedly different from the present outfall, which consists of an elongated HPDE pipe which extends most of the way down the bluff and is supported by an engineered fill slope and riprap revetment. It is apparent from aerial photographs taken as late as 1993 (**Exhibit 9**) that neither the apartment building nor the outfall pipe were previously protected by a revetment or other form of armoring.

The history of the original shoreline protection development at the site has been a matter of some confusion, with the dates of one or more late-1990s bluff failures, and of subsequent slope reconstruction and revetment installation, being described variously as 1996, 1997, 1998 or 1999 in documents submitted by the Applicant.[37] However, firm evidence for the origin of the revetment, fill slope and extended drain pipe can be found in project plans for the upcoast 380 Esplanade revetment (emergency CDP 1-98-109-G and City of Pacifica CDP 156-99), dated December 4, 1998 (**Exhibit 11**), which clearly show a separate, pre-existing revetment and "reinforced fill slope" located in front of the storm drain outfall at the south end of the property.[38] A file note, written by City staff and included in the staff report for the local permit indicates that the initial bluff collapse had occurred "recently" prior to January 1997 and that measures, including the "use of riprap, which did not previously exist", were needed to prevent further damage to the storm drain and nearby private property.[39] Site photographs documenting the installation of the new drain pipe beneath the 380 Esplanade parking lot indicate that the outfall repairs were proceeding in January and February 1997.[40] City engineering staff also has stated that the shoreline protection development was completed between January and March

[35] Street Improvements, Pacific Manor No. 11, Wilsey & Ham, Civil Engineers, Jan. 1955; Freeway Construction Plan drawings, R.A. Hayler, 3/4/1963; Geosoils Report, 4/2/2012.

[36] Freeway Construction Plan drawings, 3/4/1963; CDP #A-77-241; Geosoils Report, 7/31/12, Figure 1; "Construction Sequence, City of Pacifica Storm Drain Repairs" diagram, Cotton, Shires & Associates.

[37] For example: GSI Report 9/8/2010; 10/27/2010 letter from E. Claycomb; GSI Report 4/2/12; GSI Report 7/31/12; S. Finnegan letter, 12/19/12 letter from S. Finnegan; GSI Report 2/7/2013.

[38] Local CDP 156-99 authorized the construction of a rock revetment in front of unprotected bluff at 380 Esplanade Avenue and partially overlapped the pre-existing storm drain outfall revetment, but did not otherwise include or authorize the outfall revetment.

[39] 1/7/97 Note by Ken Solomon, in file of City of Pacifica CDP #156-99.

[40] 1997 Storm Drain Repair photographs, 1/24/97 and 2/21/97, provided by Sean Finnegan, Aimco.

1997.[41]

In December 1996, the original storm drain pipe failed during a large winter storm, washing out a portion of the bluff. In early 1997, the City undertook the outfall repair, bluff fill and revetment project that constitutes the "original development" for the purposes of the this permit application as follows: (1) rock was placed in the failed area of the bluff, partially cemented, and covered with geogrid fabric; (2) a replacement 48-inch diameter HDPE storm-drain pipe, extending far down the bluff, was placed on top of the rock fill; (3) fine-sediment fill was placed over and around the rock fill and much of the pipe, and was revegetated; and (4) a riprap revetment, contiguous and integrated with the rock fill, was installed in front of the reconstructed slope. At that point, the revetment extended from approximately 73 feet south of the outfall pipe to approximately 95 feet north of the outfall pipe in front of the as-yet unprotected bluff fronting the 380 Esplanade apartment building (**Exhibits 4, 11, 12**). No CDP was issued by the Coastal Commission authorizing the original development, and the City of Pacifica does not have a record of any local permitting process that may have occurred. However, file documents indicate that Commission staff may have erroneously informed City staff that no CDP was necessary, although the Commission has no record of such statements.[42]

Severe erosion along the Pacifica coast during the following winter (1997-98) triggered the emergency installation of shoreline protection at a number of sites, including the bluff in front of the apartments at 360 and 380 Esplanade, immediately north of the project site.[43] The emergency revetment installed in front of 380 Esplanade was built to overlap the northern end of the pre-existing, City-owned outfall revetment (**Exhibit 11**).[44] Though built and permitted separately, at the conclusion of the 1998-1999 emergency work, the combined projects in effect comprised a single revetment extending from approximately 73 feet south of the storm-drain outfall pipe to the northern boundary of the 360 Esplanade parcel. This configuration can be seen in the 2002 aerial photograph of the site, and remained essentially unchanged through 2008 (**Exhibit 9**).

By 2009, the original revetment in front of the storm drain outfall had begun to show signs of deterioration (**Exhibit 9**). Between October 2008 and October 2009, an approximately 25-foot by 25-foot area of rock was eroded from the revetment immediately south of the drain pipe, exposing the underlying bluff. Rock was also lost from the southern tip of the revetment. Greater damage occurred during storms and high-wave conditions of March and April 2010.[45] Most of the original revetment south of the drain pipe was washed out, along with a portion of the reconstructed bluff and a larger section of the natural bluff (**Exhibits 8, 9**). The 2010 erosion event left behind a wide cavity or "embayment" (approximately 120 feet across) in the bluff immediately south of the drain pipe and 380 Esplanade parking lot. Along this failure scarp, the bluff top retreated up to 45 feet inland (largely into the undeveloped 390 Esplanade property), and the southwestern corner of the parking lot was left within a few feet of the bluff edge. The

[41] 1/22/14 letter from V. Ocampo.

[42] 1/7/97 Note by the City's Ken Solomon to thefile of City of Pacifica CDP 156-99.

[43] ECDPs 1-98-083-G & 1-98-106-G (DeDominico); 1-98-109-G (Behling); 1-99-005-G (DeDominico); later formalized under CDP 2-08-020.

[44] Local CDP 156-99; ECDP 1-98-109-G; CDP 02-08-020.

[45] GSI report 9/8/2010; GSI report 4/2/2012.

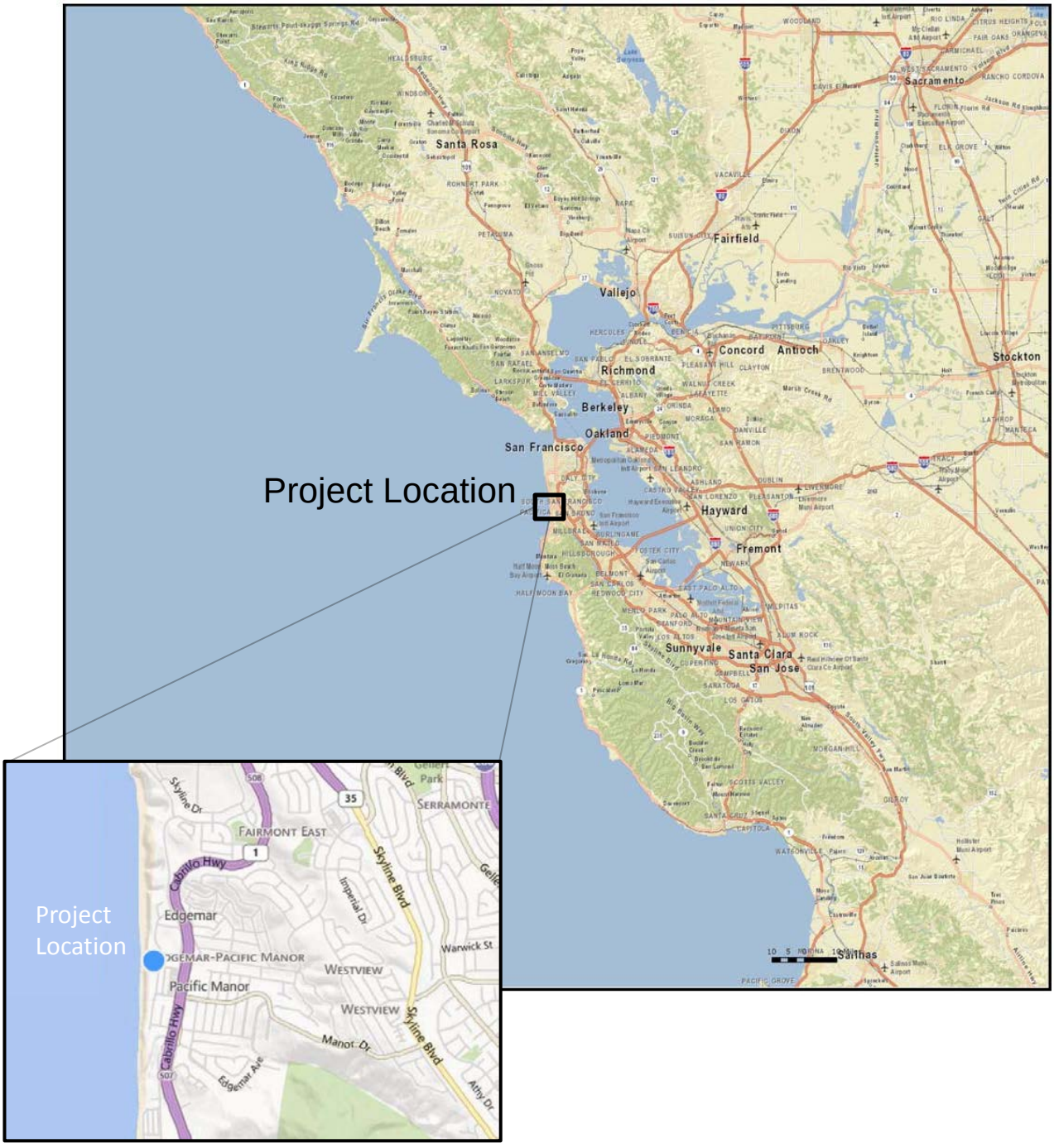
revetment rocks and fill beneath the storm drain outfall pipe itself were partially eroded, exposing the geogrid fabric, undermining the pipe's concrete support structure and leaving the lower section of the pipe unsupported and protruding in mid-air (**Exhibit 10**). Further erosion appears to have occurred between site inspections in April and August 2010.[46]

In October 2010, the City of Pacifica applied for an emergency CDP to repair and expand the shoreline protection structures at the site. Emergency CDP 2-10-034-G was issued on November 5, 2010. The emergency CDP authorized (1) the temporary installation of 40 new ten-ton stones and placement of smaller rock retrieved from the beach immediately fronting the storm drain in order to stabilize the storm drain pipe; (2) placement of slurry/asphalt in cracks in the parking lot at the top of the bluff to prevent further subsidence; (3) installation of an approximately 30-foot wide, 40-foot high soil nail wall over the mid- and upper bluff to provide lateral support to the storm drain. The emergency CDP specifically authorized only limited repair of the revetment as necessary to stabilize the storm drain. Project plans submitted with the emergency CDP application portrayed a repaired revetment with a footprint largely conforming to that of the original, extending a similar distance south along the bluff, but with more riprap material deposited inland to fill a part of the 2010 bluff failure area (**Exhibit 12**). The emergency work authorized by emergency CDP 2-10-034-G was completed during the first week of January, 2011.

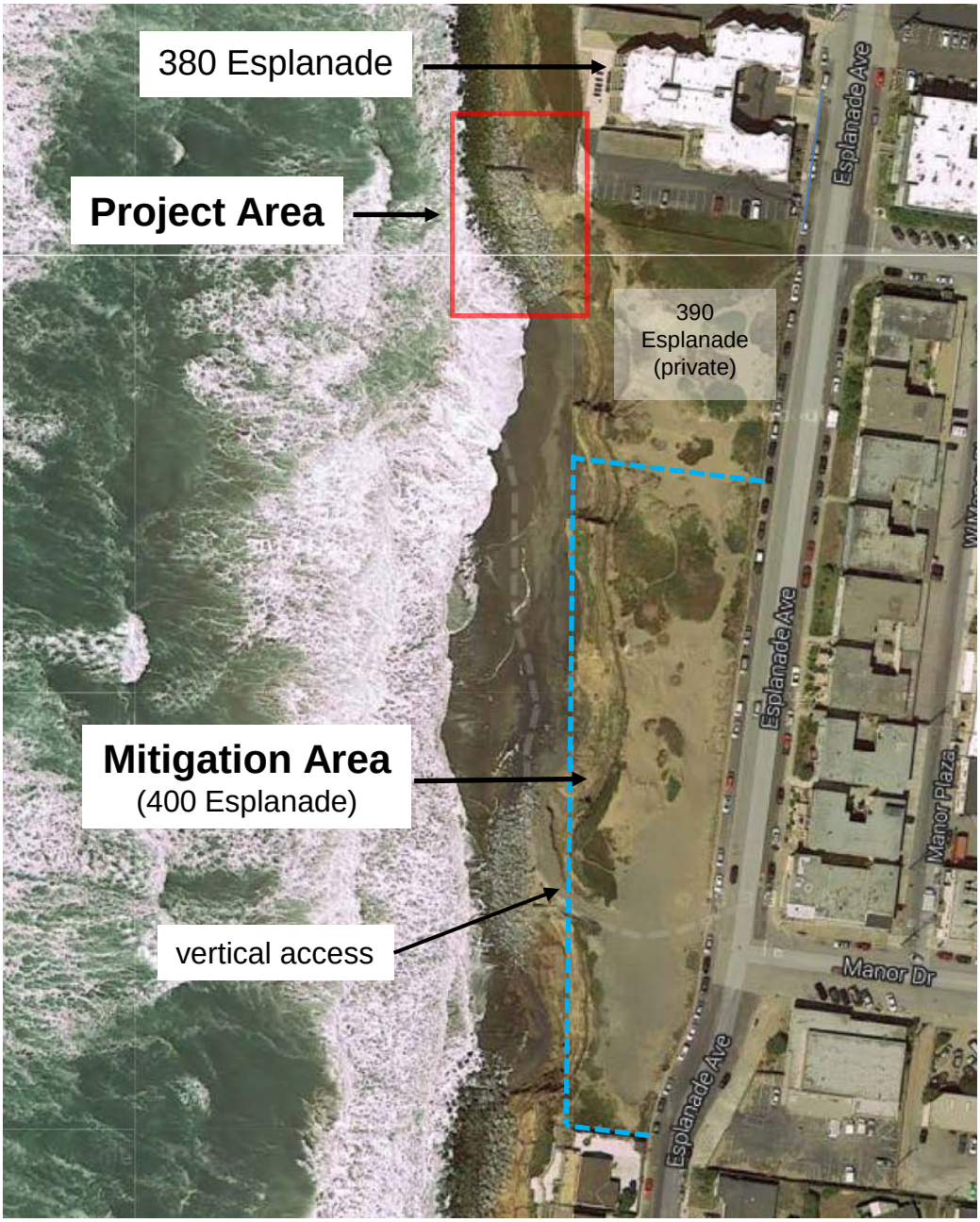
[46] GSI report 9/8/2010.

APPENDIX B: SUBSTANTIVE FILE DOCUMENTS

- CDPs A-77-241, 2-08-020 and 2-10-039
- CDP Waiver 2-11-030-W
- Emergency CDP s 1-98-083-G, 1-98-106-G, 1-98-109-G, 1-99-005-G, 2-10-034-G
- City of Pacifica Local Coastal Program (LCP)
- City of Pacifica Municipal Code Section 9-4.2818
- City of Pacifica CDP 156-99 (with attachments)
- City of Pacifica Grant of Easement 2006-006769
- Correspondence, including:
  - 10/27/2010 letter from Elizabeth Claycombe (City of Pacifica)
  - 12/19/2012 letter from Sean Finnegan (Aimco)
  - 1997 storm drain repair project photographs, Sean Finnegan (Aimco), submitted 1/17/2014
  - 1/22/2014 letter from Van Ocampo (City of Pacifica)
- Project reports submitted by Geo Soil Inc., including:
  - *As Built Plans (January 26, 2011)*
  - *Emergency Repairs to the City of Pacifica Storm Water Outfall and Bluff (September 8, 2010)*
  - *City of Pacifica Storm Drain Emergency Repair Project Plans (October 5, 2010)*
  - *Additional Information Regarding Emergency Repairs to the City of Pacifica Storm Water Outfall Revetment and Reinforced Bluff Slope (November 4, 2010)*
  - *Requested Additional Information by California Coastal Commission (April 2, 2012)*
  - *Requested Additional Information by California Coastal Commission Letter Dated May 11, 2012 (July 31, 2012)*
  - *2/7/13 letter/report*
- Miscellaneous Diagrams, Maps & Project Plans including:
  - *Street Improvements, Pacific Manor No. 11* (plans), Wilsey & Ham, Civil Engineers, January 1955
  - *Freeway Construction Plan, Sanitary Sewers Drainage Details* (plans), R.A. Hayler, March 4, 1963
  - *Construction Sequence, City of Pacifica Storm Drain Repairs* (diagram), Cotton, Shires & Associates
  - *Composite Topographic Survey of 380 Esplanade for Aimco* (map), Kier & Wright Civil Engineers & Surveyors, Inc., August 2010

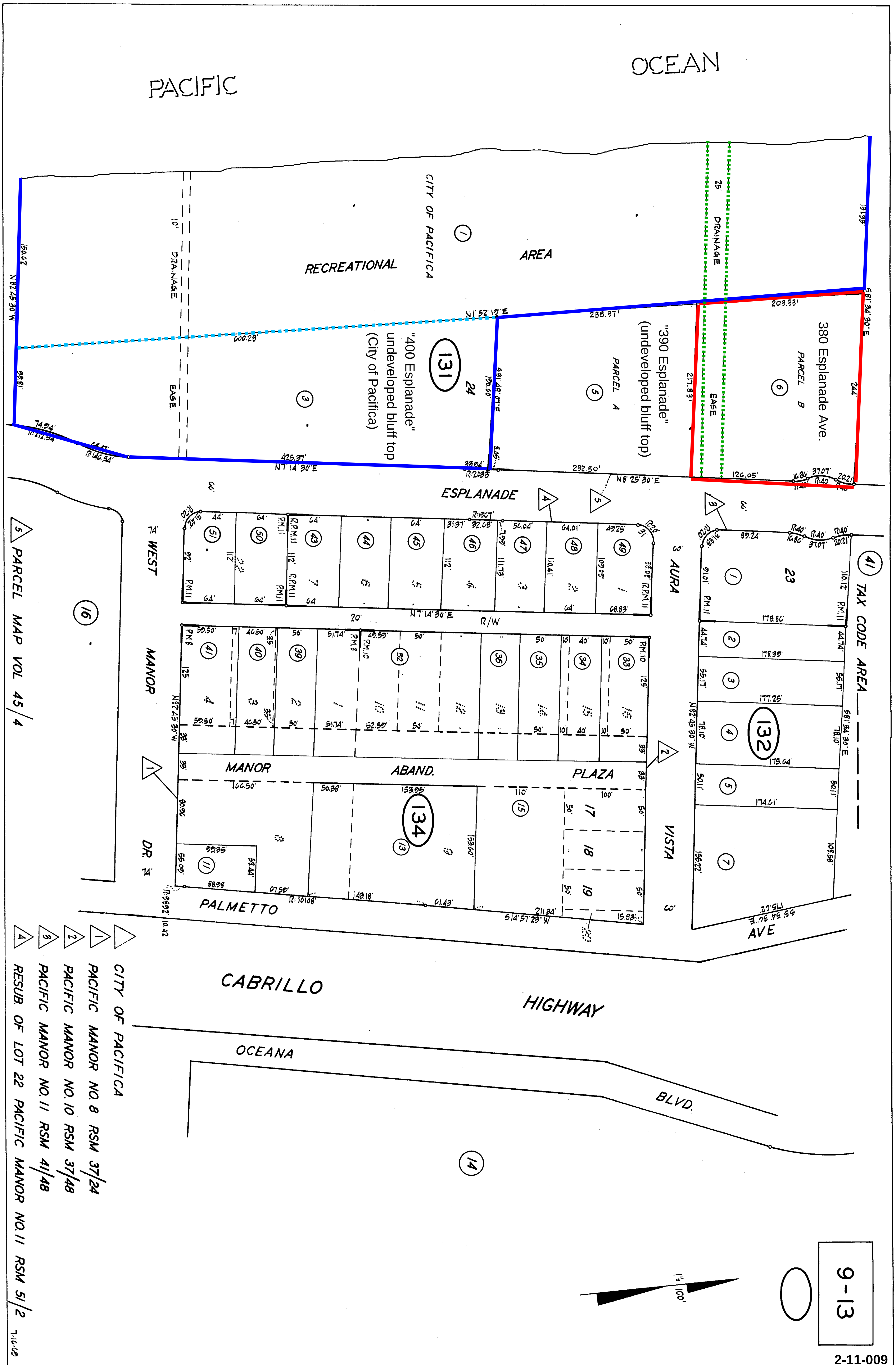


2-11-009
Exhibit 1
Page 1 of 1

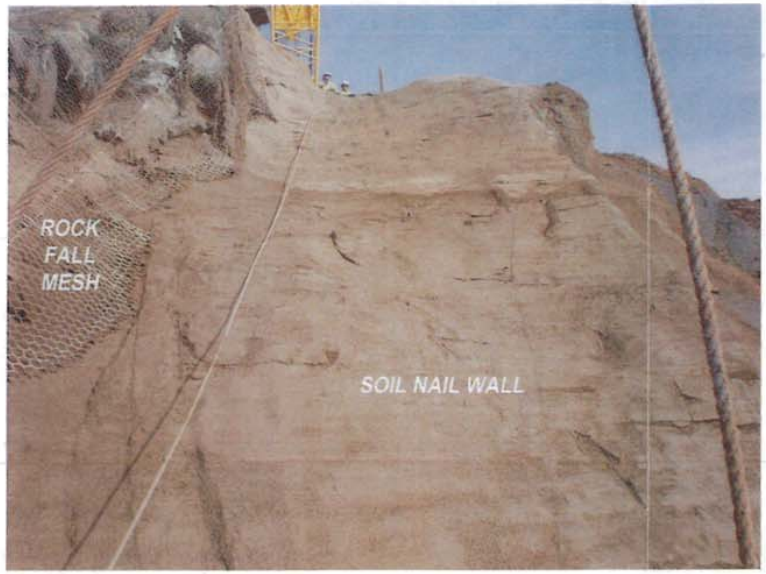


Project Vicinity

Imagery sources: 2013 Digital Globe, U.S. Geological Survey, USDA.



2-11-009
Exhibit 3
Page 1 of 1



VICINITY MAP

NO SCALE

ENGINEERS OF WORK'S AS-BUILT CERTIFICATE

I, DAVID W. SKELLY HEREBY DECLARE THAT THE PREPARATION OF THESE AS-BUILT DRAWINGS AND THAT THE INFORMATION SHOWN IS BASED ON ACTUAL SITE INVESTIGATIONS AND SURVEYS OF THE IMPROVEMENTS BETWEEN THE DATES OF NOV. 10, 2010 AND DEC. 28, 2010. TO THE BEST OF MY KNOWLEDGE AND EXPERIENCE THE INFORMATION SHOWN ON THESE PLANS PROVIDE AN ACCURATE AND CORRECT REPRESENTATION OF THE AS-BUILT CONDITIONS.

SIGNED _____ DATE _____

R.C.E. NO._____ EXP. _____

REVISIONS	BY

DRAFTING BY: SCHMAHL DRAFTING — DAVE SCHMAHL (760)414-3978

PROFESSIONAL ENGINEER — DAVID W. SKELLY — No. C 47857 — EXP. 12/31/11 — CIVIL — STATE OF CALIFORNIA

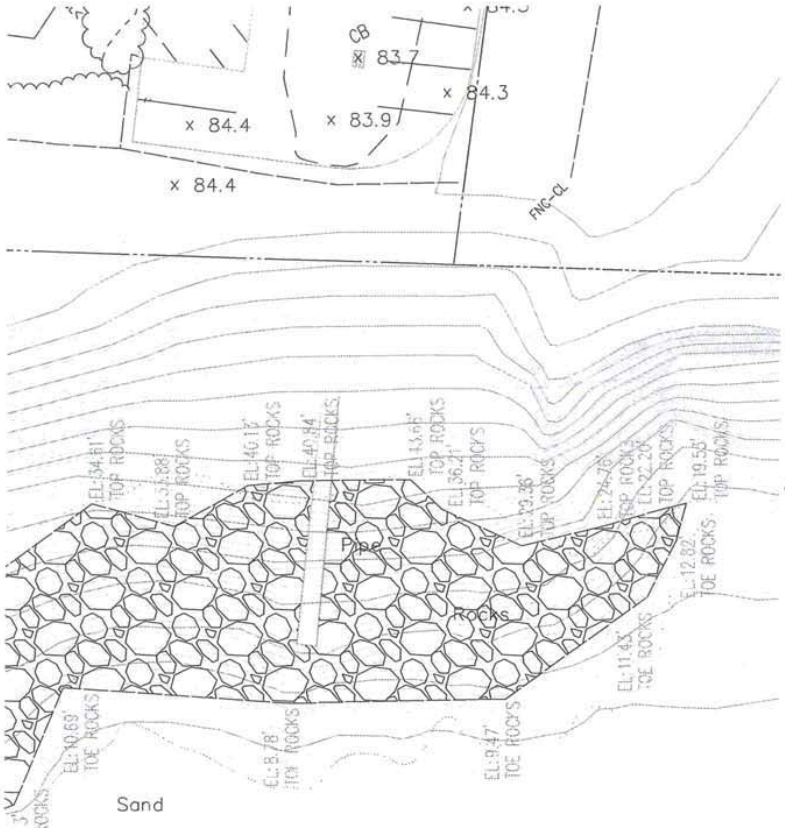
GeoSoils, Inc.
Geotechnical • Geologic • Coastal • Environmental
5741 Palmer Way, Carlsbad, CA 92010
760-438-3155

TITLE: **As-Built**
City of Pacifica Storm Drain Emergency Repair

CLIENT: JAECO, 28 Executive Park Suite 125, Irvine, CA 92614 — W.O. 5601-A

DRAWN
CHECKED
DATE 1/26/11
SCALE
JOB NO.
SHEET S1
OF 4 SHEETS

2-11-009
Exhibit 4
Page 1 of 4

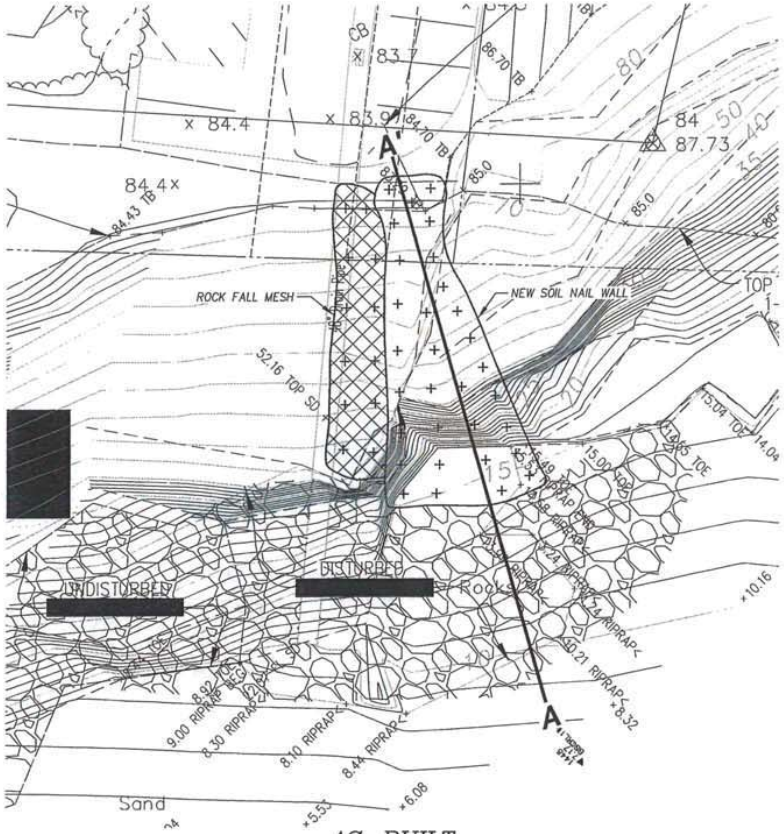


PRE–FAILURE TOPOGRAPHY

SCALE: 1" = 10'

UNDERLYING SURVEY

by Kier & Wright, dated: Aug. 13, 2010



AS–BUILT
WITH SITE TOPOGRAPHY PRIOR TO REPAIRS

SCALE: 1" = 10'

AS-BUILT NOTES

1. Soil nail wall follows the failed contours. No back fill was performed.
2. Soil nail wall is located entirely on AIMCO and City of Pacifica property.
3. Quarry stone revetment repairs are within the footprint of the emergency repairs performed by the City of Pacifica in the late 1990s.

LEGEND

+ — NEW SOIL NAIL WALL

▨ — ROCK FALL MESH

NORTH HERON

GRAPHIC SCALE

10 0 5 10 20 40

1" = 10'

REVISIONS	BY

DRAFTING BY: SCHMAHL DRAFTING — DAVE SCHMAHL (760)414-3978

PROFESSIONAL ENGINEER — REGISTERED — DAVID SKELLY — No. C 47857 — EXP: 12/31/11 — CIVIL — STATE OF CALIFORNIA

GeoSoils, Inc.

Geotechnical • Geologic • Coastal • Environmental

5741 Palmer Way, Carlsbad, CA 92010

760-438-3155

TITLE: **As-Built**
City of Pacifica Storm Drain Emergency Repair

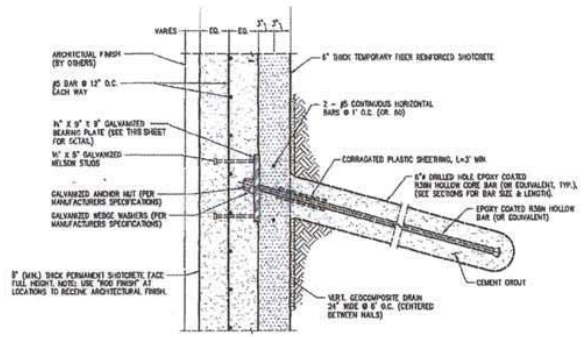
W.O. 5801A

CLIENT: AIMCO
28 Executive Park, Suite 125
Irvine, CA 92614

DRAWN:
CHECKED:
DATE: 1/26/11
SCALE:
JOB NO.
SHEET: S2
OF 4 SHEETS

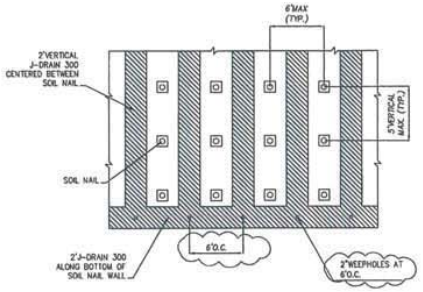
2-11-009
Exhibit 4
Page 2 of 4

TITLE: As-Built
City of Pacifica Storm Drain
Emergency Repair
CLIENT: AMOCO
26 Executive Park Suite 125
Irvine, CA 92614
W.O. S6014
Geotechnical • Geologic • Coastal • Environmental
5741 Palmer Way, Carlsbad, CA 92010
760-438-3155
DRAFTING BY:
DAVE SCHMAHL
DRAFTING
(760)414-3978
DATE 1/26/11
SHEET S3
4
SOIL NAIL WALL
SECTION A–A'
SCALE: 1" = 10'
REVETMENT SECTION A–A'
SCALE: AS SHOWN
EXISTING GRADE
SLOPE SURFACE PRIOR TO FAILURE
PROPOSED FINISHED SLOPE SURFACE
SEE SHEET S3 FOR RETAINING DETAIL
EXISTING SLOPE SURFACE (AFTER FAILURE)
TERRACE DEPOSIT
SANDSTONE
LEGEND:
EXISTING GRADE (3/11/09)
EXISTING GRADE (6/13/10)
PROPOSED SOLDIER WALL
RE-BUILD REVETMENT
~1.5 TON
~5 TON
~10 TON
TERRACE DEPOSITS
EL = 27.0
SANDSTONE
TOP FACE OF STONE DIP INTO SLOPE
SAND
NATURALLY CEMENTED SAND
NATURALLY CEMENTED SAND
NATURALLY CEMENTED SAND



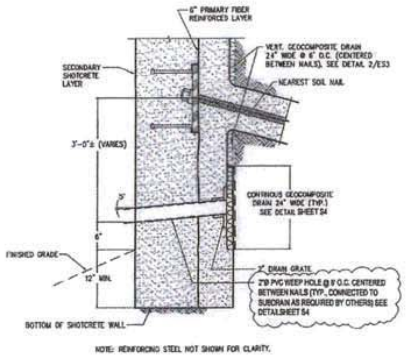
PERMANENT DCP SOIL NAIL DETAIL (TYPICAL)

NOT TO SCALE



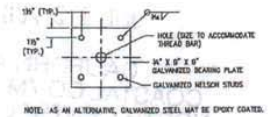
SOIL NAIL WALL BACKDRAIN

NO SCALE



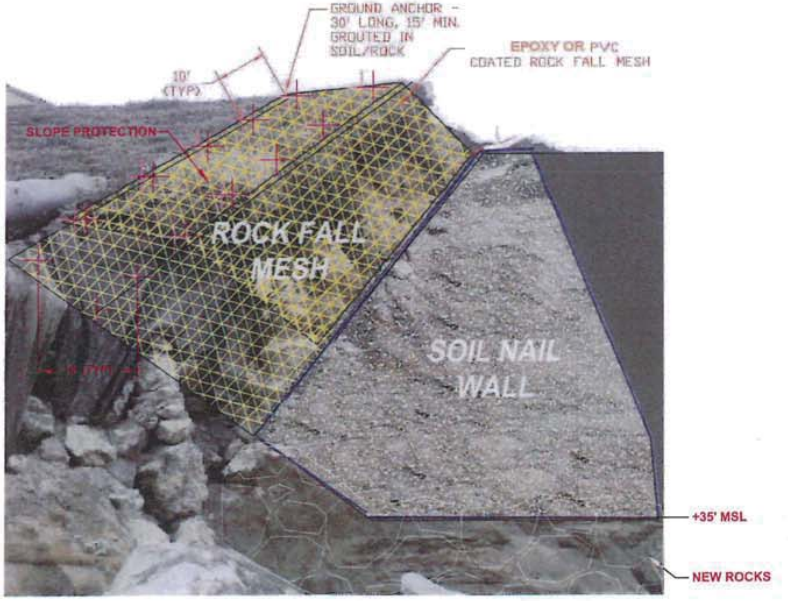
GEOCOMPOSITE DRAIN & WEEPHOLE DETAIL (TYPICAL)

NOT TO SCALE



GALVANIZED BEARING PLATE (BY OTHERS)

NOT TO SCALE



SOIL NAIL WALL & ROCK FALL MESH

NO SCALE

REVISIONS	BY

DRAFTING BY: SCHMAHL DRAFTING
DAVE SCHMAHL (760)414-3978

PROFESSIONAL ENGINEER * DAVID SCELLY * No. C 47857 EXP. 12/31/11 CIVIL * STATE OF CALIFORNIA * REGISTERED

GeoSoils Inc.
Geotechnical • Geologic • Coastal • Environmental
5741 Palmer Way, Carlsbad, CA 92010
760-438-3155

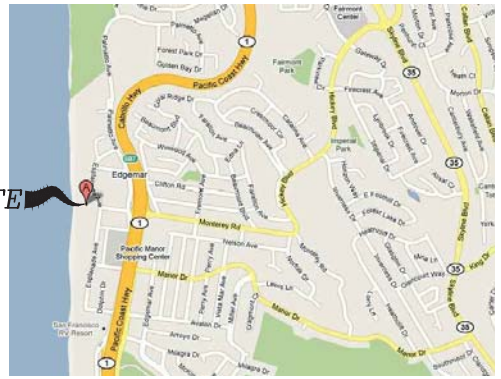
TITLE: As-Built
City of Pacifica Storm Drain Emergency Repair

W.O. 5801

CLIENT: AMCO
20 Executive Park Suite 125
Irvine, CA 92614

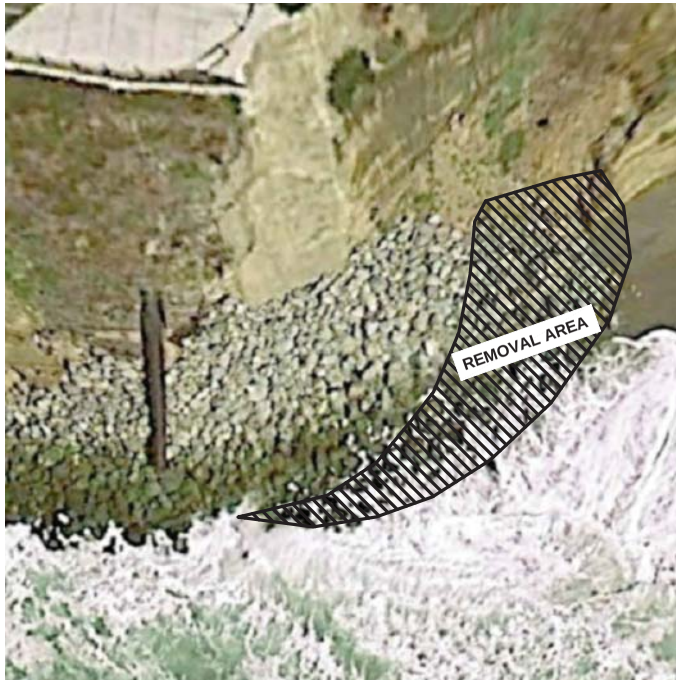
DRAWN
CHECKED
DATE 1/26/11
SCALE
JOB NO.
SHEET S4
OF 4 SHEETS

2-11-009
Exhibit 4
Page 4 of 4



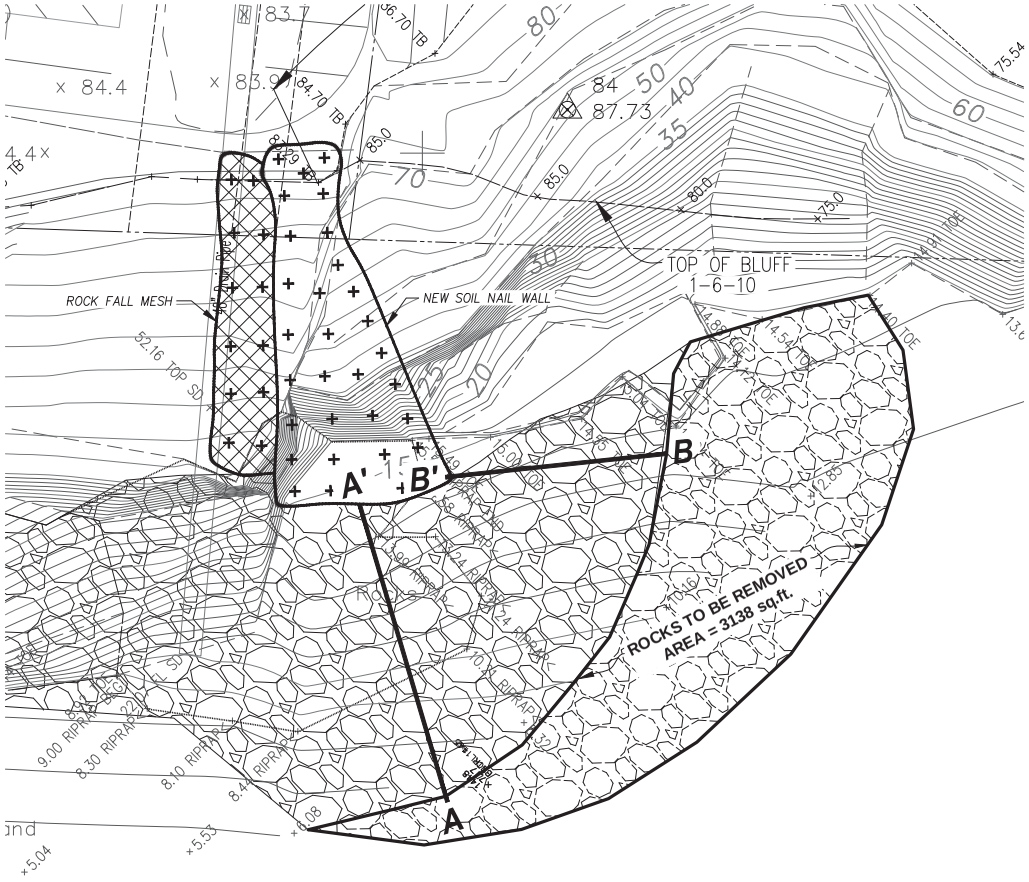
VICINITY MAP

NO SCALE



AREA OF RECONFIGURATION

NO SCALE



REVETMENT RECONFIGURATION

LEGEND

+ — NEW SOIL NAIL WALL

— ROCK FALL MESH

NORTH

GRAPHIC SCALE

10 0 5 10 20 40

1" = 10'

REVISIONS	BY

DRAFTING BY: SCHMAHL DRAFTING — DAVE SCHMAHL (760)414-3978

PROFESSIONAL ENGINEER — REGISTERED — DAVID W. SKELLY — No. C 47857 EXP. 12/31/11 CIVIL — STATE OF CALIFORNIA

GeoSoils, Inc.

Geotechnical • Geologic • Coastal • Environmental

5741 Palmer Way, Carlsbad, CA 92010

760-438-3155

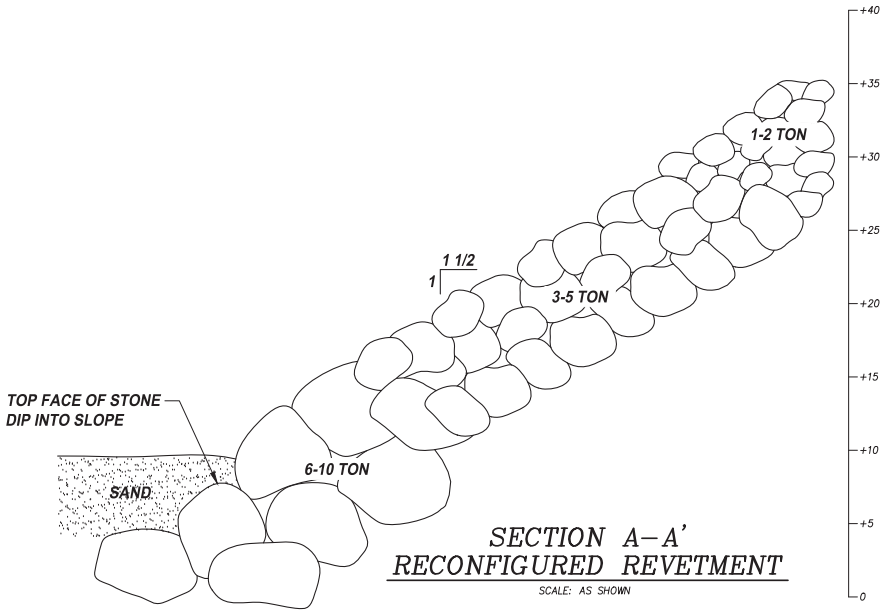
TITLE: City of Pacifica Storm Drain Revetment Reconfiguration

W.O. 6014

CLIENT: AMCO, 26 Executive Park Suite 125, Irvine, CA 92614

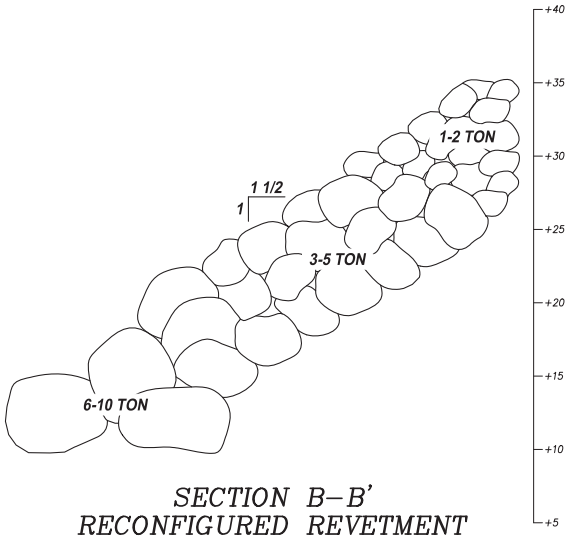
DRAWN	
CHECKED	
DATE	10/14/13
SCALE	
JOB NO.	
SHEET	S1
OF	2 SHEETS

2-11-009
Exhibit 5
Page 1 of 2



SECTION A–A'
RECONFIGURED REVETMENT

SCALE: AS SHOWN



SECTION B–B'
RECONFIGURED REVETMENT

SCALE: AS SHOWN

GENERAL NOTES

1. All quarry rock seaward and to the south of the removal area to be removed from beach and restacked.
2. Work to be performed under the direction of the project engineer.
3. Actual toe location to be determined in the field.
4. Rock slope to be on average about 1.5/1 (h/v).
5. Depiction of rock removal area is estimated. Final area will be provided in "as built" drawings.
6. **Storage and Staging Areas/Access Corridors**

   a. No overnight storage of equipment or materials shall occur on sandy beach or public parking spaces. During the construction stages of the project, the applicants shall not store any construction materials or waste where it will be or could potentially be subject to wave erosion and dispersion. In addition, no machinery shall be placed, stored or otherwise located in the intertidal zone at any time, except for the minimum necessary to construct the protective structures/slope reconstruction. Construction equipment shall not be washed on the beach or in recreational areas.

   b. Access corridors shall be located in a manner that has the least impact on public access to and along the shoreline.

   c. No work shall occur on the beach on holidays.

7. **Storm Design/Certified Plans**

   a. By signing these plans the engineer of record *certifies that the proposed shoreline protective devices has been designed to withstand storms comparable to the winter storms of 1982-83.

   b. In addition, within 60 days following construction, the applicants shall submit certification by a registered civil engineer, acceptable to the Executive Director, verifying that the shoreline protective device has been constructed in conformance with the approved plans for the project.

8. **Best Management Practices**

   The applicant shall undertake the development in accordance with the approved Plan. Any proposed changes to the approved Plan shall be reported to the Executive Director. No changes to the Plan shall occur without a Coastal Commission approved amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required. The applicant shall comply with the following construction-related requirements:

   a. All areas used for construction staging and access purposes shall be kept free from any trash or debris not needed for construction purposes. Daily trash and debris haul shall be implemented.

   b. No construction equipment, materials, or debris shall be placed where they may be subject to ocean waters or dispersion. No construction equipment or materials shall be stored on the beach.

   c. If, at any time while the work authorized by this Permit is occurring, any marine mammals are located on or seaward of the subject property, work must immediately stop and the Property Owner must immediately call the Marine Mammal Center in Sausalito, CA or the National Marine Fisheries Service to report that a marine mammal is located on the beach. Work must not commence until either the animal is removed by the Marine Mammal Center or the National Marine Fisheries Service, or until the animal returns to the ocean on its own without any harassment.

   d. All construction activities that result in discharge of materials, polluted runoff, or wastes to the beach and/or the adjacent marine environment are prohibited. The Permittee shall collect, contain, and properly dispose of all construction leaks, drips, by-products, and any similar contaminants through the use of containment structures or equivalent as necessary (including through the use of collection devices and absorbent materials placed below any above-ground work where such contaminants are possible and/or expected). Equipment washing, refueling, and/or servicing shall not take place on the beach.

   e. A copy of the signed Permit shall be maintained in a conspicuous location at the staging area site at all times, and such copy shall be available for public review on request. All persons involved with the construction shall be briefed on the content and meaning of the Permit, including all of its terms and conditions, prior to commencement of construction.

   f. Particular care shall be exercised to prevent foreign materials (e.g., construction scraps, garbage, chemicals, etc.) from entering Pacific Ocean waters. A floating containment boom shall be placed around all active portions of the construction site where any floatable debris could enter the water. Contractors shall insure that work crews are carefully briefed on the importance of observing the appropriate precautions and reporting any accidental spills. Construction contracts shall contain appropriate penalty provisions, sufficient to offset the cost of retrieving or clean up of foreign materials not properly contained.

   g. The construction site and staging area(s) shall be maintained with good construction housekeeping measures (e.g., clean up all leaks, drips, and other spills immediately; keep materials covered and out of the rain); dispose of all wastes properly, place trash receptacles on site for that purpose, and cover open trash receptacles during wet weather; and remove all construction debris from the beach

* The term "certify" is used herein as defined in Division 3, Chapter 7, Article 3, section 6735.5 of the California Business and Professions Code.

REVISIONS	BY

DRAFTING BY: SCHMAHL DRAFTING
DAVE SCHMAHL (760)414-3978

PROFESSIONAL ENGINEER * REGISTERED * STATE OF CALIFORNIA
W. SKELLY
No. C 47857
EXP. 12/31/11
CIVIL

geoSoils, Inc.
Geotechnical • Geologic • Coastal • Environmental
5741 Palmer Way, Carlsbad, CA 92010
760-438-3155

TITLE: **City of Pacifica Storm Drain Revetment Reconfiguration**

W.O. S6014

CLIENT: AMCO
26 Executive Park Suite 125
Irvine, CA 92614

DRAWN

CHECKED

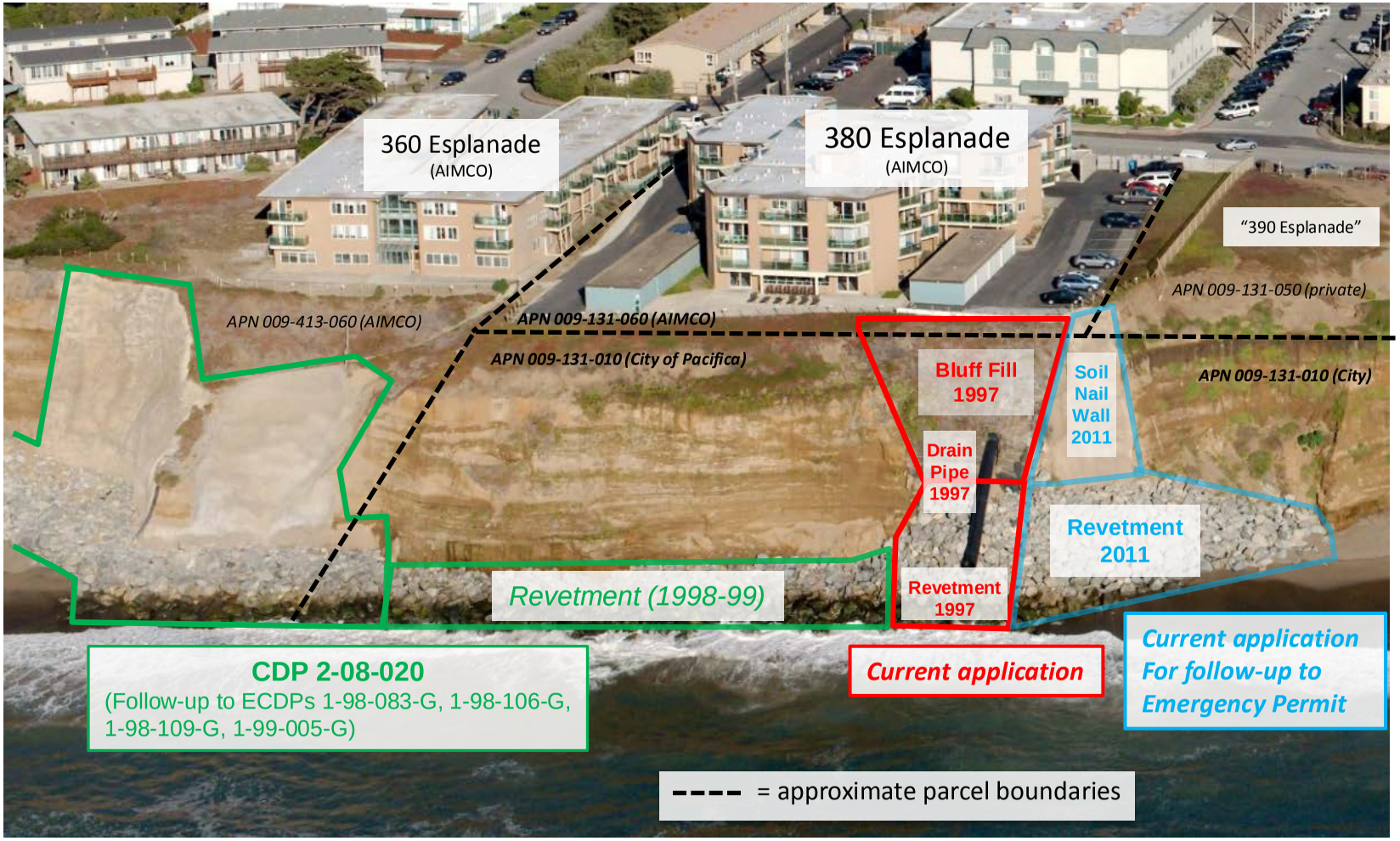
DATE 10/14/13

SCALE

JOB NO.

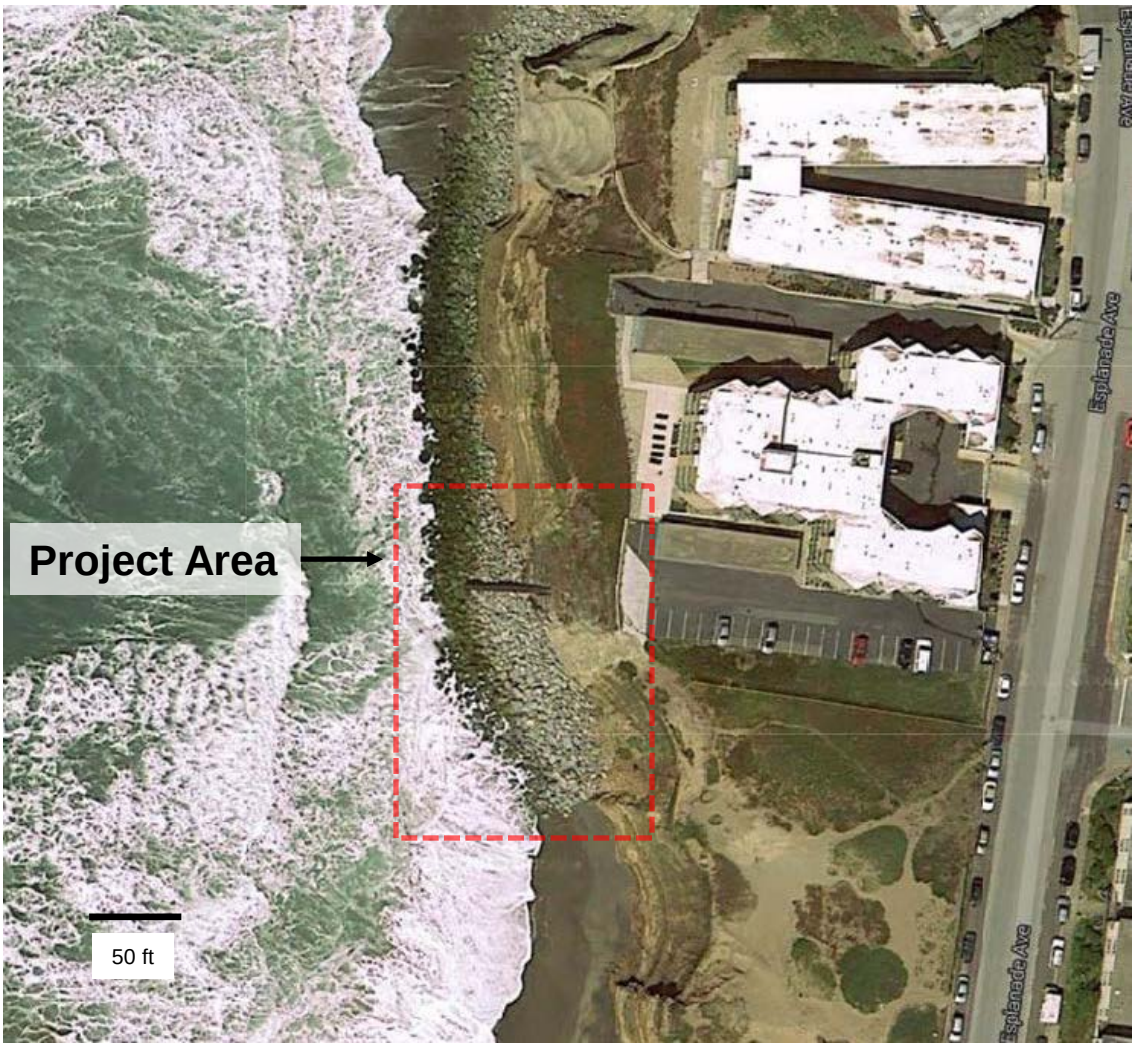
SHEET **S2**

OF 2 SHEETS



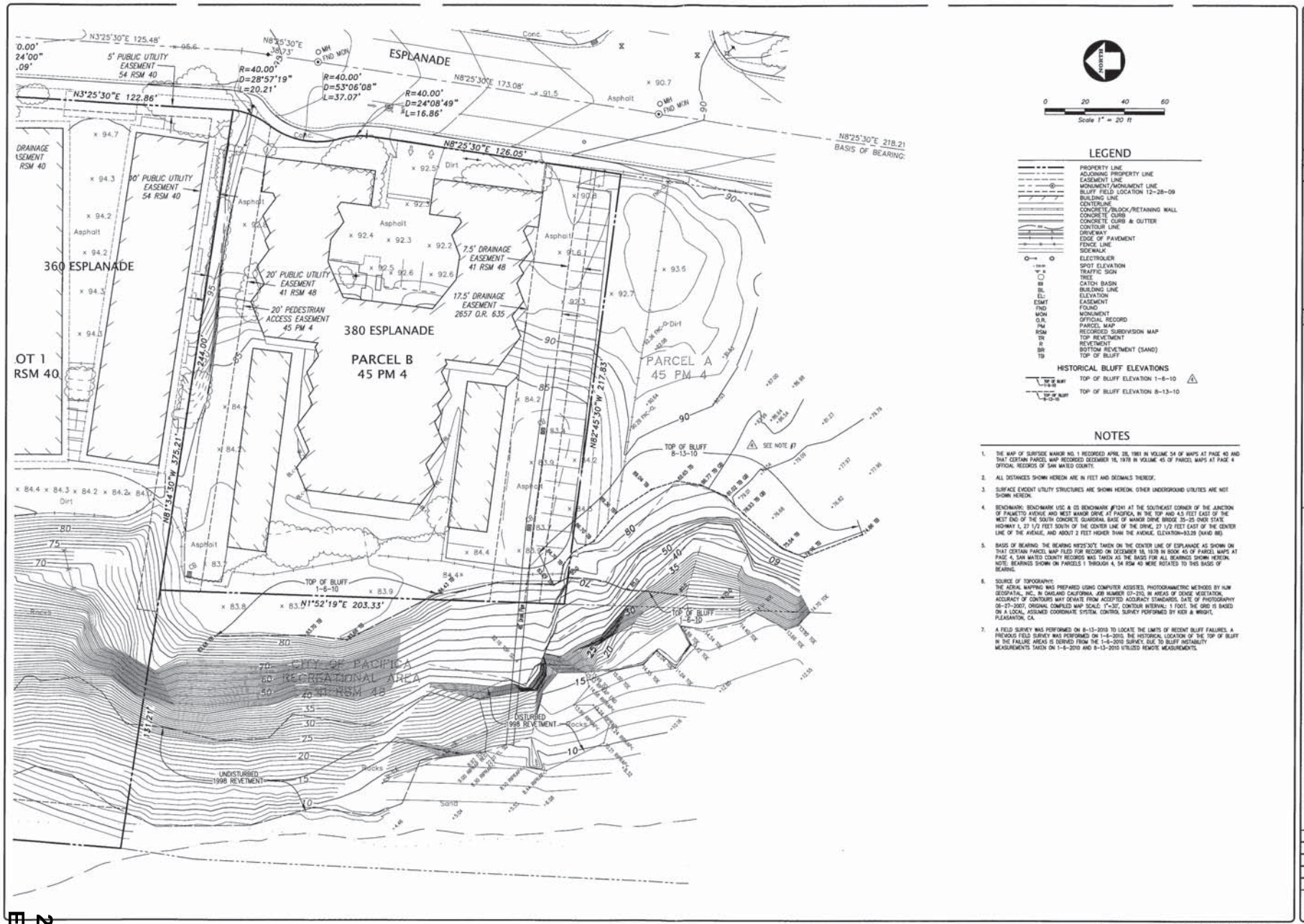
Project Site & Components

Image source:
California Coastal Records Project
Copyright 2002-2013 Kenneth & Gabrielle Adelman



Overhead Aerial Photograph of Project Site, 2013

Image source: 2013 Digital Globe, U.S. Geological Survey



LEGEND

- PROPERTY LINE
- ADJOINING PROPERTY LINE
- EASEMENT LINE
- MONUMENT/MONUMENT LINE
- BLUFF FIELD LOCATION 12-28-09
- BUILDING LINE
- CENTERLINE
- CONCRETE/BLOCK/RETAINING WALL
- CONCRETE CURB
- CONCRETE CURB & GUTTER
- CONTOUR LINE
- DRIVEWAY
- EDGE OF PAVEMENT
- FENCE LINE
- SIDEWALK
- ELECTROLIER
- SPOT ELEVATION
- TRAFFIC SIGN
- TREE
- CB CATCH BASIN
- BL BUILDING LINE
- EL ELEVATION
- ESMT EASEMENT
- FND FOUND
- MON MONUMENT
- O.R. OFFICIAL RECORD
- PM PARCEL MAP
- RSM RECORDED SUBDIVISION MAP
- TR TOP REVETMENT
- R REVETMENT
- BR BOTTOM REVETMENT (SAND)
- TB TOP OF BLUFF

HISTORICAL BLUFF ELEVATIONS

- TOP OF BLUFF 1-6-10
- TOP OF BLUFF 8-13-10

NOTES

1. THE MAP OF SURFSIDE MANOR NO. 1 RECORDED APRIL 28, 1961 IN VOLUME 54 OF MAPS AT PAGE 40 AND THAT CERTAIN PARCEL MAP RECORDED DECEMBER 18, 1978 IN VOLUME 45 OF PARCEL MAPS AT PAGE 4 OFFICIAL RECORDS OF SAN MATEO COUNTY.
2. ALL DISTANCES SHOWN HEREON ARE IN FEET AND DECIMALS THEREOF.
3. SURFACE EVIDENT UTILITY STRUCTURES ARE SHOWN HEREON. OTHER UNDERGROUND UTILITIES ARE NOT SHOWN HEREON.
4. BENCHMARK: BENCHMARK USC & GS BENCHMARK #1241 AT THE SOUTHEAST CORNER OF THE JUNCTION OF PALMETTO AVENUE AND WEST MANOR DRIVE AT PACIFICA, IN THE TOP AND 4.5 FEET EAST OF THE WEST END OF THE SOUTH CONCRETE QUADRORAL BASE OF MANOR DRIVE BRIDGE 35-25 OVER STATE HIGHWAY 1, 27 1/3 FEET SOUTH OF THE CENTER LINE OF THE DRIVE, 27 1/2 FEET EAST OF THE CENTER LINE OF THE AVENUE, AND ABOUT 2 FEET HIGHER THAN THE AVENUE. ELEVATION=83.28 (NAVD 88).
5. BASIS OF BEARING: THE BEARING N8°25'30"E TAKEN ON THE CENTER LINE OF ESPLANADE AS SHOWN ON THAT CERTAIN PARCEL MAP FILED FOR RECORD ON DECEMBER 18, 1978 IN BOOK 45 OF PARCEL MAPS AT PAGE 4, SAN MATEO COUNTY RECORDS WAS TAKEN AS THE BASIS FOR ALL BEARINGS SHOWN HEREON. NOTE: BEARINGS SHOWN ON PARCELS 1 THROUGH 4, 54 RSM 40 WERE ROTATED TO THIS BASIS OF BEARING.
6. SOURCE OF TOPOGRAPHY: THE AERIAL MAPPING WAS PREPARED USING COMPUTER ASSISTED, PHOTOGRAMMETRIC METHODS BY HJW GEOSPATIAL, INC., IN OAKLAND CALIFORNIA, JOB NUMBER 07-210, IN AREAS OF DENSE VEGETATION, ACCURACY OF CONTOURS MAY DEVIATE FROM ACCEPTED ACCURACY STANDARDS. DATE OF PHOTOGRAPHY 06-27-2007, ORIGINAL COMPILED MAP SCALE: 1"=30', CONTOUR INTERVAL: 1 FOOT. THE GRID IS BASED ON A LOCAL, ASSUMED COORDINATE SYSTEM. CONTROL SURVEY PERFORMED BY KIER & WRIGHT, PLEASANTON, CA.
7. A FIELD SURVEY WAS PERFORMED ON 8-13-2010 TO LOCATE THE LIMITS OF RECENT BLUFF FAILURES. A PREVIOUS FIELD SURVEY WAS PERFORMED ON 1-6-2010. THE HISTORICAL LOCATION OF THE TOP OF BLUFF IN THE FAILURE AREAS IS DERIVED FROM THE 1-6-2010 SURVEY. DUE TO BLUFF INSTABILITY MEASUREMENTS TAKEN ON 1-6-2010 AND 8-13-2010 UTILIZED REMOTE MEASUREMENTS.

NO.	REVISION	BY
1	UPDATE BLUFF LOCATION 12-30-09	TK
2	AS-BUILT REVETMENT & BLUFF 1-14-10	TK
3	ADD 2007 BLUFF LOCATION 4-9-10	TK
4	UPDATE BLUFF LOCATION 08-13-10	TK

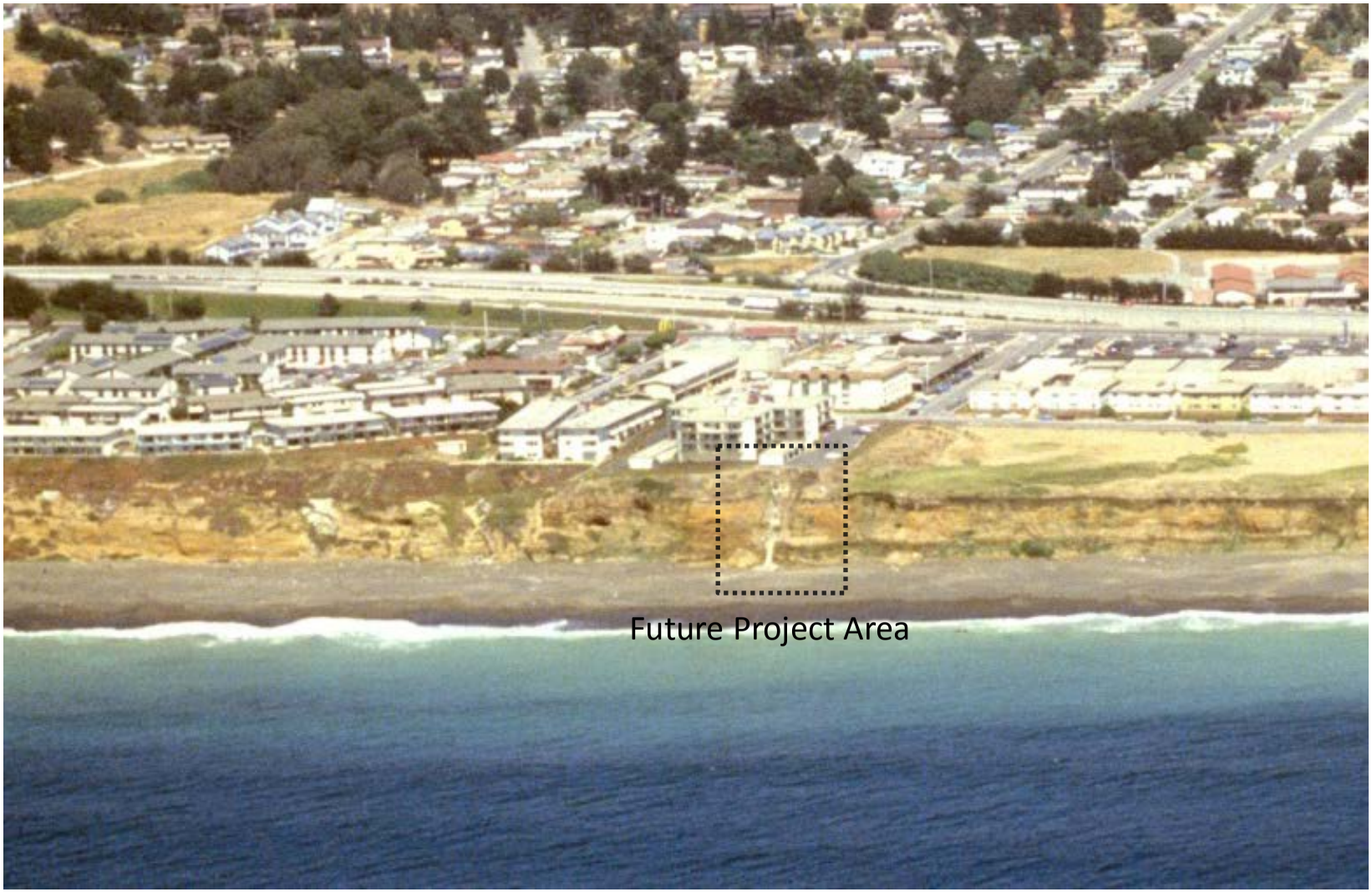
KIER & WRIGHT
CIVIL ENGINEERS & SURVEYORS, INC.
1233 Quarry Lane, Suite 145
Pleasanton, California 94566
(925) 249-9555
Fax (925) 249-9583

COMPOSITE TOPOGRAPHIC SURVEY
OF
380 ESPLANADE
FOR
AIMCO
PACIFICA, CALIFORNIA

DATE	AUGUST 2010
SCALE	1" = 20'
SURVEYOR	ACM
DRAFTER	RPS
JOB NO.	A07602-5
SHEET	C2
OF	2 SHEETS

Site Photo, 1972

Image source: California Coastal Records Project
Copyright 2002-2013 Kenneth & Gabreille Adelman



Site Photo, 1987

Image source: California Coastal Records Project
Copyright 2002-2013 Kenneth & Gabreille Adelman

Overhead Aerial Photo, 1993

Image source: California Coastal Records Project
Copyright 2002-2013 Kenneth & Gabreille Adelman

Site Photo, 2002

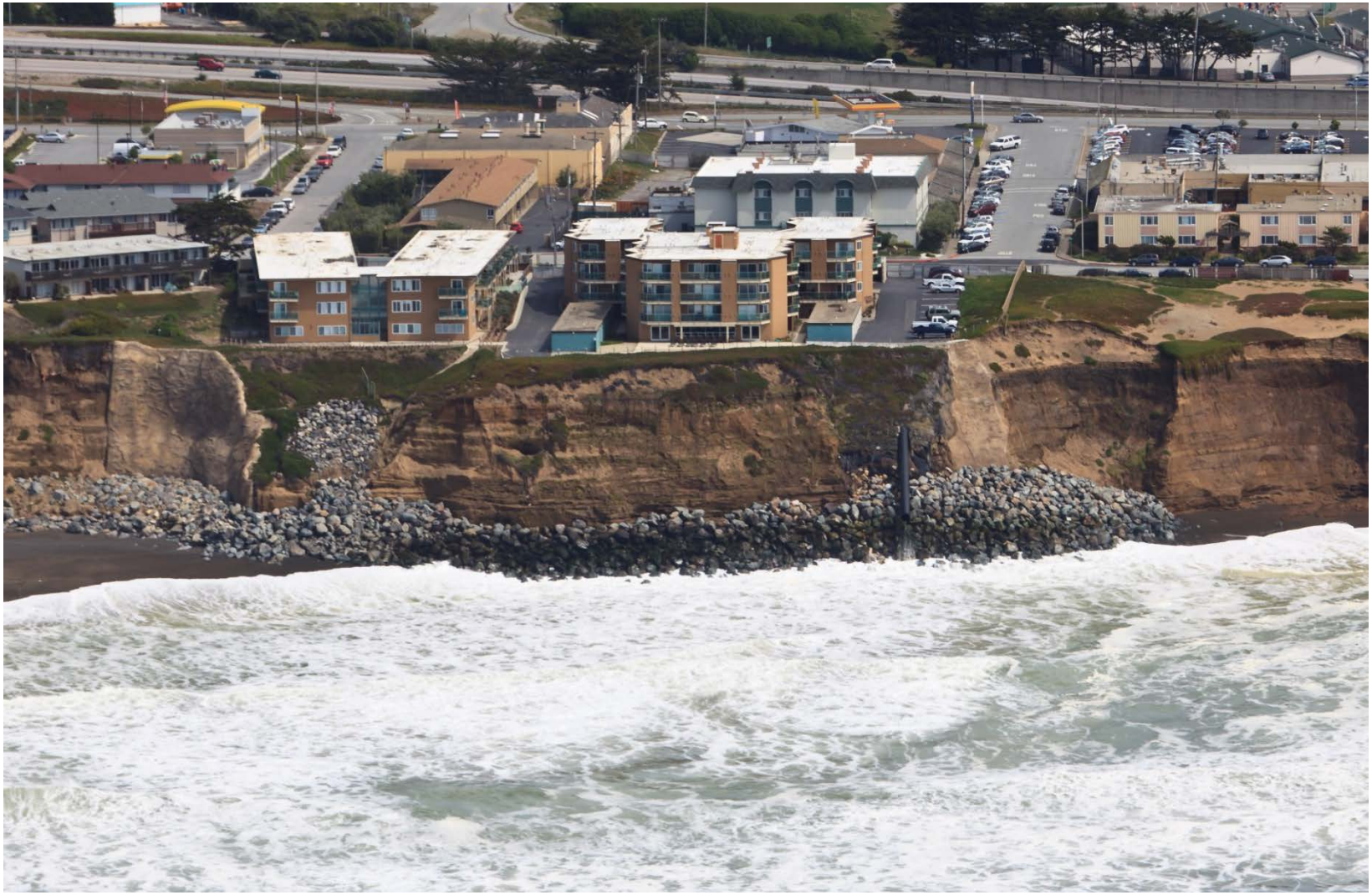
Image source: California Coastal Records Project
Copyright 2002-2013 Kenneth & Gabreille Adelman

Project Site Photo, 2009

Image source: California Coastal Records Project
Copyright 2002-2013 Kenneth & Gabreille Adelman

Project Site Photo, 2010 – Bluff Failure

Image source: California Coastal Records Project
Copyright 2002-2013 Kenneth & Gabreille Adelman



Site Photo, April 2012 – Emergency Project in Place

Image source: Chris Dant, Apr 2012

Site Photo, September 2013

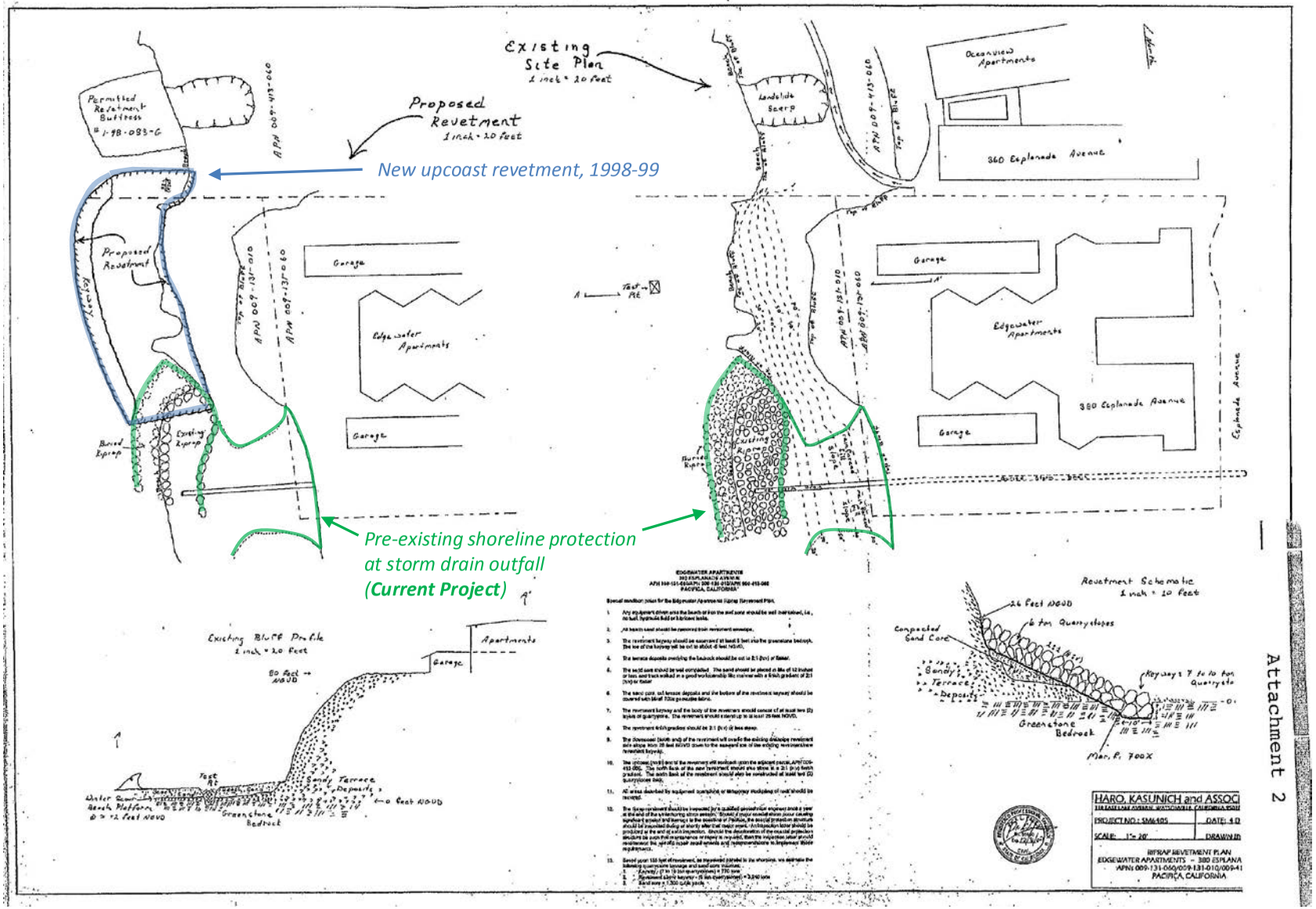
Image source: California Coastal Records Project
Copyright 2002-2013 Kenneth & Gabreille Adelman

Project Site, 2010 (after bluff failure)

Image Source: Nick Dreher

Eroded Fill & Bluff, August 2010

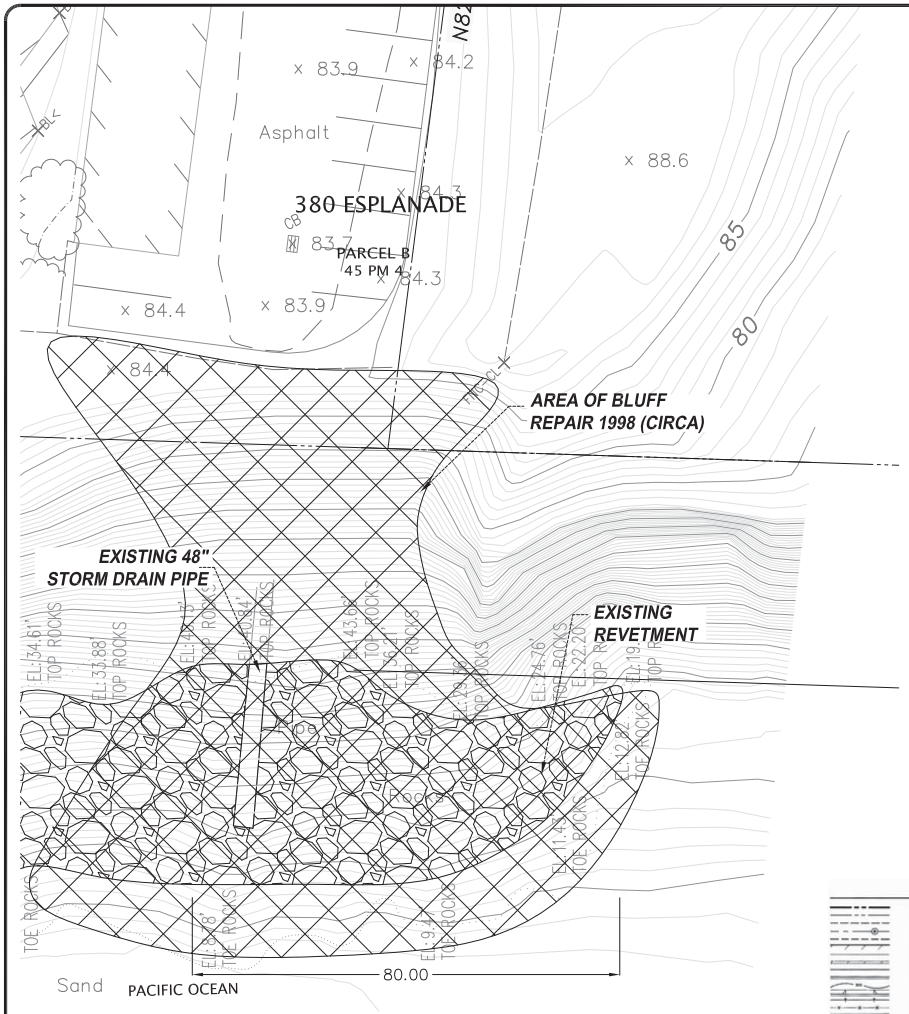
Image Source: Chris Dant, Aug 2010



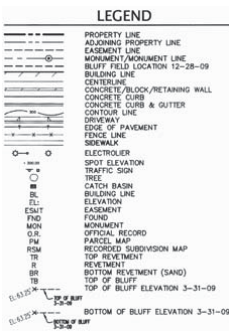
Attachment 2

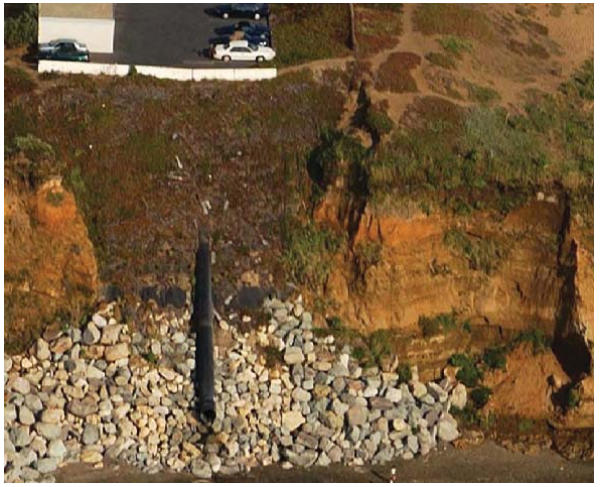
Project Plans for 1998-99 380 Esplanade Revetment, local CDP #156-99

2-11-009
Exhibit 11
Page 1 of 1



PLAN VIEW
BEFORE FAILURE
SCALE: 1" = 10'





SEPTEMBER 2002

BEFORE FAILURE
NO SCALE

ATTACHMENT D

NORTH

GRAPHIC SCALE
10 0 5 10 20 40
1" = 10'

REVISIONS	BY

PROFESSIONAL ENGINEER
SKELLY
No. C 47857
EXP. 12/31/11
REGISTERED
DAVID
STATE OF CALIFORNIA
CIVIL

GeoSoils, Inc.
Geotechnical • Geologic • Coastal • Environmental
5741 Palmer Way, Carlsbad, CA 92010
760-438-3155

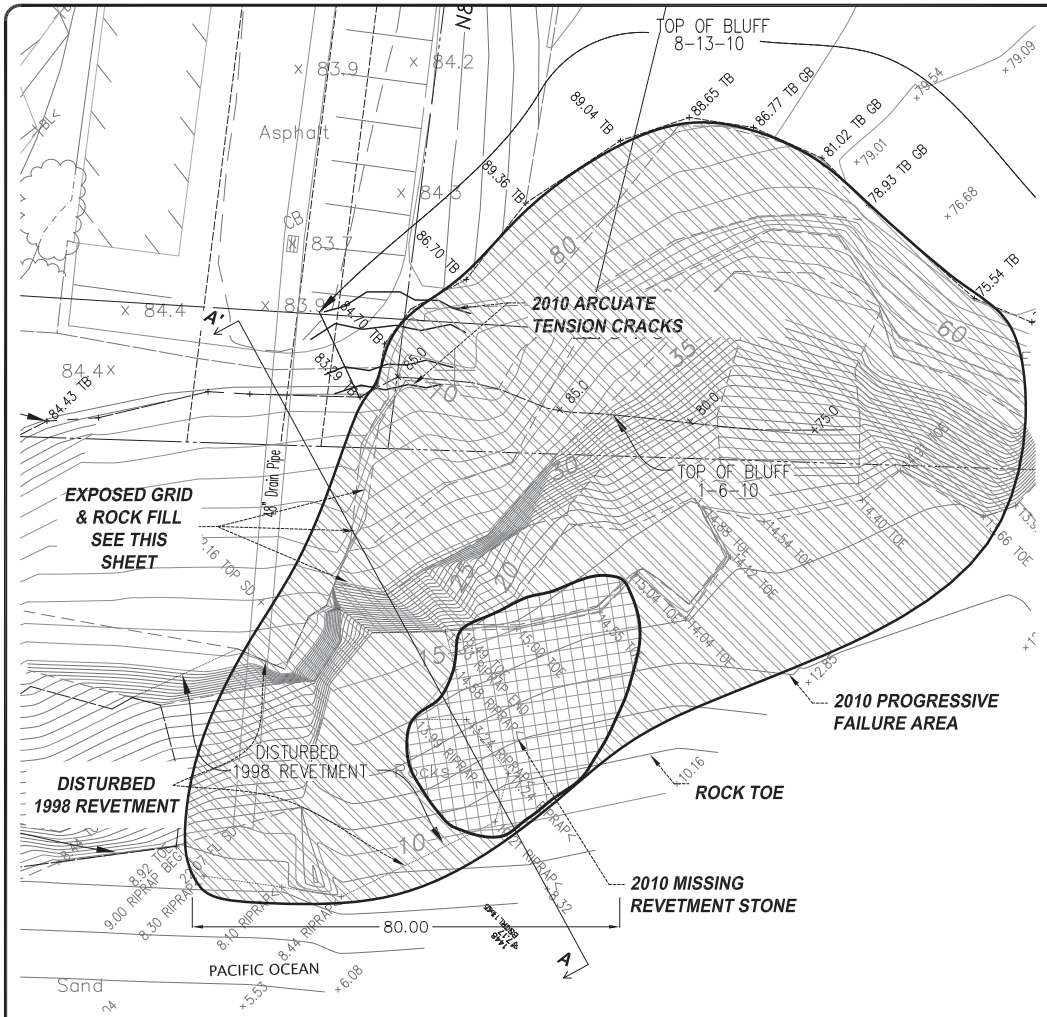
TITLE: City of Pacifica
Storm Drain
Emergency Repair

W.O. 5601-A-SC

CLIENT: AMCO
26 Executive Park Suite 125
Irvine, CA 92614

DRAWN
CHECKED
DATE 10-05-10
SCALE
JOB NO.
SHEET S1
OF 6 SHEETS

2-11-009
Exhibit 12
Page 1 of 6



BLUFF FAILURE AREAS
(SURVEY 8/13/10)

SCALE: 1" = 10'

AFTER FAILURE

NO SCALE

ATTACHMENT D

REVISIONS	BY

PROFESSIONAL ENGINEER
SKELLY
No. C 47857
EXP. 12/31/11
REGISTERED
DAVID
CIVIL
STATE OF CALIFORNIA

GeoSoils, Inc.
Geotechnical • Geologic • Coastal • Environmental
5741 Palmer Way, Carlsbad, CA 92010
760-438-3155

TITLE: City of Pacifica
Storm Drain
Emergency Repair

W.O. 5601-A-SC

CLIENT: AIMCO
26 Executive Park Suite 125
Irvine, CA 92614

DRAWN

CHECKED

DATE 10-05-10

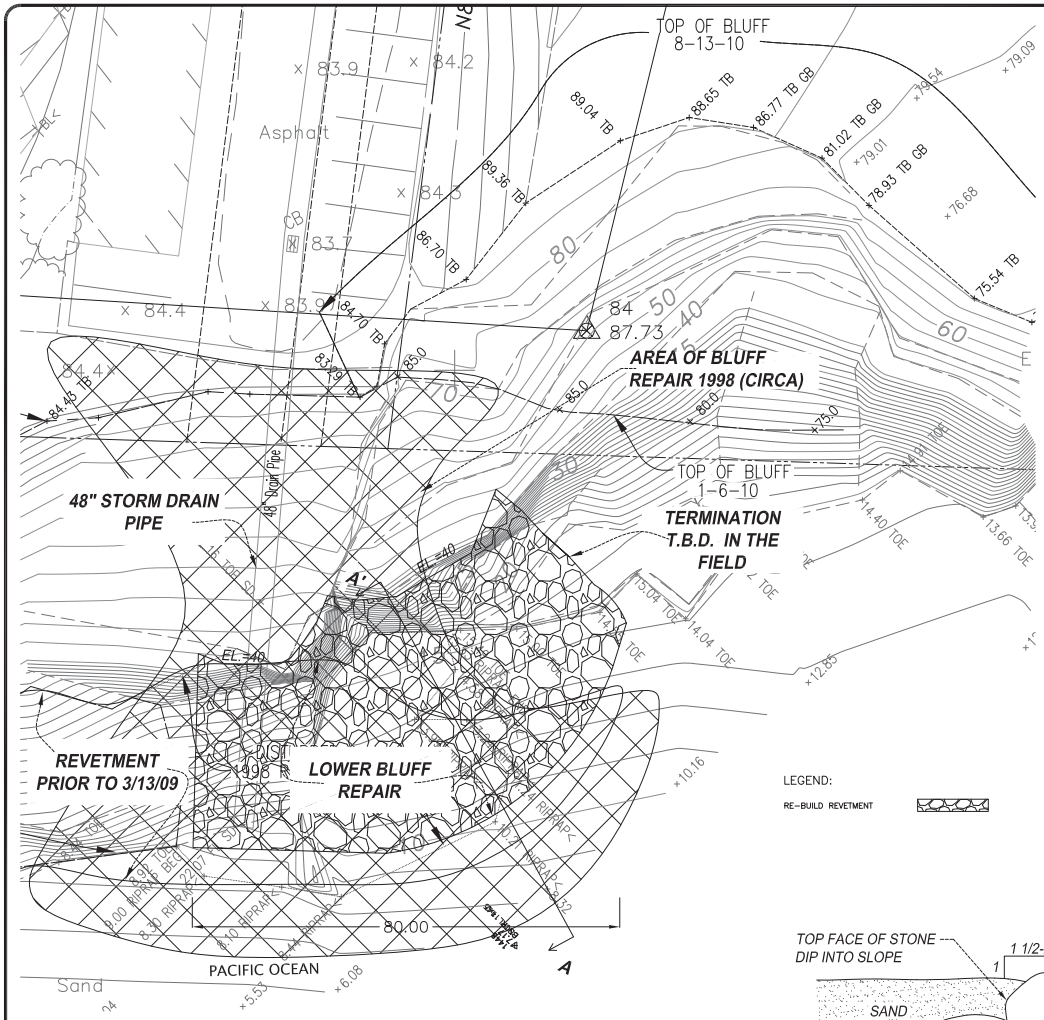
SCALE

JOB NO.

SHEET S2

OF 6 SHEETS

2-11-009
Exhibit 12
Page 2 of 6



NORTH

GRAPHIC SCALE
10 0 5 10 20 40
1" = 10'

REVETMENT REPAIR

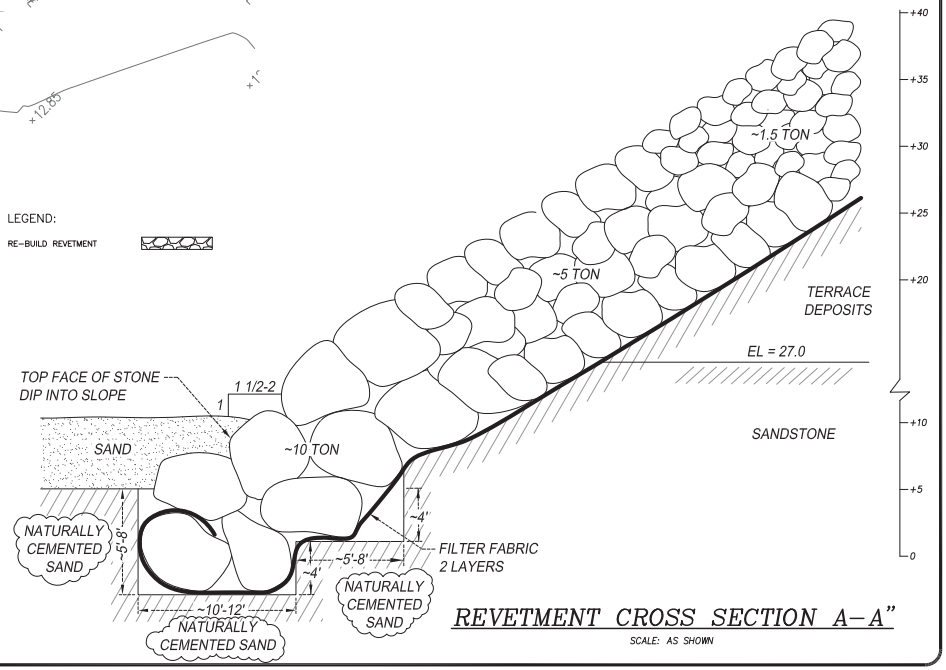
SCALE: 1" = 10'

LEGEND:

RE-BUILD REVETMENT

REVETMENT REPAIR RECOMMENDATIONS

1. Reconstruct revetment at the drain terminus, contractor to discuss reconstruction sequence and methods with engineer.
   a. remove existing rock in workable sections, find lost rock in profiles, and inventory large, medium and small rock.
   b. in appropriate lengths along the work area (up to contractor) excavate a key way into existing bedrock material. Key way to be ~5 feet deep by 8 feet wide (can be benched).
   c. install filter fabric, 2 layers (Mirafi 500X or approved) up to as high as possible ~elevation +35 MSL.
   d. place large imported 10 ton stone in key.
   e. place medium size stone 4-6 ton on revetment from elevation ~+18 to ~+30 MSL.
   f. place smaller stone 1 - 2 ton and smaller on slope up to about elevation +40 or to the elevation of the exposed rock fill.
   g. filter fabric to be overlapped a minimum of 5-foot over existing fabric
2. Estimated import 400 tons of 10 ton stone.
3. Slurry seal and asphalt patch the tension cracks in the parking lot.



REVETMENT CROSS SECTION A-A"

SCALE: AS SHOWN

ATTACHMENT D

REVISIONS	BY

PROFESSIONAL ENGINEER * SKELLY * No. C 47857 EXP. 12/31/11 * REGISTERED * DAVID * STATE OF CALIFORNIA

GeoSoils, Inc.
Geotechnical • Geologic • Coastal • Environmental
5741 Palmer Way, Carlsbad, CA 92010
760-438-3155

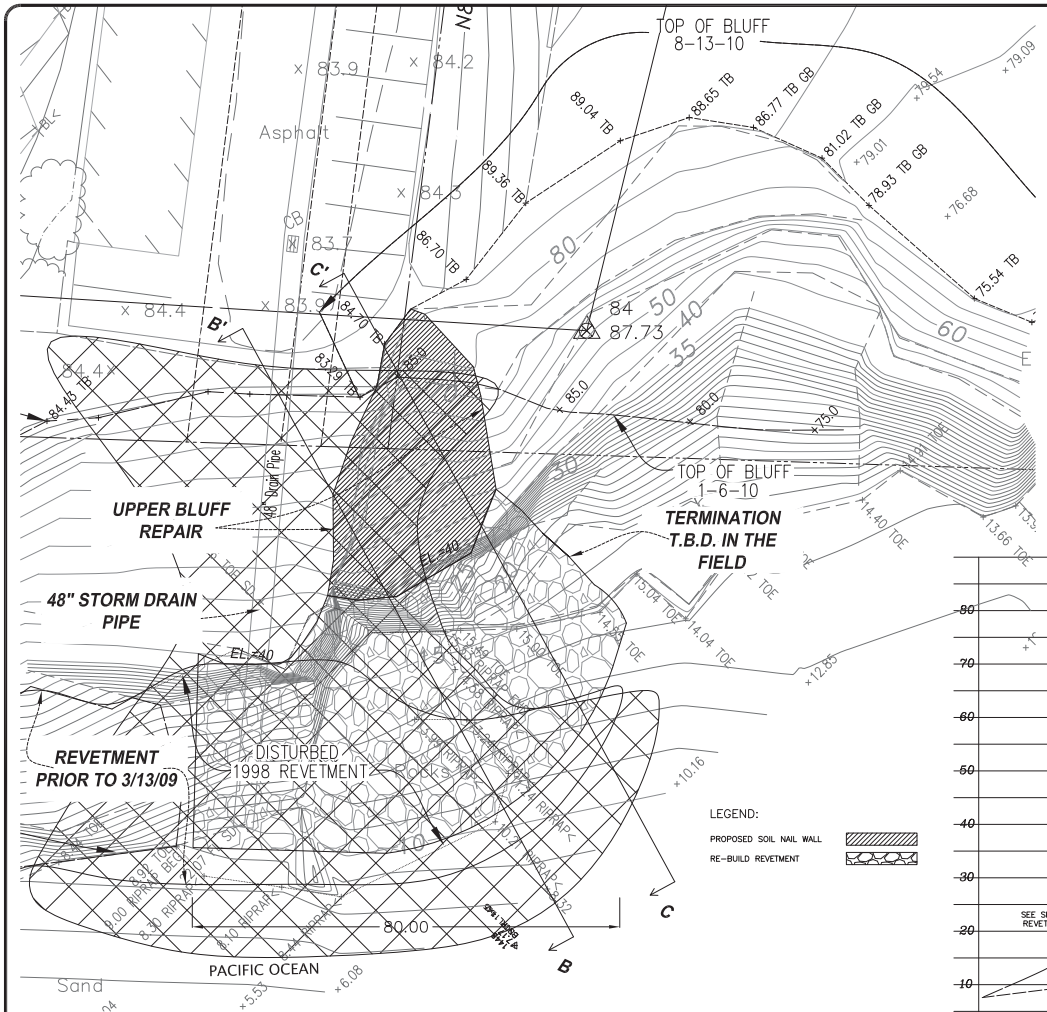
TITLE: City of Pacifica Storm Drain Emergency Repair

W.O. 560 14

CLIENT: AMCO
26 Executive Park Suite 125
Irvine, CA 92614

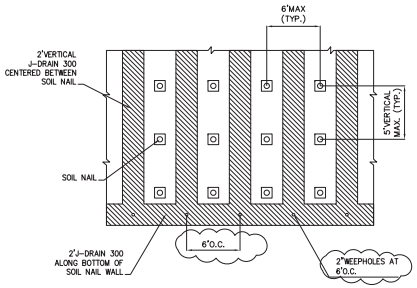
DRAWN	
CHECKED	
DATE	9-13-10
SCALE	
JOB NO.	
SHEET	S3
OF	6 SHEETS

2-11-009
Exhibit 12
Page 3 of 6



MID SLOPE REPAIR

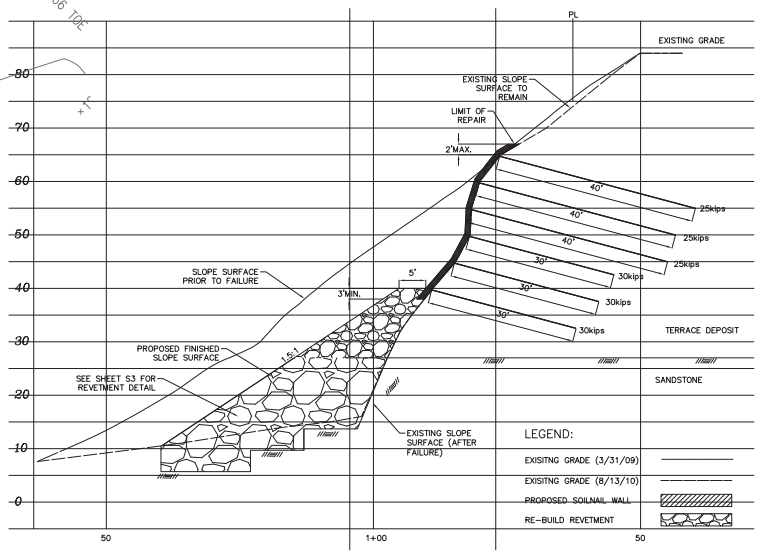
SCALE: 1" = 10'



SOIL NAIL WALL BACKDRAIN

SEE SHEET 5 FOR DETAILS

NO SCALE



CROSS SECTION B-B'

SCALE: 1" = 10'

NORTH

GRAPHIC SCALE

1" = 10'

ATTACHMENT D

REVISIONS | BY

PROFESSIONAL ENGINEER * REGISTERED * SKELLY * No. C 47857 EXP. 12/31/11 * STATE OF CALIFORNIA

GeoSoils, Inc.

Geotechnical • Geologic • Coastal • Environmental

5741 Palmer Way, Carlsbad, CA 92010

760-438-3155

TITLE: City of Pacifica Storm Drain Emergency Repair

W.O. 5601-A-SC

CLIENT: AMCO 26 Executive Park Suite 125 Irvine, CA 92614

DRAWN

CHECKED

DATE 10-05-10

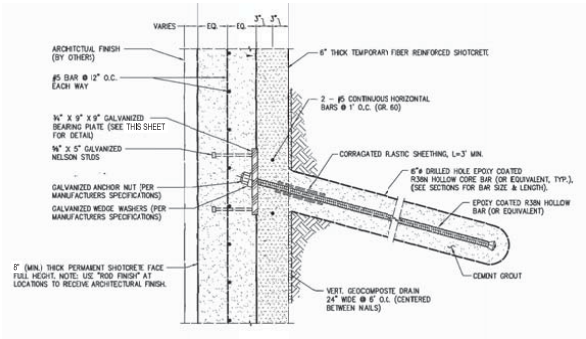
SCALE

JOB NO.

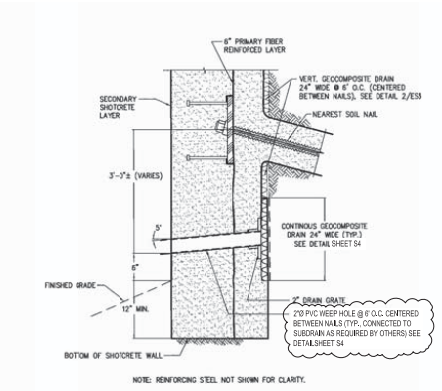
SHEET S4

OF 6 SHEETS

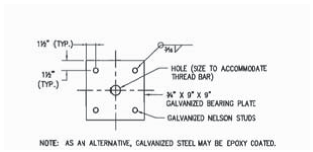
2-11-009
Exhibit 12
Page 4 of 6



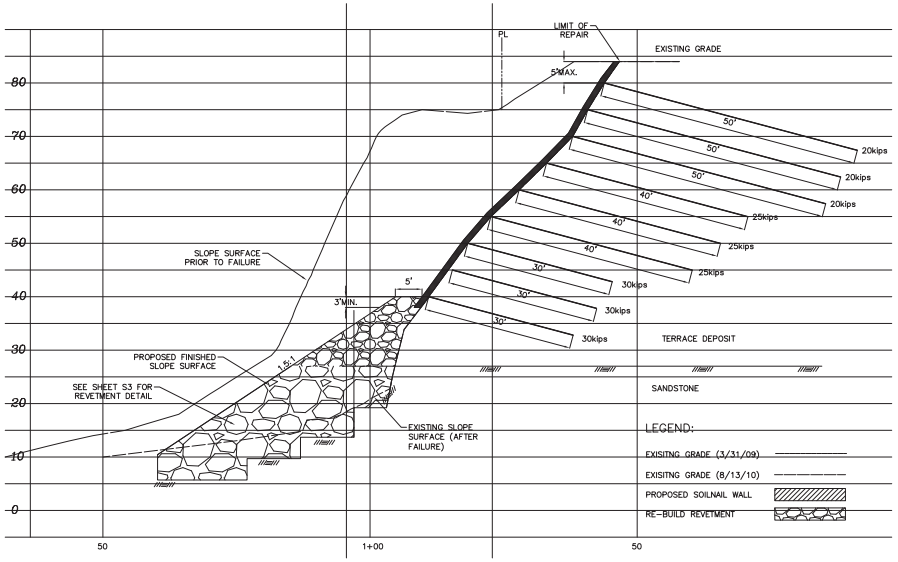
PERMANENT DCP SOIL NAIL DETAIL (TYPICAL)
NOT TO SCALE



GEOCOMPOSITE DRAIN & WEEPHOLE DETAIL (TYPICAL)
NOT TO SCALE



GALVANIZED BEARING PLATE (BY OTHERS)
NOT TO SCALE



CROSS SECTION C–C'
SCALE: 1" = 10'

ATTACHMENT D

REVISIONS	BY

PROFESSIONAL ENGINEER * REGISTERED * DAVID M. SKELLY * No. C 47857 EXP. 12/31/11 * STATE OF CALIFORNIA

GeoSoils, Inc.
Geotechnical • Geologic • Coastal • Environmental
5741 Palmer Way, Carlsbad, CA 92010
760-438-3155

TITLE: *City of Pacifica Storm Drain Emergency Repair*

W.O. 5601-A-SC

CLIENT: AMCO
26 Executive Park Suite 125
Irvine, CA 92614

DRAWN	
CHECKED	
DATE	10–05–10
SCALE	
JOB NO.	
SHEET	S5
OF	6 SHEETS

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL CONFORM TO THE 2007 CBC, LOCAL BUILDING AND SAFETY CODES AND TO THE RULES AND REGULATIONS OF ALL AGENCIES HAVING JURISDICTION.
2. CONTRACTORS SHALL VERIFY ALL DIMENSIONS AND CONDITIONS AT THE SITE AND REPORT ANY VARIATIONS TO THE ENGINEER. OWNER TO PROVIDE THE NECESSARY CONSTRUCTION STAKES FOR WALL LOCATIONS.
3. GENERAL SITE WORK SHALL BE COORDINATED WITH INSTALLATION OF SHOTCRETE WALL TO ENSURE SAFE WORKING CONDITIONS AND PREVENT LOSS OF GROUND AND THE CAVING OF BANKS
4. THE SOIL CONDITIONS SHALL BE VERIFIED IN THE FIELD BY THE GEOTECHNICAL ENGINEER. SHOTCRETE WALL DESIGN SHALL BE REVISED IF SITE CONDITIONS ENCOUNTERED DIFFER FROM THOSE OF THE DESIGN.
5. A THOROUGH SITE UTILITY LOCATION INVESTIGATION SHALL BE COMPLETED BEFORE ANY WORK COMMENCES AND ANY CONFLICT BETWEEN UTILITIES OR OTHER STRUCTURES AND EXCAVATION SUPPORT SYSTEM SHALL BE REPORTED TO THE ENGINEER.
6. THE CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES AND/OR ADJACENT BASEMENTS AND SHALL PROTECT THEM FROM HARM, AS REQUIRED, TO PREVENT DAMAGE AND TO MAINTAIN THEIR USE. CONSULT THE DESIGN ENGINEER IF UTILITY LINES OR PIPING ARE ENCOUNTERED DURING DRILLING OF TIEBACKS OR SOLDIER PILES.
7. DRILL EQUIPMENT & CRANES SHALL KEPT A SAFE DISTANCE FROM THE EDGE OF THE BLUFF.
8. ALL PERMITS AND FEES SHALL BE THE RESPONSIBILITY OF THE OWNER. AS WELL AS, ANY FEES DUE TO EASEMENT ENCROACHMENTS AND OTHER PERMISSIONS.
9. ALL AREAS DISTURBED DURING CONSTRUCTION, SHALL BE RESTORED TO THEIR PRE-CONSTRUCTION CONDITION OR BETTER, WITHIN 3 DAYS OF COMPLETION OF CONSTRUCTION.
10. ANY BEACH SAND IMPACTED BY CONSTRUCTION OPERATION, SHALL BE FILTERED AS NECESSARY TO REMOVE ALL CONSTRUCTION DEBRIS. DEBRIS SHALL BE REMOVED FROM THE SITE.
11. WITHIN SEVEN DAYS OF COMPLETION OF THE WORK AUTHORIZED BY THE EMERGENCY PERMIT, THE PERMITEE SHALL SUBMIT PHOTOGRAPHIC EVIDENCE OF COMPLIANCE WITH THE EMERGENCY PERMIT.

SHOTCRETE WALL NOTES:

INSPECTIONS: ALL SHOTCRETE WALL PROCEDURES SHALL BE CONTINUOUSLY OBSERVED BY THE DESIGN ENGINEER OR HIS REPRESENTATIVE. SPECIAL INSPECTION IS REQUIRED FOR THE FOLLOWING:

A. CONCRETE GREATER THAN 2000 PSI.
B. DRILLING AND INSTALLATION OF SOIL NAILS (GEOTECHNICAL ENGINEER).
C. FIELD WELDING. (IF REQUIRED)
D. TESTING OF SOIL NAILS (GEOTECHNICAL ENGINEER).
E. REINFORCING STEEL AND SHOTCRETE PLACEMENT

PROCEDURE FOR ANCHOR AND SHOTCRETE WALL:

1. LINE AND GRADES SHALL BE ESTABLISHED BY THE OWNER AND VERIFIED BY THE CONTRACTOR
11. EXISTING SLOPE SURFACE SHALL BE CLEARED OF LOOSE SOIL, DEBRIS AND ORGANIC MATERIALS.
12. START SHOTCRETE IN LIFTS OF FIVE (5) FEET OR AS DIRECTED BY THE ENGINEER.
13. DRILL ANCHOR SHAFTS TO DEPTHS INDICATED. IF CAVING OCCURS, USE CASING OR HOLLOW STEM AUGER. SHAFT SHALL BE FREE OF LOOSE SPOILS PRIOR TO TO GROUTING.
5. INSERT ROD OR STRAND WITH CENTRALIZERS IN FREE STANDING OR CASED SHAFTS. ATTACH ROD OR STRAND TO HOLLOW STEM AUGER POINT IF AUGERED.
6. BACKFILL ANCHOR LENGTH WITH STRUCTURAL CONCRETE. BACKFILL THE REMAINDER OF THE ANCHOR SHAFT WITH SLURRY AFTER TIEBACK TEST.
7. AFTER ANCHORS HAS BEEN BACKFILLED, PLACE TEMPORARY REINFORCEMENT AND SHOTCRETE TO THE BLUFF FACE. A BEARING PLATE SHALL BE PLACED ON THE ANCHOR AND BOLTED WITH A BEARING NUT.
8. REPEAT STEPS 4 THROUGH 7 FOR EACH ADDITIONAL LEVEL OF ANCHORS OR UNTIL BOTTOM OR TOP OF WALL IS REACHED.
9. APPLIED PERMANENT SHOTCRETE FACE AS SHOWN ON DETAILS SHEET S6.
10. LOCK-OFF ANCHOR TO THE DESIGN LOAD SHOWN HEREIN AFTER THE SHOTCRETE HAS REACH A MINIMUM OF 70% OF THE DESIGN STRENGTH 9. CAP THE ANCHOR AFTER LOCK-OFF WITH CONCRETE. GALVANIZED STEEL MAY BE USE AS AN OPTION FOR CORROSION PROTECTION.

TESTING OF ANCHORS

1. WHEN ANCHOR GROUT HAS ATTAINED MINIMUM COMPRESSIVE STRENGTH OF 75% OF DESIGN STRENGTH, STRESS TIEBACK TO TEST LOAD SHOWN ON DRAWINGS AND IN ACCORDANCE WITH TIEBACK TESTING PROCEDURE SPECIFICATIONS.
2. EACH ANCHOR SHALL BE SATISFACTORILY PROOF TESTED TO A MINIMUM OF 150% OF THE DESIGN LOAD.
3. ALLOWABLE PULLOUT RESISTANCE FOR THIS PROJECT IS 2110 PLF (POUND PER LINEAL FOOT,. SOIL MATERIAL TO BE IDENTIFIED AT SITE BY THE GEOTECHNICAL ENGINEER'S REPRESENTATIVE.
4. AN ANCHOR IS DEEMED SATISFACTORY WHEN THE ANCHOR ROD OR STRANDS DOES NOT MOVE MORE THAN TWELVE INCHES (12") DURING APPLICATION OF THE TEST LOAD, AT 150% TEST LOAD, THE ANCHOR MOVEMENT SHALL NOT EXCEED 0.10 INCH DURING A 15 MINUTE TEST PERIOD WITHOUT LOSS OR BLEEDING OF PRESSURE.
5. IN THE EVENT OF A FAILURE OF AN ANCHOR, TO ACHIEVE THE TEST LOAD, THE ULTIMATE LOAD SHALL BE RECORDED. THIS ANCHOR WILL THAN BE ASSIGNED A VALUE OF 50 % OF THE ULTIMATE LOAD AND LOCKED AT THAT LOAD. AN EXTRA ANCHOR WILL BE INSTALLED AT AN ANGLE AND LOCATION TO BE APPROVED BY THE ENGINEER. THE EXTRA ANCHOR SHALL ATTAIN THE BALANCE OF THE REQUIRE LOAD % OF THE BALANCE, AS STATED IN ITEM 2 ABOVE AND BE TESTED TO A 150%.
6. THE CONTRACTOR SHALL PROVIDE ADDITIONAL TEMPORARY SUPPORT AS MAY BE REQUIRED DURING THE TEST LOADING OF ANCHORS.
7. ANCHORS SHALL BE LOCKED OFF TO WITHIN 10% OF THE DESIGN LOAD
8. HYDRAULIC JACKS SHALL BE CALIBRATED AND CERTIFIED BY AN APPROVED TESTING LABORATORY. THE CERTIFICATION AND CALIBRATION SHEETS OF EACH JACK USED SHALL BE MADE AVAILABLE TO THE SHORING INSPECTOR.
9. THE GEOTECHNICAL ENGINEER SHALL OBSERVED THE TESTING OF ALL ANCHORS, KEEP A RECORD OF ALL TEST LOADS AND TOTAL ANCHOR MOVEMENT. THESE RECORD SHALL BE KEPT AT THE JOB SITE AND SHALL BE MADE AVAILABLE FOR INSPECTION. THE SOILS ENGINEER SHALL POST WRITTEN CERTIFICATION AT THE JOB SITE INDICATING THAT THE ANCHORS HAVE BEEN TESTED IN ACCORDANCE WITH THE PROCEDURE INDICATED ABOVE.

ATTACHMENT D

MATERIALS:

1. MISCELLANEOUS STEEL SHALL CONFORM TO REQUIREMENTS OF ASTM A-36.
2. WELDING. ELECTRIC ARC USING ELECTRODES E70-XX AND PLACED BY A CERTIFIED WELDER. FIELD WELDING TO BE CONTINUOUSLY INSPECTED.
3. ANCHOR (EITHER OF THE FOLLOWING ITEMS):
   A. DYWIDAG R38N HOLLOW CORE EPOXY COATED THREADED BAR AND SHALL COMPLY WITH THE LATEST EDITION OF ASTM A-722, A-615 AND SHALL HAVE A MINIMUM YIELD STRENGTH OF 90 KIPS, OR SIMILAR.
   B. HIGH STRENGTH TENDONS SHALL BE SUITABLE WIRE STRANDS WITH A MINIMUM ULTIMATE STRENGTH OF 270 KIPS AND 0.6 INCHES DIAMETER (58.8 KIPS ULTIMATE LOAD EACH STRAND). FOR USE OF THIS ANCHOR TYPE, THE CONTRACTOR SHALL SUBMIT DOCUMENTATION OT THE DESIGN ENGINEER FOR APPROVAL PRIOR TO PLACEMENT OF ANCHOR.
5. ANCHOR PLATES, NUTS, & WASHERS SHALL COMPLY WITH AASHTO M291, 75 KSI AND SHALL BE ABLE TO HOLD THE DESIGN LOADS.
6. ALL STRUCTURAL DETAILS OR SHAPES SHOWN ARE MINIMUM SIZES REQUIRED. EQUAL OR GRATER SIZES MAY BE SUBSTITUTE WITH THE DESIGN ENGINEER'S PRIOR APPROVAL.
7. SHOTCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS. SHOTCRETE SHALL CONTAIN NOT LESS THAN 610 LBS OF PORTLAND CEMENT PER CY AND SHALL COMPLY WITH CBC 2007.
6. THE GROUT FOR THE ANCHORS SHALL HAVE A MAXIMUM WATER-CEMENT RATIO OF 0.45 BY WEIGHT AND A MINIMUM COMPRESSIVE OF 2500 PSI AT 3 DAYS AND 3000 PSI AT 28 DAYS. TYPE V CEMENT SHALL BE USED.
9. MINIMUM LAP OR SPLICE LENGTH FOR REINFORCEMENT IN SHOTCRETE SHALL BE 40 BAR DIAMETERS OR AS SHOWN ON PLANS.
10. REINFORCEMENT STEEL SHALL BE EPOXY COATED AND SHALL COMPLY WITH LATEST ASTM-615 SPECIFICATIONS.
11. BENDS SHALL BE IN ACCORDANCE WITH LATEST ACI CODE.
12. STEEL STUDS SHALL CONFORM TO ASTM-108 (50 KSI).

WALL DRAINS

1. A 2-FOOT WIDE LAYER OF J-DRAIN 300 OR EQUAL, SHALL BE INSTALLED BETWEEN THE EXISTING GROUND AND THE SHOTCRETE WALL, AND BETWEEN THE SOIL NAILS AS SHOWN HEREIN.
2. A 2-FOOT WIDE J-DRAIN 300 SHALL BE INSTALLED WITHIN THE BOTTOM 16" OF THE SHOTCRETE WALL AND SHALL BE TIED TO THE VERTICAL SECTIONS OF THE DRAINS.
3. 2-INCH WEEP HOLES SHALL BE PROVIDED AT 5-FOOT INTERVALS ALONG THE LENGTH OF THE WALL AND SHALL BE LOCATED WITHIN THE BOTTOM 16 INCHES OF THE SHOTCRETE WALL AS SHOWN HEREIN.

BASIS OF DESIGN:

THE SOIL PARAMETERS USED FOR THE SOIL NAIL RETAINING WALL DESIGN ARE AS FOLLOW:

ANGLE OF INTERNAL FRICTION	Ø = 45 DEG
SOIL UNIT WEIGHT	γ = 108 PCF
SKIN FRICTION	f = 4230 PSF
COHESION	C = 250 PSF
LIVE LOAD SURCHARGE	q = 250 PSF
SEISMIC COEFFICIENT	kh= 0.281g

THE SPECIAL INSPECTION SHOWN BELOW ARE
IN ADDITION TO THE ORIGINAL INSPECTION REQUIREMENTS.
Summary of Special Inspection

No.	Description of Type of Inspection Required, Location, Remarks, etc.	Design Strength
1	SHOTCRETE STRENGTH @ 28 DAYS (PER CBC 2007)	4000 PSI
2	ANCHOR GROUT STRENGTH @ 28 DAYS (PER CBC 2007)	3000 PSI
3	REINFORCING STEEL & SOIL NAILS (PER CBC 2007)	
4	SOILS ENGINEER TO INSPECT PLACEMENT OF WALL BACKFILL AND PROVIDE COMPACTION	
	TEST RESULTS	90% min.
5	THE SOILS ENGINEER SHALL INSPECT AND APPROVE THE BACKWALL DRAIN	
6	THE SOILS ENGINEER SHALL INSPECT AND APPROVE LOCATION AND DEPTH OF ANCHORS	PER SECT. B-B'
7	THE SOILS ENGINEER SHALL OBSERVE AND APPROVE ANCHOR TEST (DL= DESIGN LOAD)	150% DL
8	FIELD WELDING (PER CBC 2007)	E70-XX

SPECIAL INSPECTIONS SHALL COMPLY TO THE MINIMUM STANDARDS OF THE CBC 2007 EDITION OF THE CALIFORNIA BUILDING CODE AND TITLE 24 OF THE CALIFORNIA CODE OF REGULATIONS.

INSPECTION AND QUALITY CONTROL/ASSURANCE ACTIVITIES

1. FOR STEEL COMPONENT, CENTERLIZERS AND DRAINAGE MATERIALS, OBTAIN SAMPLES OF TESTING (WHEN SPECIFIED) AND CHECK ALL MIL TEST CERTIFICATES FOR COMPLIANCE WITH SPECIFICATIONS.
2. VISUALLY CHECK ALL SOIL NAIL TENDONS AND REINFORCING STEEL FOR DAMAGE AND DEFECTS UPON DELIVERY AND PRIOR TO USE.
3. VISUALLY CHECK EPOXY COATED OR ENCAPSULATED TENDONS FOR COMPLIANCE WITH SPECIFICATIONS AND FOR ANY DAMAGE TO THE CORROSION PROTECTION. TOUCH UP DAMAGED AREAS WITH EPOXY PAINT.
4. CONFIRM MIX DESIGN COMPLIANCE OF SOIL NAIL GROUT AND FACING SHOTCRETE.
5. WHEN SPECIFIED, TAKE GROUT (CUBES) AND/OR SHOTCRETE SAMPLES (TEST PANELS AND CORES) FOR TESTING.
6. VERIFY COMPLIANCE OF BACKDRAIN COMPOSITE WITH PLANS AND SPECIFICATIONS.
7. VERIFY ADEQUACY OF FIELD STORAGE OF CONSTRUCTION MATERIALS TO PREVENT DAMAGE OR DEGRADATION.
8. INSPECT NAIL BARS FOR DAMAGE, REQUIRED LENGTH AND MILL TEST CERTIFICATES TO CERTIFY GRADE AND CORROSION PROTECTION.
9. VERIFY THAT THE STABILITY OF THE FACE IS MAINTAINED AT ALL STAGES OF CONSTRUCTION; IF STABILITY CAN NOT BE MAINTAINED, STOP WORK AND NOTIFY DESIGN ENGINEER.
10. VERIFY THAT THE NAILS BE INSTALLED TO THE CORRECT ORIENTATION, SPACING, SIZE/GRADE AND LENGTH; IN DRILLING THE SHAFT, THE CONTRACTOR MUST MAINTAIN AN OPEN HOLE WITHOUT ANY LOSS OF GROUND, OTHERWISE CASING MUST BE USED. SUBSIDENCE OF GROUND ABOVE THE DRILLING LOCATION OF LARGER QUANTITIES OF SOIL REMOVAL WITH LITTLE OR NO ADVANCEMENT OF THE DRILL HEAD SHOULD NOT BE PERMITTED; DRILLING MUD SHOULD NO BE PERMITTED BECAUSE BENTONITE RESIDUE ON THE ANCHOR SHAFT PERIMETER WILL LIKELY REDUCE THE CAPACITY OF THE NAIL.
11. VERIFY THAT CENTERLIZERS ARE USED TO PROVIDE PROPER LOCATION OF THE NAILS IN THE DRILLED SHAFT; INSERTION OF THE BAR MAY BE DONE BEFORE OR AFTER TREMIE GROUTING THE DRILL SHAFT; CENTERLIZERS MUST BE PLACED ALONG THE LENGTH OF THE NAIL SUCH THAT FLOW OF GROUT IN THE DRILL SHAFT IS NOT IMPEDED.
12. INABILITY TO ACHIEVE THE REQUIRED NAIL LENGTH IN UNCASED HOLES IS USUALLY A SIGN OF CAVING AND MAY REQUIRED RE-DRILLING.
13. VERIFY THAT PROPER GROUTING OF THE DRILLED SHAFT AROUND THE NAIL BAR IS EMPLOYED; THE GROUTING OPERATION INVOLVES INJECTING GROUT AT THE LOWEST POINT OF THE SHAFT IN ORDER TO FILL THE SHAFT EVENLY WITHOUT AIR VOIDS.
14. VERIFY THAT THE SHOTCRETE IS PLACED TO THE REQUIRED THICKNESS. IS PLACED IN ACCORDANCE WITH STANDARD PRACTICE AND THAT THE FACING REINFORCEMENT IS INSTALLED IN ACCORDANCE WITH THE SPECIFICATIONS AND PLANS.
15. VERIFY PROPER PLACEMENT OF THE BEARING PLATE; DEVIATIONS OF PERPENDICULARLY BETWEEN THE PLATE AND NAIL, SHOULD BE ADJUSTED BY USING BEVEL WASHERS BELOW THE NUT.
16. VERIFY PROPER INSTALLATION OF DRAIN PIPES, WEEP HOLES AND PREFABRICATED VERTICAL DRAINS; IT IS ESSENTIAL THAT HYDRAULIC CONTINUITY OF THE VERTICAL DRAINS BE ASSURED IN INSTALLED INCREMENTS.
17. VERIFY THAT GROUT AND SHOTCRETE CUBES ARE TAKEN FOR STRENGTH TESTING OR PERMANENT WALL.

REVISIONS	BY

PROFESSIONAL ENGINEER * REGISTERED * SKELLY * No. C 47857 * EXP. 12/31/11 * CIVIL * STATE OF CALIFORNIA

GeoSoils, Inc.
Geotechnical • Geologic • Coastal • Environmental
5741 Palmer Way, Carlsbad, CA 92010
760-438-3155

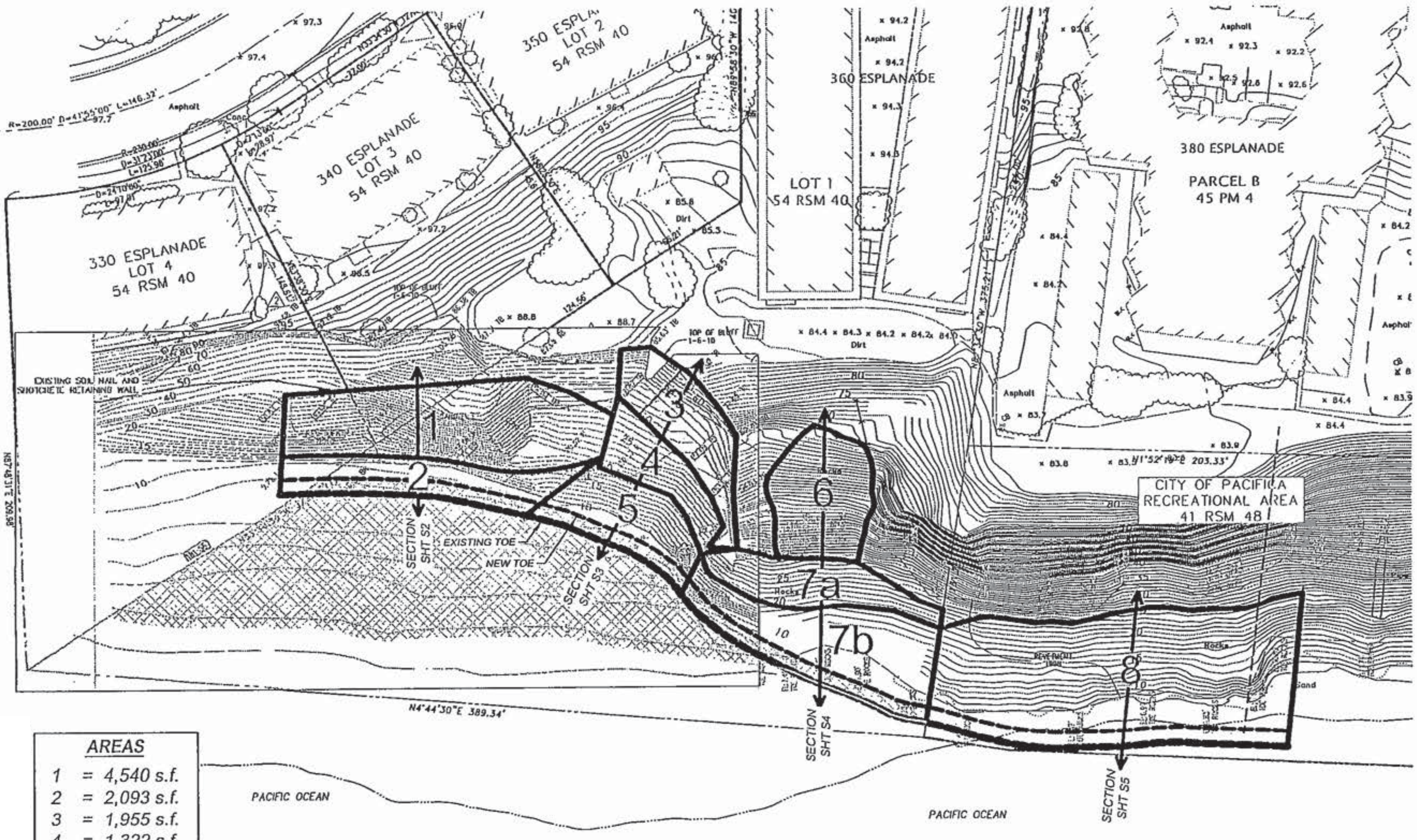
TITLE: *City of Pacifica Storm Drain Emergency Repair*

W.O. 5601-A-SC

CLIENT: AMCO
26 Executive Park Suite 125
Irvine, CA 92614

DRAWN
CHECKED
DATE 10-05-10
SCALE
JOB NO.
SHEET S6
OF 6 SHEETS

2-11-009
Exhibit 12
Page 6 of 6



AREAS		
1	=	4,540 s.f.
2	=	2,093 s.f.
3	=	1,955 s.f.
4	=	1,322 s.f.
5	=	1,952 s.f.
6	=	2,202 s.f.
7a	=	1,434 s.f.
7b	=	3,468 s.f.
8	=	7,848 s.f.

LEGEND

OTD AREA = 14,171 s.f.

PLAN VIEW

SCALE: 1" = 20'

PROJECT ROCK SUMMARY

EXISTING ROCK	~12,211 TONS
ROCK TO BE REMOVED	~5,086 TONS

These drawings are for permitting purposes only

9/22/11

DRAFTING BY: SCHMAHL DRAFTING
DAVE SCHMAHL (760)414-3978

GeoSoils, Inc.
Geotechnical • Geologic • Coastal • Environmental
5741 Palmer Way, Carlsbad, CA 92010
760-438-3155

TITLE: Revised Shore Protection
360 & 380 Esplanade Ave., Pacifica, CA

CLIENT: AMCO 26 Executive Park Suite 125 Irvine, CA 92614
W.O. 56014

9/16/11

S1
5

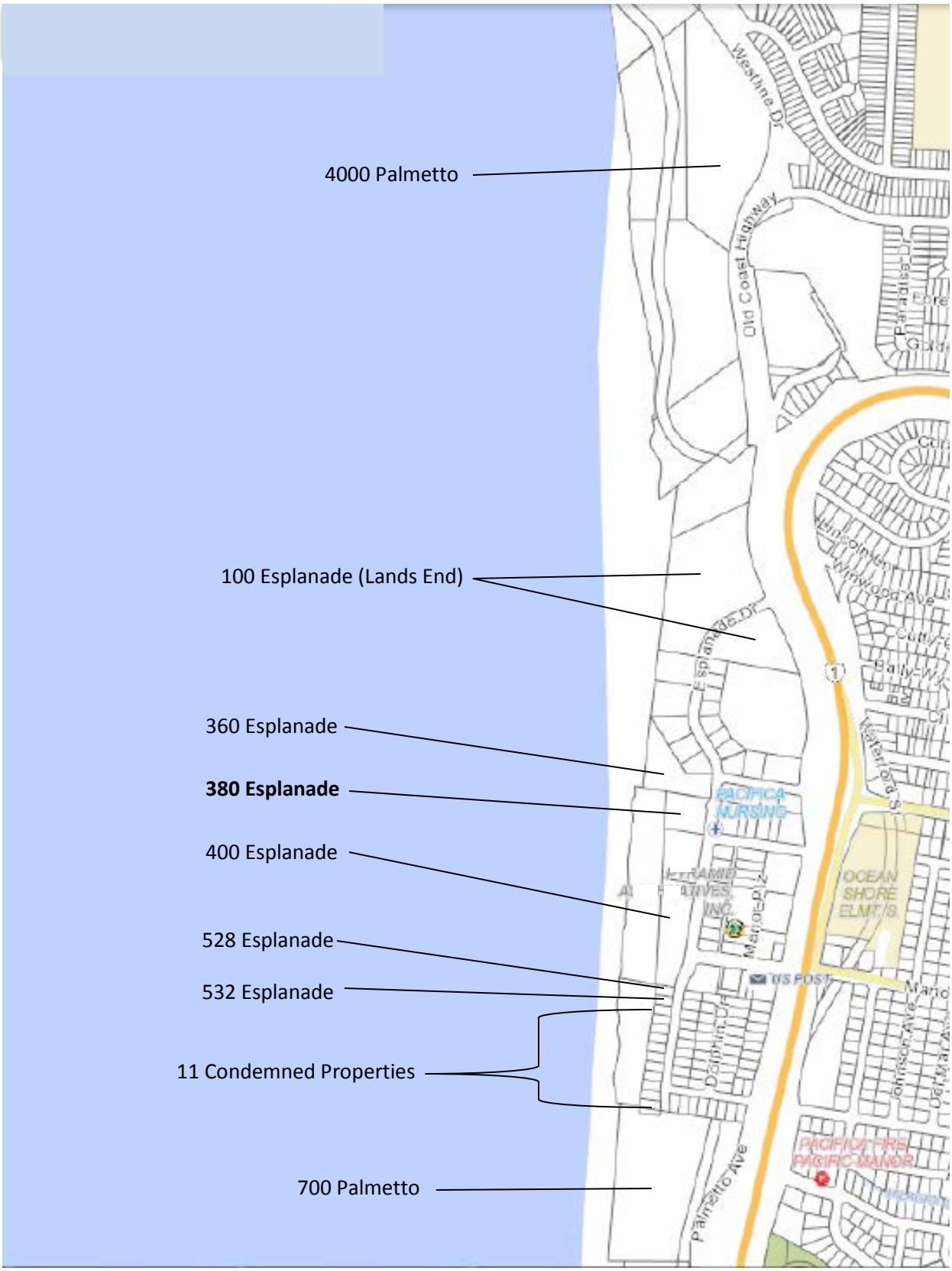
2-11-009
Exhibit 13
Page 1 of 1

Property Location & APN	Square Feet	Sales Price & Month, Year	Sales Price Adjusted to Nov 30, 2013 with Assessor improvement discount	
540 Esplanade 009-161-040	5200	$150,150 March 1999	$327,440.66	Condemnation by City of Pacifica.[1]
544 Esplanade 009-161-050	5200	$80,115 March 1999	$174,711.35	Condemnation by City of Pacifica.
548 Esplanade 009-161-060	5200	$150,150 March 1999	$327,440.66	Condemnation by City of Pacifica.
552 Esplanade 009-161-070	5200	$113,400 March 1999	$247,297.84	Condemnation by City of Pacifica.
556 Esplanade 009-161-080	5200	$98,700 March 1999	$215,240.71	Condemnation by City of Pacifica.
560 Esplanade 009-161-090	5200	$107,100 March 1999	$233,559.07	Condemnation by City of Pacifica.
009-161-130 & 009-161-140	8470	$173,460 April 1999	$354,216.93	Condemnation by City of Pacifica.
009-161-120	5720	$75,000 May 1999	$146,692.58	Condemnation by City of Pacifica.
536 Esplanade 009-161-030	5200	$155,400 July 1999	$300,044.16	Condemnation by City of Pacifica.
4000 Palmetto 009-401-030	335412	$3.1 million May 2000	$4,715,396.00	
564 Esplanade 009-161-100	5200	$95,550 December 2000	$137,055.78	Condemnation by City of Pacifica.
568 Esplanade 009-161-110	5460	$95,550 December 2000	$137,055.78	Condemnation by City of Pacifica.

[1] **For all condemnations, the Agreement of Purchase and Sale date is used.**

Property Location & APN	Square Feet	Sales Price & Month, Year	Sales Price Adjusted to Nov 30, 2013 with Assessor improvement discount	
700 Palmetto*[2] 009-074-030	360859	$5,875,000 July 2001	$7,666,339.23	
400 Esplanade 009-131-030	94525	Appraised $2.9 million June 2005	$2,442,418.03	
100 Esplanade* 009-023-070 & 009-024-010	404150	$44.8 million June 2005	$21,129,442.62	
360 Esplanade* 009-413-060	95614	$5,150,00 September 2006	$3,279,932.85	
380 Esplanade* 009-131-060	46200	$6,950,000 September 2006	$4,552,783.35	
528 Esplanade* 009-161-010	5200	$375,000 January 2009	$198,070.17	
532 Esplanade* 009-161-020	5200	$270,000.00 Feb 2009	$148,620.54	
SUM	1,408,410		$46,733,758.32	
AVERAGE ADJUSTED SALES PRICE PER SQUARE FOOT = $33.18				

[2] **Asterisk indicates property has improvement that was discounted.**


4000 Palmetto
100 Esplanade (Lands End)
360 Esplanade
380 Esplanade
400 Esplanade
528 Esplanade
532 Esplanade
11 Condemned Properties
700 Palmetto
Westline Dr
Old Coast Highway
Esplanade Dr
Windward Ave
Balboa Ave
Valencia St
PACIFICA NURSING
OCEAN SHORE ELMT./S.
US POST
Dolphin Dr
Johnson Ave
Palmetto Ave
PACIFICA PIER
PACIFIC MANOR

400 ESPLANADE
MULTI PURPOSE TRAIL PROJECT
ENGINEER'S ESTIMATE

ITEM NO.	ITEM	UNIT OF MEASURE	ESTIMATED QUANTITY	UNIT PRICE	ITEM TOTAL
1	Site Preparation including	LS	1	$20,000	$20,000
	Clearing, Grubbing, Fence Removal				
2	10' Wide 4" AC Path	LF	600	$200	$120,000
3	Retaining/Seat Wall	LF	600	$300	$180,000
4	Class II Aggregate	CY	275	$80	$22,000
5	Grading	LS	1	$50,000	$50,000
6	Drainage Structure	EA	2	$2,000	$4,000
7	Interpretive/Educational Signs	LS	1	$10,000	$10,000
8	Signage	EA	8	$500	$4,000
9	PVC Pipe	LF	20	$300	$6,000
10	Erosion Control/Landscaping/Remove Ice Plants	LS	1	$40,000	$40,000
11	Sidewalk	LF	230	$150	$34,500
12	Curb Ramp	EA	3	$3,000	$9,000
13	Pavement Stripping and Marking	LS	1	$5,000	$5,000
14	Benches	EA	2	$2,000	$4,000
15	Bike Racks	EA	2	$1,500	$3,000

Total Construction =	$511,500
Geotechnical/Design, 10% =	$51,150
Contingency, 15% =	$76,725
Construction Management, 10% =	$51,150
Total Project Cost =	**$690,525**
Total Project Cost	**$690,525**
Construction Cost Index, 3%/year	$20,716
Construction Cost Index over 20 years	$414,315
Estimated Replacement Cost by 2034	$1,104,840
Annual Replacement Cost Amortization	$55,242
Estimated Annual Maintenance Cost	$18,000
Total Annual Maintenance Cost over 20 years	$360,000