CALIFORNIA COASTAL COMMISSION
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REGULAR CALENDAR
STAFF REPORT AND PRELIMINARY RECOMMENDATION

Application No.: 6-02-2

Applicant: Martha Gregg
Paul Santina

Agent: TerraCosta Consulting

Description: Application for follow-up permit to several emergency permits for application of liquid polymer spray over portion of bluff face, construction of approximately 35 ft.-high, 100 ft.-long tiedback concrete seawall at base of bluff, backfill behind the seawall consisting of a geogrid reinforced fill slope, an approximately 60 ft.-long retaining wall along the south side of the backfill and a below-grade retention system consisting of two 24-inch diameter drilled piers approximately 45 in depth placed along top of bluff seaward of the residence at 333 Pacific Avenue. The project also includes the request for after-the-fact approval for removal of approximately 120 sq. ft. from bluff side of the residence at 333 Pacific Avenue.

Site: 333 and 337 Pacific Avenue, Solana Beach, San Diego County.
APN Nos. 263-301-09 and 10

STAFF NOTES:

Summary of Staff's Preliminary Recommendation: Staff is recommending approval of the subject development as the applicants have demonstrated that the existing blufftop residences are in danger from erosion. The subject site has recently sustained a bluff collapse that has exposed a layer of cohensionless, clean sands and resulted in the removal of a portion of the residence at 333 Pacific Avenue. Due to the collapse and exposure of the clean sand layer and the damage to the residence, the applicant's geotechnical representative has concluded that the existing blufftop residences are both in

danger from erosion. The Commission's staff engineer and geologist have reviewed the applicants' geotechnical assessment and concur with its conclusions. The seawall structure and application of liquid polymer spray over clean sands have already been constructed pursuant to Emergency Permits issued by the Executive Director in August and September 2001 (ref. 6-01-134-G, 6-01-154-G/Gregg, Santina). In addition, pursuant to an Emergency Permit issued July 2002, a below-grade retention system has also been constructed seaward of the residence at 333 Pacific Avenue along with the construction of a geogrid fill slope behind the seawall that is supported on its south side by a retaining wall (6-02-78-G/Gregg). The subject permit represents the follow-up regular coastal development permit for all of the developments completed pursuant to the above-cited Emergency Permits. The applicants also request after-the-fact approval for removal of a portion of the structure that was immediately threatened by erosion.

The proposed development has been conditioned to mitigate its impact on coastal resources such as scenic quality, public access and recreation opportunities, and shoreline sand supply. A special condition has been attached which requires the applicant to acknowledge that should additional stabilization be proposed in the future, the applicant will be required to identify and address the feasibility of all alternative measures which would avoid additional alteration of the natural landform of the public beach or coastal bluffs, and would reduce the risk to the principle residential structure and provide reasonable use of the property. The recommended conditions also require the applicant to pay a beach sand mitigation fee to mitigate the direct and long-term impacts on shoreline sand supply. Other conditions involve the timing of construction, the appearance of the seawall, south side retaining wall and upper bluff retention system, long-term monitoring of the seawall and below-grade upper bluff retention system, and approval from other agencies.

Substantive File Documents: City of Solana Beach General Plan and Zoning Ordinance; San Diego County LCP; City of Solana Beach Special Use Permit #17-01-29; "Application for Use Permit Coastal Bluff Stabilization 333-337 Pacific Avenue" by TerraCosta Consulting dated 8/22/01; "Emergency Permit Request for Coastal Bluff Stabilization 333-337 Pacific Avenue" by TerraCosta Consulting dated 9/13/01; Geotechnical Basis of Design Shoreline Stabilization Project 333-337 Pacific Avenue" by TerraCosta Consulting dated 10/26/01; "Revised Geotechnical and Design Review of Documents Pertaining to the Proposed Shoreline Stabilization Project, 333 and 337 Pacific Avenue" letter from GeoSoils, Inc. dated 11/1/01; "Response to Third-party Geotechnical and Plan Review" by Terra Costa Consulting dated 12/19/01; CDP Nos. 4-87-161/Pierce Family Trust and Morgan, 6-87-371/Van Buskirk, 5-87-576/Miser and Cooper, 6-93-36-G/Clayton, 6-93-85/Auerbach, 6-93-131/Richards, et al, 6-93-136/Favero, 6-95-66/Hann, 6-98-39/Denver,Canter, 6-99-41/Bradley, 6-99-100/Presnell, et. al, #6-99-103/ Coastal Preservation Association, 6-00-66/Pierce, Monroe, 6-00-138/Kinzel,Greenberg, 6-02-78-G/Gregg, 6-02-130-G (Scism) and 6-03-008-G (Scism).

I. PRELIMINARY STAFF RECOMMENDATION:

The staff recommends the Commission adopt the following resolution:

MOTION: ***I move that the Commission approve Coastal Development Permit No. 6-02-2 pursuant to the staff recommendation.***

STAFF RECOMMENDATION OF APPROVAL:

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

RESOLUTION TO APPROVE THE PERMIT:

The Commission hereby approves a coastal development permit for the proposed development and adopts the findings set forth below on grounds that the development as conditioned will be in conformity with the policies of Chapter 3 of the Coastal Act and will not prejudice the ability of the local government having jurisdiction over the area to prepare a Local Coastal Program conforming to the provisions of Chapter 3. Approval of the permit 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.

See attached page.

III. Special Conditions.

The permit is subject to the following conditions:

1. As Built Plans. PRIOR TO THE ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the applicants shall submit for review and written approval of the Executive Director, as built plans for the seawall, reconstructed slope, modular retaining wall on the southern border of the reconstructed slope and the upper bluff retention system in substantial conformance with the submitted plans date stamped received on December 18, 2002 by TerraCosta Consulting. Said plans shall first be approved by the City of Solana Beach and revised to include the following:

a. Sufficient detail regarding the construction method and technology utilized for constructing a return wall on the north side so as to gradually blend into the

adjacent natural bluff. The return wall shall be designed and constructed to minimize the erosive effects of the approved seawall on the adjacent bluffs.

b. Sufficient detail regarding the construction method and technology utilized for texturing and coloring the seawall and below-grade upper bluff retention system. Said plans shall confirm, and be of sufficient detail to verify, that the seawall color and texture closely matches the adjacent natural bluffs, including provision of a color board indicating the color of the fill material.

c. Any existing permanent irrigation system located on the bluff top site shall be removed or capped.

d. All runoff from impervious surfaces on the top of the bluff shall be collected and directed away from the bluff edge towards the street.

e. Existing accessory improvements (i.e., decks, patios, walls, etc.) located in the geologic setback area on the site shall be detailed and drawn to scale on the final approved site plan and shall include measurements of the distance between the accessory improvements and the bluff edge (as defined by Section 13577 of the California Code of Regulations) taken at 3 or more locations. The locations for these measurements shall be identified through permanent markers, benchmarks, survey position, written description, or other method that enables accurate determination of the location of structures on the site.

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

2. Landscape Plan. **PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicants shall submit, for the review and written approval of the Executive Director, a plan for landscaping to vegetate the reconstructed bluff slope. The plan shall be prepared by a licensed landscape architect.

1. The plan shall demonstrate that:

(a) all vegetation planted on the site will consist of native, drought-tolerant plants,

(b) all planting will be completed by within 60 days after issuance of the permit,

(c) all required plantings will be maintained in good growing conditions through-out the life of the project, and, whenever necessary, shall be

replaced with new plant materials to ensure continued compliance with the landscape plan.

2. The plan shall include, at a minimum, the following components:

(a) a map showing the type, size, and location of all plant materials that will be on the developed site, topography of the developed site, and all other landscape features including any proposed temporary and limited irrigation for the proposed landscaping.

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

3. Mitigation for Impacts to Sand Supply. **PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicants shall provide evidence, in a form and content acceptable to the Executive Director, that a fee of $36,387.00 has been deposited in an interest bearing account designated by the Executive Director, in-lieu of providing the total amount of sand to replace the sand and beach area that will be lost due to the impacts of the proposed protective structure. All interest earned by the account shall be payable to the account for the purposes stated below.

The developed mitigation plan covers impacts only through the identified 30-year design life of the seawall. No later than 29 years after the issuance of this permit, the permittees or their successor in interest shall apply for and obtain an amendment to this permit that either requires the removal of the seawall within its initial design life or requires mitigation for the effects of the seawall on shoreline sand supply for the expected life of the seawall beyond the initial 30 year design life. If within the initial design life of the seawall the permittees or their successor in interest obtains a coastal development permit or an amendment to this permit to enlarge or reconstruct the seawall or perform repair work that extends the expected life of the seawall, the permittee shall provide mitigation for the effects of the seawall on shoreline sand supply for the expected life of the seawall beyond the initial 30 year design life.

The purpose of the account shall be to establish a beach sand replenishment fund to aid SANDAG, or a Commission-approved alternate entity, in the restoration of the beaches within San Diego County. The funds shall be used solely to implement projects which provide sand to the region's beaches, not to fund operations, maintenance or planning studies. The funds shall be released only upon approval of an appropriate project by the Executive Director of the Coastal Commission. The funds shall be released as provided for in a MOA between SANDAG, or a Commission-approved alternate entity and the Commission, setting forth terms and conditions to assure that the in-lieu fee will be expended in the manner intended by the Commission. If the MOA is terminated, the Commission can appoint an alternative entity to administer the fund.

4. Monitoring Program. **PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicants shall submit to the Executive Director for review and written approval, a monitoring program prepared by a licensed civil engineer or geotechnical engineer to monitor the performance of the seawall, reconstructed slope and upper bluff retention system which requires the following:

a. An annual evaluation of the condition and performance of the seawall, geogrid slope and upper bluff retention system addressing whether any significant weathering or damage has occurred that would adversely impact the future performance of the structures. This evaluation shall include an assessment of the color and texture of the seawall and any exposed areas of the upper bluff retention system comparing the appearance of the structures to the surrounding native bluffs. In addition, the evaluation shall include an assessment of the appearance of the geogrid slope structure.

b. Annual measurements of any differential retreat between the natural bluff face and the seawall face, at the north end of the seawall and at 20-foot intervals (maximum) along the top of the seawall face/bluff face intersection. The program shall describe the method by which such measurements shall be taken.

c. Provisions for submittal of a report to the Executive Director of the Coastal Commission by May 1 of each year (beginning the first year after construction of the project is completed) for a period of three years and then, each third year following the last the annual report, for the life of the approved seawall and upper bluff retention system. However, reports shall be submitted in the Spring immediately following either:

    1. An "El Niño" storm event – comparable to or greater than a 20-year storm.

    2. An earthquake of magnitude 5.5 or greater with an epicenter in San Diego County.

    Thus reports may be submitted more frequently depending on the occurrence of the above events in any given year.

d. Each report shall be prepared by a licensed civil engineer, geotechnical engineer. The report shall contain the measurements and evaluation required in sections a, and b above. The report shall also summarize all measurements and analyze trends such as erosion of the bluffs or changes in sea level and the stability of the overall bluff face, including the upper bluff area, and the impact of the seawall on the bluffs to either side of the wall. In addition, each report shall contain recommendations, if any, for necessary maintenance, repair, changes or modifications to the project.

e. An agreement that the permittee shall apply for a coastal development permit within 90 days of submission of the report required in subsection c. above for any necessary maintenance, repair, changes or modifications to the project recommended by the report that require a coastal development permit.

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

5. Storm Design/Certified Plans. **PRIOR TO THE ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicant shall submit certification by a registered civil engineer that the proposed shoreline protective devices are designed to withstand storms comparable to the winter storms of 1982-83.

In addition, **within 60 days following issuance of the permit**, the permittee shall submit certification by a registered civil engineer, acceptable to the Executive Director, verifying the seawall, reconstructed slope, southern retaining wall and upper bluff retention system have been constructed in conformance with the approved plans for the project.

6. Future Response to Erosion. If in the future the permittee seeks a coastal development permit to construct additional bluff or shoreline protective devices, the permittee will be required to include in the permit application information concerning alternatives to the proposed bluff or shoreline protection that will eliminate impacts to scenic visual resources, recreation and shoreline processes. Alternatives shall include but not be limited to: relocation of all or portions of the principle structure that are threatened, structural underpinning, and other remedial measures capable of protecting the principal structure and providing reasonable use of the property, without constructing bluff or shoreline stabilization devices. The information concerning these alternatives must be sufficiently detailed to enable the Coastal Commission or the applicable certified local government to evaluate the feasibility of each alternative, and whether each alternative is capable of protecting existing structures that are in danger from erosion. No additional bluff or shoreline protective devices shall be constructed on the adjacent public bluff face above the approved seawall or on the beach in front of the proposed seawall unless the alternatives required above are demonstrated to be infeasible. No shoreline protective devices shall be constructed in order to protect ancillary improvements (patios, decks, fences, landscaping, etc.) located between the principal residential structure and the ocean.

7. Future Maintenance. The permittee shall maintain the permitted seawall, reconstructed slope, southern retaining wall and upper bluff below-grade retention system in its approved state. Maintenance of the seawall shall include maintaining the color, texture and integrity. Maintenance of the below-grade upper bluff retention device and southerly slope retaining wall shall include maintaining the color, texture and integrity of any portions of the device that become exposed in the future. Any change in the design

of the project or future additions/reinforcement of the seawall and upper bluff retention system beyond exempt maintenance as defined in Section 13252 of the California Code of Regulations to restore the structure to its original condition as approved herein, will require a coastal development permit. **However, in all cases, if after inspection, it is apparent that repair and maintenance is necessary, including maintenance of the color of the structures to ensure a continued match with the surrounding native bluffs, the permittee shall contact the Executive Director to determine whether a coastal development permit or an amendment to this permit is legally required, and, if required, shall subsequently apply for a coastal development permit or permit amendment for the required maintenance.**

8. U.S. Army Corps of Engineers Permit. **WITHIN 90 DAYS OF ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the permittee shall provide to the Executive Director a copy of a U.S. Army Corps of Engineers permit, letter of permission, or evidence that no Corps permit is necessary. Any mitigation measures or other changes to the project required through said permit shall be reported to the Executive Director. Such changes shall not be incorporated into the project until the applicant obtains a Commission approved amendment to this coastal development permit, unless the Executive Director determines that no amendment is legally required.

9. State Lands Commission Approval. **PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicants shall submit to the Executive Director for review and written approval, a written determination from the State Lands Commission that:

a) No state lands are involved in the development; or

b) State lands are involved in the development, and all permits required by the State Lands Commission have been obtained; or

c) State lands may be involved in the development, but pending a final determination of state lands involvement, an agreement has been made by the applicant with the State Lands Commission for the project to proceed without prejudice to the determination.

10. Public Rights. The Coastal Commission's approval of this permit shall not constitute a waiver of any public rights that exist or may exist on the property. The permittee shall not use this permit as evidence of a waiver of any public rights that exist or may exist on the property.

11. Assumption of Risk, Waiver of Liability and Indemnity Agreement. By acceptance of this permit, the applicant acknowledges and agrees (i) that the site may be subject to hazards from erosion and coastal bluff collapse; (ii) to assume the risks to the applicant and the property that is the subject of this permit of injury and damage from such hazards in connection with this permitted development; (iii) to unconditionally waive any claim of damage or liability against the Commission, its officers, agents, and

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

12. Condition Compliance. **WITHIN 90 DAYS OF COMMISSION ACTION ON THIS CDP APPLICATION**, or within such additional time as the Executive Director may grant for good cause, the applicant shall satisfy all requirements specified in the conditions hereto that the applicant is required to satisfy prior to issuance of this permit. Failure to comply with this requirement may result in the institution of enforcement action under the provisions of Chapter 9 of the Coastal Act.

13. Deed Restriction. **PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicants shall submit to the Executive Director for review and approval documentation demonstrating that the landowners have executed and recorded a deed restriction, in a form and content acceptable to the Executive Director: (1) indicating that, pursuant to this permit, the California Coastal Commission has authorized development on the subject property, subject to terms and conditions that restrict the use and enjoyment of that property (hereinafter referred to as the "Standard and Special Conditions"); and (2) imposing all Standard and Special Conditions of this permit as covenants, conditions and restrictions on the use and enjoyment of the Property. The deed restriction shall include a legal description of the applicant's entire parcel or parcels. 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 permit shall continue to restrict the use and enjoyment of the subject property so long as either this permit or the development it authorizes, or any part, modification, or amendment thereof, remains in existence on or with respect to the subject property.

IV. Findings and Declarations.

The Commission finds and declares as follows:

1. Detailed Project Description\Permit History. The residences at the top of the subject site were constructed prior to 1972 and the Commission has no record of development activity on the subject lots since the effective date of the Coastal Act. However, the Executive Director has recently approved emergency permits to spray a coat of liquid polymer (glue) over the face of an exposed section of clean sands and construct the seawall, reconstructed slope, below grade retention system and southerly slope retaining wall below the residences (ref. 6-01-134-G, 6-01-154-G, /Gregg, Santina and 6-02-78-G/Gregg). All elements of the emergency permits have been completed. The subject permit application represents the required follow-up permit to permanently authorize all of the development constructed under the above-cited Emergency Permits and an after-the-fact request to remove a portion of the residence at 333 Pacific Avenue that was threatened by erosion.

The proposed project involves the construction of an approximately 35 foot-high, 100 foot-long, 2 ½ foot-wide tiedback concrete seawall at the toe of the bluff and a below-grade upper bluff retention system consisting of 2 piers, approximately 24 inches in diameter, placed in the rear yard of the residential structure at 333 Pacific Avenue extending to a depth of approximately 45 feet. The face of the seawall is proposed to be colored, textured and sculpted to allow for a more natural appearance. In addition, the applicants are proposing backfill behind the seawall consisting of a reinforced geogrid slope that will be planted with native, drought tolerant species and an approximately 60 ft.-long modular retaining wall along the south side of the backfill to provide support. Prior to the construction of the geogrid slope, the applicants will also apply liquid polymer over the exposed clean sands area on the bluff face. In addition, the applicant is requesting after-the-fact approval to remove approximately 120 sq. ft. from the seaward side of the residence at 333 Pacific Avenue. The applicants also propose to pay an in-lieu fee to mitigate the adverse effects of the seawall on the local sand supply.

The subject development is located on the top, face and at the base of an approximately 80 ft.-high coastal bluff below two single-family residences. Tide Beach Park public access stairway is located approximately 700 feet north of the site and Fletcher Cove, the City's central beach access park, is located approximately ¼ mile to the south.

The City of Solana Beach does not yet have a certified LCP. Therefore, Chapter 3 policies of the Coastal Act is the standard of review.

2. Geologic Conditions and Hazards.

a. Coastal Act Policies: Section 30235 of the Coastal Act states, in part:

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 sand supply.

In addition, Section 30253 of the Coastal Act states, in part:

New development shall:

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

(2) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs...

Coastal Act Section 30235 acknowledges that seawalls, revetments, cliff retaining walls, groins and other such structural or "hard" solutions alter natural shoreline processes. Thus, such devices are required to be approved only when necessary to protect existing structures and when designed to eliminate or mitigate adverse impacts on shoreline sand supply. The Coastal Act does not require the Commission to approve shoreline altering devices to protect vacant land or in connection with construction of new development. A shoreline protective device proposed in those situations is likely to be inconsistent with various other Coastal Act policies. For example, Section 30253 addresses new development and requires that it be sited and designed to avoid the need for protective devices that would substantially alter natural landforms along the bluffs and cliffs.

In addition, the Commission has interpreted Section 30235 to require the Commission to approve shoreline protection only for existing principal structures. The Commission must always consider the specifics of each individual project, but has found in many instances that accessory structures such as patios, decks and stairways are not required to be protected under Section 30235 or can be protected from erosion by relocation or other means that do not involve shoreline protection. The Commission has historically permitted at grade structures within the geologic setback area recognizing they are expendable and capable of being removed rather than requiring a protective device that alters natural landforms along bluffs and cliffs.

b. Project Location and Hazardous Conditions: The applicants have submitted a geotechnical report documenting the geologic structure and recent history of the bluffs in the project area. The bluffs in the location of the proposed project are approximately 80 feet in height and consist of an underlying layer of Torrey Sandstone, an approximately 10 foot-high layer of "clean sands" and an upper layer of Pleistocene terrace deposits.

In August 2001 the subject site experienced a significant mid and upper bluff sloughage resulting in the increased exposure of the clean sand layer located at approximately elevation 25 to 35 ft. Mean Sea Level (MSL) and an approximately "16 ft.-high blufftop scarp that extends about 1 foot under the edge of the structure" at 333 Pacific Avenue (ref. letter from TerraCosta Consulting Group date 12/19/01). As a result of the upper bluff failure the existing home at 333 Pacific Avenue was threatened and a portion of the residence was removed as a precautionary measure.

According to the Commission's staff geologist, the clean sand layer consists of a layer of sand with a limited amount of capillary tension and a very minor amount of cohesion, both of which cause the material to erode easily, making this clean sand layer, once exposed, susceptible to wind blown erosion and continued sloughing as the sand dries out and loses the capillary tension that initially held the materials together. The applicants' engineer has stated that gentle sea breezes and any other perturbations, such as landing birds or vibrations from low-flying helicopters, can be sufficient triggers of small- or large-volume bluff collapses, since the loss of the clean sands eliminates the support for the overlying, slightly more cemented, terrace deposits.

The presence of this clean sand layer within the bluffs along the Solana Beach shoreline has previously been identified in geotechnical reports submitted in conjunction with seawall, seacave and notch infill projects south of the subject site (ref. CDP #6-99-100/Presnell, et. al, #6-99-103/ Coastal Preservation Association, 6-00-66/Pierce, Monroe and 6-02-84/Scism). These reports document that the layer of clean sand extends south to Fletcher Cove. In addition, the Executive Director recently has issued an emergency permit to fill a small section of exposed clean sand with erodible concrete in a section of the bluff located near the northern terminus of the bluffs suggesting the layer extends throughout the entire extent of the bluffs from Fletcher Cove to the northern City limits (6-02-144-G/Steinberg).

According to the Commission's staff geologist, the typical mechanism of sea cliff retreat along the Solana Beach shoreline involves the slow abrasion and undercutting of the Torrey Sandstone bedrock, which forms the sea cliff at the base of the bluffs, from wave action which becomes more pronounced in periods of storms, high surf and high tides. Other contributing factors to sea cliff retreat include fracturing, jointing, sea cave and overhang collapse and the lack of sand along the shoreline. When the lower sea cliff is undercut sufficiently, it commonly fails in blocks. The weaker terrace deposits are then unsupported, resulting in the collapse of the terrace deposits through circular failures. Such paired, episodic failures eventually result in a reduction in the steepness of the upper bluff, and the landward retreat of the bluff edge. Such retreat may threaten structures at the top of the slope. When failures of the upper bluff have sufficiently reduced the overall gradient of the upper bluff, a period of relative stability ensues, which persists until the lower bluff becomes sufficiently undercut to initiate a block failure once more, triggering a repetition of the entire process.

The mechanism of bluff retreat that occurs in conjunction with the exposure of the clean sand layer is somewhat different than the paired, episodic failure model described above. Because of the cohesionless character of the clean sands, once they are exposed they continue to slump on an ongoing basis as a result of very small triggers such as traffic vibrations or wind erosion. Continued sloughage results in the further exposure of more clean sand, and ongoing upper bluff collapse. This cycle occurs so quickly (over months or days, rather than years) that the upper bluff may never achieve a stable angle of repose. In 1998, following the exposure of the clean sands layer below 261 Pacific Avenue approximately 9 lots south of the subject site), a section of the bluff collapsed suddenly and without warning, leaving a vertical head scarp 25 feet in height at the top of the bluff. Unless the base of the bluff is afforded shoreline protection, additional bluff failures can further expose the layer of clean sands and result in a potential upper bluff failure and an immediate threat to the residences at the top of the bluff. The proposed seawall, at 35 ft. in height, is designed to retain the clean sand layer which, according to the applicant's geotechnical report, is located at approximately elevation 25 to 35 ft. MSL.

The subject geotechnical report indicates that the long-term average sea cliff erosion rate for Solana Beach is approximately 0.2 ft. per year. According to the Commission's staff geologist, the best regional estimate of historical long-term bluff retreat for Solana Beach is from a FEMA-funded study summarized in Benumof and Griggs (1999). These

authors report an average long-term retreat rate of 0.27 ft/yr for the Solana Beach area over the period 1932 - 1994. Episodic erosion events such as sea cave or notch overhang collapses, and erosion related to severe winter storms, can lead to short-term bluff retreat rates well above the long-term average. These short-term retreat rates are inherently included in the estimation of the long-term retreat rate for Solana Beach and, therefore, are included in the methodology used for the in-lieu fee sand replenishment calculations.

In the case of the subject site, the geotechnical report estimates that the El Niño storms of October 1997 to March 1998 resulted in approximately 8 to 10 feet of bluff retreat, and also resulted in the nearly complete removal of beach deposits. The applicant contends that during 2001, the mid and upper portions of the subject bluff experienced a significant failure resulting in the exposure of the 10 ft.-high clean sand layer. The applicant's geotechnical report indicates "[o]ur limited field survey of the subject site on August 22, 2001, indicated that possibly 15.5 feet of lower sea-cliff retreat may have occurred since 1997 at the location of the large failure in front of 333 Pacific Avenue." ("Emergency Permit Request for Coastal Bluff Stabilization" by TerraCosta Consulting Group, dated September 13, 2001) According to the applicant's geotechnical report, the upper bluff has failed to a point of up to 1 ft. under the residence at 333 Pacific. The slope analysis performed by the applicant's engineer indicates that further collapse of the upper bluff would undermine the foundations of the residence. The factor of safety against sliding along the most likely slide plane was only ~1.14 at the time the Executive Director approved emergency permits for the site. (The factor of safety is an indicator of slope stability where a value of 1.5 is the industry-standard value for new development. In theory, failure should occur when the factor of safety drops to 1.0, and no slope should have a factor of safety less than 1.0.) Based on conditions at the site and analysis of slope stability, the existing homes were determined to be in danger from erosion.

c. Proposed Project: The proposed project involves application of a liquid polymer spray over the face of an exposed area of clean sands on the face of the bluff, the construction of a 100-foot long, 35-foot high tiedback concrete seawall on the public beach, a geogrid reinforced backfill behind the seawall and construction of an approximately 15-foot wide, 2-piered, below-grade upper bluff retention device seaward of the residence at 333 Pacific Avenue. In addition, an east/west directed modular "keystone" retaining wall is proposed to be placed along the south side of the reinforced backfill area.

Although the geotechnical report contends that an approximately 35 ft.-high seawall is required to contain the clean sands layer and prevent additional lower bluff collapses, it also indicates that following the installation of the seawall the residences will still be in danger from erosion. In particular, the residence at 333 Pacific Avenue will continue to be threatened by upper bluff failure because of the approximately 16 ft.-high vertical scarp that lies up to 1 ft. beneath the residence. To address these concerns, the applicants are proposing to construct a 2-piered caisson, below-grade retention system to be located 5 feet seaward of the residence at 333 Pacific Avenue. A reconstructed slope was also considered as an alternative to the caisson system. The applicants' engineer has documented that soil backfill behind the seawall will not by itself afford adequate

protection to the residences since it is no longer possible to recreate an unsupported slope between the seawall and the residences. According to the applicants' engineered plans, the natural equilibrium angle of the bluff material (approximately 33-38 degrees for the material making up the subject bluff) will intersect with the foundation of the residences even after construction of the seawall.

As proposed, the top few feet of the caissons would be visible from the beach. To address the visual prominence of the 45 ft.-in-depth caissons that would become further exposed in the near future, the City has required the applicant to reconstruct the bluff face and plant it with native, drought tolerant species. Because this backfilled slope cannot be reconstructed to its natural angle without exposing the caissons, the applicant is proposing to construct a reinforced geogrid slope with an undulating 1:1 slope so as to appear more natural. In addition to the reinforced geogrid construction, the applicant is proposing to construct an approximately 60 ft.-long modular "keystone" retaining wall along the entire south side of the reconstructed bluff. The retaining wall will be exposed temporarily until, as explained below, the property owner on the south side can reconstruct that portion of the bluff that lies immediately south of the subject site.

The two property owners to the south of the subject site (325/327 Pacific Avenue) are experiencing ongoing bluff failures despite the construction of an approximately 15 ft. high seawall, upper bluff below-grade retention system and the spraying of a liquid polymer coating over the exposed clean sands layer (ref. CDP No. 6-00-138/Kinzel,Greenberg). The continued sloughage of bluff landward of the approximately 15 ft.-high seawall at 325 and 327 Pacific Avenue has resulted in the loss of slope that otherwise would be available to support the south side of a backfilled slope on the subject site (See Photos on Exhibit #10). It is anticipated that future measures will be required to address this ongoing sloughage at the Kinzel/Greenberg property that potentially could threaten the below-grade retention systems that have been installed to protect their homes. The proposed approximately 60 ft. long modular "keystone" retaining wall on the south side of the proposed geogrid reinforced slope is proposed to serve as a temporary measure until the bluff sloughage on the adjacent southern properties is contained. If reconstruction of the slope on the neighboring Kinzel/Greenberg properties occurs, most if not all of the proposed southern modular retaining wall would either be removed or buried and would be no longer be visible.

The proposed 2-pier below-grade retention system represents the third such request for the protection of a blufftop residential home along the Solana Beach shoreline (ref. CDP No. 6-00-138/Kinzel,Greenberg and 6-02-84/Scism). Its alignment in proximity to the bluff edge may, therefore, serve as an additional precedent for future devices along this section of the coast. The Commission has found in other permit actions involving below-grade retention systems that the alignment in proximity to the residence and bluff edge is important to reduce potential visual impacts. As the angle of the upper bluff is reduced through surficial erosion,, portions of the below grade retention device may become exposed. The degree of that exposure depends upon how close the pier structures are to the edge of the bluff. As such, the Commission has generally required that such structures be placed as far landward as possible. In this case, however, the area

between the edge of the bluff and the residence is identified at the time of the failure as being approximately 1 ft., which the applicant's engineer has identified as an inadequate distance to install the caissons. As a result, the applicant has removed approximately 120 sq. ft. from the western side of the existing residence and is proposing to install the two caissons at approximately 5 feet seaward of the remaining residence. In addition, the reconstructed geogrid slope has been designed to effectively cover the two caissons such that their future exposure is not anticipated to occur.

Thus, given the amount of documented erosion on the site following the El Nino storms of 1997 and 1998, the significant bluff collapse that occurred in August 2001, the presence of the clean sand layer and the extreme erodibility of these sands once exposed, and the low factor of safety on the subject bluffs, substantial evidence has been provided to document that the existing primary blufftop structures are in danger from erosion. However, there are a variety of ways in which the threat from erosion could be addressed. Under the policies of the Coastal Act, the project must eliminate or mitigate adverse effects on shoreline sand supply and minimize adverse effects on public access, recreation, and the visual quality of the shoreline.

Alternatives

The applicant's engineer has performed an alternatives analysis to demonstrate that no other feasible alternatives exist to address the threats to the structures at the top of the bluff. The applicant's engineer has identified that while rock rip-rap or erodible concrete infills could be placed at the toe of the bluff to dissipate wave action and slow the rate of erosion, these structures would not contain the clean sands layer nor provide support to reconstruct the bluff face and prevent upper bluff failures. In addition, rip-rap would result in a greater encroachment on the beach than would the proposed 2 ½ ft. wide seawall.

In addition, the applicant's representative has also examined underpinning the foundations of the two residences as an alternative to constructing shoreline protective devices. While underpinning could essentially work as a below-grade retention system to help stabilize the upper bluff, underpinning alone would not prevent the formation of lower bluff notch and subsequent lower bluff failures which in turn result in mid-bluff failures further exposing the clean sands layer. In addition, without a seawall and reconstructed slope, the underpinnings would soon become exposed resulting in significant adverse visual impacts along the shoreline.

The applicant's engineer also has examined the use of chemical grouting over the exposed clean sands layer. It is the opinion of the engineer, that chemical grouting of the clean sands layer while effective as a temporary measure is not effective as a permanent solution. The engineer has identified that in order to be effective it would be necessary to permeate the outer 5 to 10 feet of the slope face which he indicates is difficult, if not impossible. The difficulty involves injecting chemical grouting at high pressure into the bluff face which he indicates is very dangerous to construction crews and may result in blowing out sections of the slope face. The applicant's engineer has identified that the

process has only recently been tried on the two properties to the south with limited success.

The analysis also examined the feasibility of relocation of the existing bluff-top residences. The applicant's engineer asserts that moving the homes would be generally infeasible since inadequate space remains to relocate the residence on the existing lot. Both homes are within 10 ft. of the existing street. However, even if the residences could be moved somewhat further away from the bluff, or, if seaward portions of the residences were removed, it would not eliminate the need for the project. As described above, once exposed, the clean sand layer erodes rapidly, undermining the upper terrace deposits, which then collapse, exposing more clean sands, and continuing the cycle. Thus, moving the homes would temporarily reduce the threat to the homes, but would do nothing to address the ongoing problem.

The alternatives analysis supports the control of planting and irrigation on bluff top lots to prevent excess moisture (from overwatering or broken pipes) from triggering collapses of bluff-top sediments. However, the analysis emphasizes that the bluff collapse at the project site was due to wave action and the current threat is due to the exposure of the clean sands layer, not from excess water resulting from bluff-top activities. Thus, instituting stricter landscaping and irrigation controls would not stabilize the bluff, and would not reduce or eliminate the need for the proposed project, but should still be instituted to reduce the potential for water-related collapses in the future.

In summary, the exposure of the clean sands layer presents a threat of rapid erosion and bluff collapses that must be addressed by a solution that effectively contains the clean sands and affords protection to the residence at the top of the bluff. Given the substantial amount of documented erosion on the site over the last two years, the presence of the clean sands and the extreme erodibility of these sands, and the low factor of safety on the subject bluffs, substantial evidence has been provided to document that the existing primary blufftop structure is in danger from erosion. In addition, the above-described alternatives presented by the applicants do not suggest there is a less-environmentally-damaging feasible alternative. Based on the information provided, the proposed structures will adequately address the erosion threats to the existing homes. The Commission's staff geologist and coastal engineer have reviewed the applicant's geotechnical assessment of the site along with their alternatives analysis and concur with its conclusions and recommendations. Therefore, the Commission is required to approve a shoreline-altering device to protect the residence, pursuant to Section 30235 of the Coastal Act.

Sand Supply/In Lieu Mitigation Fee

Although construction of a seawall is required to protect the existing principle structures on the site, Section 30235 of the Coastal Act requires that the shoreline protection be designed to eliminate or mitigate adverse impacts on local shoreline sand supply. There are a number of adverse impacts to public resources associated with the construction of shoreline protection on the public beach. The natural shoreline processes referenced in

Section 30235, such as the formation and retention of sandy beaches, can be significantly altered by construction of a seawall, since bluff retreat is one of several ways that beach area and beach quality sand is added to the shoreline. This retreat is a natural process resulting from many different factors such as erosion by wave action causing cave formation, enlargement and eventual collapse, saturation of the bluff soil from ground water causing the bluff to slough off and natural bluff deterioration. When a seawall is constructed on the beach at the toe of the bluff, it directly impedes these natural processes.

Some of the effects of a shoreline protective structure on the beach such as scour, end effects and modification to the beach profile are temporary or difficult to distinguish from all the other actions which modify the shoreline. Seawalls also have non-quantifiable effects to the character of the shoreline and visual quality. However, some of the effects which a structure may have on natural shoreline processes can be quantified. Three of the effects from a shoreline protective device which can be quantified are: 1) loss of the beach area on which the structure is located; 2) the long-term loss of beach which will result when the back beach location is fixed on an eroding shoreline; and 3) the amount of material which would have been supplied to the beach if the back beach or bluff were to erode naturally.

Loss of beach material and loss of beach area are two separate concerns. A beach is the result of both sandy material and a physical area between the water and the back beach. Thus, beach area is not simply a factor of the quantity of sandy beach material. In Solana Beach, published reports document that the shoreline is a shallow bedrock layer covered by a thin veneer of sand. The bedrock layer provides an area for collection of sandy material. The sand material is important to the overall beach experience, but even without the sand, the bedrock layer provides an area for coastal access between the coastal bluff and the ocean. The loss of beach material that will be a direct result of this project can be balanced or mitigated by obtaining similar quality and quantity of sediment from outside the littoral cell and adding this sediment to the littoral cell. There are sources of beach quality sediment that can be drawn upon to obtain new sediment for the littoral cell. Unfortunately there is not a source of extra beach land that can be used to add new land area to the littoral cell and therefore it is not possible to directly mitigate for the loss of coastal land when shoreline protective devices are required to protect existing development. In this particular case, dedication of an isolated portion of the applicant's blufftop property would not mitigate for potential impacts to public access and recreation associated with the loss of beach land because the blufftop property is not accessible to the public in the same manner as the beach. Instead, beach nourishment is an indirect method to mitigate the loss of coastal land in that it allows us to shift the shore profile seaward and create a new area of dry beach. This will not create new coastal land, but will provide many of the same benefits that will be lost when the beach area is covered by a seawall or "lost" through passive erosion when the back bluff location is fixed.

It is possible to estimate the volume of sand needed to create a given area of dry beach through beach nourishment. The proposed project will result in a loss of 250 sq. ft. of

beach due to the long-term physical encroachment of the seawall (based on a 100-foot length and 2.5 foot width). In addition, there will be 810 sq. ft. of beach area that will no longer be formed because the back of the beach will be fixed. This 1,060 sq. ft. of beach area [250+ 810] cannot be directly replaced by land, but a comparable area can be built through the one-time placement of 954 [1,060 x 0.9] cubic yards of sand on the beach seaward of the seawall as beach nourishment. Further explanation of this calculation is provided below. Thus, the impact of the seawall on beach area can be quantified as 954 cubic yards of sand. This estimate is only a "rough approximation" of the impact of the seawall on beach area because a one-time placement of this *volume* of sand cannot result in creation of beach *area* over the long term.

In addition to the impact on beach area, there is the amount of beach material that would have been added to the beach if natural erosion had been allowed to continue at the site, which can be calculated at a volume of 1,847 cubic yards. This 1,847 cubic yards of sand that would have been added to the littoral cell, plus the 954 cubic yards of sand associated with the impact to beach area, totals 2,799 cubic yards of sand that are needed to balance the quantifiable impacts from the entire project. Special Condition #3 requires the applicant to deposit an in-lieu fee to fund beach sand replenishment of 2,799 cubic yards of sand, as mitigation for impacts of the proposed shoreline protective device on beach sand supply and shoreline processes.

In the case of the proposed project, the fee calculates to be $36,387.00 based on 2,799 cubic yards of sand multiplied by the cost of obtaining a cubic yard of sand, as proposed by the applicants' engineer at $13.00.

The following is the methodology used by Commission staff in developing the in-lieu fee amount. The methodology uses site-specific information provided by the applicant as well as estimates, derived from region-specific criteria, of both the loss of beach material and beach area which could occur over the life the structure, and of the cost to purchase an equivalent amount of beach quality material and to deliver this material to beaches in the project vicinity.

In earlier Commission actions that required payment of an in-lieu fee to mitigate the loss of sand resulting from shoreline devices, the long-term estimated rate of erosion along the Solana Beach shoreline had been estimated to be approximately 0.2 ft./yr. The applicants have proposed an in-lieu fee of $27,716.00 based on this earlier estimate of 0.2 ft./yr. However, as previously described, the best current estimate for the average long-term bluff retreat for Solana Beach is from a FEMA-funded study reported on in Benumof and Griggs (1999) which estimates the rate to be 0.27 ft./yr. Therefore, the in-lieu fee calculations have been revised by Commission staff accordingly such that the in-lieu fee will be $36,387, which will more accurately mitigate the impact of the seawall to the region's sand supply (ref. Exhibit #9).

The following is a description of the methodology. The actual calculations which utilize values that are applicable to the subject sites, and were used as the basis for calculating the estimated range of the mitigation fee, are attached as Exhibit #9 to this report.

Fee = (Volume of sand for mitigation) x (unit cost to buy and deliver sand)

$\mathbf{M = V_t \times C}$

where

M = Mitigation Fee

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

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

$\mathbf{V_t = V_b + V_w + V_e}$

where

$\mathbf{V_b}$ = Volume of beach material that would have been supplied to the beach if natural erosion continued, based on the long-term regional bluff retreat rate, design life of the structure, percent of beach quality material in the bluff, and bluff geometry (cubic yards). This is equivalent to the long-term reduction in the supply of bluff material to the beach resulting from the structure.

$\mathbf{V_w}$ = Volume of sand necessary to replace the beach area that would have been created by the natural landward migration of the beach profile without the seawall, based on the long-term regional bluff retreat rate, and beach and nearshore profiles (cubic yards)

$\mathbf{V_e}$ = Volume of sand necessary to replace the area of beach lost due to encroachment by the seawall; based on the seawall design and beach and nearshore profiles (cubic yards)

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

where

R = Long-term regional bluff retreat rate (ft./yr.), based on historic erosion, erosion trends, aerial photographs, land surveys, or other accepted techniques. For the Solana Beach area, this regional retreat has been estimated to be 0.27 ft/year. The use of any alternative retreat rates must be documented by the applicant.

L = Design life of armoring without maintenance (yr.) If maintenance is proposed and extends the life of the seawall beyond the initial estimated design life, a revised fee shall be determined through the coastal development permit process.

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

h = Total height of armored bluff (ft.)

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

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

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

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

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

NOTE: For conditions where the upper bluff retreat will closely follow the lower bluff, this volume will approach a volume of material equal to the height of the total bluff, the width of the property and a thickness equal to the total bluff retreat that would have occurred if the seawall had not been constructed. For conditions where the upper bluff has retreated significantly and would not be expected to retreat further during the time that the seawall is in place, this volume would approach the volume of material immediately behind the seawall, with a thickness equal to the total bluff retreat that would have occurred if the seawall had not been constructed.

$$V_W = \mathbf{R} \times \mathbf{L} \times \mathbf{v} \times \mathbf{W}$$

where

R = Long-term regional bluff retreat rate (ft./yr.), based on historic erosion, erosion trends, aerial photographs, land surveys, or other accepted techniques. For the Solana Beach area, this regional retreat has been estimated to be 0.27 ft/year. The use of any alternative retreat rates must be documented by the applicant.

L = Design life of armoring without maintenance (yr.) If maintenance is proposed and extends the life of the seawall beyond the initial estimated design life, a revised fee shall be determined through the coastal development permit process.

v = Volume of material required, per unit width of beach, to replace or reestablish one foot of beach seaward of the seawall; based on the vertical distance from the top of the beach berm to the seaward limit of reversible sediment movement (cubic yards/ft of width and ft. of retreat). The value of v is often taken to be 1 cubic yard per square foot of beach. In the report, Oceanside Littoral Cell Preliminary Sediment Budget Report" (December 1987, part of the Coast of California Storm and Tide Wave Study, Document #87-4), a value for v of 0.9 cubic yards/square foot was suggested. If a vertical distance of 40 feet is used for the range of reversible sediment movement, v would have a value of 1.5 cubic yards/square foot (40 feet x 1 foot x 1 foot / 27 cubic feet per cubic yard). These different approaches yield a range of values for v from 0.9 to 1.5 cubic yards per square foot. The value for v would be valid for a region, and would not vary from one property to the adjoining one. Until further

technical information is available for a more exact value of v, any value within the range of 0.9 to 1.5 cubic yards per square foot could be used by the applicant without additional documentation. Values below or above this range would require additional technical support.

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

$$V_e = E \times W \times v$$

where

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

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

v = Volume of material required, per unit width of beach, to replace or reestablish one foot of beach seaward of the seawall, as described above;

The San Diego Association of Governments (SANDAG) has adopted the Shoreline Preservation Strategy for the San Diego region and is currently working on techniques toward its implementation. The Strategy considers a full range of shoreline management tactics, but emphasizes beach replenishment to preserve and enhance the environmental quality, recreational capacity, and property protection benefits of the region's shoreline. Funding from a variety of sources will be required to implement the beach replenishment and maintenance programs identified in the SANDAG Strategy. In this particular case, SANDAG has agreed to administer a program which would identify projects which may be appropriate for support from the beach sand replenishment fund, through input from the Shoreline Erosion Committee which is made up of representatives from all the coastal jurisdictions in San Diego County. The Shoreline Erosion Committee is currently monitoring several large scale projects, both in and out of the coastal zone, they term "opportunistic sand projects", that will generate large quantities of beach quality material suitable for replenishing the region's beaches. The purpose of the account is to aid in the restoration of the beaches within San Diego County. One means to do this would be to provide funds necessary to get such "opportunistic" sources of sand to the shoreline.

The applicant is being required to pay a fee in-lieu of directly depositing the sand on the beach, because the benefit/cost ratio of such an approach would be too low. Many of the adverse effects of the seawall on sand supply will occur gradually. In addition, the adverse effects impact the entire littoral cell but to different degrees in different locations throughout the cell (based upon wave action, submarine canyons, etc.). Therefore, mitigation of the adverse effects on sand supply is most effective if it is part of a larger project that can take advantage of the economies of scale and result in quantities of sand at appropriate locations in the affected littoral cell in which it is located. The funds will be used only to implement projects which benefit the area where the fee was derived, and

provide sand to the region's beaches, not to fund operations, maintenance or planning studies. Such a fund will aid in the long-term goal of increasing the sand supply and thereby reduce the need for additional armoring of the shoreline in the future. The fund also will insure available sandy beach for recreational uses. The methodology, as proposed, ensures that the fee is roughly proportional to the impacts to sand supply attributable to the proposed seawall. The methodology provides a means to quantify the sand and beach area that would be available for public use, were it not for the presence of the seawall.

Mitigation for impacts to sand supply are based on the estimated 30-year design life of the seawall and, therefore, the proposed in-lieu fee sand replenishment plan only mitigates for the initial design life of the structure. The seawall, however, might outlast its design life. To address the impacts of the seawall on shoreline sand supply that will occur if the seawall lasts for more than its design life, Special Condition #3 requires that the applicant or successor in interest apply for an amendment to the subject permit within 29 years of issuance in order to either remove the proposed seawall or to provide additional mitigation for the additional years of design life that occurs to the seawall. If the applicant or successor in interest enlarges, reconstructs, or performs repairs that extend the design life of the seawall, the applicant or successor in interest will at that time be required to provide mitigation for the additional impacts to shoreline sand supply.

It has been argued that regional approaches to shoreline erosion are environmentally preferable to building separate seawalls to protect individual structures. Coastal Act Section 30235, however, requires the Commission to approve shoreline protection for existing structures in danger from erosion when the shoreline protection is designed to eliminate or mitigate effects on local shoreline sand supply. In this particular case, the Commission finds the applicants residences are faced with an immediate threat from erosion and require protection prior to implementation of a comprehensive regional shoreline erosion strategy.

It also has been argued that the impacts of the seawall on shoreline sand supply, public access, and recreation must be reduced to insignificance. Given that the seawall necessarily fixes the inland extent of the beach on an eroding beach, the adverse effects of the seawall on public access and recreation cannot be completely eliminated. By requiring sand mitigation fees that will fund beach sand replenishment, the Commission is minimizing the adverse effects of the seawall on public access and recreation to the greatest extent feasible.

The above-described impacts on the beach and sand supply have previously been found to result from seawalls in other areas of North County. In March of 1993, the Commission approved CDP #6-93-85/Auerbach, et al for the construction of a seawall fronting six non-continuous properties located in the City of Encinitas north of the subject site. In its finding for approval, the Commission found the proposed shoreline protection would have specific adverse impacts on the beach and sand supply and required mitigation for such impacts as a condition of approval. The Commission made a similar finding for several other seawall developments within San Diego County

including an August 1999 approval (ref. CDP No. 6-99-100/Presnell, et. al) for the approximately 352-foot-long seawall project located approximately 10 lots south of the subject development and a March 2001 approval (ref. CDP No. 6-00-138/Kinzel, Greenberg) for an approximately 100 ft.-long seawall located adjacent to the south side of the subject site. Most recently, the Commission made these same findings in its action approving an approximately 50 ft. long seawall located approximately 200 ft. north of the subject site (ref. CDP No. 6-02-84/Scism). (Also ref. CDP Nos. 6-93-36-G/Clayton, 6-93-131/Richards, et al, 6-93-136/Favero, 6-95-66/Hann, 6-98-39/Denver/Canter and 6-99-41/Bradley).

In addition to the adverse impacts the seawall will have on the beach as detailed above, the Commission finds that the proposed seawall could also have adverse impacts on adjacent unprotected properties caused by wave reflection, which leads to accelerated erosion. Numerous studies have indicated that when continuous protection is not provided, unprotected adjacent properties can experience a greater retreat rate than would occur if the protective device were not present. This is due primarily to wave reflection off the protective structure and from increased turbulence at the terminus of the seawall. According to James F. Tait and Gary B. Griggs in Beach Response to the Presence of a Seawall (A Comparison of Field Observations) "[t]he most prominent example of lasting impacts of seawalls on the shore is the creation of end scour via updrift sand impoundment and downdrift wave reflection. Such end scour exposes the back beach, bluff, or dune areas to higher swash energies and wave erosion." As such, as the base of the bluff continues to erode on the unprotected adjacent properties, failure of the bluff is likely. Thus, future failures could "spill over" onto other adjacent unprotected properties, prompting requests for much more substantial and environmentally damaging seawalls to protect the residences. This then starts a "domino" effect of individual requests for protection.

According to information contained in the Planners Handbook (dated March 1993), which is included as Technical Appendix III of the Shoreline Preservation Strategy adopted by the San Diego Association of Governments (SANDAG) on October 10, 1993, "[a] longer return wall will increase the magnitude of the reflected wave energy. On a coast where the shoreline is retreating, there will be strong incentives to extend the length of the return wall landward as adjacent property is eroded, thereby increasing the return wall, and its effects on neighboring property, with time."

The plans for the subject seawall submitted by the applicant do not address the design of the proposed return wall on its north side or the how the end will be designed to mitigate these known effects. (The south side of the seawall will connected with an existing seawall.) Therefore, Special Condition #1 has been attached which requires the submission of revised final plans that reflect the design of the proposed end return wall. The condition requires that the returns incorporate a "feathered" design to gradually blend into the adjacent natural bluffs which will help to reduce the turbulence and wave reflection at the end of the wall that can lead to accelerated erosion of adjacent unprotected bluffs. However, although the proposed seawall must be designed to reduce impacts of the wall on adjacent properties, at best, the impacts can be reduced, but not

eliminated. Regardless of whether accelerated erosion will occur on the adjacent unprotected properties, the adjacent bluffs will continue to erode due to the same forces that are causing them to erode currently. As this occurs, more surface area of the feathered edges will be exposed to wave attack leading to increased turbulence and accelerated erosion of the adjacent unprotected bluff. These impacts are particularly problematic in the case of the proposed project, as the seawall will be an isolated structure in a stretch of currently unprotected shoreline north of the proposed seawall.

If the proposed seawall and other proposed structures were damaged in the future (e.g. as a result of wave action, storms, etc.) it could threaten the stability of the site and adjacent properties which could lead to need for more bluff alteration. In addition, damage to the seawall or other proposed structures could adversely affect the beach by resulting in debris on the beach and/or creating a hazard to the public using the beach. Excessive wear of the seawall could result in the loss of or change to the color or texture of the seawall resulting in adverse visual impacts (discussed in more detail in a subsequent section of this report). Therefore, in order to find the proposed shore and bluff protection consistent with the Coastal Act, the Commission finds that the condition of the structures must be maintained in their approved state for the life of the structures. Further, in order to ensure that the permittee and the Commission know when repairs or maintenance are required, the permittee must monitor the condition of the proposed structures annually, for three years and then at three-year intervals after that, unless a major storm event occurs. The monitoring will ensure that the permittee and the Commission are aware of any damage to or weathering of the shore and bluff structures and can determine whether repairs or other actions are necessary to maintain the structures in their approved state before damage occurs resulting in the need for potentially more substantial structures. Therefore, Special Condition #4 requires the applicant to submit a monitoring report which evaluates the condition and performance of the seawall, geogrid reinforced slope and southerly modular retaining wall, below-grade upper retention system and overall site stability, and submit an annual report with recommendations, if any, for necessary maintenance, repair, changes or modifications to the project. In addition, the condition requires the applicant to perform the necessary repairs through the coastal development permit process.

Special Condition #6 requires that feasible alternative measures must be implemented on the applicant's blufftop property in the future, should additional stabilization be required, which would avoid additional alteration of the natural landform of the public beach or coastal bluffs, but would reduce risk to the principle residential structures and provide reasonable use of the property. The condition will ensure that future property owners will be aware that any future proposals for additional shoreline protection, such as additional upper bluff stabilization, will require an alternative analysis similar to one required for the subject project. If there are feasible alternatives to shoreline protection that would have less impact on visual quality, sand supply, or public access, the Commission (or, where applicable, the City of Solana Beach after the effective certification of its Local Coastal Program) can require implementation of those alternatives. The condition also states that no shore or bluff protection shall be permitted for ancillary improvements located within the blufftop setback area (such as decks,

patios, etc.). Through this condition, the property owner is required to acknowledge the risks inherent in the subject property and that there are limits to the structural protective measures that may be permitted on the adjacent public property in order to protect the existing development in its current location.

Special Condition #1 requires the applicant to submit final plans for the project indicating that the seawall conforms to the bluff contours, details the design of the northern return wall and that demonstrate that any existing irrigation systems on the blufftop have been removed, as these would impact the ability of the seawall and other shoreline protection devices to adequately stabilize the site. Submission of final plans will ensure that overall site conditions which could adversely impact the stability of the bluff have been addressed.

Special Condition #7 notifies the applicants that they are responsible for maintenance of the herein approved shore and bluff protection including the geogrid reinforced slope in their approved state. The condition also indicates that, should it be determined that maintenance of the proposed structures are required in the future, including maintenance of the color and texture, landscaping of the slope or work on elements of the geogrid slope, the applicant shall contact the Commission to determine if permits are required.

To assure the proposed shore/bluff protection has been constructed properly, Special Condition #5 has been proposed. This condition requires that, within 60 days of completion of the project, certification by a registered civil engineer be submitted that verifies the proposed shoreline devices have been constructed in accordance with the approved plans along with a certification that the structures are designed to withstand storms comparable to the winter storms of 1982-83.

Special Conditions #8 requires the applicant to submit a copy of any required permits from the Army Corps of Engineers, to ensure that no additional requirements are placed on the applicant that could require an amendment to this permit.

Due to the inherent risk of shoreline development, Special Condition #11 requires the applicant to waive liability and indemnify the Commission against damages that might result from the proposed shoreline devices or their construction. The risks of the proposed development include that the proposed shoreline devices will not protect against damage to the residences from bluff failure and erosion. In addition, the structures themselves may cause damage either to the applicants' residence or to neighboring properties by increasing erosion of the bluffs. Such damage may also result from wave action that damages the seawall. Although the Commission has sought to minimize these risks, the risks cannot be eliminated entirely. Given that the applicants have chosen to construct the proposed shoreline devices despite these risks, the applicants must assume the risks. Special Condition #13 requires the applicant to record a deed restriction imposing the conditions of this permit as covenants, conditions and restrictions on the use and enjoyment of the property. Only as conditioned can the proposed project be found consistent with Sections 30235 and 30253 of the Coastal Act.

In summary, the applicant has documented that the existing blufftop primary structures are in danger from erosion and subsequent bluff collapse. In addition, even with the construction of the seawall, the upper bluff will continue to erode and soon will threaten the blufftop homes. Thus, the upper bluff retention system is also necessary to assure full protection for the existing blufftop residences. The Commission's staff geologist and coastal engineer have reviewed the applicant's geotechnical assessment and concur with its conclusions. As conditioned, there are no other less damaging alternatives available to reduce the risk from bluff erosion. Thus, the Commission is required to approve the proposed protection for residential structure. Since the proposed seawall will contribute to erosion and geologic instability over time on adjacent unprotected properties and also deplete sand supply, occupy public beach and fix the back of the beach, Special Condition #3 requires the applicant to require pay an in-lieu mitigation fee to offset this impact. Therefore, as conditioned, the Commission finds that the proposed seawall is consistent with Sections 30235 and 30253 of the Coastal Act.

3. Visual Resources/Alteration of Natural Landforms. Section 30240 (b) of the Coastal Act is applicable and states:

(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.

In addition, Section 30251 of the Coastal Act states, in part:

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 . . .

As stated above, the proposed development will occur on the face of a coastal bluff and on the public beach. An approximately 522 ft.-long series of connecting seawalls have been constructed commencing on the immediate south side of the subject site (ref. CDP Nos. 6-00-138/Kinzel, Greenberg, 6-0036/Corn, Scism, and 6-99-100/Presnell, et.al). However, the bluffs to the north side of the subject site remain in their natural state and do not contain seawalls or upper bluff retention systems. As such, the potential for adverse impacts on visual resources associated with the proposed development could be significant.

The applicant is proposing to construct an approximately 100-ft. long, 25 to 35-ft. high tied-back concrete seawall, install an approximately 15 ft.-wide below-grade retention device involving 2 approximately 45 ft.-high caissons installed into the top of the bluff. In addition, the applicant proposes to construct a reinforced backfill behind the seawall consisting of soil with geogrid support constructed at an approximately 1:1 slope

inclination that includes a temporary approximately 60 ft.-long, 15 ft.-high modular block retaining wall along the south side of the reinforced backfill. The reinforced geogrid backfill area is proposed to be designed in a undulating manner so as to produce a more natural appearing slope and is proposed to be planted with native drought-tolerant plants.

To mitigate the visual impacts of the proposed seawall, the applicant proposes to color and texture the seawall. The visual treatment proposed is similar to the visual treatment approved by the Commission for the long expanse of seawalls located to the south of the subject site. Since the proposed 2 piered caisson structure is proposed to be below-grade the caissons are not proposed to be colored or sculpted. Because the reconstructed slope has been given structural support elements that include a geogrid foundation and southern modular retaining wall, it is not likely that the proposed below-grade caissons will become exposed in the future. However, if site conditions change their exposure could have adverse visual impacts to coastal resources.

To address potential adverse visual impact, Special Conditions Nos. 4 and 7 have been attached which require the applicant to monitor and maintain the proposed seawall and upper bluff system, reinforced slope and southerly retaining wall in their approved state. If during monitoring of the upper bluff system it is determined that portions of the below-grade device has become exposed, the applicant is required to apply for a coastal development permit or amendment to visually treat any exposed sections. In addition, although the applicant proposes to color and texture treat the proposed seawall, specific information regarding the treatment has not been submitted. Therefore, Special Condition #1 requires the submittal of detailed plans, color samples, and information on construction methods and technology for the surface treatment of the seawall. Finally, Special Condition #2 has been attached to require the applicant to plant the proposed geogrid based slope with native, drought tolerant species and to maintain the plants in good condition over the lifetime of the project. In this way, the Commission can be assured that the proposed seawall, geogrid slope with southerly retaining wall and below-grade retention system will blend with the natural bluffs in the area to the maximum extent feasible.

Therefore, as conditioned, the Commission finds that potential visual impacts associated with the proposed development have been reduced to the maximum extent feasible and the proposed development will include measures to prevent impacts that would significantly degrade the adjacent park and recreation area (beach area). Thus, the project can be found consistent with Sections 30240 and 30251 of the Coastal Act.

4. Public Access/Recreation. Pursuant to Section 30604 (c), the Coastal Act emphasizes the need to protect public recreational opportunities and to provide public access to and along the coast. Section 30210 of the Coastal Act is applicable to the proposed development and states:

> 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.

In addition, Section 30212 of the Act is applicable and states, in part:

(a) Public access from the nearest public roadway to the shoreline and along the coast shall be provided in new development projects except where:

(1) it is inconsistent with public safety, military security needs, or the protection of fragile coastal resources,

(2) adequate access exists nearby....

Additionally, Section 30220 of the Coastal Act provides:

Coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses.

The project site is located on a public beach utilized by local residents and visitors for a variety of recreational activities. The site is located approximately 700 feet south of the Tide Beach public access stairway and approximately ¼ mile north of Fletcher Cove the main public and vehicle beach access ramp in the City of Solana Beach. The proposed seawall will be constructed on sandy beach area that is currently available to the public. The project will have several adverse impacts on public access.

Although the proposed seawall has been designed to be as narrow as feasible, it will project approximately 2.5 feet seaward of the toe of the bluff. Although the seaward encroachment of the wall appears at first glance to be minimal, the beach along this area of the coast is narrow and at high tides and winter beach profiles, the public may be forced to walk virtually at the toe of the bluff or the area would be impassable. As such, an encroachment of any amount, including 2.5 feet for a length of 100 feet onto the sandy beach, reduces the beach area available for public use and is therefore a significant adverse impact. This is particularly true given the existing beach profiles and relatively narrow beach where access is sometimes only available at high tides.

In addition to the above-described direct interference with public access by the proposed seawall, there are a number of indirect effects as well. Shoreline processes, and sand supply and beach erosion rates are affected by shoreline structures as described in Section 2 of this report, and thus alter public access and recreational opportunities.

Development along the shoreline which may burden public access in several respects has been approved by the Commission. However, mitigation for any adverse impacts of the development on access and public resources is always required. The Commission's permit history reflects the experience that development can physically impede public access directly, through construction adjacent to the mean high tide line in areas of narrow beaches, or through the placement or construction of protective devices seawalls,

rip-rap, and revetments. Since physical impediments adversely impact public access and create private benefit for the property owners, the Commission has found in such cases (in permit findings of #4-87-161 [Pierce Family Trust and Morgan], #6-87-371 [Van Buskirk], #5-87-576 [Miser and Cooper]) that a public benefit must arise through mitigation conditions in order that the development will be consistent with the access policies of the Coastal Act, as stated in Sections 30210, 30211, and 30212.

The development proposed in this application is the construction of a vertical seawall and mid and upper bluff protection. Although the proposed seawall adheres closely to the contour of the natural bluff, the seawall will reduce lateral beach access by encroaching onto the beach and will have adverse impacts on the natural shoreline processes.

As stated elsewhere in these findings, Section 30235 of the Act allows for the use of such a device where it is required to protect existing development and where it has been designed to mitigate adverse impacts upon shoreline sand supply. In order to mitigate the known adverse impacts, the Commission has in the past required an offer of dedication of lateral public access in order to balance the burden placed on the public with a public benefit. In this particular case, the beach and bluff are in public ownership and will remain as such. Therefore, a dedication of lateral public access is not an available mitigation option. However, Special Condition #3, discussed in a previous section of the staff report, requires the applicant to provide mitigation for adverse impacts on beach and sand area resulting from placement of the proposed seawall, which will also serve to mitigate the impact of the loss of beach access. The mitigation will be an in-lieu fee which will be utilized for beach replenishment projects within San Diego County.

The development proposed in this application involves the construction of a vertical seawall, as well as other significant mid and upper bluff devices. The majority of the beach and bluffs along the Solana Beach shoreline are in public ownership. Much of the beach is accessible in this area only at lower tides, and thus, the protection of a few feet of beach along the toe of the bluff is still important. This stretch of beach has historically been used by the public for access and recreation purposes. Special Condition #10 acknowledges that the issuance of this permit does not waive the public rights that exist on the property. The seawall may be located on State Lands property, and as such, Special Condition #9 requires the applicant to obtain any necessary permits or permission from the State Lands Commission to perform the work.

With Special Conditions assuring maximum public access, addressing sand supply and authorization from the State Lands Commission, impacts to the public will be minimized to the greatest extent feasible. Thus, as conditioned, the Commission finds the project consistent with the public access and recreation policies of the Coastal Act.

5. Unpermitted Development. The proposed development will occur on a site where development has occurred without the benefit of a coastal development permit. On August 31, 2001, the Executive Director issued an emergency permit for the chemical spray of liquid polymer over the face of area of exposed clean sands on the bluff face below the two subject properties (EP No. 6-01-134-G/Gregg, Santina). On October 9,

2001, the Executive Director issued an emergency permit to construct a 35 ft. high, 100 ft.-long seawall at the base of the bluff below the two subject properties and the construction of a below grade retention system at the top of the bluffs (EP No. 6-01-154-G/Gregg, Santina). Finally, on August 29, 2002, the Executive Director issued an additional emergency permit to construct a below grade retention system at the top of the bluff seaward of the residence at 333 Pacific, a geogrid reinforced fill slope behind the seawall and modular block wall along the south side of the geogrid fill slope (EP No. 6-02-78-G/Gregg). Each of these emergency permits required the applicant(s) to obtain a regular coastal development permit within 150 days or to remove the emergency structures. In this case, each of the structures authorized through the emergency permit process have been constructed but the applicants have failed to obtain the regular permit within the required 150 day time limit. Therefore, all of the structures constructed pursuant to the emergency permit are considered to be unpermitted development. In addition, the applicant at 333 Pacific Avenue demolished approximately 120 sq. ft. from the seaward side of the residence without first obtaining an emergency permit or regular coastal development permit.

To assure that this application involving unpermitted development is resolved in a timely manner, Special Condition #12 requires that the applicant satisfy all conditions of this permit which are prerequisite to the issuance of this permit within 90 days of Commission action within 90 days of issuance of the permit, unless additional time is granted by the Executive Director for good cause.

Although development has taken place without the benefit of a coastal development permit, consideration of the application by the Commission has been based solely upon the Chapter 3 policies of the Coastal Act. Approval of the permit does not constitute a waiver of any legal action with regard to any violation of the Coastal Act that may have occurred, nor does it constitute admission as to the legality of any development undertaken on the subject site without a coastal development permit.

6. Local Coastal Planning. Section 30604(a) also requires that a coastal development permit shall be issued only if the Commission finds that the permitted development will not prejudice the ability of the local government to prepare a Local Coastal Program (LCP) in conformity with the provisions of Chapter 3 of the Coastal Act. In this case, such a finding can be made.

The subject site was previously in the County of San Diego jurisdiction, but is now within the boundaries of the City of Solana Beach. The City is preparing and plans to submit a new LCP for the area to the Commission for review. Because of the incorporation of the City, the County of San Diego's LCP was never effectively certified. However, the issues regarding protection of coastal resources in the area have been addressed by the Commission in its review of the San Diego County LUP and Implementing Ordinances.

The City of Solana Beach has prepared a draft LCP. In preparation of its LCP, the City of Solana Beach is faced with many of the same issues as the City of Encinitas, located

immediately north of Solana Beach, whose LCP was certified by the Commission in March 1995. The City of Encinitas' LCP includes the intent to prepare a comprehensive plan to address the coastal bluff recession and shoreline erosion problems in the City. The plan will include at a minimum, bluff top setback requirements for new development and redevelopment; alternatives to shore/bluff protection such as beach sand replenishment, removal of threatened portions of a residence or the entire residence or underpinning existing structures; addressing bluff stability and the need for protective measures over the entire bluff (lower, mid and upper); impacts of shoreline structures on beach and sand area as well as mitigation for such impacts; impacts for groundwater and irrigation on bluff stability and visual impacts of necessary/required protective structures.

The City of Solana Beach LCP should also address these items in the context of a comprehensive approach to management of shoreline resources. As shoreline erosion along the coast rarely affects just one individual property, it is imperative that a regional wide solution to the shoreline erosion problem be addressed and solutions developed to protect the beaches. Combined with the decrease of sandy supply from coastal rivers and creeks and armoring of the coast, beaches will continue to erode without being replenished. This will, in turn, decrease the public's ability to access and recreate on the shoreline.

In the case of the proposed project, site specific geotechnical evidence has been submitted indicating that the existing structures at the top of the bluff are in danger. The Commission feels strongly that approval of the proposed project should not send a signal that there is no need to address a range of alternatives to armoring for existing development. Planning for comprehensive protective measures should include a combination of approaches including limits on future bluff development, ground and surface water controls, and beach replenishment. Although the erosion potential on the subject site is such that action must be taken promptly, decisions regarding future shoreline protection should be done through a comprehensive planning effort that analyzes the impact of such a decision on the entire City shoreline.

The location of the proposed seawall is designated for Open Space Recreation in the City of Solana Beach Zoning Ordinance and General Plan, and was also designated for open space uses under the County LCP. As conditioned, the subject development is consistent with these requirements. Based on the above findings, the proposed development is consistent with the Chapter 3 policies of the Coastal Act in that the need for the shoreline protective devices has been documented and its adverse impacts on beach sand supply and on adjacent unprotected properties will be mitigated.

Therefore, the Commission finds the proposed development, as conditioned, is consistent with the Chapter 3 policies of the Coastal Act, and will not prejudice the ability of the City of Solana Beach to complete a certifiable local coastal program. However, these issues of shoreline planning will need to be addressed in a comprehensive manner in the future through the City's LCP certification process

7. Consistency with the California Environmental Quality Act (CEQA).

Section 13096 of the Commission's Code of Regulations requires Commission approval of Coastal Development Permits to be supported by a finding showing the permit, as conditioned, to be consistent with any applicable requirements of the California Environmental Quality Act (CEQA). Section 21080.5(d)(2)(A) of CEQA prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse effect which the activity may have on the environment.

The proposed project has been conditioned in order to be found consistent with the geologic stability, visual quality, and public access policies of the Coastal Act. Mitigation measures, including conditions addressing payment of an in-lieu fee for impacts to sand supply, construction techniques consistent with the geotechnical report and the color of construction materials, will minimize all adverse environmental impacts. As conditioned, there are no feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse impact which the activity may have on the environment. Therefore, the Commission finds that the proposed project is the least environmentally-damaging feasible alternative and is consistent with the requirements of the Coastal Act to conform to CEQA.

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.

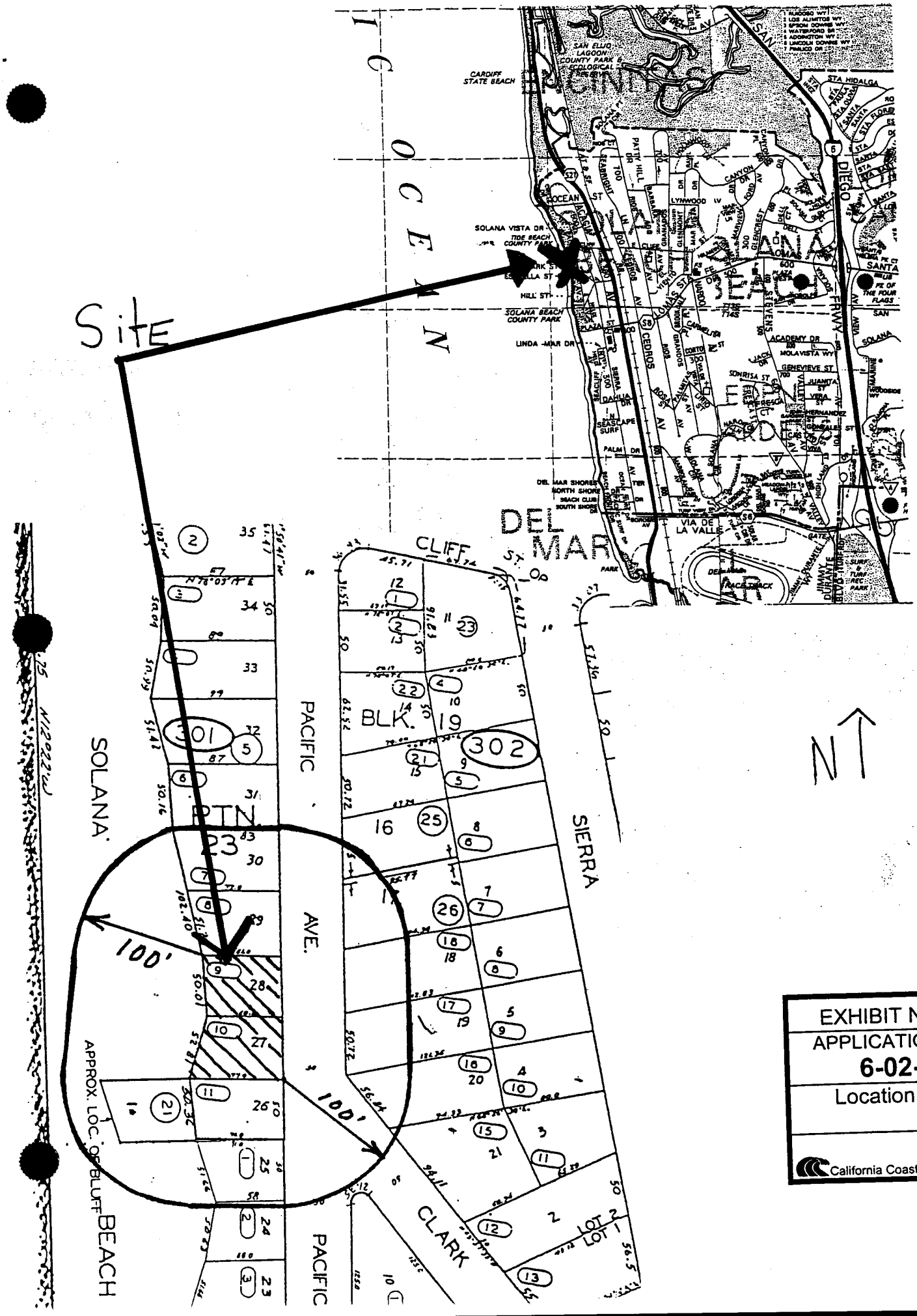


EXHIBIT NO. 1
APPLICATION NO. **6-02-2**
Location Map
California Coastal Commission

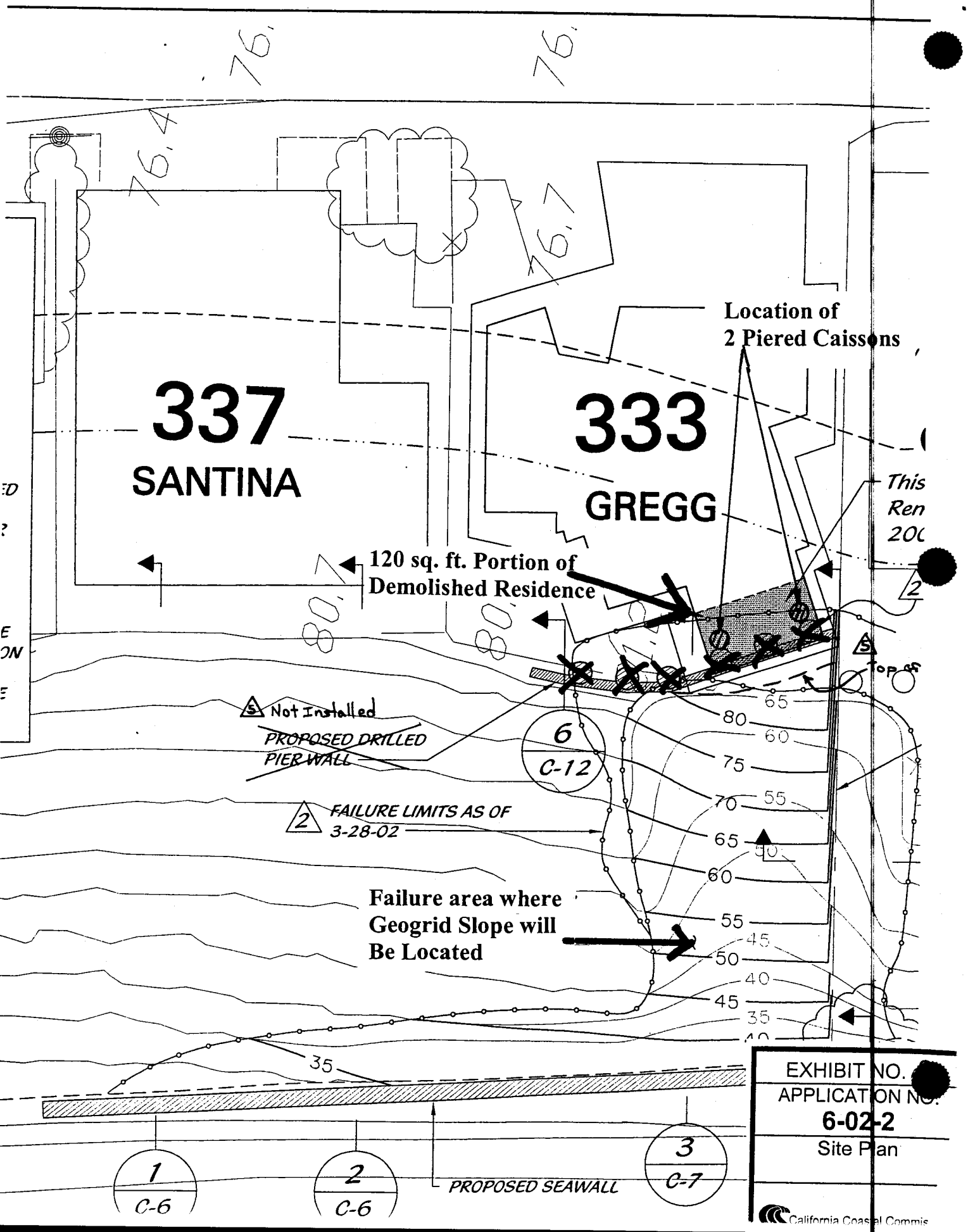


EXHIBIT NO.
APPLICATION NO.
6-02-2
Site Plan

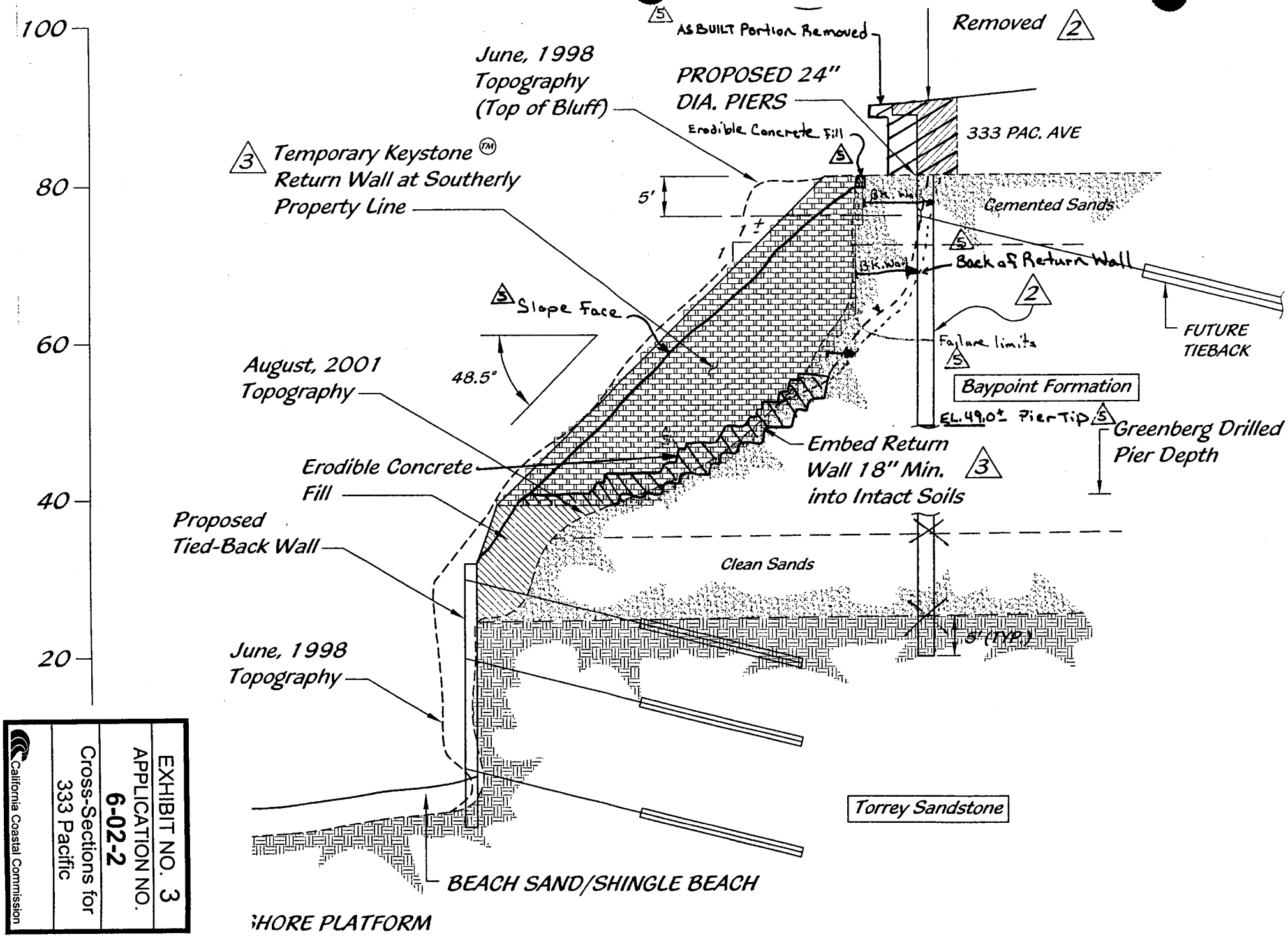


EXHIBIT NO. 3
APPLICATION NO.
6-02-2
Cross-Sections for
333 Pacific

California Coastal Commission

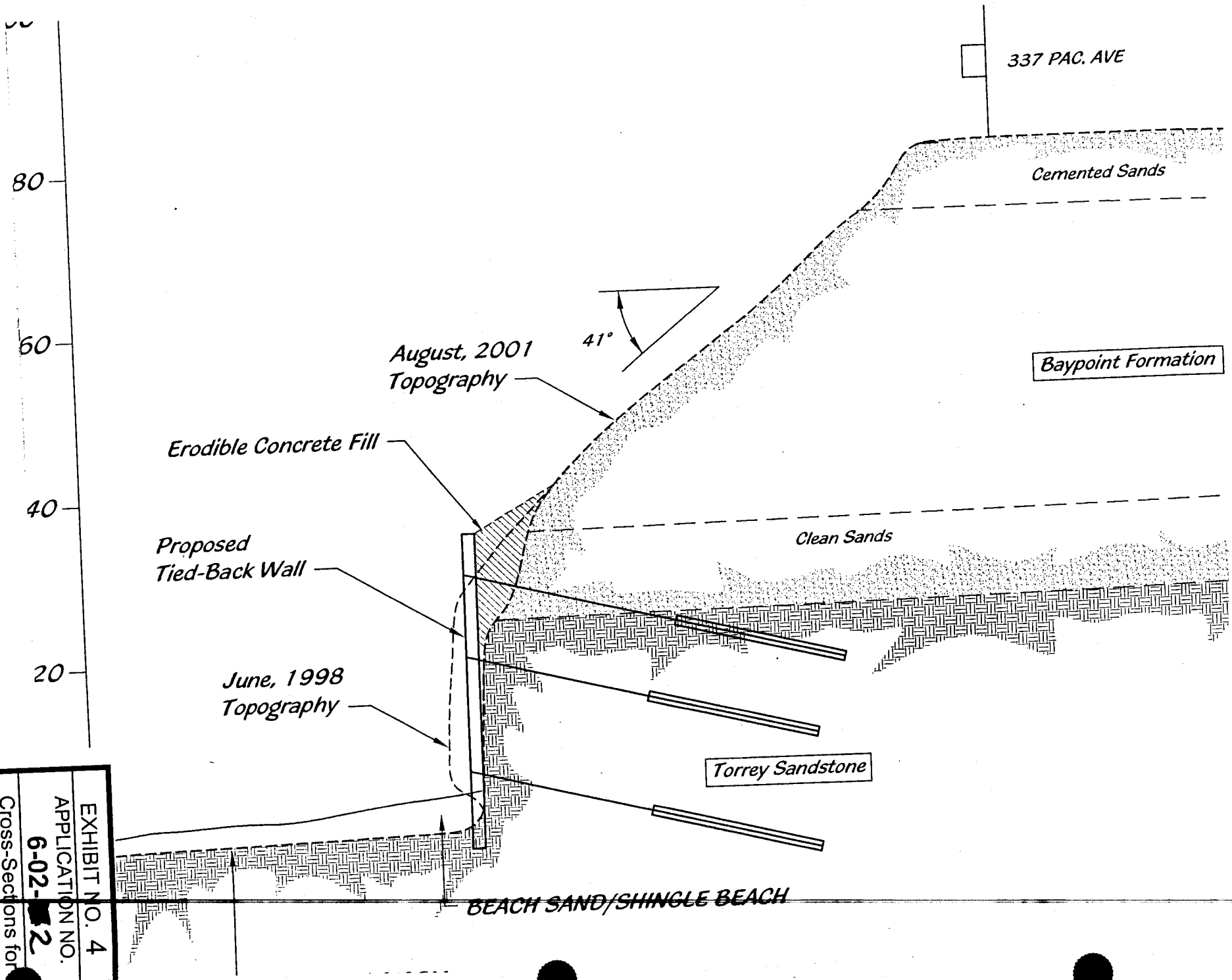


EXHIBIT NO. 4
APPLICATION NO.
6-02-[redacted]2
Cross-Sections for
337 Pacific

California Coastal Commission

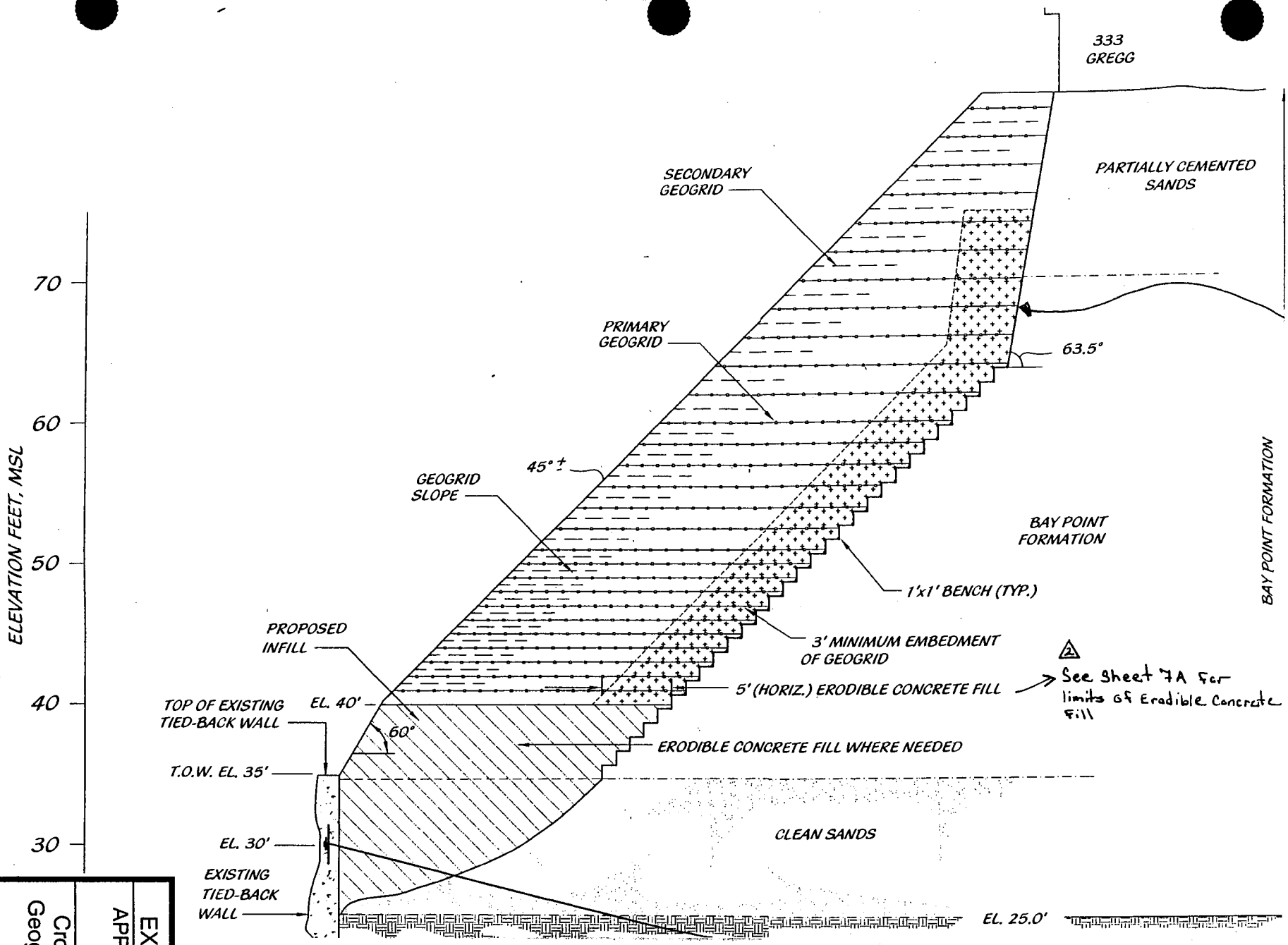


EXHIBIT NO. 5
APPLICATION NO.
6-02-[redacted]2
Cross Section of
Geogrid Reinforced
Slope

California Coastal Commission

TE OF CALIFORNIA -- THE RESOURCES AGENCY

GRAY DAVIS, Governor

ALIFORNIA COASTAL COMMISSION
DIEGO AREA
METROPOLITAN DRIVE, SUITE 103
DIEGO, CA 92108-4402
) 767-2370

EMERGENCY PERMIT

Applicants: **Martha Gregg**
333 Pacific Avenue
Solana Beach, CA 92075

Paul Santina
337 Pacific Avenue
Solana Beach, CA 92075

Date: **August 31, 2001**

Agent: **TerraCosta Consulting Group**

Emergency Permit No. **6-01-134-G**

LOCATION OF EMERGENCY WORK: **On the face of the public bluff below 333 and 337 Pacific Avenue, Solana Beach, San Diego County.**

WORK PROPOSED: **Chemical spray application of a liquid polymer (1 part Elmer's Glue/9 parts water) over an area of exposed clean sands to inhibit wind blown erosion.**

This letter constitutes approval of the emergency work you or your representative has requested to be done at the location listed above. I understand from your information and our site inspection that an unexpected occurrence in the form of sloughage of the bluff requires immediate action to prevent or mitigate loss or damage to life, health, property or essential public services. 14 Cal. Admin. Code Section 13009. The Executive Director of the Coastal Commission hereby finds that:

(a) An emergency exists which requires action more quickly than permitted by the procedures for administrative or ordinary permits and the development can and will be completed within 30 days unless otherwise specified by the terms of this permit;

(b) Public comment on the proposed emergency action has been reviewed if time allows;

(c) As conditioned, the work proposed would be consistent with the requirements of the California Coastal Act of 1976.

The work is hereby approved, subject to the conditions listed on the attached page.

Sincerely,

PETER M. DOUGLAS
Executive Director

By: DEBORAH LEE
Deputy Director

EXHIBIT NO. 6
APPLICATION NO. 6-02-2
Emergency Permit 6-01-134-G
Page 1 of 4
California Coastal Commission

Emergency Permit Number: 6-01-134-G
Date: August 31, 2001

CONDITIONS OF APPROVAL:

1. The enclosed Emergency Permit Acceptance form must be signed by the PROPERTY OWNER and returned to our office within 15 days.

2. Only that work specifically described in this permit and for the specific properties listed above is authorized. The construction, placement, or removal of any accessory or other protective structure, including but not limited to, stairways or other access structures, walls, fences, etc. not described herein, are not authorized by this permit. Any additional work requires separate authorization from the Executive Director.

3. The work authorized by this permit must be completed within 30 days of the date of this permit (i.e., by September 30, 2001)

4. Within 60 days of the date of this permit (i.e., by October 30, 2001), the permittee shall apply for a regular Coastal Permit to have the emergency work be considered permanent.

5. In exercising this permit, the applicant agrees to hold the California Coastal Commission harmless from any liabilities for damage to public or private properties or personal injury that may result from the project.

6. This permit does not obviate the need to obtain necessary authorizations and/or permits from other agencies (e.g. City of Solana Beach, Dept. of Fish & Game, U.S. Fish & Wildlife, U.S. Army Corps of Engineers, State Lands Commission.)

7. Prior to the commencement of the construction, the applicant shall submit to the Executive Director, for review and written approval, final plans for the proposed application of liquid polymer that have been reviewed and approved by the City of Solana Beach. Said plans shall be in substantial conformance with the plans submitted with this application by TerraCosta Consulting Group and received by the Commission on August 31, 2001 (see attached).

8. Prior to the commencement of construction, the applicant shall submit to the Executive Director photographic documentation of the pre-construction site conditions of the area at the time of construction.

As noted in Condition #4, the emergency work carried out under this permit is considered to be TEMPORARY work done in an emergency situation. As a follow-up to the emergency permit, a regular Coastal Permit must be obtained. A regular permit would be subject to all of the provisions of the California Coastal Act and may be conditioned accordingly.

If you have any questions about the provisions of this emergency permit, please call Gary Cannon at the Commission's San Diego Coast Area Office at the address and telephone number listed on the first page.

ALIFORNIA COASTAL COMMISSION
DIEGO AREA
METROPOLITAN DRIVE, SUITE 103
DIEGO, CA 92108-4402
) 767-2370

EMERGENCY PERMIT ACCEPTANCE FORM

TO: CALIFORNIA COASTAL COMMISSION
SAN DIEGO COAST AREA
7575 Metropolitan Drive, SUITE 103
SAN DIEGO, CA 92108-4402
(619) 767-2370

RE: **Emergency Permit No. 6-00-134-G**

INSTRUCTIONS: After reading the attached Emergency Permit, please sign this form and return to the San Diego Coast Area Office within 15 working days from the permit's date.

I hereby understand all of the conditions of the emergency permit being issued to me and agree to abide by them.

I also understand that a regular Coastal Permit is necessary to permanently authorize the emergency work. I agree to apply for a regular Coastal Permit within 60 days of the date of the emergency permit (i.e., by October 30, 2001).

_____
Signature of property owner

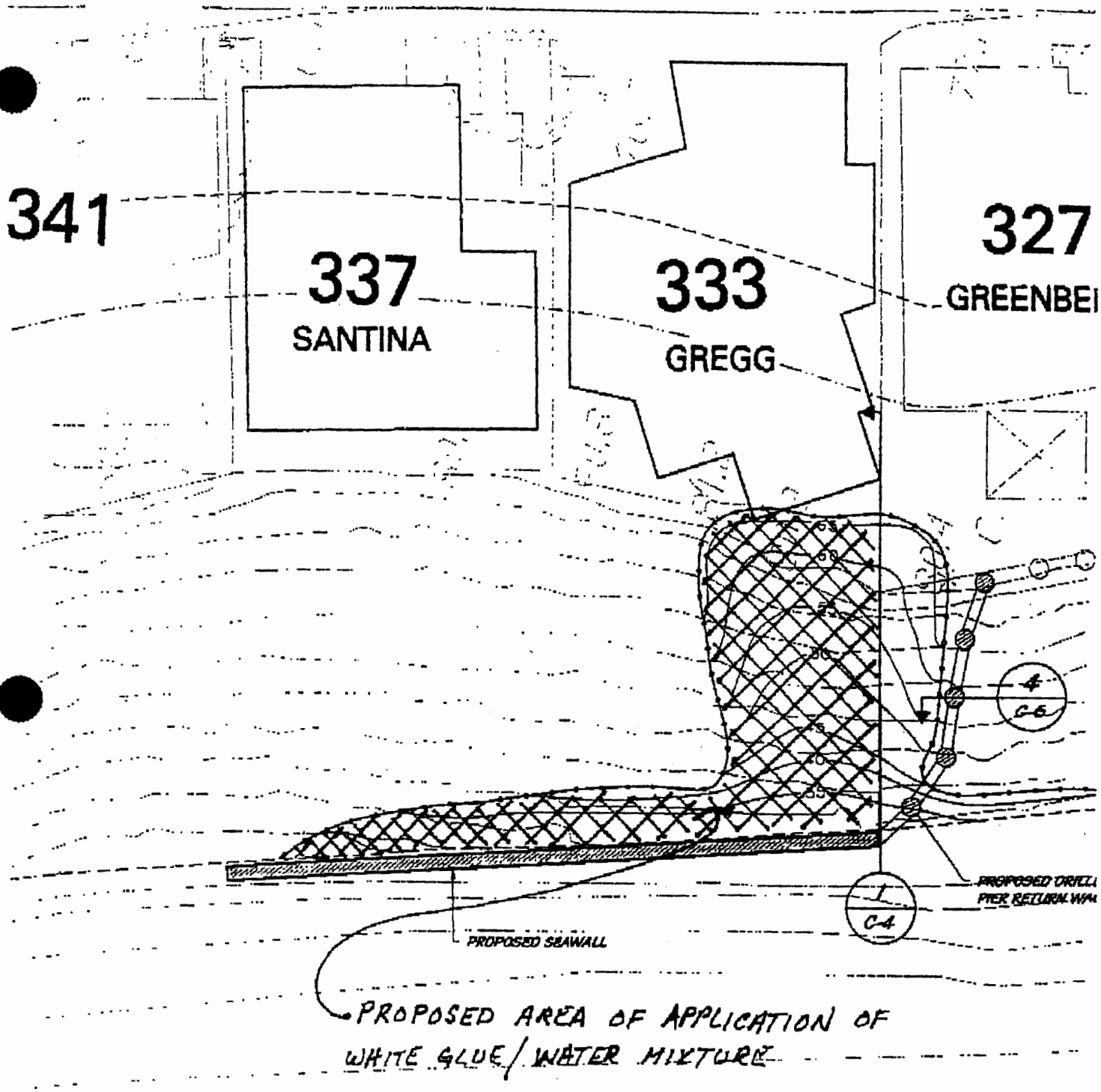
_____
Name

_____
Address

_____

_____

_____
Date of Signing



23792	TERRACOSTA CONSULTING GROUP ENGINEERS & GEOLOGISTS 4455 MURPHY CANYON ROAD, SUITE 100 SAN DIEGO, CALIFORNIA 92123 (858) 573-6900	DESIGN WJD	REVISIONS				333-337 PACIFIC AVENUE SHORELINE STAB
12-31-01		DRAWN CDS	REV.	BY	DATE	APP.	SITE PLAN
		CHECKED WFC					

ATE OF CALIFORNIA -- THE RESOURCES AGENCY GRAY DAVIS, Governor

ALIFORNIA COASTAL COMMISSION
N DIEGO AREA
75 METROPOLITAN DRIVE, SUITE 103
N DIEGO, CA 92108-4402
19) 767-2370

EMERGENCY PERMIT

Applicants: **Paul Santina/Marti Gregg**
333/337 Pacific Avenue
Solana Beach, Ca

Date: October 9, 2001

Agent: **Walter Crampton**

Emergency Permit No. **6-01-154-G**

LOCATION OF EMERGENCY WORK: On the bluff face below 333 Pacific Avenue and on the public beach below 333 & 337 Pacific Avenue, Solana Beach, San Diego County.

WORK PROPOSED: Construction of an approximately 35 ft.-high, 100 ft.-long tiedback concrete seawall which is proposed to be colored and textured to match the surrounding bluff. Also, construction of a row of six (6) 24-inch diameter drilled piers to a depth of approximately 60 ft. along the top of the bluff fronting 333 Pacific Avenue.

This letter constitutes approval of the emergency work you or your representative has requested to be done at the location listed above. I understand from your information and our site inspection that an unexpected occurrence in the form of upper and mid-bluff collapse and exposure of a clean sands lens within the midbluff requires immediate action to prevent or mitigate loss or damage to life, health, property or essential public services. 14 Cal. Admin. Code Section 13009. The Executive Director of the Coastal Commission hereby finds that:

(a) An emergency exists which requires action more quickly than permitted by the procedures for administrative or ordinary permits and the development can and will be completed within 30 days unless otherwise specified by the terms of this permit;

(b) Public comment on the proposed emergency action has been reviewed if time allows;

(c) As conditioned, the work proposed would be consistent with the requirements of the California Coastal Act of 1976.

The work is hereby approved, subject to the conditions listed on the attached page.

Sincerely,

PETER M. DOUGL
Executive Director

Deborah Le

By: DEBORAH LEE
Deputy Director

EXHIBIT NO. 7
APPLICATION NO.
6-02-2
Emergency Permit
6-01-154-G
Page 1 of 7
California Coastal Commission

CONDITIONS OF APPROVAL:

1. The enclosed Emergency Permit Acceptance form must be signed by the PROPERTY OWNER and returned to our office within 15 days.

2. Only that work specifically described in this permit and for the specific properties listed above is authorized. The construction, placement, or removal of any accessory or protective structure, including but not limited to, stairways or other access structures, walls, fences, etc. not described herein, are not authorized by this permit. Any additional work requires separate authorization from the Executive Director. If during construction, site conditions warrant changes to the approved plans, the San Diego District office of the Coastal Commission shall be contacted immediately prior to any changes to the project in the field.

3. The work authorized by this permit must be completed within 60 days of the date of this permit (i.e., by December 10, 2001). Within 60 days of the date of this permit (i.e., by December 10, 2001), the permittee shall apply for a regular Coastal Permit to have the emergency work be considered permanent. If no such application is received, the emergency work shall be removed in its entirety within 150 days of the date of this permit (i.e., by March 10, 2002), unless this requirement is waived in writing by the Executive Director.

4. The subject emergency permit is being issued in response to a documented emergency condition where action needs to be taken faster than the normal coastal development permit process would allow. By approving the proposed emergency measures, the Executive Director of the Coastal Commission is not certifying or suggesting that the structures constructed under this emergency permit will provide necessary protection for the blufftop residential structures. Thus, in exercising this permit, the applicant agrees to hold the California Coastal Commission harmless from any liabilities for damage to public or private properties or personal injury that may result from the project.

5. This permit does not obviate the need to obtain necessary authorizations and/or permits from other agencies (e.g. City of Solana Beach, Dept. of Fish & Game, U.S. Fish & Wildlife Service, U.S. Army Corps of Engineers, California Department of Parks and Recreation, State Lands Commission.)

6. PRIOR TO THE COMMENCEMENT OF THE CONSTRUCTION, the applicant shall submit to the Executive Director, for review and written approval, final plans for the proposed seawall and drilled piers that have been reviewed and approved by the City of Solana Beach. Said plans shall be in substantial conformance with the plans submitted with this application dated 10/2/01 by Terracosta Consulting Group, except they shall be revised as follows:

   a. The proposed geogrid-reinfroced slope reconstruction behind the seawall shall be deleted.

   b. Sufficient detail regarding the construction method and technology utilized for connecting the subject seawall to adjacent seawall structure(s).

c. Sufficient detail regarding the construction method and technology utilized for texturing and coloring the seawall and tiebacks. Said plans shall confirm, and be of sufficient detail to verify, that the seawall color and texture closely matches the adjacent natural bluffs, including provision of a color board indicating the color of the fill material.

d. The seawall shall conform as closely as possible to the natural contour of the bluff. If during construction, slope conditions or bluff profiles substantially change, work shall be stopped and consultation with the City of Solana Beach and Commission staff shall occur before work resumes.

e. During construction of the approved development, disturbance to sand and intertidal areas shall be minimized to the maximum extent feasible. All excavated beach sand shall be redeposited on the beach. Local sand, cobbles or shoreline rocks shall not be used for backfill or for any other purpose as construction material.

7. Pre-construction site conditions shall be documented through photographs of the bluff at the time of construction and submitted with any required follow-up coastal development permit.

If you have any questions about the provisions of this emergency permit, please contact Gary Cannon at the Commission's San Diego Coast Area Office at the address and telephone number listed on the first page.

(G:\San Diego\Emergency\6-01-154-G Santina-GreggEP.doc)

EMERGENCY PERMIT ACCEPTANCE FORM

TO: CALIFORNIA COASTAL COMMISSION
SAN DIEGO COAST AREA
7575 METROPOLITAN DRIVE, SUITE 103
SAN DIEGO, CA 92108-4402
(619) 767-2370

RE: **Emergency Permit No. 6-01-154-G**

INSTRUCTIONS: After reading the attached Emergency Permit, please sign this form and return to the San Diego Coast Area Office within 15 working days from the permit's date.

I hereby understand all of the conditions of the emergency permit being issued to me and agree to abide by them. I also understand that a regular Coastal Permit is necessary to permanently authorize the emergency work. I agree to apply for a regular Coastal Permit within 60 days of the date of the emergency permit (i.e., by December 10, 2001).

_____
Signature of property owner

_____
Name

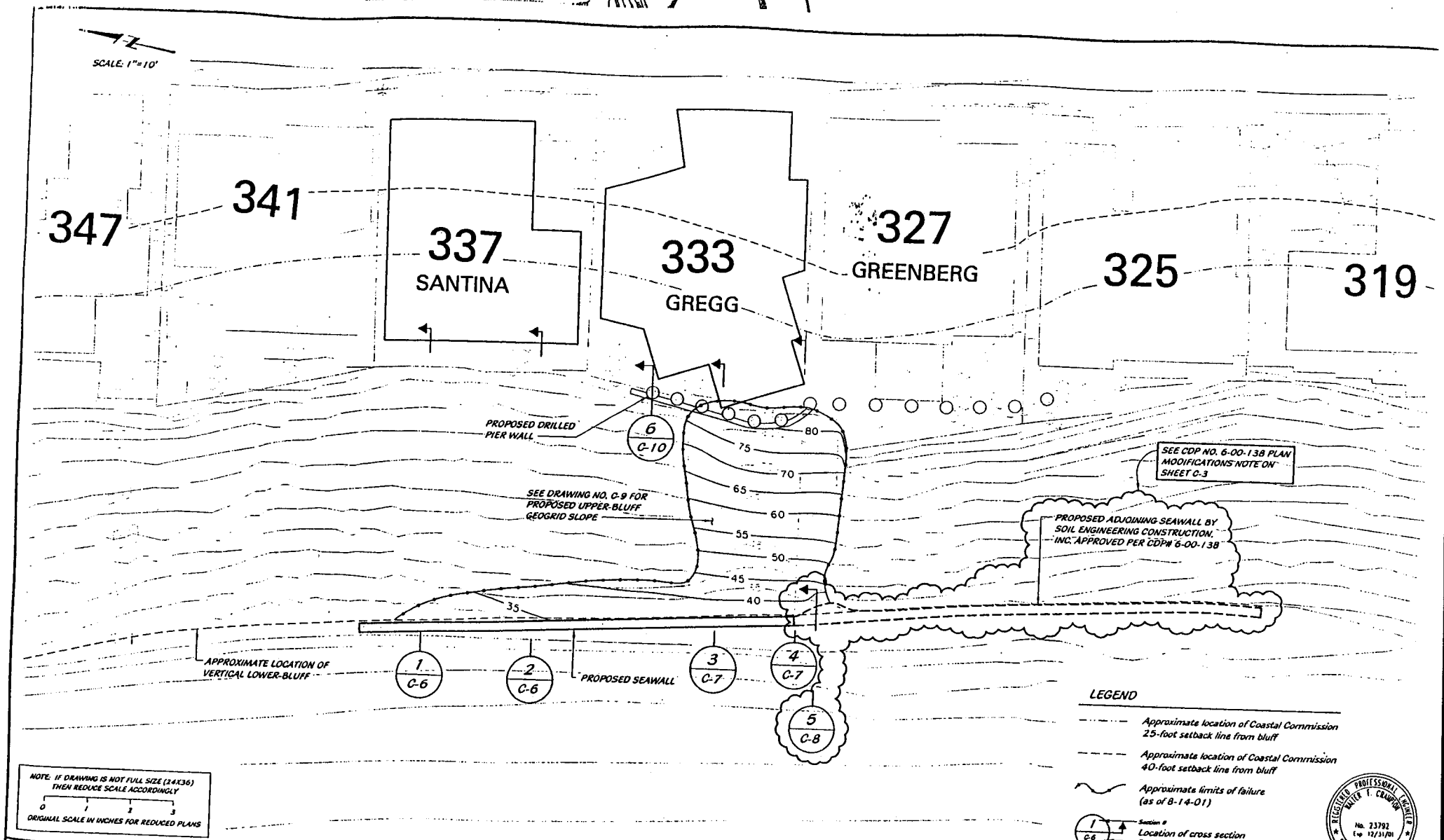
_____
Address

_____

_____

_____
Date of Signing

WORK TO BE ... IMPROVEMENTS CONSIST ... AND SPECIFICATIONS. ... CONSIST OF ALL WORK ... AND ASSOCIATED UPPER-BLUFF ... BE CLEARED OF EQUIPMENT, ... DEBRIS, CLEAN, AND NEAT ... AND MATERIAL



NOTE: IF DRAWING IS NOT FULL SIZE (24X36) THEN REDUCE SCALE ACCORDINGLY

0 1 2 3

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

REGISTERED PROFESSIONAL ENGINEER WALTER F. CRAMPTON No. 23792 Exp 12/31/01 CIVIL STATE OF CALIFORNIA

CALIFORNIA COASTAL DEVELOPMENT PERMIT NO.:	PLANS PREPARED UNDER THE SUPERVISION OF DATE: INITIALS: R.C.E. NO.: 23792	TERRACOSTA CONSULTING GROUP ENGINEERS & GEOLOGISTS 4455 MURPHY CANYON ROAD, SUITE 100 SAN DIEGO, CALIFORNIA 92123 (858) 573-6900	DESIGN: WJO DRAWN: GDS CHECKED: WJO	REVISIONS REV. BY DATE APP.	333-337 PACIFIC AVENUE SHORELINE STABILIZATION PROJECT
	ENGINEER OF WORK: WALTER F. CRAMPTON R.C.E. NO.: 23792 EXP. DATE: 12-31-01				SITE PLAN

CITY OF SOLANA BEACH

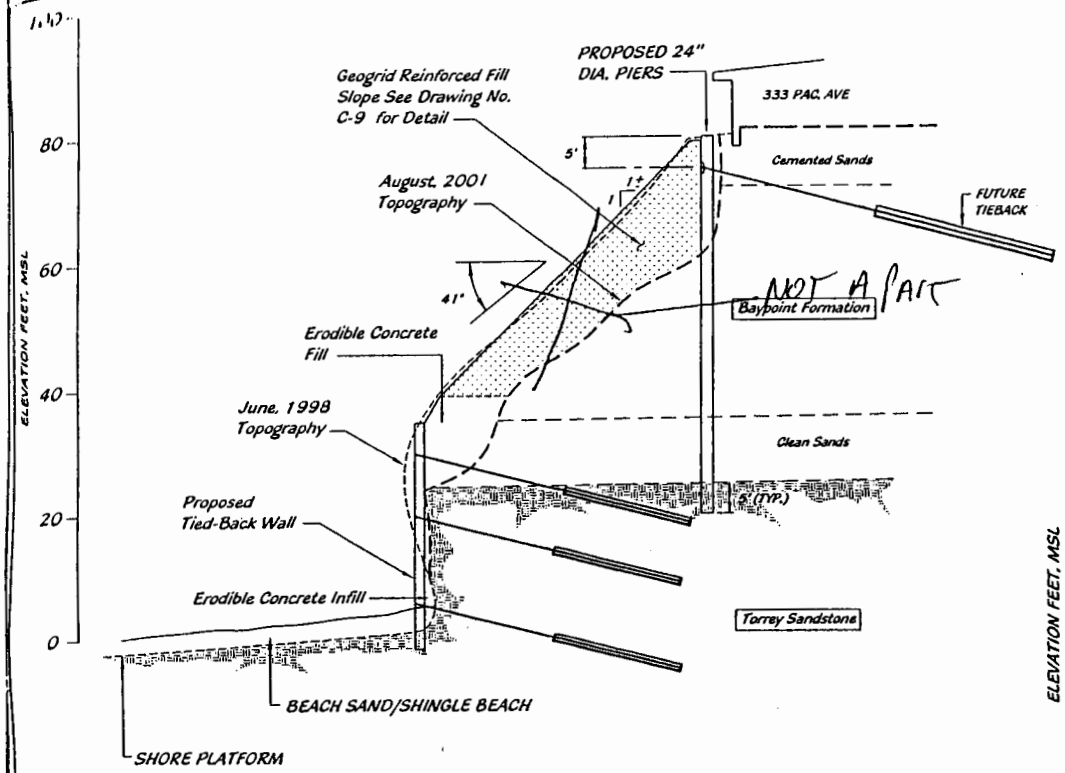
RECOMMENDED FOR APPROVAL	APPROVED FOR CONSTRUCTION
BY: R.C.E.: EXP.: DATE:	BY: CITY ENGINEER R.C.E.: EXP.: DATE:

2065

DRAWING NO. C-4

SHEET 4 OF 11

10-2-01 DATE OF PRINT

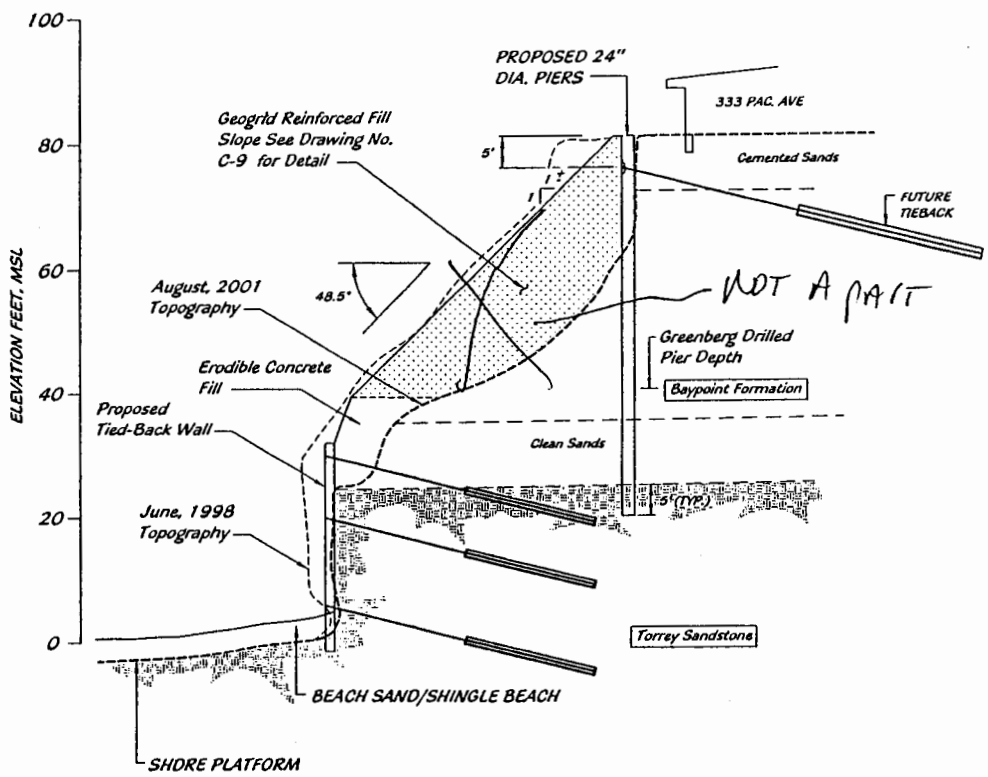


333 PACIFIC AVENUE - SECTION 3

SCALE: 1"=10' (HORIZ.:VERT.)

333 PACIFIC AVE - PHASE 1

INSTALL DRILLED PIERS WITH TIEBACK ANCHORS AND SCULPTED INFILL WITHIN THE LIMITS OF EXISTING UPPER BLUFF FAILURE FRONTING 333 PACIFIC AVENUE. ADDITIONAL TIEBACKS AND INFILL WILL BE NECESSARY AS FUTURE EROSION EXPOSES THE CURRENTLY BURIED DRILLED PIERS. SEE THE PROFILE IN THIS SET OF DRAWINGS FOR CURRENT LIMITS OF INFILL.



333 PACIFIC AVENUE - SECTION 4

SCALE: 1"=10' (HORIZ.:VERT.)

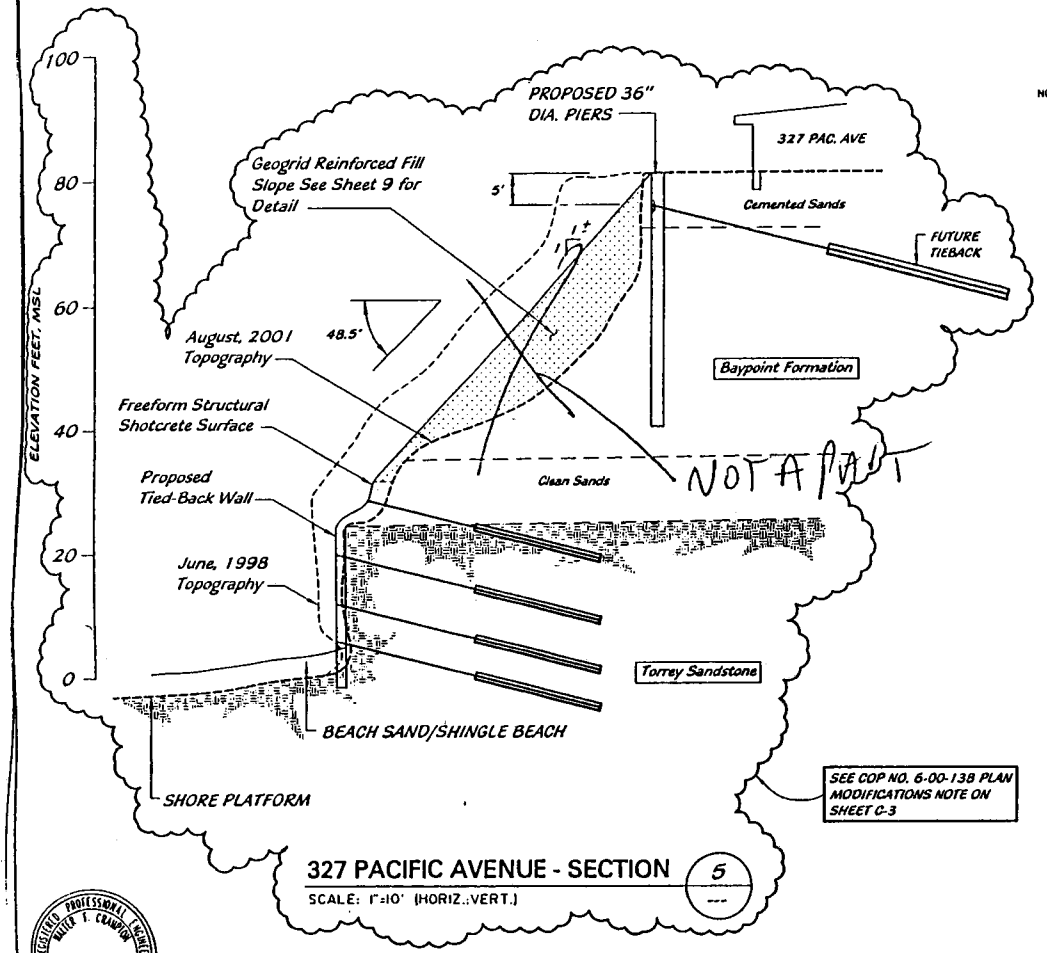
REGISTERED PROFESSIONAL ENGINEER WALTER F. CRAMPTON No. 23792 Exp. 12/31/01 CIVIL STATE OF CALIFORNIA

NOTE: IF DRAWING IS NOT FULL SIZE (24X36) THEN REDUCE SCALE ACCORDINGLY
0 1 2 3
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

CALIFORNIA COASTAL DEVELOPMENT PERMIT NO.:	PLANS PREPARED UNDER THE SUPERVISION OF DATE: INITIALS: R.C.E. NO.: 23792	TERRACOSTA CONSULTING GROUP ENGINEERS & GEOLOGISTS 4455 MURPHY CANYON ROAD, SUITE 100 SAN DIEGO, CALIFORNIA 92123 (858) 573-6900	DESIGN: WJD DRAWN: GDS CHECKED: WFC	REVISIONS REV. BY DATE APP.	333-337 PACIFIC AVENUE SHORELINE STABILIZATION PROJECT
	ENGINEER OF WORK: WALTER F. CRAMPTON R.C.E. NO.: 23792 EXP. DATE: 12-31-01				CROSS SECTIONS

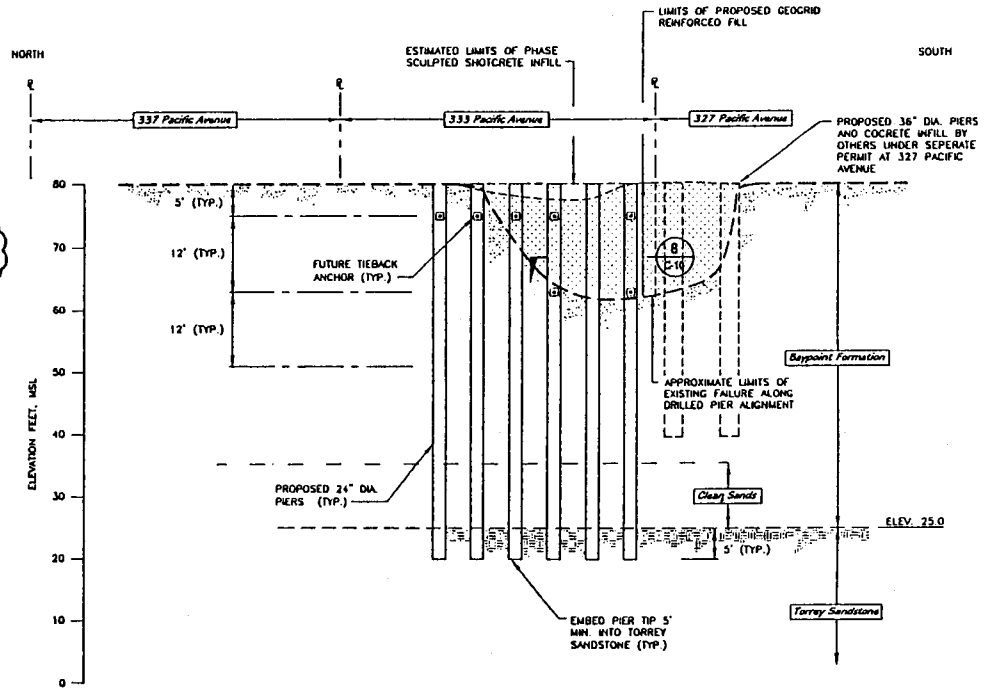
CITY OF SOLANA BEACH	
RECOMMENDED FOR APPROVAL	APPROVED FOR CONSTRUCTION
BY:	BY:
R.C.E.: EXP.:	CITY ENGINEER R.C.E.:
DATE:	EXP.: DATE:

2065
DRAWING NO C-7
SHEET 7 of 10
10-2-01
DATE OF PRINT



327 PACIFIC AVENUE - SECTION 5

SCALE: 1"=10' (HORIZ.:VERT.)



DRILLED PIER PROFILE & LAYOUT

SCALE: 1"=10' (HORIZ.:VERT.)

NOTES FOR PROPOSED PIER TIEBACK WALL

THE INITIAL APPEARANCE OF THE PROPOSED DRILLED-PIER WALL WILL BE MINIMAL, AS THE MAJORITY OF THE PIERS WILL BE ENTIRELY BURIED. AS EROSION CONTINUES, THE UPPER PARTS OF THE PIERS WILL BECOME EXPOSED. AS THEY ARE EXPOSED, A STRUCTURAL INFILL WILL BE APPLIED BETWEEN THE PIERS AND OVER THE ENTIRE SURFACE TO PROVIDE AN APPEARANCE CLOSELY MATCHING THAT OF THE EXISTING NATURAL BLUFF. THE PIERS WILL ALSO BE TIED BACK BY SOIL ANCHORS AS EROSION CONTINUES AND MORE OF THE PIERS BECOME EXPOSED.

REGISTERED PROFESSIONAL ENGINEER WALTER F. CRAMPTON No. 23792 Exp. 12/31/01 CIVIL STATE OF CALIFORNIA

ANCHOR NOTE

UPPER ANCHOR ELEVATIONS ARE SET AT EL. 30.0 WHEN THE TOP-OF-WALL (T.O.W.) IS AT EL. 35.0. WHEN THE T.O.W. DROPS BELOW EL. 35.0 THE UPPER ANCHOR SHALL BE LOCATED MID-WAY BETWEEN THE T.O.W. AND GEOLOGIC CONTACT AT EL. 25.0. WHEN THE T.O.W. IS AT OR BELOW EL. 30.0 THE REINFORCED THICKENED REAR REINFORCING SHALL BE MODIFIED AS NECESSARY TO ACCOMODATE THE ANCHOR REACTION AS DIRECTED BY THE ENGINEER. WHEN THE T.O.W. IS AT OR BELOW EL. 27.0 THE ANCHOR SHALL BE LOCATED 1.0 FOOT BELOW THE T.O.W. THE UPPER ANCHOR SHALL BE DELETED WHEN THE T.O.W. IS AT EL. 25.0

TIEBACK ANCHOR SCHEDULE

ANCHOR ROW	ANCHOR ELEV.	BOND LENGTH (FT)	TOTAL LENGTH (FT)	DESIGN LOAD (kips)	NO. OF 0.6" DIA. STRANDS	PROOF LOAD (kips)	LOCK OFF LOAD (kips)
UPPER	30.0*	40.0	75.0	230	8	345	230
MIDDLE	20.0	40.0	70.0	70	3	105	70
LOWER	6.0	40.0	65.0	110	4	165	110

*SEE ANCHOR NOTE THIS PAGE

NOTE: IF DRAWING IS NOT FULL SIZE (24X36) THEN REDUCE SCALE ACCORDINGLY
0 1 2 3
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

CALIFORNIA COASTAL DEVELOPMENT PERMIT NO.:	PLANS PREPARED UNDER THE SUPERVISION OF DATE: R.C.E. NO. 23792 ENGINEER OF WORK: R.C.E. NO. 23792 EXP. DATE 12-31-01	TERRACOSTA CONSULTING GROUP ENGINEERS & GEOLOGISTS 4455 MURPHY CANYON ROAD, SUITE 100 SAN DIEGO, CALIFORNIA 92123 (858) 573-6900	DESIGN: WJO DRAWN: GDS CHECKED: WFC	REVISIONS REV. BY DATE APP.	333-337 PACIFIC AVENUE SHORELINE STABILIZATION PROJECT DRILLED PIER WALL PROFILE	CITY OF SOLANA BEACH RECOMMENDED FOR APPROVAL BY: R.C.E.: EXP.: DATE:	APPROVED FOR CONSTRUCTION BY: CITY ENGINEER R.C.E.: EXP.: DATE:	2065 DRAWING NO. C-8 SHEET 8 OF 1(10-2-01 DATE OF PRIN	

STATE OF CALIFORNIA -- THE RESOURCES AGENCY GRAY DAVIS, Governor

CALIFORNIA COASTAL COMMISSION
SAN DIEGO AREA
7575 METROPOLITAN DRIVE, SUITE 103
DIEGO, CA 92108-4402
767-2370

EMERGENCY PERMIT
(REVISED)

Applicants: **Martha Gregg**
333 Pacific Avenue
Solana Beach, Ca

Date: **August 29, 2002**

Agent: **Walter Crampton**

Emergency Permit No. **6-02-78-G**

LOCATION OF EMERGENCY WORK: On the top of bluff and bluff face below 333 Pacific Avenue, Solana Beach, San Diego County.

WORK PROPOSED: Construction of a row of six (6) 24-inch diameter drilled piers to a depth of approximately 60 ft. along the top of the bluff and construction of a geogrid reinforced fill slope from top of an existing seawall (elevation +40 ft. MSL) to the top of bluff with a temporary modular block wall of equal height to the geogrid fill slope constructed along the south property line as shown on attached Exhibit #3.

This letter constitutes approval of the emergency work you or your representative has requested to be done at the location listed above. I understand from your information and our site inspection that an unexpected occurrence in the form of upper and mid-bluff collapse and exposure of a clean sands lens within the midbluff that has extended onto the adjacent southern property requires immediate action to prevent or mitigate loss or damage to life, health, property or essential public services. 14 Cal. Admin. Code Section 13009. The Executive Director of the Coastal Commission hereby finds that:

(a) An emergency exists which requires action more quickly than permitted by the procedures for administrative or ordinary permits and the development can and will be completed within 30 days unless otherwise specified by the terms of this permit;

(b) Public comment on the proposed emergency action has been reviewed if time allows;

(c) As conditioned, the work proposed would be consistent with the requirements of the California Coastal Act of 1976.

The work is hereby approved, subject to the conditions listed on the attached page.

Sincerely,

PETER M. DOUGLAS
Executive Director

By: DEBORAH LEE
Deputy Director

EXHIBIT NO. 8
APPLICATION NO.
6-02-2
Emergency Permit
6-02-78-G
Page 1 of 7
California Coastal Commission

CONDITIONS OF APPROVAL:

1. The enclosed Emergency Permit Acceptance form must be signed by the PROPERTY OWNER and returned to our office within 15 days.

2. Only that work specifically described in this permit and for the specific property listed above is authorized. In addition, the proposed modular block wall is only authorized as a temporary feature which must be removed prior to or during the construction of any approved geogrid fill slope or other slope reconstruction on the bluff below 327 Pacific Avenue, Solana Beach. The construction, reconstruction, placement, or removal of any portion of the existing or pre-existing residential structure or accessory or protective structures, including but not limited to, stairways or other access structures, walls, fences, etc. not described herein, are not authorized by this permit. Any additional work requires separate authorization from the Executive Director. If during construction, site conditions warrant changes to the approved plans, the San Diego District office of the Coastal Commission shall be contacted immediately prior to any changes to the project in the field.

3. The work authorized by this permit must be completed within 90 days of the date of this permit (i.e., by November 27, 2002). Within 60 days of the date of this permit (i.e., by October 28, 2002), the permittee shall apply for a regular Coastal Permit to have the emergency work be considered permanent. If no such permit is received, the emergency work shall be removed in its entirety within 150 days of the date of this permit (i.e., by January 26, 2003), unless this requirement is waived in writing by the Executive Director.

4. The subject emergency permit is being issued in response to a documented emergency condition where action needs to be taken faster than the normal coastal development permit process would allow. By approving the proposed emergency measures, the Executive Director of the Coastal Commission is not certifying or suggesting that the structures constructed under this emergency permit will provide necessary protection for the blufftop residential structures. Thus, in exercising this permit, the applicant agrees to hold the California Coastal Commission harmless from any liabilities for damage to public or private properties or personal injury that may result from the project.

5. This permit does not obviate the need to obtain necessary authorizations and/or permits from other agencies (e.g. City of Solana Beach, Dept. of Fish & Game, U.S. Fish & Wildlife Service, U.S. Army Corps of Engineers, California Department of Parks and Recreation, State Lands Commission.)

6. PRIOR TO THE COMMENCEMENT OF THE CONSTRUCTION, the applicant shall submit to the Executive Director, for review and written approval, final plans for the proposed drilled piers and upper bluff reconstruction that have been reviewed and approved by the City of Solana Beach. Said plans shall be in substantial conformance with the plans submitted with this application dated 7/22/02 and 8/7/02 by Terracosta Consulting Group, which indicate the drilled piers shall be located as far landward as possible. Said plans shall be revised to include the following:

a. The site plan shall be revised to show the location of the proposed wall in relation to the existing (not pre-existing) residential structure.

b. The face of the proposed geogrid-reinforced slope reconstruction shall be sculpted to more closely resemble the conditions on the adjacent natural bluff.

c. If during construction, slope conditions or bluff profiles substantially change, work shall be stopped and consultation with the City of Solana Beach and Commission staff shall occur before work resumes.

d. During construction of the approved development, disturbance to sand and intertidal areas shall be minimized to the maximum extent feasible. All excavated beach sand shall be redeposited on the beach. Local sand, cobbles or shoreline rocks shall not be used for backfill or for any other purpose as construction material.

7. Pre-construction site conditions shall be documented through photographs of the bluff at the time of construction and submitted with any required follow-up coastal development permit.

If you have any questions about the provisions of this emergency permit, please contact Gary Cannon at the Commission's San Diego Coast Area Office at the address and telephone number listed on the first page.

EMERGENCY PERMIT ACCEPTANCE FORM

TO: CALIFORNIA COASTAL COMMISSION
SAN DIEGO COAST AREA
7575 METROPOLITAN DRIVE, SUITE 103
SAN DIEGO, CA 92108-4402
(619) 767-2370

RE: **Emergency Permit No. 6-02-78-G**

Acknowledgement

In acceptance of this emergency permit, I acknowledge that any work authorized under an emergency permit is temporary and subject to removal if a regular Coastal Permit is not obtained to permanently authorize the emergency work. I agree to apply for a regular Coastal Permit within 30 days of the date of the emergency permit (i.e., by September 28, 2002). I also acknowledge and understand that a regular coastal development permit would be subject to all of the provisions of the Coastal Act and may be conditioned accordingly. These conditions may include, but not be limited to, provisions for long term maintenance and monitoring of the bluff face, a sand mitigation fee and restrictions on future construction of additional shore or bluff protection. I further acknowledge that the proposed reconstruction of the bluff slope is being done to provide long-term stability to the upland property and shall not be justification for reconstruction of threatened portions of the existing home that have been removed. I further acknowledge that the modular wall proposed to traverse the southern side of the subject reconstructed bluff slope is a temporary wall which must be removed prior to or during the construction of any approved reconstruction of the bluff slope below 327 Pacific Avenue.

I hereby understand all of the conditions of the emergency permit being issued to me and agree to abide by them.

INSTRUCTIONS: After reading the attached Emergency Permit, please sign this form and return to the San Diego Coast Area Office within 15 working days from the permit's date.

_____
Signature of property owner

_____
Name

_____
Address

_____

_____

_____
Date of Signing

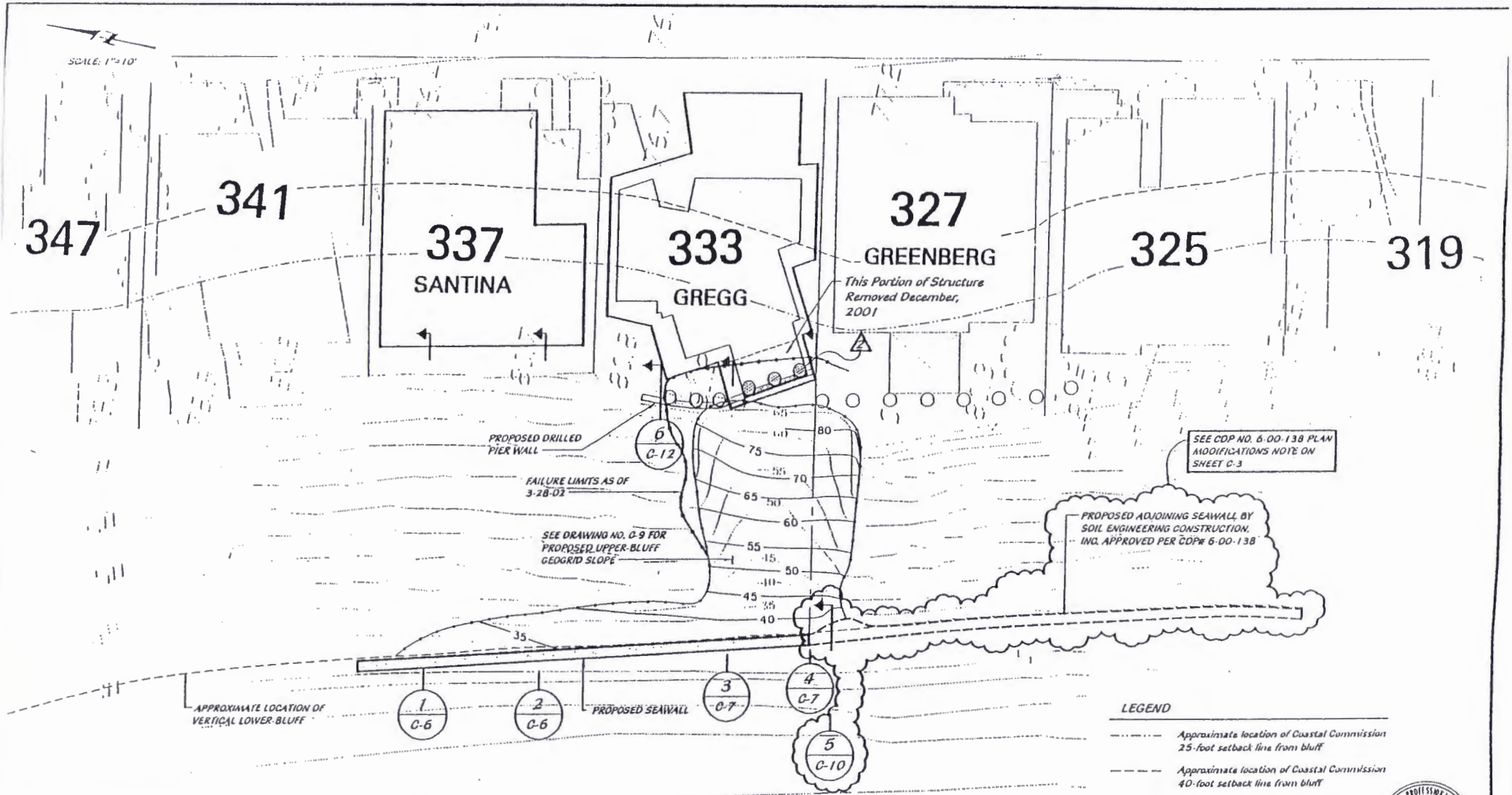


EXHIBIT NO. 1
APPLICATION NO.
6-02-78-G

DRAWING IS NOT FULL SIZE (24X36)
REDUCE SCALE ACCORDINGLY
1 2 3
INCHES FOR REDUCED PLANS

PLANS PREPARED UNDER THE SUPERVISION OF
DATE:
REG. NO. 23792
ENGINEER OF WORK:
WALTER F. CRAUPTON

TERRACOSTA CONSULTING GROUP
ENGINEERS & GEOLOGISTS
6155 MURPHY CANYON ROAD, SUITE 100
SAN DIEGO, CALIFORNIA 92123
(858) 573-6900

DESIGN: WJD
DRAWN: GDS

REVISIONS				
REV.		BY	DATE	APP
1	REVISE PER PLAN CHECK COMMENTS	WJD	12/01	
2	REVISE PER LOCATIONS	WJD	6/02	

333-337 PACIFIC AVENUE SHORELINE STABILIZATION PROJECT

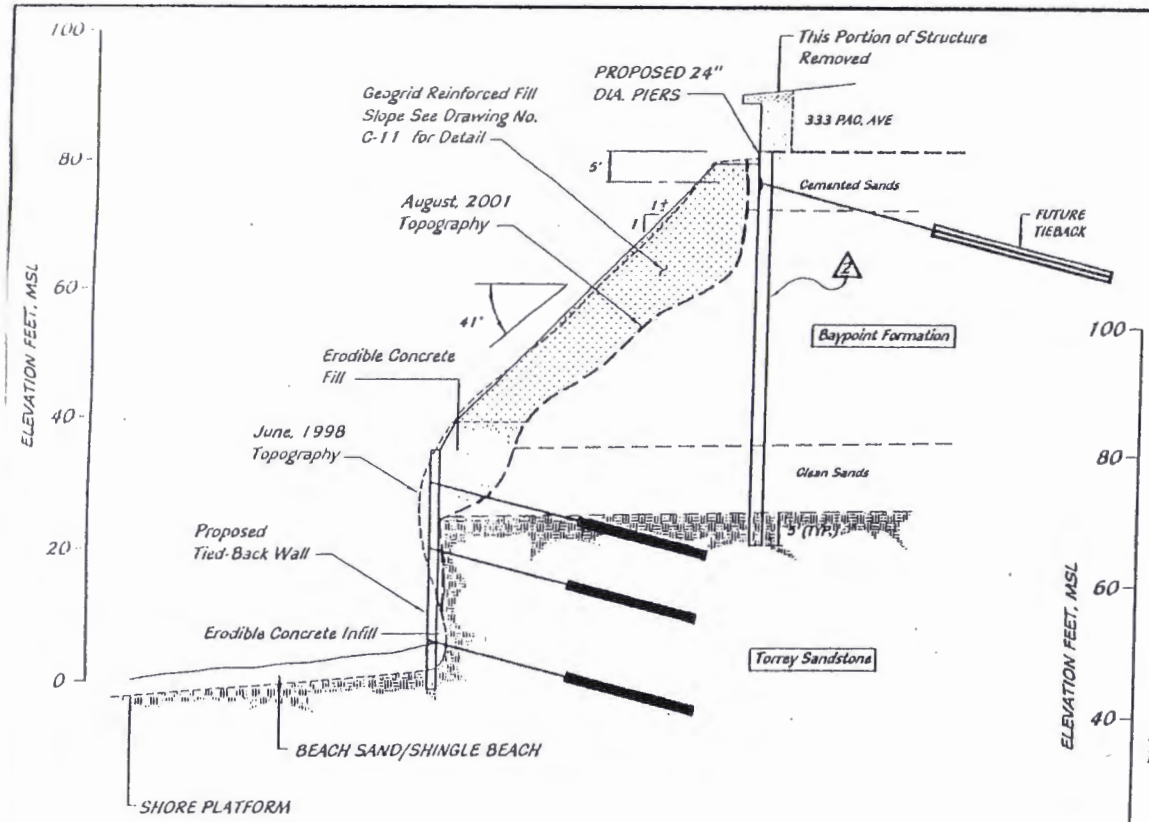
SITE PLAN

CITY OF SOLANA BEACH

RECOMMENDED FOR APPROVAL
BY:
R.C.E.: EXP.:

APPROVED FOR CONSTRUCTION
BY:
CITY ENGINEER R.C.E.:

DRAWING NO. C-4
SHEET 4 of 12
7-22-03

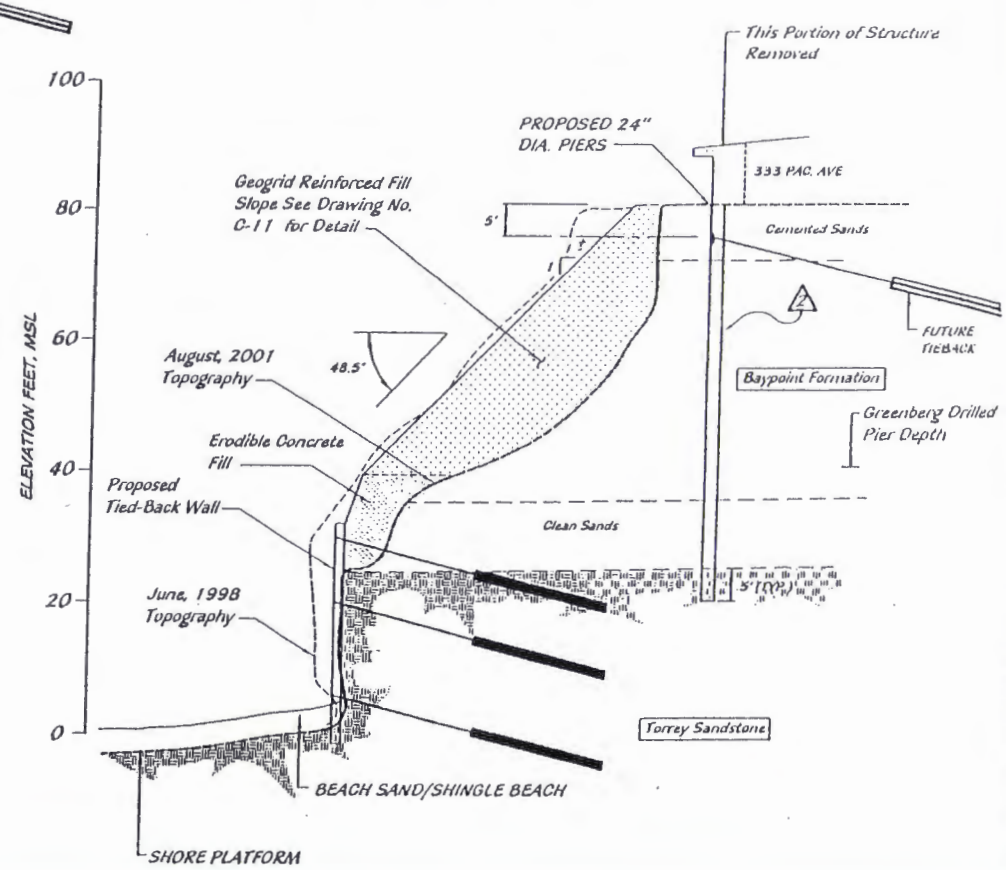


333 PACIFIC AVE - PHASE 1

INSTALL DRILLED PIERS WITH TIEBACK ANCHORS AND SCULPTED INFILL WITHIN THE LIMITS OF EXISTING UPPER BLUFF FAILURE FRONTING 333 PACIFIC AVENUE. ADDITIONAL TIEBACKS AND INFILL WILL BE NECESSARY AS FUTURE EROSION EXPOSES THE CURRENTLY BURIED DRILLED PIERS. SEE THE PROFILE IN THIS SET OF DRAWINGS FOR CURRENT LIMITS OF INFILL.

333 PACIFIC AVENUE - SECTION 3

SCALE: 1"=10' (HORIZ.:VERT.)



333 PACIFIC AVENUE - SECTION 4

SCALE: 1"=10' (HORIZ.:VERT.)

LICENSED PROFESSIONAL ENGINEER — WALTER T. CRAMPTON — No. 23782 Exp. 12/31/05 — CIVIL — STATE OF CALIFORNIA

IS NOT FULL SIZE (24X36) E SCALE ACCORDINGLY

2 3 INCHES FOR REDUCED PLANS

PLANS PREPARED UNDER THE SUPERVISION OF — WALTER T. CRAMPTON — RCE NO. 23782 — ENGINEER OF WORK

TERRACOSTA CONSULTING GROUP
ENGINEERS & GEOLOGISTS
1135 MURPHY CANYON ROAD SUITE 100
SAN DIEGO, CALIFORNIA 92123
(858) 573-8400

DESIGN: WJO — DRAWN: GDS

REVISIONS				
REV.		BY	DATE	APP
1	REVISE PER PLAN CHECK COMMENTS	WJO	12/01	
2	REVISE PER LOCATIONS	WJO	6/02	

333 337 PACIFIC AVENUE SHORELINE STABILIZATION PROJECT

CROSS SECTIONS

CITY OF SOLANA BEACH

RECOMMENDED FOR APPROVAL — BY: — R.C.E.: — EXP.:

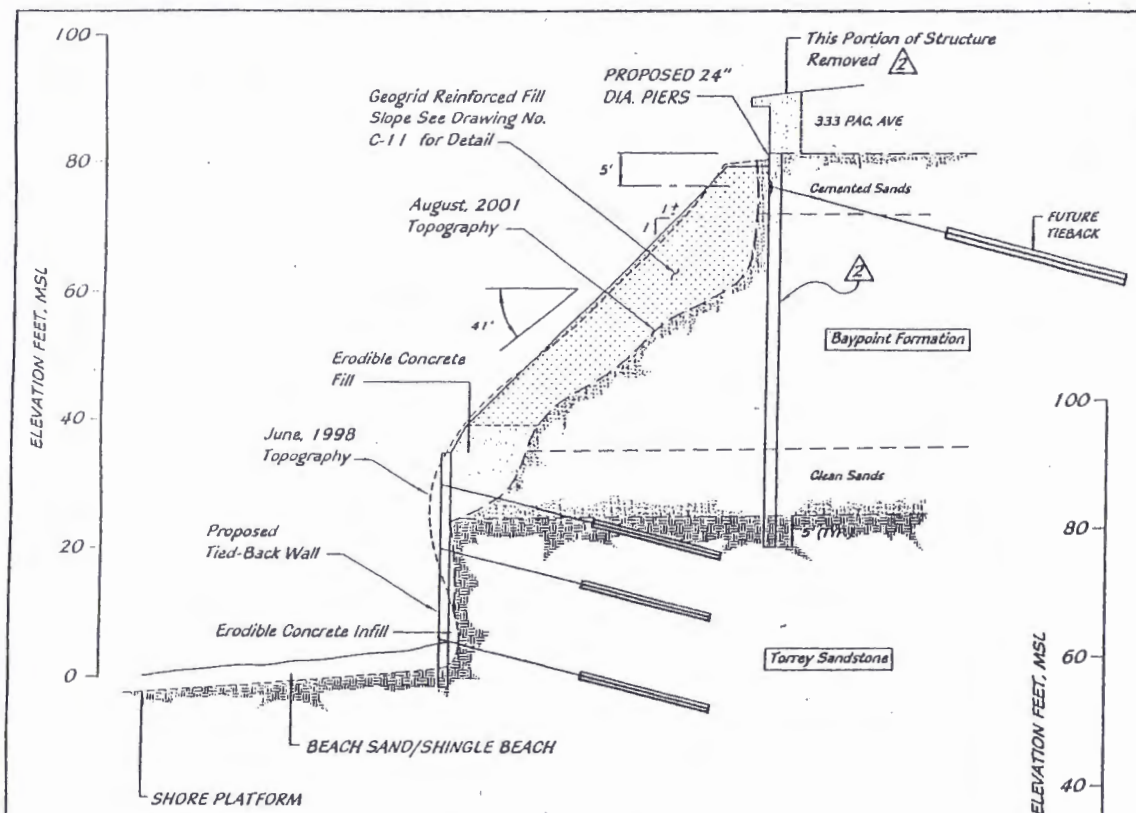
APPROVED FOR CONSTRUCTION — BY: — CITY ENGINEER R.C.E.:

2005 DRAWING NO. C-7

SHEET 7 OF 12

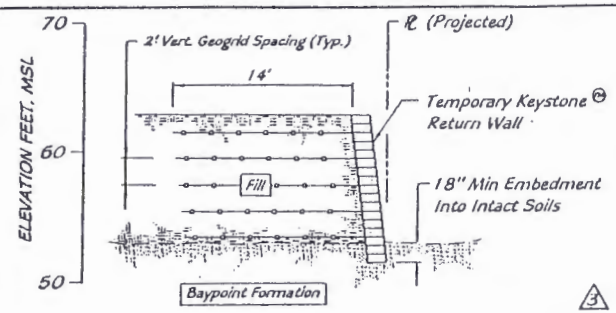
7-22-02

EXHIBIT NO. 2
APPLICATION NO.
6-02-78-G



333 PACIFIC AVENUE - SECTION 3

SCALE: 1"=10' (HORIZ.:VERT.)

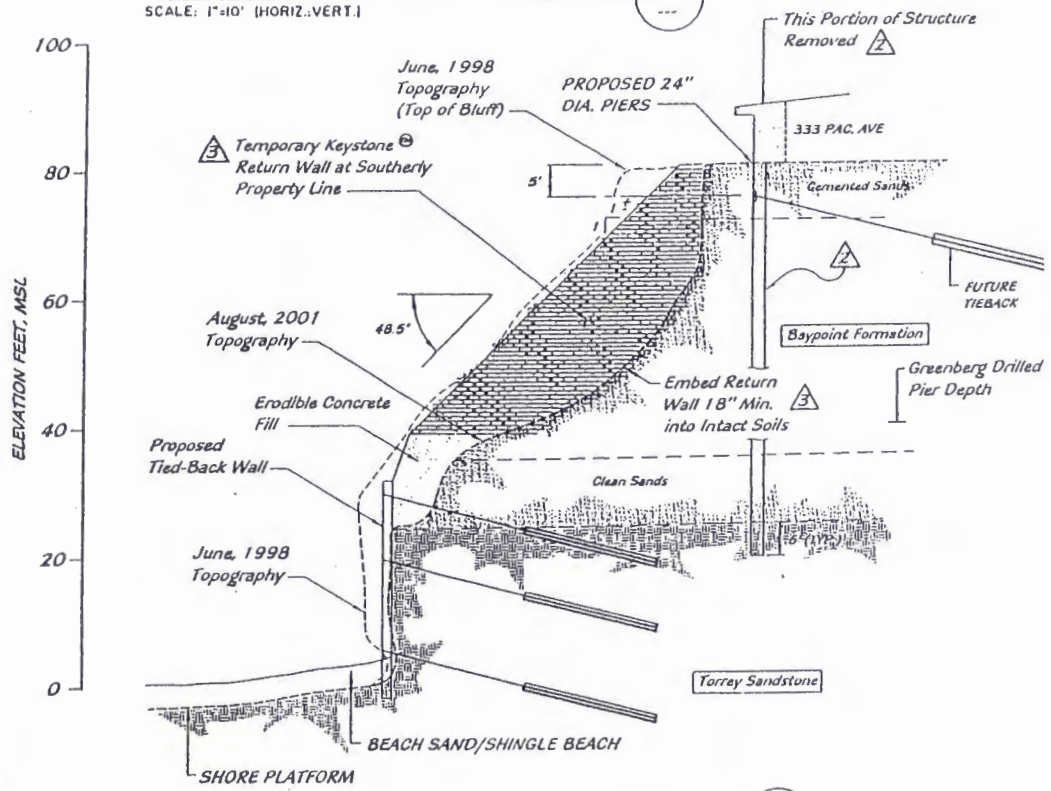


NOTE:

Only Geogrid Reinforcement For North-South Running Keystone Wal are Shown For Clarity. See Sheet C-11 for Primary East-West Geogri Reinforcement of Adjacent Upper-Bluff Slope. 3

TEMPORARY KEYSTONE RETURN WALL 7

SCALE: 1"=10' (HORIZ.:VERT.)



333 PACIFIC AVENUE - SECTION 4

SCALE: 1"=10' (HORIZ.:VERT.)

KEYSTONE® WALL NOTES 3

1. GEOGRID MATERIALS SHALL BE TENSAR UX1500SB OR APPROVED EQUAL.
2. MINIMUM GEOGRID LENGTH SHALL BE 14' HORIZONTAL AS MEASURED FROM BACK OF WALL. VERTICAL SPACING OF GEOGRIDS SHALL BE 2' O.C.
3. SEE SECTIONS 2.05 "REINFORCED EARTH FILL MATERIALS" (SHEET C-2) AND SECTION 3.04 "CONSTRUCTION SEQUENCE FOR 1:1 GEOGRID-REINFORCED EARTH SLOPE (SHEET C-3) FOR ADDITIONAL NOTES.

REGISTERED PROFESSIONAL ENGINEER WALTER F. CRAMPTON No. 23792 Exp. 12/31/05 CIVIL STATE OF CALIFORNIA

G IS NOT FULL SIZE (24X36) CE SCALE ACCORDINGLY

1 2 3

INCHES FOR REDUCED PLANS

EXHIBIT NO. 3
APPLICATION NO. 6-02-78-G

PLANS PREPARED UNDER THE SUPERVISION OF DATE: _____ NAME: _____ R.C.E. NO. 23792

ENGINEER OF WORK: WALTER F. CRAMPTON R.C.E. NO. 23792 EXP. DATE 12-31-05

TERRACOSTA CONSULTING GROUP
ENGINEERS & GEOLOGISTS
4155 MURPHY CANYON ROAD SUITE 100
SAN DIEGO, CALIFORNIA 92123
(858) 573-8900

DESIGN: WJD
DRAWN: GDS
CHECKED: WFC

REVISIONS

REV.		BY	DATE	APP.
1	REVISE PER PLAN CHECK COMMENTS	WJD	12/01	
2	REVISE PIER LOCATIONS	WJD	8/02	
3	ADD RET. WALL & NOTES	WJD	8/02	

333-337 PACIFIC AVENUE SHORELINE STABILIZATION PROJECT

CROSS SECTIONS

CITY OF SOLANA BEACH

RECOMMENDED FOR APPROVAL: BY: _____ R.C.E.: _____ EXP.: _____ DATE: _____

APPROVED FOR CONSTRUCTION: BY: _____ CITY ENGINEER R.C.E.: _____ EXP.: _____ DATE: _____

DRAWING NO. C-7A

SHEET 7 OF

8-1-02 DATE OF PR

THIS SHEET REPLACES DRAWING NO. C-7 10

In-lieu Fee Worksheet
333-337 Pacific Avenue
6-02-2/Gregg, Santina

Sand Mitigation Fee Parameters

W	=	100 ft.
E	=	2.5 ft.
v	=	0.9
R	=	0.27 ft/yr.
L	=	30 yrs
S	=	.75
hs	=	36 ft.
hu	=	46 ft.
Rcu	=	0.27 ft/yr.
Rcs	=	0.0
C	=	$13.00 cy

$V_e = A_e \times v = W \times E \times v$

$V_e = \underline{100} \times \underline{2.5} \times \underline{0.9} = \underline{225 \text{ cubic yards}}$

$V_w = A_w \times v = R \times L \times W \times v$

$V_w = \underline{0.27} \times \underline{30} \times \underline{100} \times \underline{0.9} = \underline{729 \text{ cubic yards}}$

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

$V_b = (\underline{.75} \times \underline{100} \times \underline{30}) \times [(\underline{0.27} \times \underline{36}) + (\underline{46}/2 \times (\underline{0.27} + (\underline{0.27} - \underline{0})))]/27 = \underline{1{,}845 \text{ cubic yards}}$

$V_t = V_b + V_w + V_e$

$V_t = \underline{225} + \underline{729} + \underline{1{,}845} = \underline{2{,}799 \text{ cubic yards}}$

$M = V_t \times C$

$M = \underline{2{,}799} \times \underline{\$13.00} = \underline{\$36{,}387.00}$

(G:\San Diego\GARY\6-02-2 In-lieu Fee Calcs.doc)

EXHIBIT NO. 9
APPLICATION NO.
6-02-2
In-lieu Fee Calculations
California Coastal Commission

Photos of site submitted by applicant that were taken in March 2003.

Subject site showing seawall and geogrid slope.

EXHIBIT NO. 10
APPLICATION NO.
6-02-2
Photos of Existing Site Conditions
California Coastal Commission

Neighboring Properties to Immediate South.
Southern Modular Retaining Wall For Geogrid Slope Can Be Seen