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Staff report prepared by:	Susan Craig
Staff report approved by:	Dan Carl
Hearing date:	12/11/2009

COASTAL DEVELOPMENT PERMIT APPLICATION

Application number.....**3-08-019, Sea Breeze LLC Seawall**

Applicant.....Sea Breeze LLC

Project location .....At the toe of the bluff and along the top of a rocky outcrop seaward of 2-3920 East Drive in the unincorporated Live Oak area of Santa Cruz County (APNs 032-182-02 and 032-182-03).

Project description.....Modify and expand existing permitted shotcrete seawall with new footings, new anchors, and new faux bluff surfacing extending from the rock shelf area to the bluff top edge. Provide a two-foot-wide public pathway at the base of the modified seawall that will provide a connection from the upcoast beach around the rocky shelf to the downcoast coastal stair accessway.

File documents.....Santa Cruz County coastal development permit (CDP) file 84-389-G; Santa Cruz County certified Local Coastal Program (LCP); *Geologic Investigation, Kengle Property, 2-3920 East Cliff Drive, Santa Cruz, California, Santa Cruz County APN 032-182-02 and 03* by Rogers E. Johnson & Associates, dated July 11, 2007; *Geotechnical Investigation - Design Phase, Proposed Rebuild of Single Family Dwelling, 2-3920 East Cliff Drive, Santa Cruz, California, A.P.N.'s: 032-182-02 and -03* by Rock Solid Engineering, Inc., dated July 24, 2007; *Structural Calculations for Coastal Bluff Stabilization - Repair and Construction of Shotcrete Facing with Soil Nail Anchors, Prepared for: Kim Kengle Property, 2-3920 East Cliff Drive, Santa Cruz, California, A.P.N.: 032-182-02 & -03* by Soil Engineering Construction, Inc., dated February 28, 2008.

Staff recommendation ...**Approval with Conditions**

A.Staff Recommendation

1. Summary of Staff Recommendation

The proposed project site is located along the bluffs above a minor rocky promontory in the Pleasure Point portion of the Live Oak beach area of Santa Cruz County. The majority of the bluff on the project

site is armored with a shotcrete seawall, approximately 200 feet in length, which extends vertically above the rocky shore platform to the top of the bluff. Approximately 80 feet of this existing seawall is located on Santa Cruz County property and is unpermitted (but the Commission recently approved a new seawall at this location as part of the Pleasure Point seawall project). The existing seawall on the site has a distinctly artificial color and texture and does not approximate the look of a natural bluff face. The footings of the existing seawall have been undermined and exposed by erosion.

The blufftop area of the project site is developed with a single family dwelling. Some elements of this residential development (fencing, driveway, a detached structure, etc.) are located within the East Cliff Drive right-of-way. The Commission's approval of Santa Cruz County's Pleasure Point seawall project (with segments both upcoast and directly downcoast of the project site) required an encroachment removal plan for this site that would return the right-of-way encroachment areas to public use and enjoyment as part of the upcoming redevelopment of East Cliff Drive, also part of the Commission's approval of the Pleasure Point seawalls.

The proposed project would modify and expand the existing shotcrete seawall at this location with new footings, new anchors, and new faux bluff concrete surfacing extending from the rock shelf area to the blufftop edge along the entire seaward extent of the property. The Applicant proposes to sculpt, color, and texture the concrete facing of all components of the proposed seawall to visually approximate the natural surrounding bluff face. The Applicant also proposes construction of a two-foot-wide walkway at the base of the proposed seawall to provide access from the upcoast adjacent beach around the rocky promontory and to the County's soon-to-be redeveloped public access stairway located directly downcoast of the project site. The Applicant proposes this access improvement as mitigation to offset impacts associated with improving the seawall at this location. The walkway fills a well-known and significant gap in lateral shoreline access in this area, and will provide a more meaningful connection around the headland on which this site sits. The new trail connection will allow for lateral transit around the headland whereas only very limited access is now available, even at very low tides, and only for the particularly spry beachgoer or surfer who can climb atop the headland and rock-hop around it. The new trail will thus benefit general beachgoer access, and, given the orientation of the offshore surfing breaks in relation to the headland, will be particularly beneficial to surfers, especially for safe ingress and egress during periods of high wave energy.

Shoreline armoring has a number of impacts on the coast, including but not limited to impacts from encroachment, fixing the back of the beach, and preventing the natural erosion of coastal bluffs that provide sandy material to the nearby beaches. As a result, the Coastal Act is premised on both hazard and shoreline armoring avoidance. The bluff here has been armored for many years, and thus these impacts already exist to a large degree. This project will extend certain such impacts and result in some new impacts. In this case, the proposed project's impacts on recreational access (e.g., retention of potential beach material) will be mitigated by the construction of the new access path at the base of the seawall, which will provide new access directly along the shoreline. The proposed project will also improve the public viewshed along this area of coast by including appropriate texturing, contouring, and coloring to mimic a natural bluff face and minimize the seawall's visual impact to the maximum degree

feasible. The project as proposed includes adequate construction best management practices to protect water quality and public access during construction activities.

Regarding the more general issue of how best to address existing and augmented shoreline armoring such as proposed here, the Commission is faced with a complex issue that is not easily simplified or addressed in a general way independent of site specific considerations. Nonetheless, the prospects of climate change and accelerated sea level rise have brought these issues to the fore in a manner that the Commission must begin to address more globally.

The proposed project site and the sites directly adjacent upcoast and downcoast are already armored, as is most of the shoreline in the urbanized areas of Santa Cruz County. As such, the project vicinity is not an undeveloped shoreline within which planning decisions about whether to armor or not, or whether to pursue planned retreat or other adaptive shoreline planning responses, can be neatly considered. In this case, the project site is located in a heavily urbanized area, which includes a significant coastal roadway and public access trail system immediately inland of the site, with a shoreline that is predominantly armored. In fact, the Commission recently approved the Pleasure Point seawalls, including a 1,100 linear-foot sculpted concrete seawall fronting the bluff seaward of East Cliff Drive located just upcoast of the proposed project site (this County seawall project is currently under construction) and a similar 300 linear-foot seawall which will directly abut the proposed project site at its downcoast location. The County's existing 120 linear-foot Larch Lane seawall at the edge of East Cliff Drive directly abuts the proposed project site at its upcoast location. Thus, significant full bluff armoring has been used to protect important public resources (e.g., the East Cliff Drive corridor), even while the inevitable impacts of these structures on other shoreline resources, such as public recreational resources, have been recognized. Most of the remaining bluffs both upcoast (Pleasure Point proper) and downcoast (the Opal Cliffs area) also have been armored to protect private residential development.

Over the long run, a more comprehensive strategy to address shoreline erosion and the impacts of armoring may be developed (e.g. planned or managed retreat, relocation of structures inland, abandonment of structures, etc.). However, such options appear not to be feasible at this location at this time as opposed to other locations where shoreline armoring is atypical. In this case, the proposed seawall meets the conditions under which shoreline armoring can be approved under Section 30235 of the Coastal Act, including, in particular, because the project includes an important public access feature that will connect with other public access amenities in the area. Thus, the project includes appropriate mitigation for the sand supply and related public access impacts that will be caused by the proposed development.

That said, it also is clear that the proposed project firmly commits this site to being armored for the foreseeable future, including for any redevelopment of the existing structure that may be proposed in the future. As indicated, such an outcome is consistent with the manner in which the Commission has historically treated this area in and around Pleasure Point, including most recently with the Pleasure Point seawall project, which is located directly adjacent to the site and is currently under construction. As also indicated, such an outcome does not mean that other more comprehensive efforts to better address urban shorelines in light of erosion and sea level rise are not relevant or should not be pursued.

On the contrary, it is clear that the State must come to grips with issues related to sea level rise, shoreline armoring, and the protection of natural and public recreational shoreline resources, particularly in urban and largely or increasingly armored areas.

One significant cumulative effect of shoreline armoring is that over time beaches in these areas will be lost, particularly as sea level rise accelerates. Mitigations can be imposed on armoring projects to reduce such impacts, as is the case here, but mitigation for the long-term impacts to the public both as a result of individual armoring projects and the overall cumulative effect of armoring projects together with all the existing armoring along the coastline has proven more difficult. Some of these long-term impacts were "inherited" by the people of the State because many such urban coastlines, such as urban Santa Cruz County, were already largely armored to a certain degree when the coastal permitting requirements of Proposition 20 and the Coastal Act were instituted in the early 1970s.

Absent a more comprehensive strategy, including relevant updates to the County's LCP, resolving the larger planning and cumulative impact questions related to shoreline erosion and armoring is not readily addressed through an individual project. Projects such as the one proposed must be shaped to provide the best possible Coastal Act outcome for a site, including providing long-term impact mitigation, as is the case here.

Therefore, staff recommends that the Commission approve the proposed project, along with additional mitigations for the impacts of the project, including but not limited to: 1) a continuing commitment to ensure that the public access path is maintained and available for use for as long as the seawall or blufftop residential development is present; 2) a landscaping plan for appropriate native plants to cascade over the top of the seawall to provide additional visual mitigation; 3) requirements for other agency approvals; 4) assumption of risk, waiver of liability and indemnity agreements for coastal hazards; 5) monitoring and maintenance of the as-built project, and; 6) recordation of a deed restriction against the parcels governed by this permit. As conditioned, the project can be found consistent with the Coastal Act. The motion to act on this recommendation is found directly below.

2. Staff Recommendation on CDP Application

Staff recommends that the Commission, after public hearing, **approve** the proposed project subject to the standard and special conditions below.

> **Motion:** I move that the Commission approve coastal development permit number 3-08-019 pursuant to the staff recommendation.
>
> **Staff Recommendation of Approval:** Staff recommends a **YES** vote. Passage of this motion will result in approval of the permit as conditioned and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of the Commissioners present.
>
> **Resolution to Approve the Permit:** The Commission hereby approves a coastal development permit for the proposed development and adopts the findings set forth below on grounds that the development as conditioned will be in conformity with the policies of Chapter 3 of the Coastal

Act. Approval of the permit complies with the California Environmental Quality Act because 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.

Report Contents

B.Findings and Declarations

The Commission finds and declares as follows:

1. Project Location, Background, and Description

A. Project Location

The proposed project site is located in the Pleasure Point portion of the Live Oak beach area of Santa Cruz County. Pleasure Point is the name of the predominantly residential area located roughly between upcoast Moran Lake and downcoast 41st Avenue. The area of Pleasure Point near 41st Avenue is known

as the "Hook." Pleasure Point is also the name of the offshore surfing area between Soquel Point (aka "Pleasure Point") and the "Hook." This area has an informal, beach community aesthetic and ambiance that clearly distinguishes it from inland commercial areas as well as from the downcoast Opal Cliffs neighborhood towards Capitola.

The proposed project site is located above a minor rocky promontory just seaward of East Cliff Drive, directly upcoast from the "Hook" coastal accessway and overlook. The bluff at the project site consists of a lower elevated bedrock shore platform overlain by a section of marine terrace deposits. The shore platform is the rock surface located at the base of the coastal bluff. The elevation of the top of the elevated rocky shore platform ranges from about 4 to 15 feet above mean sea level (MSL), and the toe of the elevated rocky shore platform sits below MSL. The bluffs above the rocky shore platform are approximately 30 to 35 feet tall, with the lower 10 feet or so made up of Purisima formation sandstone and the upper portion consisting of marine terrace deposits. The bluffs in this area are fairly vertical and range from about 50 to 65 degrees in slope. The blufftop area of the project site is developed with a single family dwelling. There are no other residences located immediately adjacent, either upcoast or downcoast, to the project site.[1]

The majority of the bluff on the project site is armored with a shotcrete seawall that extends vertically above the rocky shore platform to the top of the bluff. The existing seawall on the site has a distinctly artificial color and texture and does not approximate the look of a natural bluff face. The footings of the existing seawall have been undermined and exposed by wave erosion.

The project site is located directly upcoast from the location of one of Santa Cruz County's approved Pleasure Point seawalls,[2] now under construction.[3] The "Hook" seawall will extend along approximately 300 feet of the bluffs at the end of 41st Avenue at the "Hook" and terminate at the Applicant's property line.[4] See Exhibit A for project location maps and Exhibit C for photographs of the project site.

B. Site CDP History

Erosion at the project site in the El Niño winter of 1983 caused up to 13 feet of blufftop retreat. A geologic evaluation of the site was done at that time, resulting in a recommendation to construct a seawall to retain the upper bluff marine terrace deposits to protect the existing single family residence. On July 13, 1984, Santa Cruz County approved a shotcrete seawall, approximately 120 feet long by 27

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1 This residence is one of only three residences located seaward of East Cliff Drive between 32nd Avenue and 41st Avenue.

2 Santa Cruz County's seawall project was approved by the Commission on December 13, 2007 (combined CDP A-3-SCO-07-015/3-07-019). The County's seawall project includes seawall components located between 32nd Avenue and 36th Avenue, and at the "Hook," as well as recreational access improvements along East Cliff Drive from 30th Avenue to 41st Avenue.

3 Construction is underway at the 1,100-foot-long segment of seawall between 32nd and 36th Avenues; "Hook" seawall construction has not yet commenced.

4 Note that there is some discrepancy between the property line identified by the County and the property line identified by the Applicant. The County's seawall plans show the property line between the County's property and the Applicant's property in a different location than that shown on the Applicant's project plans. Specifically, based on the County's assessment, it appears that some of the existing unpermitted seawall that was thought to be on the Applicant's property is actually on the County's property. In any event, the County plans to construct its seawall up to the property line shown on its plans in this area.

feet high.[5] This seawall was constructed in 1986 and was keyed about four feet into the elevated bedrock shore platform that fronts the site. This seawall was later extended, without a coastal permit, about 80 feet downcoast toward the "Hook" stairway to protect an additional segment of the upper bluff.

In 2007 the Commission approved CDPs for Santa Cruz County's Pleasure Point seawalls and the East Cliff Drive redevelopment project, which included direct reference to development at this site.[6] Specifically, some components of the existing residential development at this location (i.e., fencing, driveway, detached structures, landscaping,) extend into the public right-of-way of East Cliff Drive. Special Condition 2 of the Commission's 2007 approval requires an encroachment removal plan for this site that would "[return] the encroachment areas to public use and enjoyment within three years of completion of construction of the approved project through a residential remodel project provided there is clear evidence that the property owner will complete such residential remodel project by that time." The Applicant does not in this application propose any residential construction, including none that would alleviate the subject right-of way issue. The Applicant indicates that a residential remodel will be pursued in the near future and all existing residential components in the public right-of-way would be removed as part of that project. Whether or not that occurs, the right-of-way issues must be addressed regardless through the Commission's Pleasure Point approval within the time frame indicated, and need not be resolved as part of this current seawall application.

C. Project Description

The proposed project would modify and expand the existing shotcrete seawall with new footings, new anchors, and new faux bluff surfacing extending from the rock shelf area to the blufftop edge along the entire seaward extent of the property, including adding roughly 40 linear feet of seawall to connect the existing seawall to the County's existing upcoast seawall at Larch Lane, and replacing the 80-foot unpermitted section (some or most of which appears to have been constructed on County property) adjacent to the County's "Hook" seawall. The Applicant proposes to sculpt, color, and texture the concrete facing of all components of the proposed seawall to visually approximate natural bluff landforms.

The proposed project also includes construction of a two-foot-wide walkway or "goat trail" at the base of the proposed seawall, located directly adjacent to the unarmored rocky shore platform. This walkway will provide new access to surfers and others, leading from the upcoast adjacent beach (known locally as 38th Avenue beach), around the rocky promontory, and connecting to the County's soon-to-be redeveloped public access stairway at the "Hook."

The Applicant indicates that the proposed seawall project will have a 100-year design life.

See Exhibit B for project plans and see Exhibit C for photographs of the project site.

[5] Santa Cruz County CDP 84-389-GP.

[6] Id.

2. Coastal Development Permit Determination

The proposed project falls within the Commission's retained jurisdiction and thus the standard of review is the Coastal Act. As relevant, Santa Cruz County's certified LCP can provide non-binding guidance. However, the LCP and Coastal Act policies are very similar as regards allowing shoreline armoring and protecting against its impacts. Thus, the LCP policies do not provide different policy direction in this case, and their usefulness in this review is limited as a result.

A. Geologic Conditions and Hazards

1. Applicable Policies

Coastal Act Section 30235 addresses the use of shoreline protective devices:

> ***30235.*** *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. Existing marine structures causing water stagnation contributing to pollution problems and fish kills should be phased out or upgraded where feasible.*

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

> ***Section 30253.*** *New development shall do all of the following:*
>
> *(1) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.*
>
> *(2) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.*

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

In addition, the Commission has generally interpreted Section 30235 to apply only to existing principal structures. The Commission must always consider the specifics of each individual project, but has generally found that accessory structures (such as patios, decks, gazebos, stairways, etc.) 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 armoring. The Commission has generally historically permitted at-grade structures within the geologic setback area, recognizing that they are expendable and capable of being removed rather than requiring a protective device that would alter natural landforms and processes along bluffs, cliffs, and beaches.

Under Coastal Act Section 30235, shoreline protective structures may be approved if: (1) there is an existing structure; (2) the existing structure is in danger from erosion; (3) shoreline altering construction is required to protect the existing threatened structure; and (4) the required protection is designed to eliminate or mitigate the adverse impacts on shoreline sand supply. The first three questions relate to whether the proposed armoring is necessary. The fourth question applies to mitigating some of the impacts from armoring.

2. Analysis

A. Existing Structure to be Protected

The existing residence at the site is clearly seen in a photograph taken from offshore in 1972 (see page 1 of Exhibit C). Thus, the residence predates the coastal permitting requirements of both 1972's Proposition 20 (the Coastal Initiative) and the 1976 Coastal Act. As such, the residence qualifies as an existing structure for the purposes of Section 30235.

B. Danger from Erosion

The Coastal Act allows shoreline armoring to protect existing structures in danger from erosion, but it does not define the term "in danger." There is a certain amount of risk involved in maintaining development along a California coastline that is actively eroding and can be directly subject to violent storms, large waves, flooding, earthquakes, and other geologic hazards. These risks can be exacerbated by such factors as sea level rise and localized geography that can focus storm energy at particular stretches of coastline. As a result, some would say that all development along the immediate California coastline is in a certain amount of "danger." It is a matter of the degree of threat that distinguishes between danger that represents an ordinary and acceptable risk, and danger that requires shoreline armoring per 30235. Lacking Coastal Act definition, the Commission's long practice has been to evaluate the immediacy of any threat in order to make a determination as to whether an existing structure is "in danger." While each case is evaluated based upon its own particular set of facts, the Commission has generally interpreted "in danger" to mean that an existing structure would be unsafe to occupy within the next two or three storm season cycles (generally, the next few years) if nothing were to be done (i.e., in the no project alternative).

The residence is located on the blufftop above a small promontory. Portions of the residence are located as close as 5 feet from the edge of the near-vertical bluff. The base of the promontory is subject to heavy wave action. The Applicant's geotechnical consultant indicates that an augmented seawall at this location is necessary to protect the existing residence from immediate erosion danger. The Commission's senior engineer concurs. The project, therefore, meets the second test of Section 30235 of the Coastal Act.

C. Feasible Protection Alternatives to a Shoreline Structure

The third Section 30235 test that must be met is that the proposed armoring must be "required" to protect the existing threatened structure. In other words, shoreline armoring can be permitted if it is the only feasible alternative capable of protecting the structure.[7] When read in tandem with other applicable Coastal Act policies cited in these findings, this Coastal Act 30235 evaluation is often conceptualized as a search for the least environmentally damaging feasible alternative that can serve to protect existing endangered structures. Other alternatives typically considered include: the "no project" alternative; abandonment of threatened structures; relocation of threatened structures; sand replenishment programs; drainage and vegetation measures on the blufftop; and combinations of each.

In this case, the "no project" alternative is not viable because the existing residential structure, which is located as close as 5 feet from the bluff edge, would not be viable absent some form of repaired or redeveloped armoring of the bluff.

Relocation of the threatened structures inland is another alternative typically considered. In this case, the blufftop area of the site that is located between the street right-of-way and the blufftop edge is only about 9,900 square feet. Setback requirements from the road and from the blufftop edge further limit the potential developable blufftop area to about 2,000 square feet or less, an area within which much of the existing residence is already located. Thus, given the limited site area available, there is not adequate space to relocate the existing residence on the site without further extending residential components into the adjacent public right-of-way or setback areas associated with East Cliff Drive. The residence could, of course, be reduced in size and moved into the potentially developable area of the site, but such a project would be better described as a demolition and rebuild project rather than relocation of an existing structure.

Another alternative would be to limit the project to repair or replacement of the existing footings that have been undermined by wave erosion. This is feasible, although this option is better conceptualized as extending the useful life of the existing seawall somewhat, but this option would not address issues associated with the deterioration of the existing shotcrete and it would engender most of the same coastal resource issues as would the proposed project. Also, this limited option would not provide for re-contouring and re-surfacing of the face of the seawall to better mimic a natural bluff appearance.

Another option often considered is planned or managed retreat. This option has been long debated and discussed more generally as well as in terms of specific individual sites like this. This concept posits that instead of allowing continued armoring, the shoreline should be allowed to retreat naturally. In this way, as the shoreline naturally erodes and sea level rises, new beaches can form. Beach formation in this respect is partly assisted by the sand-generating material in the bluffs as they erode, but more importantly there is space for the natural equilibrium between the shoreline and the ocean to establish itself and for beaches to form naturally. Over the longer run a more comprehensive strategy to address shoreline erosion and the impacts of armoring may be developed (e.g. planned or managed retreat,

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

relocation of structures inland, abandonment of structures, etc.). However, such options appear not to be feasible at this location at this time.

Given all the above, the proposed project is "required" to protect the existing single-family residence and it thus meets the third test of Section 30235 of the Coastal Act.

D. Sand Supply Impacts

The fourth test of Section 30235 (previously cited) that must be met in order to allow Commission approval is that shoreline structures must be designed to eliminate or mitigate adverse impacts to local shoreline sand supply.

Shoreline Processes

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

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

The project site is located within the Santa Cruz Littoral Cell. The Santa Cruz Littoral Cell is a high volume cell with annual longshore transport estimated between 300,000 and 500,000 cubic yards of beach quality materials annually.[8] The dominant direction of longshore transport in this sand supply system is north north-west to south south-east (roughly from upcoast to downcoast in relation to the

[8] United States Army Corps of Engineers (USACOE), San Francisco District, 1994.

site).[9] Materials in this system have been estimated to come mainly from coastal streams (roughly 75%), with 20% coming from bluffs, and 5% coming from coastal ravines and sand dunes.[10]

Some of the effects of engineered armoring structures on the beach (such as scour, end effects and modification to the beach profile) are temporary or are difficult to distinguish from all the other actions that modify the shoreline. Others are more qualitative (e.g., impacts to the character of the shoreline and visual quality). Some of the effects that a shoreline structure may have on natural shoreline processes can be quantified, however, including: (1) the loss of the beach area on which the structure is located; (2) the long-term loss of beach that will result when the back-beach location is fixed on an eroding shoreline; and (3) the amount of material that would have been supplied to the beach if the back-beach or bluff were to erode naturally.[11]

Fixing the back beach

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

In addition, sea level has been rising slightly for many years. Also, there is a growing body of evidence that there has been an increase in global temperature and that acceleration in the rate of sea level rise can be expected to accompany this increase in temperature (some shoreline experts have indicated that sea level could rise as much as 3 feet by the year 2100). Mean water level affects shoreline erosion several ways, and an increase in the average sea level will exacerbate all these conditions. On the California coast the effect of a rise in sea level will be the landward migration of the intersection of the ocean with the shore. This, too, leads to loss of the beach as a direct result of the armor. These effects are also known as “passive erosion.”

The Commission has established a methodology for calculating passive erosion, or the long-term loss of beach due to fixing the back beach. This impact is equivalent to the footprint of the bluff area that would have become beach due to erosion and is equal to the long-term erosion rate multiplied by the width of

[9] USACOE, San Francisco District, 1994.

[10] Griggs and Best, 1991.

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

property that has been fixed by a resistant shoreline protective device.[12] In this case, the seawall predominantly fronts a rocky promontory, not a beach. In addition, the bluffs were effectively fixed at this location by construction of the existing seawall in 1986. Although some additional area of armoring is proposed, this limited area is generally perpendicular to the orientation of the shore and is located between existing armoring and would be configured such that it does not affect potential passive erosion impacts. Although it could be argued that the proposed project will extend any potential passive erosion impacts atop the rocky promontory created by installation of the seawall in 1986, it could also be argued that that permit was premised on maintaining the armoring (and related impacts) in that configuration indefinitely and that the time to assess and quantify such impacts and mitigation has come and gone. In this case, lacking evidence to indicate that the baseline armoring decision contemplated any type of "reopening" or re-review framework, and given that the seawall is located atop a rocky promontory with rocky headland fronting it, it is presumed that passive erosion for this site has already been accounted for and/or is limited otherwise. Therefore there will be no sand loss due to fixing of the back beach.

Encroachment on the Beach

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

In this case, the proposed seawall will be located exclusively above the elevated rocky shore platform. The proposed seawall will not encroach onto the sandy beach and therefore there will be no sand loss due to encroachment. Of course, the rocky area covered will not contribute to beach sand supply, but that issue is addressed in the following section.

Retention of Potential Beach Material

If natural erosion were allowed to continue (absent the existing and the proposed seawall), some amount of beach material would be added to the beach at this location, as well as to the larger littoral cell sand supply system fronting the bluffs. Because littoral drift at this location travels in an upcoast to downcoast manner (i.e., towards the downcoast area of Opal Cliffs) the impact would be relatively more towards Opal Cliffs and Capitola than upcoast along the Pleasure Point area. The volume of total material that would have gone into the sand supply system over the lifetime of the shoreline structure would be the volume of material between (a) the likely future bluff-face location with shoreline protection; and (b) the likely future bluff-face location without shoreline protection. Since the main

[12] The area of beach lost due to long-term erosion (Aw) is equal to the long-term average annual erosion rate (R) times the number of years that the back-beach or bluff will be fixed (L) times the width of the property that will be protected (W). This can be expressed by the following equation: Aw = R x L x W. The annual loss of beach area can be expressed as Aw' = R x W.

concern is with the sand component of this bluff material, the total material lost must be multiplied by the percentage of bluff material which is beach sand, giving the total amount of sand which would have been supplied to the littoral system for beach deposition if the proposed device were not installed. The Commission has established a methodology for identifying this impact.[13] The Applicant indicates (and the Commission's senior engineer concurs) that this impact would be roughly 20.6 cubic yards of sand per year for the proposed seawall project.

Beach and Sand Supply Impacts Conclusion

The proposed project would result in quantifiable beach and sand supply impacts. There would be a beach loss, due to bluff retention, of 20.6 cubic yards per year for the lifetime of the proposed project. If these impacts were to be mitigated through a beach nourishment effort, the impacts would be comparable to the deposition of 20.6 cubic yards (or roughly two large truck loads) of beach-quality sand yearly. These impacts directly affect public access to the shore. The Applicant has proposed mitigation for these impacts in the form of a two-foot-wide access path constructed at the base of the seawall that will provide access from the upcoast beach around the rocky promontory to the County's public stairwell at the "Hook." This new access will adequately mitigate for the public access impacts of the project due to loss of sand supply (see Public Access finding below for further discussion). Thus, the project satisfies the Coastal Act Section 30235 requirements regarding mitigation for sand supply impacts, and thus also meets all Section 30235 tests for allowing such armoring.

E. Long-Term Stability, Maintenance, and Risk

Coastal Act Section 30253 requires the project to assure long-term stability and structural integrity, minimize future risk, and avoid additional, more substantial protective measures in the future. For the proposed project, the main Section 30253 concern is assuring long-term stability. This is particularly critical given the dynamic shoreline environment within which the proposed project would be placed. Also critical to the task of ensuring long-term stability, as required by Section 30253, is a formal long-term monitoring and maintenance program. If the seawall, including the public access path, were damaged in the future (e.g. as a result of flooding, landsliding, wave action, storms, etc.) it would lead to a degraded public access condition. In addition, such damages could adversely affect nearby beaches by resulting in debris on the beaches and/or creating a hazard to the public using the beaches. Therefore, in order to find the proposed project consistent with Coastal Act Section 30253, the proposed project must be maintained in its approved state. Further, in order to ensure that the Applicant and the Commission

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

know when repairs or maintenance are required, the Applicant must regularly monitor the condition of the subject armoring, particularly after major storm events. Such monitoring will ensure that the Permittee and the Commission are aware of any damage to or weathering of the armoring and can determine whether repairs or other actions are necessary to maintain the seawall structure in its approved state before such repairs or actions are undertaken. To assist in such an effort, monitoring plans should provide vertical and horizontal reference distances from armoring structures to surveyed benchmarks for use in future monitoring efforts.

To ensure that the proposed project is properly maintained to ensure its long-term structural stability, Special Condition 8 requires a monitoring and maintenance program. Such a program shall provide for evaluation of the condition and performance of the proposed project and overall bluff stability, and shall provide for necessary maintenance, repair, changes or modifications. Special Condition 9 allows the Applicant to maintain the project in its approved state, subject to the terms and conditions identified by the special conditions. Such future monitoring and maintenance activities must be understood in relation to clear as-built plans. Therefore, Special Condition 7 of this approval requires the submittal of as-built plans to define the footprint and profile of the permitted development.

Consistent with current Commission practice regarding shoreline protective devices, if within the 100-year design life of the seawall additional measures are necessary to enlarge or reconstruct the seawall or perform repair work that extends the expected design life of the seawall, such additional measures would require either a permit amendment or a new permit. The need for new mitigation for public access and sand supply impacts would be evaluated at that time. See Special Condition 11.

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

To ensure that future property owners are properly informed regarding the terms and conditions of this approval, this approval is also conditioned for a deed restriction to be recorded against the properties involved in the application (see Special Condition 12).

F. Geologic Conditions and Hazards Conclusion

In this case and for this site and this fact set, the proposed project, as conditioned, can be found consistent with Coastal Act Sections 30235 and 30253. That said, it is clear that the proposed project firmly commits this site to being armored for the foreseeable future. As indicated, such an outcome is consistent with the manner in which the Commission has historically treated armoring projects in this area in and around Pleasure Point, including most recently with the Pleasure Point seawall project, which is located directly adjacent to the site and is currently under construction. As also indicated, such an outcome does not mean that parallel and more global efforts to better address urban shorelines in light of erosion and sea level rise are not relevant or should not be pursued. On the contrary, it is clear that the State must come to grips with issues related to shoreline armoring as it relates to urban and largely armored areas and rising sea levels. The individual and cumulative effect of such armoring is that, over time, beaches in these areas will be lost. Mitigations can be imposed on armoring projects to reduce such impacts, but mitigation for the long-term impacts to the public, both as a result of individual armoring projects and the overall cumulative effect of armoring projects together with all the existing armoring along the coastline, has proven more difficult. Some of these long-term impacts were "inherited" by the people of the State because many such urban coastlines, such as urban Santa Cruz County, were already largely armored to a certain degree when the coastal permitting requirements of Proposition 20 and the Coastal Act were instituted in the early 1970s. With sea level continuing to rise and the shoreline continuing to erode, it is expected that the beaches fronting these areas, like all California beaches on which armoring is located and on which the back-beach has thus been effectively "fixed" in location, will eventually disappear over time. However, absent a more comprehensive strategy, including relevant updates to the County's LCP, resolving the larger planning and cumulative impact questions related to shoreline erosion and armoring is not readily addressed through an individual project. Projects such as the one proposed must be shaped to provide the best possible Coastal Act outcome for a site, including providing for long-term impact mitigation, as is the case here.

B. Public Access and Recreation

1. Applicable Policies

Coastal Act Section 30604(c) requires that every coastal development permit issued for any development between the nearest public road and the sea "shall include a specific finding that the development is in conformity with the public access and public recreation policies of [Coastal Act] Chapter 3." The proposed project is located seaward of the first through public road (East Cliff Drive). Coastal Act Sections 30210 through 30214 and 30220 through 30224 specifically protect public access and recreation. In particular:

> ***30210.*** *In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.*
>
> ***30211.*** *Development shall not interfere with the public's right of access to the sea where*

acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.

30213. *Lower cost visitor and recreational facilities shall be protected, encouraged, and, where feasible, provided. Developments providing public recreational opportunities are preferred. …*

30221. *Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and foreseeable future demand for public or commercial recreational activities that could be accommodated on the property is already adequately provided for in the area.*

30223. *Upland areas necessary to support coastal recreational uses shall be reserved for such uses, where feasible.*

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

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

These overlapping policies clearly protect the beach (and access to and along it) and offshore waters for public access and recreation purposes, particularly free and low cost access.

2. Analysis

As discussed in the finding above, shoreline structures can have a variety of negative impacts on coastal resources including adverse affects on beaches and sand supply, which ultimately result in the loss of the beach and associated impacts to public access. In this case, no seawall development will take place on the adjacent upcoast pocket beach and thus the proposed project will not result in any direct beach encroachment. The project's impacts to sand supply, and ultimately to public access, would be from bluff retention, estimated at 20.6 cubic yards of sand per year. Ultimately, this and related seawall impacts mean that there will continue to be no beach fronting the site for at least as long as the seawall remains. To address such impacts, the proposed project includes incorporation of a new two-foot-wide walkway at the base of the proposed redeveloped seawall. This walkway will provide new access, where none exists now, to provide a connection from the upcoast adjacent beach, leading around the rocky promontory, and terminating at the County's soon-to-be redeveloped public access stairway at the "Hook" (see page 2 of Exhibit C).[14] In addition to providing new access for those who may wish to traverse directly along the beach and rocky shoreline instead of on the public walkways of East Cliff

[14] The photo on page 2 of Exhibit C shows the existing configuration of the "Hook" accessway. The recently approved Pleasure Point seawall (which will soon be under construction) includes removal of all existing riprap and construction of a bluff-hugging (and bluff-replicating) concrete wall with an integral stairway. The new stairway will be located toward the Applicant's property and will switchback down to the beach area near the base of the existing stairway.

Drive, this new access will also provide a way for surfers and swimmers to safely enter and exit the sometimes precarious waters located just seaward of the rocky promontory adjacent to the project site. The pathway should not be understood as a wide promenade so much as a "goat trail" that is designed to functionally connect 38th Avenue beach to the "Hook."[15] Although a two-foot width is fairly narrow, this width strikes an appropriate balance between providing meaningful access and not creating a significant seaward incursion onto the rocky shelf to support the path. Provided the accessway is maintained in good condition for as long as the seawall and/or residence are present, and so long as it seamlessly connects the "Hook" stairway to 38th Avenue beach (as required in Special Condition 2), the proposed new access at the base of the seawall is adequate to mitigate the public access impacts of the proposed project.

Construction staging, storage, and washout areas will be located on the open blufftop portion of the property on the upcoast side of the residence, and thus should not significantly impact public access activities on East Cliff Drive. No heavy equipment will be used on the adjacent pocket beach or the rocky shelf platform during construction.

As proposed, the project is consistent with the Coastal Act access and recreation policies sited above.

C. Visual Resources

1. Applicable Policies

Coastal Act Section 30251 states:

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

Coastal Act Section 30240(b), previously cited, also protects the aesthetics of beach recreation areas such as those of the 38th Avenue beach and the "Hook" accessway located directly adjacent to the project site. Section 30240(b) states:

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

[15] At the "Hook," the County's approved plans include a complementary "goat trail" component that will provide access from the end of the stairway upcoast along the portion of the rocky platform that is on County property. The proposed trail would connect to the County's approved trail.

2. Analysis

The majority of the bluffs along this portion of East Cliff Drive have been armored at their base by a mix of riprap and a variety of vertical concrete seawalls. In terms of public viewshed impacts, the proposed seawall redevelopment would be an improvement over the existing seawall on the project site, i.e. the existing seawall is not textured and colored to approximate natural bluff conditions (see a photograph of the existing site condition in Exhibit C), while the proposed project would include appropriate texturing, contouring, and coloring to mimic a natural bluff face and minimize the seawall's visual impact to the maximum degree feasible. Drain weep holes in the new shotcrete facing would be installed randomly in elevation in a non-linear manner and would be visually camouflaged to the maximum extent feasible. Landscaping designed to cascade over the top of the seawall, which would screen the top of the seawall at least partially from view and provide a more natural edge to the top of the wall as seen from above and below, can also help in this regard. See Special Conditions 3 and 4. Overall, the proposed project will improve the public viewshed as seen from the adjacent upcoast beach, from the public pathway along East Cliff Drive, and from the heavily-used downcoast "Hook" area. As conditioned, the Commission finds the project consistent with the above-cited Coastal Act public viewshed policies.

D. Marine Resources

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

> ***Section 30230.*** *Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.*
>
> ***Section 30231.*** *The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.*

As proposed by the Applicant, the project would include construction work from the flat area of the blufftop residential parcel with the use of a crane and suspended work platforms/cages. Some work along the mid-portion of the project site would be done from the rocky shelf at the base of the bluff, during low tides. No heavy equipment would be used on the rocky shelf or the adjacent upcoast beach area. According to correspondence from the State Lands Commission (SLC), the proposed project appears to be located above the mean high tide line and thus does not encroach into State Lands' waters.

The project is conditioned to require review and approval (if necessary) from the Monterey Bay National Marine Sanctuary (Special Condition 5).

The proposed project plans include construction methods typically required by the Commission to protect water quality and marine resources during armoring construction, including maintaining good construction site housekeeping controls and procedures, the use of appropriate erosion and sediment controls, a prohibition on equipment washing, refueling, or servicing on the beach, etc. (see page 5 of Exhibit B for the complete list of construction methods). To further protect marine resources and offshore habitat, Special Condition 6 requires construction documents to be kept at the site for inspection, and also requires a construction coordinator to be available to respond to any inquiries that arise during construction. As conditioned, the project is consistent with Coastal Act Sections 30230 and 30231 regarding protection of marine resources and offshore habitat.

3. Conditions of Approval

A. 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.

B. Special Conditions

1. **Approved Project.** Subject to these standard and special conditions (including modifications to the project and/or the project plans required by them), this coastal development permit authorizes a shoreline armoring project to protect the single-family residence on the subject property. Such armoring shall: cover the bluff from the rocky promontory to the blufftop edge, extending from the

County's Larch Lane seawall to the County's to be constructed Hook seawall; be sculpted, colored, and textured to visually approximate natural bluff landforms; include a two-foot-wide public walkway at its base extending from the base of the Larch lane seawall to the level area providing access to the base of the approved Hook seawall; be constructed pursuant to appropriate construction best management practices to protect water quality during construction, provide for construction staging and work areas that will not impede public access along East Cliff Drive, 38th Avenue beach, or the "Hook" accessway, and include a construction schedule that limits construction to daylight hours during non-holiday weekdays as described in and shown on the plans titled "Coastal Bluff Stabilization" by Soil Engineering Construction, Inc. dated revised August 27, 2009 and dated received in the Commission's Central Coast District Office September 2, 2009 (see Exhibit B).

2. **Path Plan.** PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the Permittee shall submit to the Executive Director for review and approval a plan that demonstrates the manner in which the two-foot-wide public walkway at the base of the seawall will seamlessly connect to the Larch Lane seawall/38th Avenue beach area (upcoast) and to the County's redeveloped public access stairway at the "Hook" (downcoast). The seawall path shall be maintained in its approved state to provide general public access around the rocky headland for as long as the seawall and/or residential development on the site is present. The Permittee shall undertake development in accordance with the approved plan.

3. **Landscaping Plan.** PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the Permittee shall submit to the Executive Director for review and approval a landscaping plan for the areas located adjacent to the top of the seawall. The landscaping plan shall include removal of all nonnative and/or invasive plants within 5 feet of the blufftop edge and shall also include the planting of native, coastal-tolerant, cascading plants to provide some visual screening of the upper portion of the seawall. The landscaping plan shall be implemented immediately following completion of the seawall, and all plantings shall be kept in good growing condition and replaced as necessary to maintain some visual screening of the wall over the life of the project. The Permittee shall undertake development in accordance with the approved plan.

4. **Concrete Surfacing.** All concrete surfaces shall be faced with a sculpted concrete surface that mimics natural undulating bluff landforms in the vicinity in terms of integral mottled color, texture, and undulation to the maximum extent feasible, and seamlessly blends with the County's Pleasure Point seawall at the "Hook" (downcoast) and the County's Larch Lane seawall (upcoast). Any protruding concrete elements (e.g., corners, edges, etc.) shall be contoured in a non-linear manner designed to evoke natural bluff undulations. The color, texture, and undulations of the seawall surface shall be maintained throughout the life of the structure. PRIOR TO COMMENCEMENT OF FINISH CONCRETE SURFACING, the Permittee shall submit to the Executive Director for review and approval the qualifications of the contractor who will perform the finish concrete work, including photos of similar completed projects. Finish concrete work shall not commence until the Executive Director has approved of the finish concrete contractor. The Permittee shall undertake development in accordance with the approved plan.

5. **MBNMS Review.** PRIOR TO COMMENCEMENT OF CONSTRUCTION, the Permittee shall submit to the Executive Director for review a copy of the Monterey Bay National Marine Sanctuary (Sanctuary) permit, letter of permission, or evidence that no Sanctuary permit is necessary for the approved project. Any changes to the approved project required by the Sanctuary shall be reported to the Executive Director. No changes to the approved project shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is legally necessary.

6. **Construction Site Documents & Construction Coordinator.** DURING ALL CONSTRUCTION:

   (a) Construction Site Documents. A copy of the signed coastal development permit shall be maintained in a conspicuous location at the construction job site at all times, and such copy shall be available for public review on request. All persons involved with the construction shall be briefed on the content and meaning of the coastal development permit, and the public review requirements applicable to them, prior to commencement of construction.

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

7. **As-Built Plans.** WITHIN THREE MONTHS OF COMPLETION OF CONSTRUCTION, the Permittee shall submit two copies of As-Built Plans showing all development completed pursuant to this coastal development permit; all property lines; and all residential development inland of the seawall structure. The As-Built Plans shall be substantially consistent with the approved project described in Special Condition 1 above, including providing for all of the same requirements specified in those plans, and shall account for all of the parameters of Special Condition 8 (Monitoring and Reporting) and Special Condition 9 (Future Maintenance). The As-Built Plans shall include a graphic scale and all elevation(s) shall be described in relation to National Geodetic Vertical Datum (NGVD). The As-Built Plans shall include color photographs (in hard copy and jpg format) that clearly show all components of the as-built project, and that are accompanied by a site plan that notes the location of each photographic viewpoint and the date and time of each photograph. At a minimum, the photographs shall be from upcoast and downcoast viewpoints at 38th Avenue beach and the "Hook," from East Cliff Drive, from the coastal accessway at the "Hook," as well as from the rocky shore platform. The As-Built Plans shall be submitted with certification by a licensed civil engineer with experience in coastal structures and processes, acceptable to the

Executive Director, verifying that the seawall has been constructed in conformance with the approved final plans.

8. **Monitoring and Reporting.** The Permittee shall ensure that the condition and performance of the approved as-built seawall is regularly monitored by a licensed civil engineer with experience in coastal structures and processes. Such monitoring evaluation shall at a minimum address whether any significant weathering or damage has occurred that would adversely impact future performance, and identify any structural damage requiring repair to maintain the approved as-built seawall and/or public path. Monitoring reports prepared by a licensed civil engineer with experience in coastal structures and processes, and covering the above-described evaluations, shall be submitted to the Executive Director for review and approval at five year intervals by May 1st of each fifth year (with the first report due May 1, 2015, and subsequent reports due May 1, 2020, May 1, 2025, and so on) for as long as the seawall exists at this location. The reports shall identify the existing configuration and condition of the seawall, public path, and required landscaping, shall recommend actions necessary to maintain these project elements in their approved and/or required state, and shall include photographs taken from each of the same vantage points required in the As-Built Plans with the date and time of the photographs and the location of each photographic viewpoint noted on a site plan.

9. **Future Seawall Maintenance Authorized.** This coastal development permit authorizes future seawall maintenance and repair subject to the following:

   (a) Maintenance. "Maintenance," as it is understood in this special condition, means development that would otherwise require a coastal development permit whose purpose is: (1) to maintain the visual treatment of the seawall in its approved state; (2) to maintain the required public access path in its approved state (see Special Condition 2); and (3) to maintain the required landscaping elements in their approved state (see Special Condition 3).

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

   (c) Maintenance Notification. At least two weeks prior to commencing any maintenance event, the Permittee shall notify, in writing, planning staff of the Coastal Commission's Central Coast District Office. The notification shall include: a detailed description of the maintenance event proposed; any plans, engineering and/or geology reports describing the event; a construction plan that complies with all aspects of the construction plan included in the approved plans described in Special Condition 1; identification of a construction coordinator and his/her contact information (i.e., address, phone numbers, etc.) as described above; other agency authorizations; and any other supporting documentation (as necessary) describing the maintenance event. The maintenance event shall not commence until the Permittee has been informed by planning staff of the Coastal Commission's Central Coast District Office that the maintenance event complies with this coastal development permit. If the Permittee has not been given a verbal response or

sent a written response within 30 days of the notification being received in the Central Coast District Office, the maintenance event shall be authorized as if planning staff affirmatively indicated that the event complies with this coastal development permit. The notification shall clearly indicate that the maintenance event is proposed pursuant to this coastal development permit, and that the lack of a response to the notification within 30 days constitutes approval of it as specified in the permit. In the event of an emergency requiring immediate maintenance, the notification of such emergency episode shall be made as soon as possible, and shall (in addition to the foregoing information) clearly describe the nature of the emergency.

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

(e) Construction Site Documents and Construction Coordinator. All requirements set forth in Special Condition 6 above ("Construction Site Documents & Construction Coordinator") shall apply to any maintenance event.

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

(g) Noncompliance Proviso. If the Permittee is not in compliance with the terms and conditions of any Coastal Commission coastal development permits or other coastal authorizations that apply to the subject properties at the time that a maintenance event is proposed, then the maintenance event that might otherwise be allowed by the terms of this future maintenance condition shall not be allowed by this condition until the Permittee is in full compliance with those terms and conditions.

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

(i) Duration of Covered Maintenance. Future seawall and path maintenance under this coastal development permit is allowed subject to the above terms until December 31, 2019. Maintenance can be carried out beyond December 31, 2019 if the Permittee requests an extension prior to December 31, 2019 and if the Executive Director extends the maintenance term in writing. The intent of this permit is to regularly allow for 10-year extensions of the maintenance term unless there are changed circumstances that may affect the consistency of this seawall and path maintenance authorization with the policies of Chapter 3 of the Coastal Act and thus warrant a re-review of this permit.

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

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

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

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

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

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

11. **Future Mitigation.** If, within 100 years of coastal development permit approval (i.e., before December 11, 2109; the end of the identified design life of the seawall), the Permittee or its successors in interest obtain a coastal development permit or an amendment to this permit to enlarge or reconstruct the approved seawall, or to perform repair work that extends the expected life of the approved seawall, the Permittee or its successors shall provide additional mitigation for the effects of such project on public access and shoreline sand supply for the expected life of such project.

12. **Deed Restriction.** PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the Permittee shall submit for Executive Director review and approval documentation demonstrating that the Permittee has executed and recorded against the subject properties governed by this permit (i.e., APNs 032-182-02 and 032-182-03) 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; and (2) imposing the special conditions of this permit as

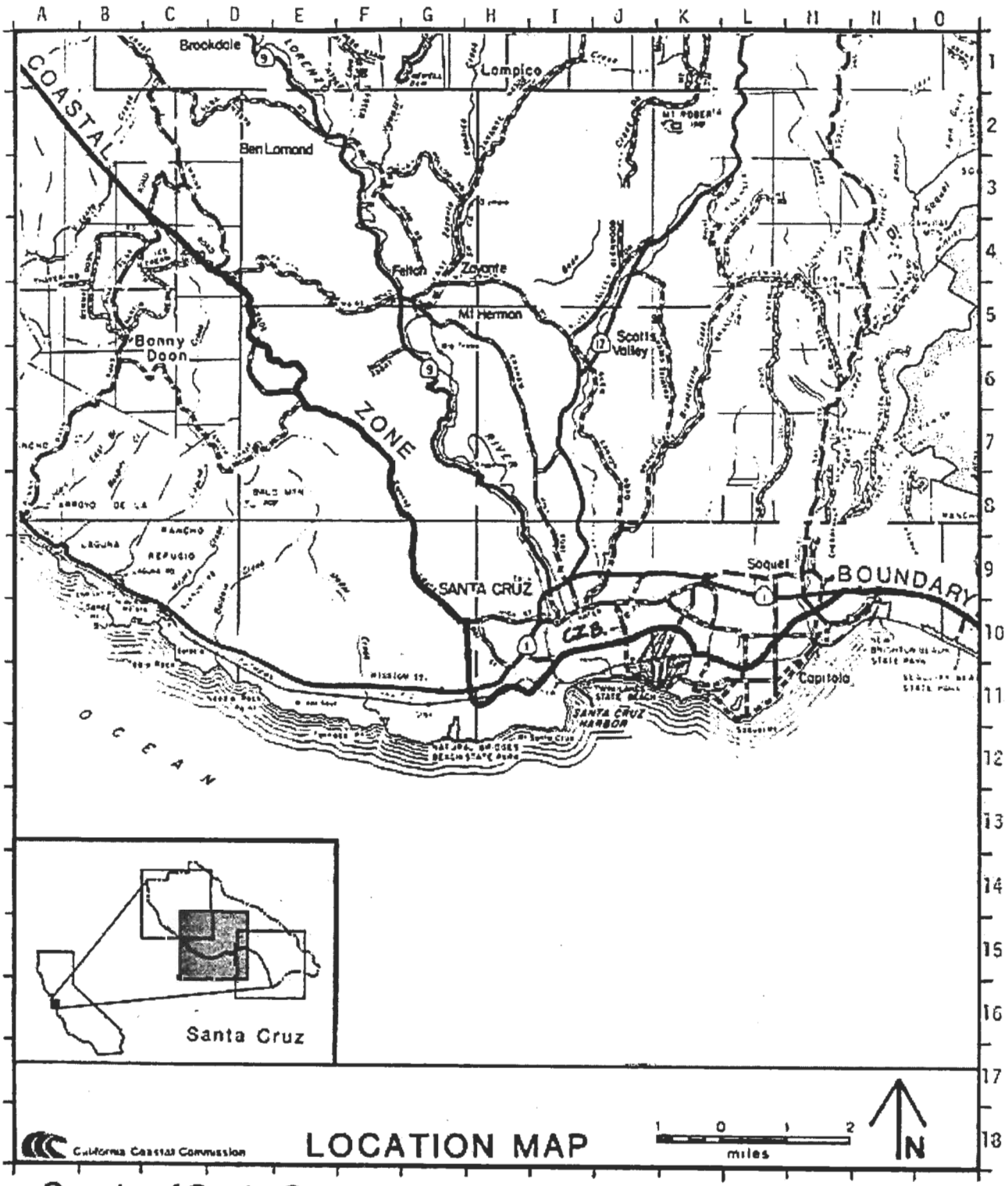
covenants, conditions and restrictions on the use and enjoyment of the property. The deed restriction shall include a legal description and graphic description of the parcels governed by this permit. The deed restriction shall also indicate that, in the event of an extinguishment or termination of the 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.

4. California Environmental Quality Act (CEQA)

Section 13096 of the California Code of Regulations requires that a specific finding be made in conjunction with coastal development permit applications showing the application to be consistent with any applicable requirements of CEQA. Section 21080.5(d)(2)(A) of CEQA prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse effect that the activity may have on the environment.

The Coastal Commission's review and analysis of land use proposals has been certified by the Secretary of Resources as being the functional equivalent of environmental review under CEQA. The preceding coastal development permit findings discuss the relevant coastal resource issues with the proposal, and the permit conditions identify appropriate modifications to avoid and/or lessen any potential for adverse impacts to said resources. All public comments received to date have been addressed in the findings above, which are incorporated herein in their entirety by reference.

As such, there are no additional feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse environmental effects which approval of the proposed project, as conditioned, would have on the environment within the meaning of CEQA. Thus, if so conditioned, the proposed project will not result in any significant environmental effects for which feasible mitigation measures have not been employed consistent with CEQA Section 21080.5(d)(2)(A).



County of Santa Cruz

Sheet 2 of 3

CCC Exhibit A
(page 1 **of** 1 **pages)**

COASTAL BLUFF STABILIZATION-

REPAIR AND CONSTRUCTION OF SHOTCRETE FACING WITH SOIL NAIL ANCHORS

PREPARED FOR:

KIM KENGLE PROPERTY,
2-3920 EAST CLIFF DRIVE,
SANTA CRUZ, CALIFORNIA
APN: 032-182-02 & 032-182-03

CCC Exhibit B
(page 1 of 5 pages)

SHEET INDEX:

1. COVER SHEET-COASTLINE CAPTION, LOCATON MAP, VICINITY MAP AND STANDARD ABBREVIATIONS
2. SITE PLAN-PROPOSED IMPROVEMENTS
3. PROFILE SECTIONS X-X', Y-Y' AND Z-Z'
4. SHOTCRETE FACING-SECTIONS, DETAILS AND NOTES
5. △ CONSTRUCTION PLAN-DRAINAGE, EROSION CONTROL, SITE ACCESS, STORAGE & STAGING AREAS, BMP NOTES

△ PROJECT CONSULTANTS:

DEREK VAN ALSTINE
RESIDENTIAL DESIGN, INC
716A SOQUEL AVENUE, SANTA CRUZ, CA
TEL (831) 426-8400, FAX (831) 426-8446

ROCK SOLID ENGINEERING, INC
1100 MAIN STREET, SUITE A, WATSONVILLE, CA 95076
TEL (831) 724-5868, FAX (831) 763-1578

ROGERS E. JOHNSON & ASSOCIATES
41 HANGAR WAY, SUITE B, WATSONVILLE, CA 95076
TEL (831) 728-7200, FAX (831) 728-7218

ORIGINAL DRAWING MEASURE 1" 2" 3"

(E) COUNTY SEAWALL

AT WESTERN SECTION: CONSTRUCT NEW SHOTCRETE FACING WITH SOIL NAIL ANCHORS TO PROVIDE POSITIVE SUPPORT TO (E) SLOPE. THIS WORK WILL INCLUDE CONSTRUCTION OF BASAL FOOTING AND COVER AREA APPROX. 40'-0" LONG AND 34'-0" HIGH (VERT.).

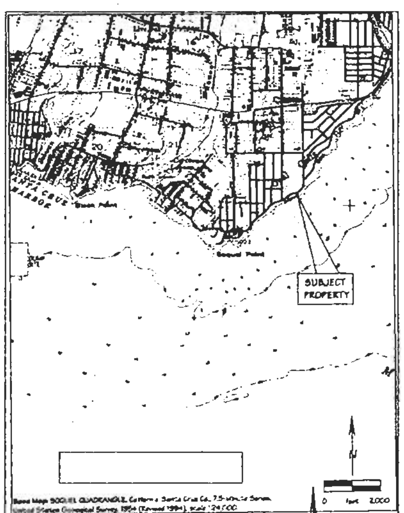
AT SOUTHERN SECTION: CONSTRUCT NEW BASAL FOOTING AT BASE OF CURRENTLY UNDERMINED WALL SECTION. THIS WORK WILL COVER AREA APPROX. 150'-0" LONG AND 3'-0" HIGH, RESTRAINED BY CORROSION PROTECTED ANCHORS.

AT EASTERN SECTION: REMOVE (E) AND CONSTRUCT NEW SHOTCRETE FACING WITH SOIL NAIL ANCHORS TO PROVIDE POSITIVE SUPPORT TO (E) SLOPE. THIS WORK WILL INCLUDE CONSTRUCTION OF BASAL FOOTING AND COVER AREA APPROX. 80'-0" LONG AND 34'-0" HIGH (VERT.)

COASTLINE CAPTION 1/1
SCALE: N/A
N36 57.46, W121 57.82, IMAGE 20050712B

SITE
2-3920 EAST CLIFF DRIVE,
SANTA CRUZ, CALIFORNIA

VICINITY MAP 3/1
SCALE: AS SHOWN ABOVE



SUBJECT PROPERTY:
2-3920 EAST CLIFF DRIVE,
SANTA CRUZ, CALIFORNIA

LOCATION MAP 2/1
SCALE: AS SHOWN ABOVE

STANDARD ABBREVIATIONS:

A.B.	ANCHOR BOLT	INS.	INSULATION
A/C	AIR CONDITIONING	INT	INTERIOR
AGG	AGGREGATE	JST	JOIST
ALT	ALTERNATE	KPL	KICK PLATE
APX	APPROXIMATE	KIT.	KITCHEN
A.D.	AREA DRAIN	K.O	KNOCKOUT
ASPH.	ASPHALT	L.B.	LAG BOLT
A.S	ALUMINUM SLIDING WINDOW	LAM	LAMINATE (D)
BM	BEAM	L.H	LEFT HAND
BIT.	BITUMINOUS	L.	LENGTH
BLK'G	BLOCKING	LW	LIGHTWEIGHT
BLDG	BUILDING	LW.C	LIGHTWEIGHT CONCRETE
B.U.R	BUILT UP ROOFING	L.L	LIVE LOAD
C.O	CLEAN OUT	LVR	LOUVER
C.J	CEILING JOISTS	LPT.	LOW POINT
CJT.	CONTROL JOINT	MAX	MAXIMUM
CORR	CORRUGATED	MIN	MINIMUM
CFL	COUNTER FLASHING	MTL	METAL
CFT	CUBIC FOOT	MMB	MEMBRANE
CYD	CUBIC YARD	MWK	MILLWORK
CLG.	CEILING	MISC	MISCELLANEOUS
CLR.	CLEAR	(N)	NEW
C.M.U	CONCRETE MASONRY UNIT	N.I.C.	NOT IN CONTRACT
CONC.	CONCRETE	N.T.S	NOT TO SCALE
DBL.	DOUBLE	O/	OVER
DET	DETAIL	O.C.	ON CENTER
DIA	DIAMETER	O.D.	OUTSIDE DIAMETER
DIAG.	DIAGONAL	O.H.	OVERHANG
D.F.	DOUGLAS FIR	OPT.	OPTIONAL
D.H.	DOUBLE HUNG WINDOW	PKT.	POCKET DOOR
DR.	DOOR	P/L	PROPERTY LINE
D.S	DOWN SPOUT	P.T.	PRESSURE TREATED
(E)	EXISTING	P.T.D.F.	PRESSURE TREATED DOUGLAS FIR
EA	EACH	PWD	PLYWOOD
ELEC	ELECTRICAL	R.W.L	RAIN WATER LEADER
EQ.	EQUAL	REF.	REFER
EXT	EXTERIOR	REQ.	REQUIRED
F.F.	FINISH FLOOR	RFTR	RAFTER
FLSH'G	FLASHING	REG.	REGISTER
FLR. JSTS	FLOOR JOISTS	RE.	REINFORCE (D), (ING)
FLO	FLUORESCENT	RET	RETURN
F.O.S	FACE OF STUD	R.A.	RETURN AIR
FAS	FASTEN, FASTENER	REV	REVISION (S), REVISED
FN	FENCE	R.D.	ROOF DRAIN
F.A.	FIRE ALARM	RFG.	ROOFING
F.E.	FIRE EXTINGUISHER	RM.	ROOM
F.E.C	FIRE EXTINGUISHER CABINET	R.O.	ROUGH OPENING
F.H.S.	FIRE HOSE STATION	S.C	SOLID CORE
FPL	FIREPLACE	S. CL	SELF CLOSING
FP	FIRE PROOF	SHT'G	SHEATHING
FLX	FLEXIBLE	SCHD	SCHEDULE
FLR	FLOOR (ING)	SNT.	SEALANT
FD	FLOOR DRAIN	SEC	SECTION
FND.	FOUNDATION	SIM	SIMILAR
FTG.	FOOTING	SKL	SKYLIGHT
FR.	FRAME (D), (ING)	S.P	SOUND PROOF
FBO	FURNISHED BY OTHERS	SPEC	SPECIFICATION (S)
FUR	FURRING	SQ	SQUARE
FUT	FUTURE	STD	STANDARD
GA.	GAUGE	STR	STRUCTURAL
GALV.	GALVANIZED	T&G	TONGUE AND GROOVE
G.F.I.	GROUND FAULT INTERRUPTED CIRCUIT	T.P.	TOP PLATE
G.L.B.	GLUE LAMINATED BEAM	TYP.	TYPICAL (IN OTHER LOCATIONS)
G.S.M	GALVANIZED SHEET METAL	TEL	TELEPHONE
GD	GRADE	THR.	THRESHOLD
GVL	GRAVEL	TOL.	TOLERANCE
HBD	HARDBOARD	T.S.	TOP OF SLAB
HDW.	HARDWARE	T.	TREAD
HWD	HARDWOOD	U.N.O.	UNLESS NOTED OTHERWISE
HTG	HEATING	VERT.	VERTICAL
HVAC.	HEATING/VENTILATING/ AIR CONDITIONING	V.B.	VAPOR BARRIER
HT	HEIGHT	VNR	VENEER
HB.	HOSE BIB	V.G.	VERTICAL GRAIN
H.D.	HOLD DOWN	VN	VINYL
H.C	HOLLOW CORE	W/	WITH
HT. DP.	HOT DIPPED	W.P.	WEATHER PROOF
HDR	HEADER BEAM	WSCT	WAINSCOT
I.C.B.O.	INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS	WTW	WALL TO WALL
I.D.	INSIDE DIAMETER	W.C	WATER CLOSET
		WN	WINDOW
		WD	WOOD

SOIL ENGINEERING CONSTRUCTION, INC.
927 ARGUELLO STREET, REDWOOD CITY, CALIFORNIA 94063
PHONE (650) 367-9595 FAX (650) 367-8139

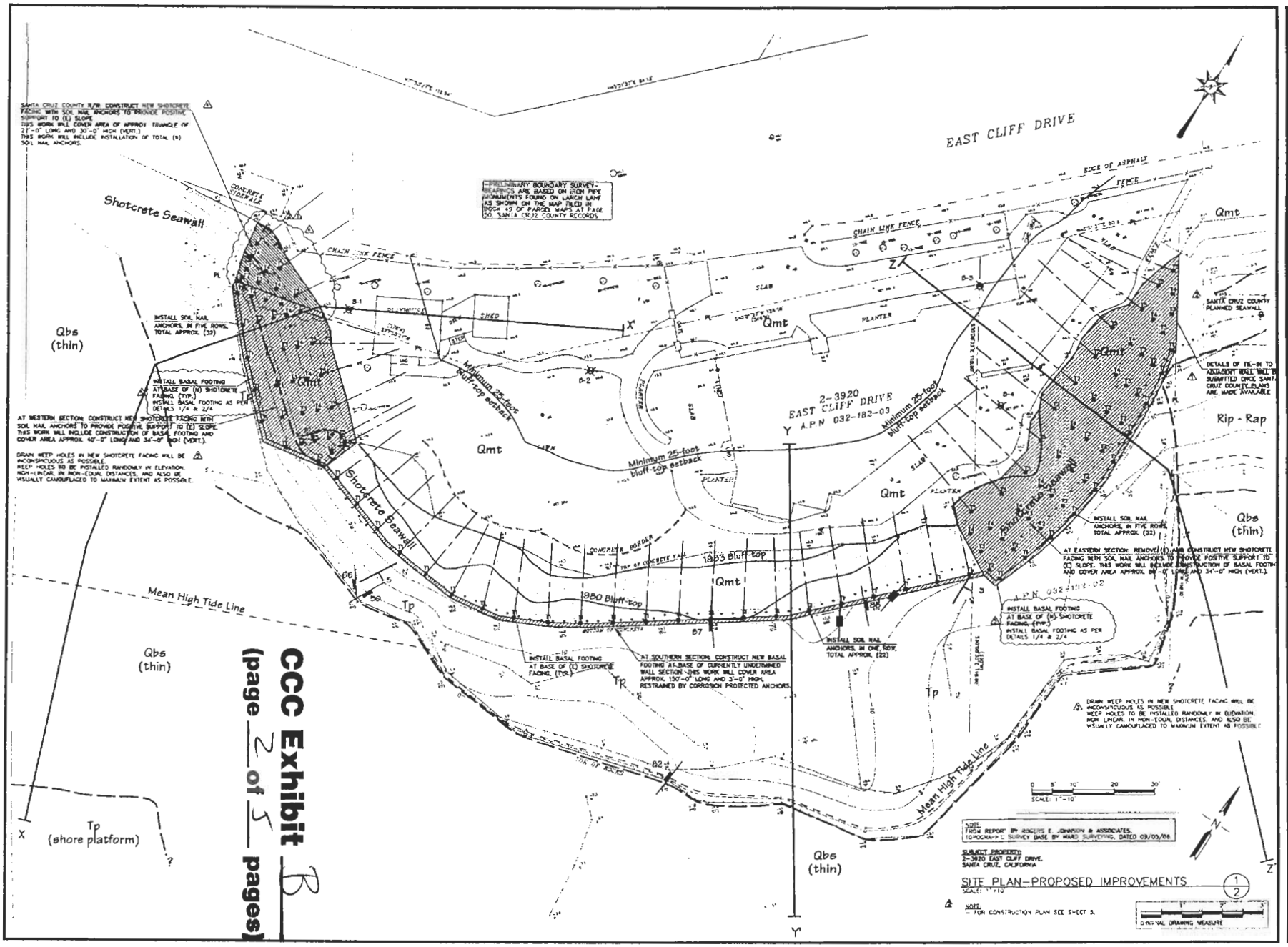
SOIL ENGINEERING CONSTRUCTION INC

REGISTERED PROFESSIONAL ENGINEER GEORGE E. DREW No. 20681 EXP. 9-30-11 CIVIL STATE OF CALIFORNIA

COVER SHEET-
COASTLINE CAPTION,
LOCATION MAP,
VICINITY MAP AND
STANDARD ABBREVIATIONS

COASTAL BLUFF STABILIZATION

KIM KENGLE PROPERTY,
2-3920 EAST CLIFF DRIVE,
SANTA CRUZ, CALIFORNIA



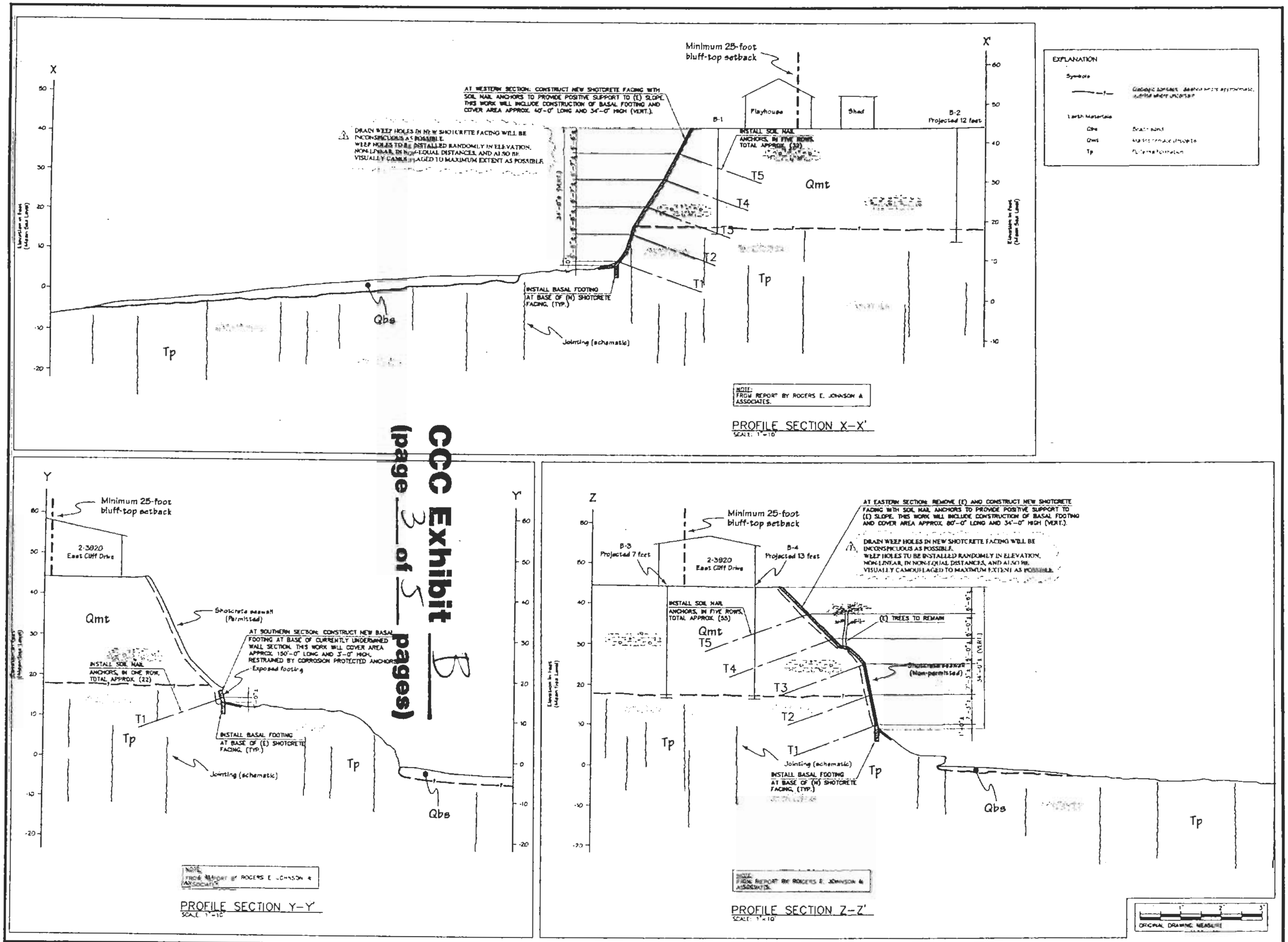
CCC Exhibit B (page 2 of 5 pages)

SOIL ENGINEERING CONSTRUCTION, INC.
SOIL ENGINEERING CONSTRUCTION
RECISTERED PROFESSIONAL ENGINEER GEORGE E. DINER No. 20681 EXP 9-30-11 CIVIL STATE OF CALIFORNIA

SITE PLAN– PROPOSED IMPROVEMENTS

COASTAL BLUFF STABILIZATION
KIM KENGLE PROPERTY,
2-3920 EAST CLIFF DRIVE,
SANTA CRUZ, CALIFORNIA

2 OF 5



CCC Exhibit B
(page 3 of 5 pages)

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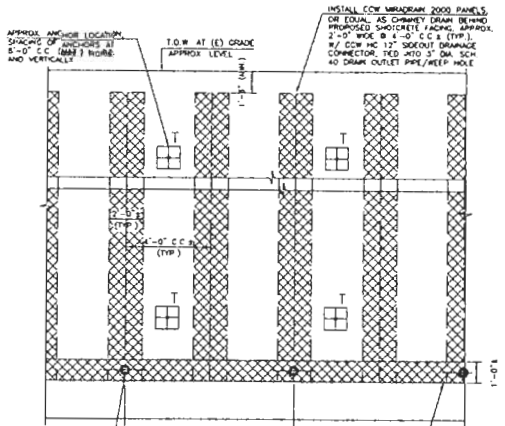
937 ANGELLO STREET, REDWOOD CITY, CALIFORNIA 94063
PHONE (650) 367-9595 FAX (650) 367-8139

REGISTERED PROFESSIONAL ENGINEER GEORGE E. DREW No. 20681 EXP 9-30-11 CIVIL STATE OF CALIFORNIA

PROFILE SECTIONS X-X', Y-Y' AND Z-Z'

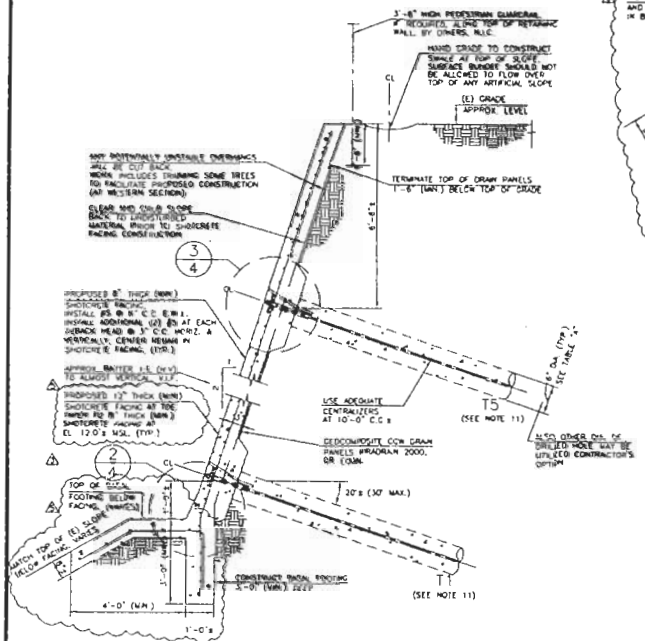
COASTAL BLUFF STABILIZATION

KIM KENGLE PROPERTY, 2-3920 EAST CLIFF DRIVE, SANTA CRUZ, CALIFORNIA

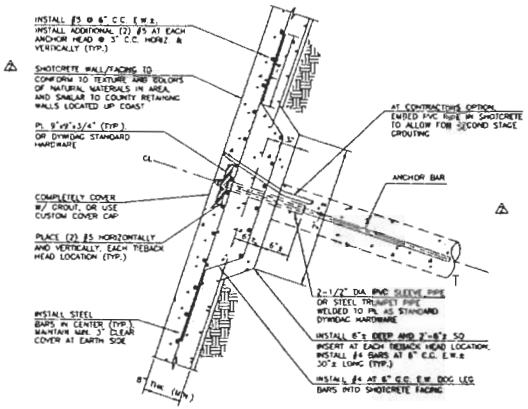


NOTE:
INSTALL AT LEAST TWO ROWS OF HORIZONTAL GEOCOMPOSITE DRAIN W/ TWO ROWS OF PVC DRAIN OUTLET PIPE/WEEP HOLES AT EACH SHOTCRETE FACING IF DETERMINED IN FIELD. ADDITIONAL DRAIN OUTLET PIPES/WEEP HOLES MAY BE INSTALLED, AS NECESSARY.

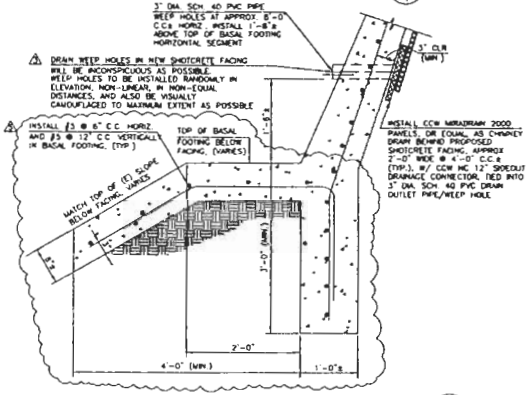
SCHEMATIC GEOCOMPOSITE DRAIN LAYOUT 4/4
SCALE: N.T.S.



SECTION-SHOTCRETE WALL/FACING (TYP.) 1/4
SCALE: 1/2"=1'-0"



DETAIL-ANCHOR HEAD ASSEMBLY 3/4
SCALE: 1"=1'-0"



DETAIL-BASAL FOOTING W/ DRAIN (TYP.) 2/4
SCALE: 1"=1'-0"

SOIL NAIL ANCHOR TABLE "A"

MARK	DESIGN LOAD KIPS	TEST LOAD KIPS	PERFORMANCE TEST LOAD KIPS	UNBONDED ZONE FEET	BONDED ZONE FEET, HOLE DIA. 0'-8"	TOTAL DEPTH FEET	SOIL NAIL ANCHOR TOTAL	NOTE
WESTERN SECTION								
T1 TO T5	10.0	10.0	15.0	10	12	22	32	*
SOUTHERN SECTION								
T1	10.0	10.0	15.0	10	12	22	22	*
EASTERN SECTION								
T1 TO T2	10.0	10.0	15.0	10	12	22	19	*
T3 TO T5	10.0	10.0	15.0	15	12	27	33	*

* NOTE:
- SOIL NAIL ANCHOR: USE 1" DIA. 60 KSI BAR AND HARDWARE, BY DCI DYWIDAG OR EQUAL DCP-EQUIPLE CORROSION PROTECTED
- TEST ALL SOIL NAIL ANCHORS TO DESIGN LOAD CAPACITY (100% D.L.)
- TEST SELECTED SOIL NAIL ANCHORS, MINIMUM 1 IN 4 ANCHORS (25% OF ALL ANCHORS), TO PERFORMANCE LOAD AS 150% DESIGN LOAD CAPACITY (150% D.L.) SPECIFIC ANCHORS TO BE TESTED TO 150% D.L. WILL BE DETERMINED SOLELY BY ROCK SOLID ENGINEERING, INC.
- ALL SOIL NAIL ANCHORS TO BE TESTED IN PRESENCE OF REPRESENTATIVE OF ROCK SOLID ENGINEERING, INC.
- ANY NECESSARY RE-DESIGN AND/OR REPLACEMENT OF FAILED OR OTHER UNACCEPTABLE ANCHORS IS SOLE RESPONSIBILITY OF CONTRACTOR. ACCEPTABILITY OF ANY ANCHOR WILL BE AT SOLE DISCRETION OF ROCK SOLID ENGINEERING, INC.
- ANCHORS MAY BE INSTALLED AS NECESSARY, PER ENGINEER'S RECOMMENDATION, BASED ON ACTUAL SLOPE SOIL CONDITIONS AT TIME OF CONSTRUCTION.
- SOIL NAIL ANCHORS TESTING PROCEDURE WILL BE IN ACCORDANCE W/ PTI MANUAL.

ABBREVIATIONS:

FOR STANDARD ABBREVIATIONS SEE COVER SHEET.

C.C.	-CENTER TO CENTER
C.O.	-CLEAN OUT
E.W.	-EACH WAY
(E), (N)	-EXISTING, NEW
N.I.C.	-NOT IN CONTRACT
P.T.D.F.	-PRESSURE TREATED DOUGLAS FIR
T.O.G.B.	-TOP OF GRADE BEAM
T.O.W.	-TOP OF WALL
T. & B.	-TOP AND BOTTOM
U.N.O.	-UNLESS NOTED OTHERWISE
V.I.F.	-VERIFY IN FIELD

PROJECT RETAINING STRUCTURE MAINTENANCE AND MONITORING PLAN:

PROJECT RETAINING STRUCTURE MAINTENANCE AND MONITORING PLAN PROPOSED RETAINING STRUCTURE SHOULD BE MONITORED VISUALLY BY PROPERTY OWNER OR BY ANOTHER RESPONSIBLE PERSON ON YEARLY BASIS AND AFTER PARTICULARLY SEVERE STORMS OR EARTHQUAKES. ALL SUGGESTIONS BELOW SHOULD BE INCLUDED WITH PROJECT GEOLOGIST ROGERS E. JOHNSON & ASSOCIATES RECOMMENDATIONS TO CREATE PROJECT RETAINING STRUCTURE MAINTENANCE AND MONITORING PLAN.
- WALL FOOTING AREA(S) SHOULD BE OBSERVED FOR SUCH ISSUES INCLUDING, BUT NOT LIMITED TO, EROSION OR BEDROCK, UNDERMINING OF BASAL FOOTING, AND/OR CRACKS IN FOOTING OR IN BEDROCK SURROUNDING FOOTING, AMONG OTHER POSSIBLE SIGNS OF DISTRESS.
- WALL FASCIA (FACING) SHOULD BE OBSERVED FOR SUCH ISSUES INCLUDING, BUT NOT LIMITED TO, CRACKS IN FASCIA, BLOCKED OR PARTIALLY BLOCKED WEEP-HOLES, LOSE OF DRAINAGE TEXTILE, LOSE OF SOIL FROM BEHIND WALL, AMONG OTHER POSSIBLE SIGNS OF DISTRESS.
- WALL AND FOOTING ANCHORS SHOULD BE OBSERVED FOR SUCH ISSUES INCLUDING, BUT NOT LIMITED TO, CRACKS SURROUNDING ANCHOR, CHANGES IN LOCATION OF ANCHORS, ANY LOOSENING OF ANCHOR LOCKING SYSTEM, AMONG OTHER POSSIBLE SIGNS OF DISTRESS.
- AREA OF PROPERTY BETWEEN EDGE OF NEW HOME AND TOP OF RETAINING STRUCTURES SHOULD BE OBSERVED FOR SUCH ISSUES INCLUDING, BUT NOT LIMITED TO, GROUND CRACKS APPEARING AND/OR OPENING, SUBSIDENCE OF GROUND SURFACE (OR PATIOS, ETC.), SEPARATION OF TOP OF FASCIA FROM GROUND SURFACE OF CLIFF FACE, CHANGES IN GRADIENT ACROSS PROPERTY, AMONG OTHER POSSIBLE SIGNS OF DISTRESS.
- INTERIOR FO NEW HOME SHOULD BE OBSERVED FOR SIGNS OF DISTRESS INCLUDING, BUT NOT LIMITED TO, CRACK DEVELOPING IN FLOORS, WALLS, ROOF OR AROUND WINDOWS OR DOORS, WINDOWS, DOORS, CABINETS OR DRAWS WHICH "STICK" OR BECOME OUT OF THEIR ORIGINAL ALIGNMENT, LEAKING UTILITY LINES, AMONG OTHER POSSIBLE SIGNS OF DISTRESS.
- THOUGH NOT SPECIFICALLY REQUIRED, IT IS SUGGESTED THAT OWNER SHOULD CONSIDER TAKING PHOTOGRAPHS OF WALLS AND OTHER IMPROVEMENTS DURING YEARLY MONITORING EVENT, EVEN IF DISTRESS IS NOT OBSERVED. THESE YEARLY PHOTOGRAPHS COULD BECOME PARTICULARLY USEFUL RECORD OF WALL OVER TIME AND CAN SERVE AS REFERENCE FOR OBSERVING ANY CHANGES WHICH MAY OCCUR TO WALLS OVER TIME.
- IF ANY SIGNS OF DISTRESS ARE NOTED ON PROJECT SITE, ROCK SOLID ENGINEERING, INC., AND ROGERS E. JOHNSON & ASSOCIATES SHOULD BE CONTACTED AND INFORMED IMMEDIATELY. AT THAT TIME, DEPENDING UPON TYPE AND SEVERITY OF SIGNS OF SIGNS OF DISTRESS, FURTHER RECOMMENDATIONS WILL BE PROVIDED FOR FURTHER MONITORING AND/OR REPAIR OPTIONS. NOTE THAT IF SIGNS OF DISTRESS OCCUR AND ROCK SOLID ENGINEERING, INC., IS NOT DIRECTLY CONTACTED AND ADVISED OF DISTRESS WITHIN 2 WORKING DAYS FROM INITIATION OF ANY DISTRESS, ROCK SOLID ENGINEERING, INC., CANNOT BE HELD RESPONSIBLE FOR CONSEQUENCES TO PROJECT AND PROJECT SITE

GENERAL NOTES:

1. DESIGN AND CONSTRUCTION TO BE IN ACCORDANCE WITH 2007 CBC, AS AMENDED BY STATE OF CALIFORNIA, AND ALL APPLICABLE LOCAL CODES
2. ALL DIMENSIONS, CONDITIONS AND LOCATION OF FACILITIES TO BE VERIFIED AND DETERMINED IN FIELD
3. EXACT LOCATION AND EXTENT OF PROPOSED BLUFF STABILIZATION PROJECT CAN BE ADJUSTED AS FIELD CONDITIONS REQUIRE AT TIME OF CONSTRUCTION
4. ALL EXPOSED STEEL, IF ANY, SHALL BE GALVANIZED OR COATED WITH CORROSION INHIBITING PAINT. ANCHOR HEADS TO BE COMPLETELY COATED WITH EPOXY GROUT OR CONCRETE
5. ALL CAST-IN-PLACE REINFORCED CONCRETE/SHOTCRETE SHALL HAVE COMPRESSIVE STRENGTH AT 28 DAYS OF 4,500 PSI. USE CEMENT TYPE II MAXIMUM WATER-CEMENTITIOUS MATERIAL RATIO, BY WEIGHT, NORMAL WEIGHT CONCRETE, TO BE OF 0.45
6. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60 FOR #4 BARS AND ABOVE. ALL REBAR TO BE EPOXY COATED
7. STEEL MEMBERS SHALL BE:
   - ALL WIDE FLANGE STEEL MEMBERS SHALL CONFORM TO ASTM A572, GRADE 50.
   - MISCELLANEOUS CHANNELS, ANGLES, AND PLATES SHALL CONFORM TO ASTM A36.
8. SECTION AT CONSTRUCTION JOINT (C.J.), IF ANY, MAKE ROUGH OR FORM KEY.
9. REINFORCEMENT COVER (2007 CBC SEC. 1907A.7.1)
   - CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH SHALL HAVE MINIMUM 3" CONCRETE COVER.
   - CONCRETE EXPOSED TO EARTH OR WEATHER SHALL HAVE MINIMUM 2" CONCRETE COVER FOR #6 BARS AND ABOVE. 1 1/2" FOR #5 BARS AND BELOW
10. SPLICES OF REBAR TO BE CLASS (B) SPLICE. IF SHOTCRETE METHOD IS GOING TO BE UTILIZED LAP SPLICES OF REINFORCING BARS IN SHOTCRETE SHALL BE BY NON-CONTACT LAP SPLICE METHOD WITH MIN. 2" CLEARANCE BETWEEN BARS (2007 CBC SEC. 1913A.4.3).
11. SOIL NAIL ANCHOR NOTES:
    SEE SOIL NAIL ANCHOR TABLE "A", AND RELEVANT NOTES ON DETAILS AND PROFILE SECTIONS
    SOIL NAIL ANCHORS TO BE DCI DYWIDAG, OR EQUAL.
    ANCHORS SHALL BE INSTALLED AT SPACING AS SPECIFIED ON DRAWINGS AND/OR TABLE "A"
    ANCHORS SHALL BE DOUBLE CORROSION PROTECTED-DCP
    IF BAR IS USED, INSTALL ADEQUATE CENTRALIZERS @ 10'-0" C.C.s
    HOLE DIA. AT CONTRACTOR'S OPTION.
    USE CEMENT TYPE II.
    GROUT TO CEMENT GROUT W/ WATER-CEMENT RATIO (W/C) OF 0.4 TO 0.5 = 5 GAL. PER SACK.
    ALLOW UP TO 22.5 CY OF SAND/YARD.
    ALLOW CURE TIME BEFORE TESTING
    PROVIDE FOR TWO STAGES OF GROUTING. FIRST STAGE OF GROUTING SHALL BE FOR TESTING OF ANCHORS. HOLES TO BE TREMIE PIPE GROUTED FROM BOTTOM OF HOLE FOR BONDED ZONE.
    SECOND STAGE OF GROUTING SHALL BE ACCOMPLISHED AFTER ACCEPTED TESTING, ALL WAY UP REMAINING HOLE.
    FRACTURE GROUTING MAY BE UTILIZED, AT CONTRACTOR'S OPTION, TO ACHIEVE CONSIDERABLY HIGHER SOIL-GROUT BOND CAPACITY
12. SPECIAL INSPECTION (2007 CBC SEC. 1704A)
    - CONCRETE f'c=4,500 PSI, W/C RATIO=0.45, TYPE II CEMENT. LAB TESTING OF CONCRETE SPECIMENS IS REQUIRED
    - SPECIAL INSPECTION FOR SHOTCRETE PLACEMENT MAY BE REQUIRED
    - SOIL ENGINEER'S REPRESENTATIVE TO OBSERVE DRILLING PROCESS TO CONFIRM EMBEDMENT DEPTH OF SOIL NAIL ANCHORS.
    - SOIL ENGINEER'S REPRESENTATIVE TO OBSERVE PROOF TESTING OF SOIL NAIL ANCHORS
    UPON CONCLUSION OF ANCHOR TESTING, SOIL ENGINEER WILL PROVIDE SUMMARY LETTER OF HIS OBSERVATIONS RELATIVE TO BOTH LOAD TESTING, ANCHOR DEPTH, AND SHOTCRETE FACING AS-BUILT CONSTRUCTION CONDITIONS
13. DESIGN RECOMMENDATIONS AND PARAMETERS FROM:
    - GEOTECHNICAL INVESTIGATION-DESIGN PHASE, PROPOSED REBUILD OF SINGLE FAMILY DWELLING, 2-3920 EAST CLIFF DRIVE, SANTA CRUZ, CALIFORNIA, BY ROCK SOLID ENGINEERING, INC., PROJECT NO. 07002, DATED JULY 24, 2007
    - ENGINEERING GEOLOGY REPORT, KENGLE PROPERTY, 2-3920 EAST CLIFF DRIVE, SANTA CRUZ, CALIFORNIA, SANTA CRUZ COUNTY, BY ROGERS E. JOHNSON & ASSOCIATES, JOB NUMBER: CO8034-SS, DATED JULY 11, 2008
14. CONSTRUCTION DOCUMENTS SHALL BE REVIEWED, AND GEOTECHNICAL ASPECTS OF CONSTRUCTION SHALL BY PERIODICALLY OBSERVED BY SOIL ENGINEER OF RECORD ROCK SOLID ENGINEERING, INC
15. ALL CONSTRUCTION SHALL COMPLY WITH RECOMMENDATIONS OF AFOREMENTIONED REPORTS.
    ALL PROPOSED CONSTRUCTION FOR ABOVE PROJECT IS OUTLINED ON SITE PLAN-PROPOSED IMPROVEMENTS, SHEET 2.
    ALL CONSTRUCTION SHALL ALSO COMPLY WITH COASTAL COMMISSION PERMIT. COPY OF COASTAL COMMISSION STAFF REPORT/PERMIT SHALL BE PROVIDED

CCC Exhibit B (page 4 of 5 pages)

ORIGINAL DRAWING MEASURE

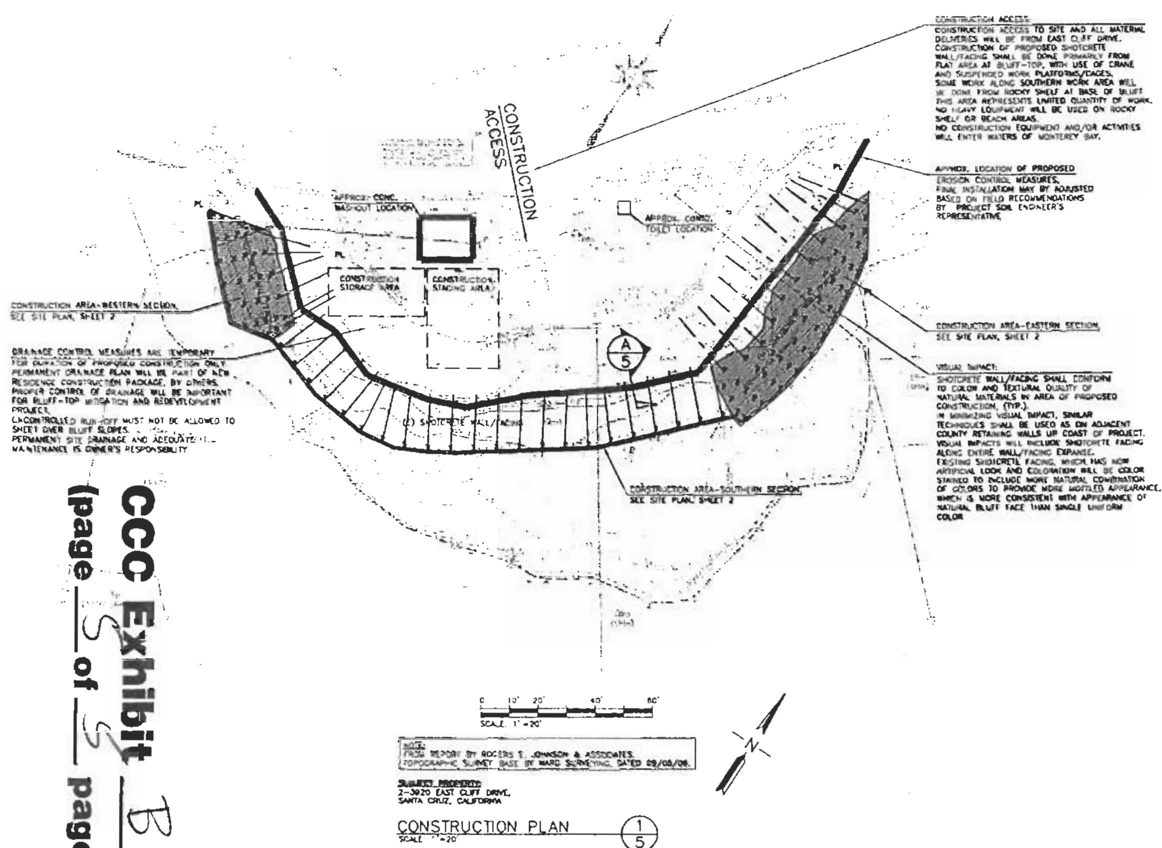
SOIL ENGINEERING CONSTRUCTION, INC.
SOIL ENGINEERING CONSTRUCTION INC
937 ANDCELLO STREET, REDWOOD CITY, CALIFORNIA 94063
PHONE (650) 367-1955 FAX (650) 367-8139

REGISTERED PROFESSIONAL ENGINEER GEORGE E. ORLOFF No. 20681 EXP 9-30-11 CIVIL STATE OF CALIFORNIA

SHOTCRETE FACING-SECTIONS, DETAILS AND NOTES

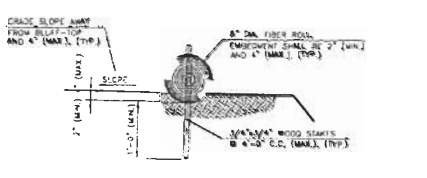
COASTAL BLUFF STABILIZATION
KIM KENGLE PROPERTY,
2-3920 EAST CLIFF DRIVE,
SANTA CRUZ, CALIFORNIA

4 OF 5



CONSTRUCTION PLAN (1/5)
SCALE: 1" = 20'

CCC Exhibit B
(page 5 **of** 5 **pages)**



SECTION—FIBER ROLL EROSION CONTROL (A/5)
SCALE: 1" = 1'-0"

Construction Plan Includes the following:
- Construction Areas (see Construction Plan drawing)
- Construction Methods and Timing (enclosed 8.5x11 document)
- Construction Criteria (see notes below).

Construction Criteria Notes.

- All work shall take place during daylight hours and lighting of the beach area is prohibited unless, due to extenuating circumstances, the Community Development Director authorizes non daylight work and/or beach area lighting
- Construction work or equipment operations shall not be conducted below the mean high water line unless tidal waters have receded from the authorized work areas.
- Any construction materials and equipment shall be delivered to the beach area by rubber-tired construction vehicles. When transiting on the beach, all such vehicles shall remain as high on the upper beach as possible and avoid contact with ocean waters.
- All construction materials and equipment placed on the beach during daylight construction hours shall be stored beyond the reach of tidal waters. All construction materials and equipment shall be removed in their entirety from the beach area by sunset each day that work occurs. The only exception shall be for erosion and sediment controls.
- Construction (including construction activities, materials, and/or equipment storage) is prohibited outside of the defined construction, staging, and storage areas.
- No work shall occur on the beach during weekends unless, due to extenuating circumstances, the Community Development Director authorizes such work.
- Equipment washing, refueling, and/or servicing shall not take place on the beach
- The construction site shall maintain good construction site housekeeping controls and procedures (e.g., clean up all leaks, drips, and other spills immediately; keep materials covered and out of the rain, including covering exposed piles of soil and wastes); dispose of all wastes properly, place trash receptacles on site for that purpose, and cover open trash receptacles during wet weather, remove all construction debris from the beach)
- All erosion and sediment controls shall be in place prior to the commencement of construction as well as at the end of each workday. At a minimum, silt fences, or equivalent apparatus, shall be installed at the perimeter of the construction site to prevent construction-related runoff and/or sediment from entering into the Pacific
- All beach areas and all beach points impacted by construction activities shall be restored to their pre-construction condition or better within three days of completion of construction. Any beach sand impacted shall be filtered as necessary to remove all construction debris from the beach.

SEC CONSTRUCTION PLAN
COASTAL BLUFF
KENGLE PROPERTY
2-3920 EAST CLIFF DRIVE

Construction Areas

The attached drawing defines the planned construction areas including crane access points as well as equipment staging and material storage areas. The work on the cliff face will be completed from a crane supported work platform. No material or equipment will be stored, moved across or used on the beach.

Construction Plan

Work will start at 8:00 am and be completed by 4:30 pm Monday through Friday (with limited overtime). We anticipate a start date in mid August (if weather and permit conditions allow) with a ten week construction period.

SCHEDULE

Week 1 – Move in men, material and equipment. Prepare jobsite for construction operation

Week 2 – Clear work area, layout anchor locations, erect drill and excavate key.

Week 3 thru 6 – Drill anchors, install and grout bars. Perform load tests on all anchors (complete key excavation).

Week 7 – Install reinforcing steel and wall back drain systems

Week 8 – Place structural shotcrete wall face and finish with colored and textured surface

Week 9 thru 10 – Clean up jobsite, load equipment and move out

1" 2" 3"
ORIGINAL DRAWING MEASURE

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SOIL ENGINEERING CONSTRUCTION

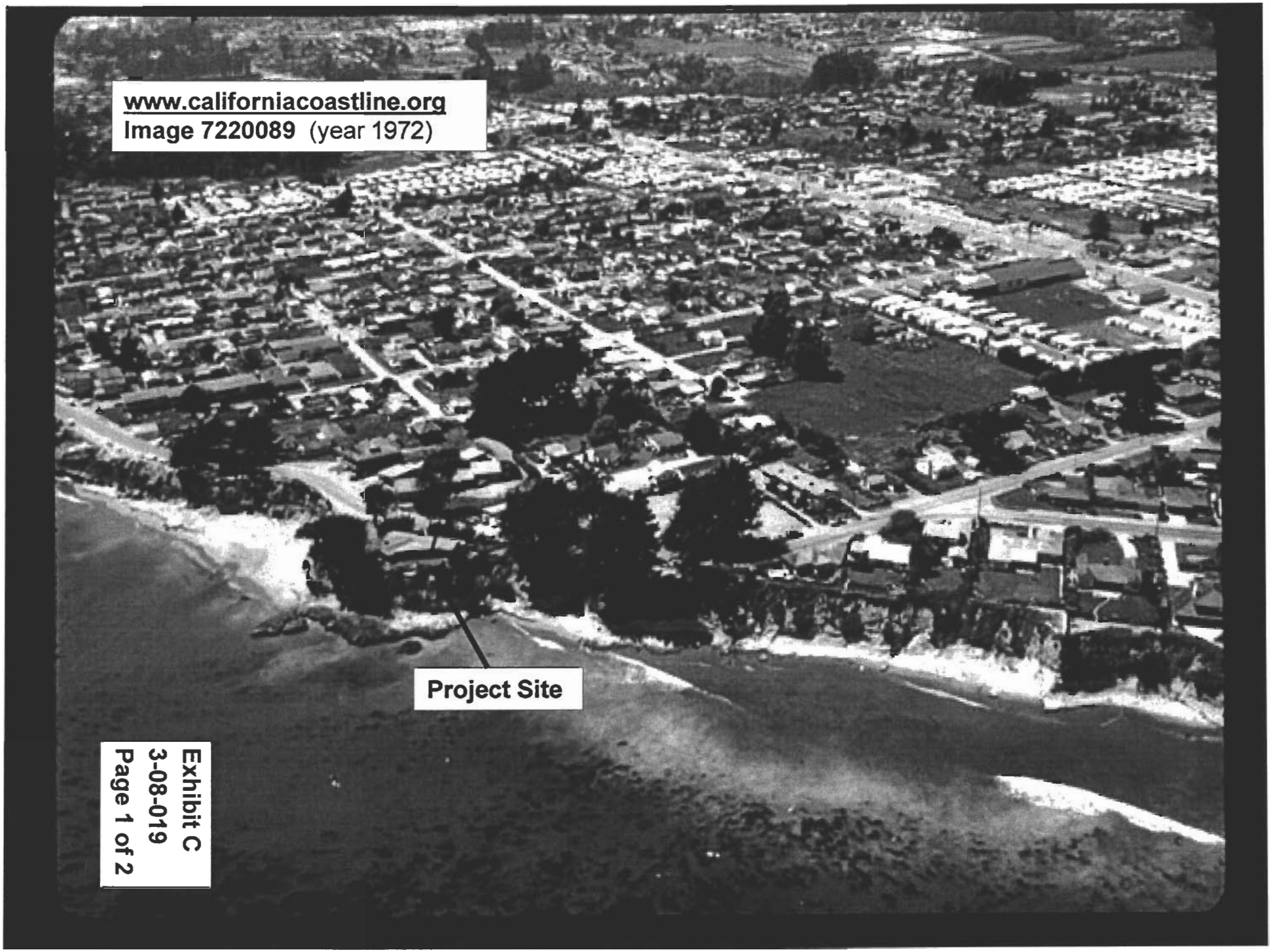
REGISTERED PROFESSIONAL ENGINEER
GEORGE E. DREW
No. 20681
EXP 9-30-11
CIVIL
STATE OF CALIFORNIA

CONSTRUCTION PLAN– DRAINAGE, EROSION CONTROL, SITE ACCESS, STORAGE & STAGING AREAS, NOTES

COASTAL BLUFF STABILIZATION

KIM KENGLE PROPERTY,
2-3920 EAST CLIFF DRIVE,
SANTA CRUZ, CALIFORNIA

5 OF 5



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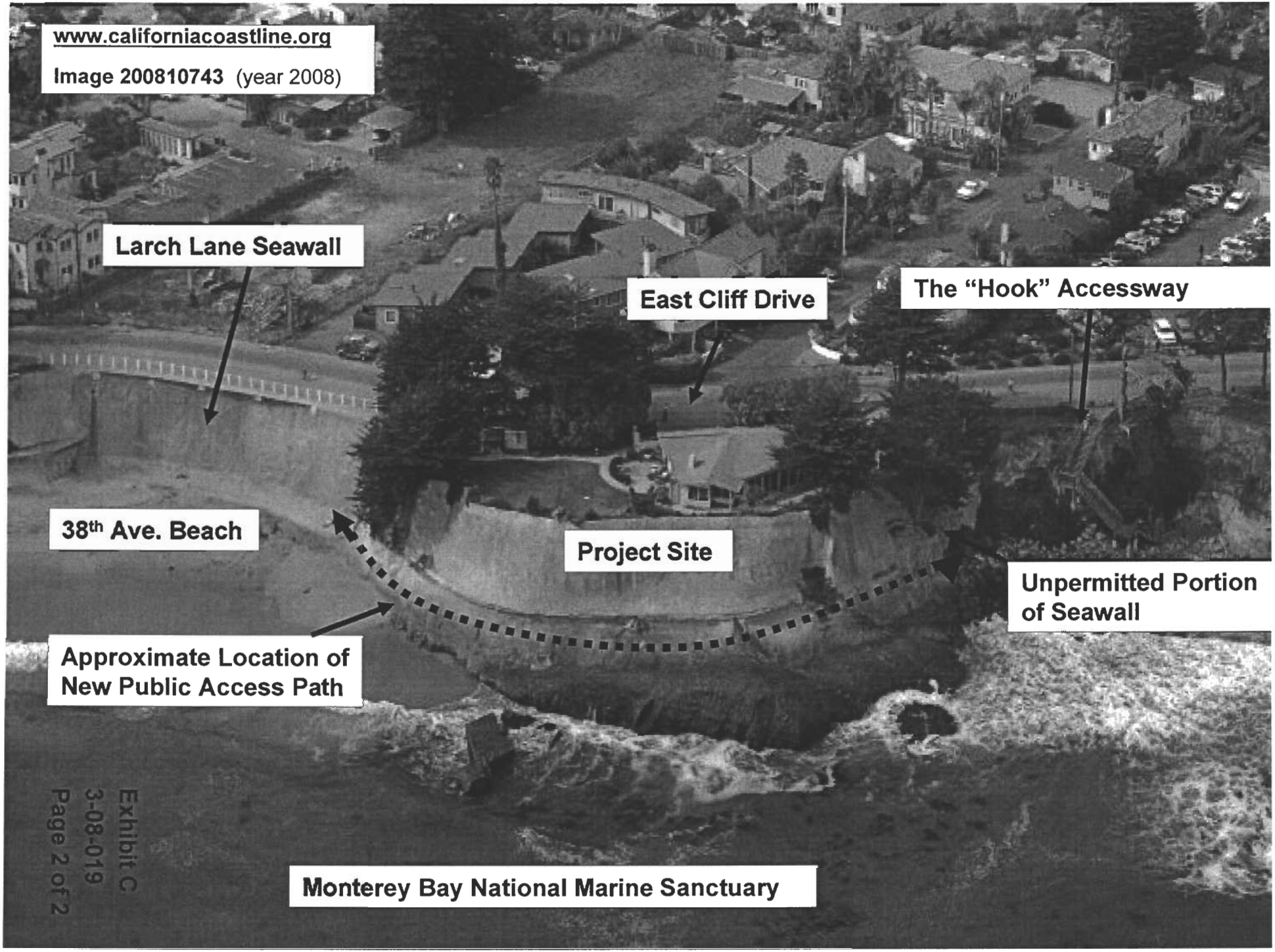

Exhibit C
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