CALIFORNIA COASTAL COMMISSION
CENTRAL COAST DISTRICT OFFICE
725 FRONT STREET, SUITE 300
SANTA CRUZ, CA 95060
PHONE: (831) 427-4863
FAX: (831) 427-4877
WEB: WWW.COASTAL.CA.GOV

W16b

Prepared August 10, 2010 (for August 11, 2010 hearing)

To: Commissioners and Interested Persons

From: Dan Carl, District Manager
Susan Craig, Coastal Planner

Subject: STAFF REPORT ADDENDUM for W16b
CDP Application Number 3-09-042 (O'Neill Seawall)

The purpose of this addendum is to modify the staff recommendation for the above-referenced item. In the time since the staff report was distributed, several issues warranting additional discussion have been raised, and staff has also identified some minor changes to the recommendation to best address site specific issues with the proposed project. Thus, the staff report is modified as shown below (where applicable, text in underline format indicates text to be added, and text in ~~strikethrough~~ format indicates text to be deleted):

1. Consistency with Coastal Act Section 30235

Questions have been raised regarding a certain statement in the staff report summary that might be read to say that the proposed shoreline armoring is approvable because it provides public access amenities by condition. While it is true that the recommendation includes requirements for certain recreational access enhancements (such as the trail across the face of the seawall, and restrictions on the adjacent property to ensure it is used only for public recreational purposes), these are not the reasons why a seawall at this location has been recommended for approval by staff. On the contrary, the staff report is premised on a straightforward Coastal Act analysis of whether armoring is required in this instance (per Coastal Act Section 30235) and, because it is, whether and how the impacts from such armoring can be mitigated. In short, staff believes that there is an existing structure in danger from erosion, that structure requires armoring to protect it, the armoring results in certain impacts, and these impacts must be mitigated. Staff also believes that the staff report is clear on these points. However, to err on the conservative side, the staff report is modified as follows to rephrase the statement in the staff report summary as follows. Specifically the third paragraph on staff report page 3 is modified as follows:

> …In this case, the proposed seawall meets the conditions under which shoreline armoring can be approved under Section 30235 of the Coastal Act <u>because the house is a structure that pre-dates Proposition 20 and Coastal Act coastal permitting requirements, it is in danger from erosion, a seawall is required to protect the existing endangered structure, and the impacts from such seawall can be mitigated. Such mitigation is directly related and roughly proportional to the impacts of the project, and will</u>~~, including, in particular, because the project includes and can be conditioned to~~ provide important public access ~~measures~~ <u>mitigation</u> designed to offset project impacts ~~as well as to~~ <u>in a way that add</u>s to the other public access amenities in ~~the~~ <u>an area that is a well known and very popular public recreational access destination</u>. Thus, in this case, the project includes appropriate mitigation for the sand supply and related public recreational access

and viewshed impacts that will be caused by the proposed development.

2. Retained Riprap

The project proposes retention of a portion of the existing riprap that is located just downcoast of the seawall within an approximately 10 to 15 foot area of the bluffs adjacent to the seawall location that forms a notch (see plans in staff report Exhibit B page 8, and site photo in Exhibit C page 2). The intent of the riprap is to provide a transition from the armoring structure to the unarmored adjacent bluffs as a means to avoid accelerated erosion within the notch area. The staff report identifies removal of this riprap (see Special Condition 1(b) on staff report page 31). In the time since the staff report was distributed, staff, including the Commission's senior coastal engineer, have re-reviewed this issue, including through additional on-site field investigation, and believe that the seawall could lead to unintended consequences at this downcoast end due to the orientation of the bluffs (including the existing notch area) in relation to the site and the seawall, and that a transition is needed to ensure that the project seamlessly connects to the adjacent bluffs and does not lead to acceleration of other problems here. In addition, staff has noted that there is currently some concrete debris (concrete drain pipe, etc.) along with riprap in the notch area, and the staff report should be premised on removal of this material as part of the project as well (to protect public access, natural landforms, and the public viewshed, and to ensure the seawall is not adversely affected by such debris). Accordingly, the following changes are made to the staff report:

a. Add the following text at the end of the first paragraph on staff report page 14:

   It is appropriate, however, to ensure that the seawall appropriately connect to the adjacent natural landform at this downcoast edge, both to avoid creating an erosion "hotspot" in the notch area where the riprap is proposed, and to ensure there is a seamless transition between the seawall and the natural bluff (again, see Special Condition 1).

b. Modify the text at the end of the first paragraph on staff report page 26 as follows:

   In addition, by removing the riprap from the downcoast edge of the seawall and requiring a seamless wall connection to the existing bluff landform (see Special Condition 1), not only is more beach area freed up for public recreational access pursuits, but access connectivity to the adjacent undeveloped property, including through the required "goat trail", can be ensured. ~~additional natural landforms are exposed and allowed to erode naturally in that location as well.~~

c. Modify the text at the end of the second paragraph on staff report page 28 as follows:

   This mitigation will help offset the view impact, and the required removal of all extra riprap/concrete debris and the requirement to seamlessly connect the wall to the downcoast bluffs will also help to address this impact as well (see Special Condition 1).

d. Modify Special Condition 3(b) on staff report page 31 as follows:

Riprap/Concrete Debris Removed and Seawall Connected Downcoast. All riprap not incorporated into the interior of the approved seawall and all concrete debris (e.g., abandoned concrete drain pipe, concrete debris, etc.) shall be removed from the site, including all riprap identified on the submitted plans along the downcoast edge of the seawall. The downcoast edge of the seawall shall include a component that conforms to the downcoast bluff and that seamlessly connects the seawall to the bluffs in the area where the riprap (to be removed) is shown on the submitted plans.

3. Drainage Bench

As discussed on page 28 of the staff report, the proposed project includes an atypical upper bench area within which large cobble/small boulder-sized rocks would be exposed in the public view from above (e.g., from recreational areas associated with the East Cliff Drive corridor). This would result in a negative public viewshed impact, including because such exposure makes it more obvious that the seawall is a concrete structure and not a bluff, thus reducing the effectiveness of its faux bluff finish in terms of camouflaging the seawall altogether, including with respect to the manner in which it connects to the Pleasure Point seawall project nearing completion at the upcoast edge of the proposed seawall (a project which does not include such a feature). Due to engineering feasibility issues, the staff report identifies certain mitigations in this regard to minimize such impacts, but does not propose significant redesign of this feature.

In the time since the staff report was distributed, staff, including the Commission's senior coastal engineer and the Applicant's consulting geotechnical engineer, have re-reviewed this issue, including through additional on-site field investigation. Based on these discussions, staff has concluded that the project can be modified in this regard to address the identified concerns and still appropriately respond to the case specific issues at this site that led to the atypical design in the first place (i.e., primarily that the house is constructed well down the slope below the blufftop edge and closer to the ocean than is typical for houses in this area). Specifically, the bench area can be modified so that the rock is encapsulated and incorporated into the seawall facing in such a way as to mimic the natural undulating bluff landforms in the vicinity of the project while still providing adequate drainage and protection of the existing residence. The primary design framework in this respect is ensuring that the bench area is undulating enough to dissipate expected wave overtopping and dispersal at this low-lying location. Accordingly, the following changes are made to the staff report:

a. Modify the second paragraph on staff report page 28 as follows:

The seawall includes an atypical upper bench area within which large cobble/small boulder-sized rocks would be exposed in the view from above (i.e., from recreational areas associated with East Cliff Drive). This results in a negative public viewshed impact, including because such exposure makes it more obvious that the seawall is a concrete structure and not a bluff, thus reducing the effectiveness of its faux bluff finish in terms of camouflaging the seawall altogether. As previously indicated, this rock bench area is intended to absorb wave run-up and to facilitate drainage (from wave overtopping) back to the ocean. The Applicant's engineer indicates that ~~such a drainage~~

~~apparatus is~~ some measures such as these that can help dissipate expected wave overtopping and dispersal at this low-lying location are critical given the location of the residence down the slope below the blufftop and the corresponding required orientation and design of the seawall in relation to expected wave overtopping~~. Alternative designs that would hide the drainage areas (e.g., a continuation of the faux bluff concrete work) have been deemed infeasible by the Applicant's engineer~~, and the Commission's senior engineer concurs. However, the Applicant's engineer and the Commission's engineer also agree that the bench area can be reconfigured in such a way as to encapsulate and incorporate the rock field concept into the seawall structure and its exterior sheathing in such a way as to provide appropriate undulation to dissipate overtopping waves at the same time as ensuring that the undulation area appears to be a seamless component of the rest of the structure and not an anomalous feature as first proposed. Given the orientation of the drainage areas and the seawall, there is not an area within which landscaping or other camouflaging elements could also be included to help soften this view impact (as is also typically applied to seawall cases by the Commission)~~significantly~~, including because any such screens would effectively block other views down the slope from above as well. However, incorporating the drain area more integrally into the seawall finish overall should be sufficient in this case to address the public viewshed impacts appropriately. Accordingly, ~~and given the identified engineering need,~~ this approval is conditioned to require that this bench area is faced with a sculpted concrete surface that mimics natural undulating bluff landforms in the vicinity and is visually cohesive with the other elements of the proposed seawall, including ~~at least ensure that the drainage rock located at the top bench of the seawall is similar in color to the surrounding natural bluffs and the concrete surface of the seawall, and~~ to ensure that the seaward edges of the seawall ~~holding the rock~~ are contoured in a non-linear manner (as opposed to a straight-line that would appear to describe a box-like and unnatural shape). This mitigation will help offset the view impact, and the required removal of all extra riprap and the requirement to seamlessly connect the wall to the downcoast bluffs will also help to address this impact as well (see Special Condition 1).

b. Modify Special Condition 1(e) on staff report page 31 as follows

Drainage Bench Parameters. The drainage bench area shall be reconfigured so that it is surfaced in concrete similar to the rest of the seawall, and so that such surface 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 other components of the seawall, with the County's upcoast Pleasure Point seawall, and with the unarmored bluff downcoast. Any rock used shall be encased in such a way as to provide appropriate undulation to dissipate overtopping waves at the same time as ensuring that the undulation area appears to be a seamless component of the rest of the structure and not an anomalous feature. The seaward edge of the ~~drainage areas at the~~ top of the seawall shall be shaped in a curvilinear and non-linear manner designed to avoid a straight-line appearance~~, to conceal the drain rock as much as possible as seen from above,~~ and to evoke natural bluff undulations as much as possible. ~~All drain rock used in the drainage area shall be similar in color to the surrounding natural bluff landforms and the concrete surface of the seawall.~~

4. Paleontological Resources

The bluff on the project site may contain scientifically important fossils, similar to fossils that were unearthed during construction of the upcoast Pleasure Point seawall. Coastal Section 30244 requires that reasonable mitigation measures be employed where development would adversely impact paleontological resources. Thus, Special Condition 2 (Construction Plan) needs to be modified to ensure that the proposed project is consistent with Coastal Act Section 30244. the following is added as subsection 2(e) of Special Condition 2 near the top of staff report page 34:

> Paleontological Resources. Should paleontological resources be encountered during project construction, all activity that could damage or destroy these resources shall be temporarily suspended until a qualified paleontologist has examined the site and mitigation measures have been developed and submitted to the Executive Director for review and approval that address and proportionately offset the impacts of the project on paleontological resources.

5. 20-year Approval

Staff's recommended Special Condition 4 authorizes the seawall project for 20 years (see staff report page 34). The intent of this condition is address the uncertainty associated with shoreline armoring projects such as this, particularly the changing physical circumstances at this site over time. The Commission has recently conditioned other armoring projects with a similar condition requiring re-review after a certain time (e.g., CDP 6-07-133, Li (20 years); CDP 6-08-073, DiNoto (30 years); CDP 6-08-122, Winkler (30 years); CDP 6-03-033-A5, Surfsong Condominiums (20 years); CDP 6-08-068, Hamilton (20 years); CDP 6-07-134, Brehmer, Matchinske, and Caccavo (22 years)). The appropriate length of the time period for such reevaluation in any particular case is a matter of professional judgment based on the facts at issue. In this case staff, including the Commission's senior coastal engineer, believes that 20 years represents an appropriately conservative approach to addressing Coastal Act requirements, including in light of how long such structures tend to last without major maintenance and/or modification, and particularly in light of changing climatic conditions and their effect on coastal erosion and retreat. The staff report, however, inadvertently omitted certain text relevant to this discussion. Thus, the staff report is modified as follows:

a. Modify the fourth paragraph on staff report page 4 as follows:

> To ensure that this project does not prejudice future shoreline planning options, including with respect to changing and uncertain circumstances that may ultimately change policy and other coastal development decisions (including not only climate change and sea level rise, but also due to legislative change, judicial determinations, etc.), staff recommends that this approval be conditioned for a twenty-year period. Despite applicant projections much further out than that, it has been staff's experience that shoreline armoring, particularly in such a significantly high-hazard area as this project, tends to be augmented, replaced, and/or substantially changed within about twenty years. The intent of the twenty-year authorization is to recognize this time-frame reality, and also to allow for an appropriate reassessment of continued armoring at that time in light of what may be differing

circumstances than are present today. Of course it is possible that physical circumstances as well as local and/or statewide policies and priorities regarding shoreline armoring are significantly unchanged from today, but it is perhaps more likely that the baseline context for considering armoring will be different – much as the Commission's direction on armoring has changed over the past twenty years as more information and better understanding has been gained regarding such projects, including their affect on the California coastline.

b. Modify the text starting with the last paragraph on staff report page 16 as follows:

Such passive erosion impacts can be calculated over the time the proposed armoring is expected to last. In this case, the Applicant indicates that the proposed seawall will have a 100-year lifetime over which time such impacts will be in effect. However, it has been the Commission's experience that the actual expected lifespan of shoreline armoring projects is often substantially less than 100 years due to the need for major maintenance or modifications, or entire redevelopment of an armoring structure within a much shorter timeframe. In this case, the proposed seawall can be expected to be subject to heavy wave action on a fairly regular basis. This wave action can only be expected to be exacerbated by sea level rise over time, with resultant impacts to the strength and integrity of the seawall. For example, the project design, while limited in height due to the backshore development, was analyzed for a still water level of 7.3 feet MSL and 9.3 feet MSL, the latter based on an estimated 2-foot rise in sea level. Although these still water levels include extreme high water conditions, elevated water due to El Niños, atmospheric forcing and some rise in sea level, there are great uncertainties now, as discussed above, in the amount of future sea level rise that should be considered for project design, and the Applicant's analysis has erred on the low end of this spectrum as opposed to a more conservative and higher end (e.g., the 4.5 to 6 foot estimates indentified above). And, in this case, the entire residence is located seaward of the bluff edge and thus the proposed seawall will need to be located relatively further seaward than most armoring structures in order to provide adequate protection for the existing residence (see page 4 of Exhibit B), and thus all of these impacts will be intensified. In other words, despite the Applicant's 100-year projection, it has been Commission's experience that shoreline armoring, particularly in such a significantly high-hazard area as this project, tends to be augmented, replaced, and/or substantially changed within about twenty years. Rising sea levels and attendant consequences will tend to further delimit such time period in the future, potentially dramatically depending on how far sea level actually rises.

The other factor that is appropriate to consider when identifying a particular horizon for a seawall in an approval is the changing and somewhat uncertain nature of the context affecting coastal development decisions regarding armoring (including not only climate change and sea level rise, but also due to legislative change, judicial determinations, etc.). A twenty-year period better responds to such potential changes and uncertainties, including to allow for an appropriate reassessment of continued armoring and its effects at that time in light of what may be differing circumstances than are present today, including with respect to its physical condition after twenty years of hard service. In addition, with respect to climatic change and sea level rise specifically, the understanding of these issues should improve in the future, given better understanding of the atmospheric and oceanic

linkages and more time to observe the oceanic and glacial responses to increased temperatures, including trends in sea level rise. Such improved understanding will almost certainly affect CDP armoring decisions, including at this location. Of course it is possible that physical circumstances as well as local and/or statewide policies and priorities regarding shoreline armoring are significantly unchanged from today, but it is perhaps more likely that the baseline context for considering armoring will be different – much as the Commission's direction on armoring has changed over the past twenty years as more information and better understanding has been gained regarding such projects, including their affect on the California coastline.

CALIFORNIA COASTAL COMMISSION
CENTRAL COAST DISTRICT OFFICE
725 FRONT STREET, SUITE 300
SANTA CRUZ, CA 95060
PHONE: (831) 427-4863
FAX: (831) 427-4877
WEB: WWW.COASTAL.CA.GOV

W16b

Filed:	3/17/2010
180th day:	9/13/2010
Staff report prepared:	7/28/2010
Staff report prepared by:	Susan Craig
Staff report approved by:	Dan Carl
Hearing date:	8/11/2010

COASTAL DEVELOPMENT PERMIT APPLICATION

Application number.....**3-09-042, O'Neill Seawall**

Applicant.....Jack O'Neill

Project location.....At the toe of the bluff and on the beach seaward of 2-3610 East Cliff Drive fronting the Pleasure Point surfing area in the unincorporated Live Oak area of Santa Cruz County (APNs 032-251-08 and 032-251-09).

Project description.....Construct a faux bluff sculpted concrete seawall with a two-foot-wide public pathway near the bottom to provide a connection across the seawall from the upcoast beach/rocky shelf to the downcoast beach/rocky shelf.

File documents.....California Coastal Commission coastal development permit (CDP) files P-78-463 and P-81-463; Santa Cruz County CDP Exclusion 09-0920; Santa Cruz County certified Local Coastal Program (LCP); *Coastal/Geotechnical Investigation for Modified Bluff Protection Structure, 2-3610 East Cliff Drive, Santa Cruz, California* by Haro, Kasunich and Associates, Inc., dated December 2008; *O'Neill Residence Seawall Modification Project Description* by Mesiti-Miller Engineering dated March 2009.

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

A.Staff Recommendation

1. Summary of Staff Recommendation

The proposed project site is located just seaward of East Cliff Drive along a low-lying rocky shelf that is directly above the sandy beach in the Pleasure Point portion of the Live Oak beach area of Santa Cruz County. The existing residence on the site is located seaward of the blufftop edge and extends up the bluff face. This residence is protected by a riprap revetment at the base of the bluff adjacent to and below the residence. The site is subject to heavy wave action, and the effectiveness of the riprap revetment has diminished over time due to seaward migration and scattering of the riprap boulders from wave run-up and erosion of fill material beneath the revetment.

The proposed project consists of a grouted riprap and concrete encased seawall that would merge with

the end of Santa Cruz County's Pleasure Point seawall at the upcoast end of the project site[1] and would extend downcoast just past the existing residence. The core of the wall would consist of grouted and un-grouted quarry-stone riprap surfaced with a reinforced concrete veneer. The proposed project includes reuse of existing scattered riprap that is located seaward of the residence for use in the grouted riprap seawall. The alignment of the proposed seawall will generally follow the existing topographical contours of the bedrock shelf, which projects seaward as it curves around the residence, giving the wall an undulating relief. The majority of the riprap within the footprint of the proposed seawall will be covered by a reinforced shotcrete surface that will include re-curve indentations at two elevations along the wall alignment. The re-curved areas will be shaped to mimic existing wave-cut bedrock faces on the upcoast and downcoast sides of the Applicant's property. The Applicant proposes to sculpt, color, and texture the concrete facing of the proposed seawall to approximate the natural surrounding bluff face. The Applicant also proposes construction of a two-foot-wide pathway along the lower platform of the proposed seawall to provide an access connection from the upcoast pocket beach, across the seawall, to the downcoast pocket beach. The Applicant proposes this access improvement as mitigation to offset impacts associated with constructing a seawall at this location.

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 provides 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 certain degree. This new 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., coverage of a portion of beach, retention of potential beach material, and long-term loss of beach due to passive erosion) can be mitigated with conditions to appropriately offset such impacts.

Specifically, the Applicant has proposed mitigation (the two-foot-wide public access path) and is also willing to allow additional mitigation through deed restricting his adjacent undeveloped blufftop property for public access, recreation, and open space uses and development in perpetuity. These overtures form the basis for an appropriate mitigation package through conditions. The proposed integrated public access pathway can be conditioned so that over time, with sea level rise, the path is moved to a slightly higher elevation, if necessary, so that it continues to provide usable access over time. In addition, the Applicant's undeveloped downcoast property can be deed restricted for public recreational access and open space uses and allowed to continue to erode such that new beach area can also be created (as adjacent unarmored bluffs erode over time). Together, these mitigations can appropriately offset the public recreational access and sand supply impacts associated with the project. 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 and conditioned includes adequate construction best management practices to protect water quality and public recreational access during construction activities.

[1] The Pleasure Point seawall was approved by the Commission in December 2007 and is currently nearing completion.

Thus, in this case and in this context, approval consistent with the Coastal Act is possible. That said, regarding the more general issue of how best to address existing and augmented shoreline armoring more generally, such as is 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. In addition, the prospects of climate change and accelerated sea level rise are bringing these issues to the fore in a manner that requires the Commission to consider both individual and cumulative impacts at perhaps a broader scale than ever before.

The proposed project site and the sites directly adjacent upcoast and slightly farther 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 or not to armor, 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 directly upcoast of the proposed project site (this County seawall project is currently under construction and nearing completion) and a similar 300 linear-foot seawall located downcoast of the proposed project site. These seawalls join other seawalls protecting both private and public development and infrastructure along this stretch of coast. In short, 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 and public resources.

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 and can be conditioned to provide important public access measures designed to offset project impacts as well as to add to the other public access amenities in the area. Thus, in this case, the project includes appropriate mitigation for the sand supply and related public recreational 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 caused by individual armoring projects and the overall cumulative effect of armoring projects taken 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 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, the larger planning and cumulative impact questions related to shoreline erosion and armoring are not readily addressed through an individual project. Rather, projects such as the one proposed are probably best shaped to provide the best possible Coastal Act outcome for a site, including providing impact mitigation, as is the case here. Such an outcome does not preclude or prevent potential future efforts to address California's beaches and shoreline more globally or within specific regions. On the contrary, it is expected that this site, along with other armored sites like it, must be part of any overall solution, and this project does not change that premise.

To ensure that this project does not prejudice future shoreline planning options, including with respect to changing and uncertain circumstances that may ultimately change policy and other coastal development decisions (including due to legislative change, judicial determinations, etc.), staff recommends that this approval be conditioned for a twenty-year period. Despite applicant projections much further out than that, it has been staff's experience that shoreline armoring, particularly in such a significantly high-hazard area as this project, tends to be augmented, replaced, and/or substantially changed within about twenty years. The intent of the twenty-year authorization is to recognize this time-frame reality, and also to allow for an appropriate reassessment of continued armoring at that time in light of what may be differing circumstances than are present today. Of course it is possible that local and/or statewide policies and priorities regarding shoreline armoring are significantly unchanged from today, but it is perhaps more likely that the baseline context for considering armoring will be different – much as the Commission's direction on armoring has changed over the past twenty years as more information and better understanding has been gained regarding such projects, including their affect on the California coastline.

Therefore, staff recommends that the Commission approve a CDP for the proposed project, along with mitigations for the impacts of the project, including but not limited to: 1) authorization of the seawall for a period of twenty years; 2) provisions to ensure that the project emulates and evokes natural bluff landforms as much as possible; 3) a continuing commitment to ensure that the public access path is maintained and available for public use for as long as the seawall or blufftop residential development is present, including future modifications to the public access path in response to sea level rise; 4) a

prohibition on development on the adjacent downcoast property, except for public access, recreation, and open space uses; 5) removal of the riprap proposed to be retained on the downcoast portion of the property; 6) requirements for other agency approvals; 7) assumption of risk, waiver of liability and indemnity agreements for coastal hazards; 8) monitoring and maintenance of the as-built project; 9) a revised landscaping plan to include only low-growing native blufftop plants to provide additional visual mitigation; 10) appropriate best management practices to protect water quality and public access during construction, and; 11) recordation of a deed restriction against the property 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 3-09-042 pursuant to the staff recommendation. I recommend a yes vote.

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 just seaward of East Cliff Drive along a low-lying rocky shelf that is directly above the sandy beach. The project site geology consists of basal Purisima siltstone/sandstone bedrock overlain by coastal terrace deposits. These terrace deposit materials are very susceptible to coastal erosion from ocean wave run-up and terrestrial runoff, and at the project location have eroded to expose a more durable bedrock platform that projects seaward from the existing residence. The elevation of the top of the bedrock platform is about 12 feet above National Geodetic Vertical Datum (NGVD) and the toe of the bedrock platform sits at an elevation of about -7 feet NGVD. The bluff above the bedrock platform is approximately 25 feet tall (i.e., the top of the bluff is at an elevation of about +37 feet NGVD) and its slope is about 45 degrees. The existing residence on the project site is built into the slope of the bluff (i.e., the house's foundation is located at an elevation of about +18 feet NGVD and the lower two floors are built into the slope at an elevation of between +18 NGVD and about +37 NGVD). Only the top floor of the structure extends above the elevation of the bluff edge, and the entire house is located

seaward of the bluff edge. There are no other residences located immediately adjacent, either upcoast or downcoast, to the project site.[2]

The existing residence is protected by a riprap revetment at the base of the bluff adjacent to and below the residence. The effectiveness of the riprap revetment has diminished over time due to seaward migration and scattering of the riprap due to wave run-up and erosion of fill material beneath the revetment.

In addition to the parcel on which the residence is located, the proposed project will extend onto the immediately adjacent upcoast and downcoast parcels. The upcoast parcel (APN 032-251-08) is owned by Santa Cruz County and is the location where the County's Pleasure Point seawall terminates. The project proposes to tie into the County's seawall.[3] In the meantime, the County's CDP provides for a temporary riprap transition.[4]

See Exhibit A for the project location map and Exhibit C for photographs of the project site.

B. Site CDP History

In 1978 the Commission approved CDP P-78-463, which allowed for the installation of about 400 cubic yards of riprap in a two-rock-deep stack on the beach fronting the existing residence at 2-3610 East Cliff Drive. Prior to that approval, the Applicant's residence was protected from wave attack by a coating of gunnite[5] that covered the base of the house and some of the bedrock platforms around it. In 1981 the Commission approved an amendment to P-78-463 (CDP P-81-463), which allowed for restacking of the existing riprap and the addition of about 100 tons of rock to the revetment. In response to severe erosion at the site due to the El Niño storms of 1982-83, in September 1983 the Applicant received authorization to perform maintenance on the existing riprap revetment (subject to Special Condition 3 of P-78-463) and to add 150 tons of new riprap to the revetment. Over time, the revetment has migrated from its permitted configuration such that it now extends significantly more seaward and also upcoast and downcoast.

In 2007, the Commission approved CDPs for Santa Cruz County's Pleasure Point seawalls and the East

---

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

3 The Applicant underwent a preliminary grading review for the project by the County's Planning Department (local application number 09-0110). The County's review indicated that before any work occurs on the County-owned parcel, the Applicant will need to complete a written agreement with the County Redevelopment Agency and the Department of Public Works to allow any work and the installation of a portion of the proposed structure on County-owned property, and also agree to provisions for future maintenance of the seawall.

4 This temporary riprap transition armoring is allowed through November 1, 2011 or until such time as the Commission determines its ultimate disposition (i.e., through this CDP application), whichever occurs first.

5 The house was originally constructed prior to 1972 (i.e., prior to coastal permitting requirements), and the application of gunnite to the base of the house and some of the bedrock at the base appears to have also taken place prior to 1972.

Cliff Drive redevelopment project, which included direct reference to development at this site.[6] Specifically, in addition to the aforementioned temporary transition riprap, some components of the existing residential development at this location (i.e., fencing, driveway, landscaping, etc.) extend into the public right-of-way of East Cliff Drive. The Commission's 2007 approval was conditioned to require reconfiguration of the split rail fence along the recreational trail that fronts the Applicant's residence so as to maximize space for recreational trail improvements while avoiding existing cypress trees, and for removal of private fences in the trail area. Conversely, a component of the County's approved recreational trail is located on the Applicant's adjoining undeveloped property, and the Commission's approval was likewise premised on that area becoming public.[7]

In December 2009, the County issued CDP Exclusion 09-0290, which allowed for a lot line adjustment that affected three parcels: the subject parcel and the two adjacent downcoast undeveloped parcels, also owned by the Applicant. The lot line adjustment resulted in two parcels: an expanded residential parcel and a larger downcoast undeveloped parcel that combined the two parcels that were present there. See Exhibit D for the current parcel configuration.[8]

C. Project Description

According to the Applicant's geotechnical representative, the existing riprap revetment at the site requires substantial rehabilitation or replacement with a more durable long-term solution in order to ensure continued protection of the existing residence. To remedy the situation, the Applicant is proposing a grouted riprap concrete-encased seawall. The proposed seawall would merge with the end of the Pleasure Point seawall at the upcoast end of the project site and would extend downcoast just past the existing residence. The proposed seawall would be keyed into the Purisima sandstone bedrock to an elevation of -5.0 feet NGVD. The proposed seawall would slope upward and landward to an elevation of about +22.0 feet NGVD. The alignment of the proposed seawall would generally follow the existing topographical contours of the bedrock shelf, which projects seaward as it curves around the residence, giving the wall an undulating relief.

The core of the wall would consist of grouted and un-grouted quarry-stone riprap surfaced with a reinforced concrete veneer. The proposed project would include reuse of existing scattered riprap that is located on the beach seaward of the residence for use in the grouted riprap seawall. Riprap rock removed from the beach during construction of the adjacent Pleasure Point seawall also would be reused as much as possible in the proposed seawall. In addition, the proposed project would include the importation of new riprap rock to the site to make up much of the massing of the wall itself. Existing riprap that covers about a 289 square foot portion of the downcoast bedrock shelf is proposed to remain in place to address

---

6 Santa Cruz County's seawall project was approved by the Commission on December 13, 2007 (combined CDPs 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.

7 The Applicant is currently in negotiations with the County regarding this issue.

8 The project plans in Exhibit B show the property lines before the lot line adjustment was approved by the County. See Exhibit D for the current configuration of property lines.

potential end effects of the seawall (edge scour, etc.) and to protect a bedrock terrace viewing platform and an existing coastal access footpath located on the downcoast undeveloped parcel.

The keyway and surface layers of rock would be grouted to each other to secure them into place. The riprap would not be visible except for some large cobble/small boulder-sized rocks that would be exposed on a bench at the top of the structure to absorb wave run-up and to facilitate drainage (from wave overtopping) back to the ocean. The drainage system will consist of catch basins and 12-inch diameter drain pipes concealed in the riprap on the bench at the top of the seawall. All other riprap within the footprint of the proposed seawall will be covered by a reinforced shotcrete surface that will be re-curved at two elevations along the wall alignment. The re-curved areas will be shaped to mimic existing wave-cut bedrock faces on the upcoast and downcoast sides of the Applicant's property. The shotcrete surface would be sculpted to match the textures of the native Purisima bedrock and stained to match its color.

The proposed project also includes construction of a two-foot-wide pathway or "goat trail" on the lower platform of the proposed seawall at an elevation of about +6.0 NGVD, which is about four feet above the mean high tide line. The proposed pathway is intended to provide new access to surfers and others, leading from the upcoast adjacent beach over the bedrock platform and terminating at the bedrock platform and beach on the downcoast portion of the property.

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

See Exhibit B for project plans and for photographic simulations of the proposed project.

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 significantly 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, including 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 at times historically permitted at-grade structures within geologic setback areas, 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

For the purposes of shoreline protective structures, the Coastal Act distinguishes between development that is allowed shoreline armoring, and development that is not. Under Section 30253, new development

is to be designed, sited, and built to allow the natural process of erosion to occur without creating a need for a shoreline protective device. Coastal development permittees for new shorefront development are thus making a commitment to the public (through the approved action of the Commission, and its local government counterparts) that, in return for building their project, the public will not lose public beach access, offshore recreational access, sand supply, visual resources, and natural landforms, and that the public will not be held responsible for any future stability problems.

Coastal Act 30235 allows for shoreline protection in certain circumstances (if warranted and otherwise consistent with Coastal Act policies) for "existing" structures. One class of "existing structures" refers to those structures in place prior to the effective date of the Coastal Act. Coastal zone development approved and constructed prior to the Coastal Act went into effect was not subject to Section 30253 requirements. Although some local hazard policies may have been in effect prior to the Coastal Act, these pre-Coastal Act structures have not necessarily been built in such a way as to avoid the future need for shoreline protection (in contrast to those evaluated pursuant to Section 30253 and similar LCP policies since).

A second class of existing structures refers to those structures that have been permitted since the effective date of the Coastal Act. There has long been discussion that these structures should not constitute "existing structures" for purposes of Section 30235 because they were developed pursuant to 30253 (and/or similar LCP) standards so as not to require shoreline armoring in the future. However, the Commission has generally interpreted "existing" to mean structures existing at the time the armoring proposal is being considered, whether these structures were originally constructed before or after the Coastal Act, and has not limited consideration of armoring only to those structures constructed prior to the Coastal Act.

And finally, in a limited number of cases, the Commission has required applicants for blufftop structures to waive any right to a seawall that may exist pursuant to Section 30235; in other words to stipulate that they are not existing structures for 30235 purposes because the structures have been sited and designed to not need shoreline armoring in the future (pursuant to Section 30253 and LCP counterpart policies).

In this case, 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)[9] 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

[9] Proposition 20's coastal permitting requirements began in 1973.

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).

In this case, the entire residence is located seaward of the blufftop edge and extends up the bluff face. The bluffs upcoast of this site, at Pleasure Point, have experienced average annual long term erosion of approximately 8 to 12 inches per year. Such erosion does not occur as small incremental amounts each year, but more often as several feet to ten feet of retreat during a significant winter storm and then only small amounts of retreat during other years. In addition to erosion, the subject site 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 and impacts from wave attack. The Commission's senior engineer concurs. The existing structure is "in danger from erosion" as that term is understood in a Coastal Act context, and thus the project 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 existing endangered structure.[10] 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 built into the bluff face and is located entirely seaward of the bluff top edge, is immediately threatened and in danger from erosion absent some form of redeveloped armoring of the bluff.

Relocation of the threatened structures inland is another alternative typically considered. In this case, the relatively flat blufftop area of the site that is located between the street right-of-way and the blufftop edge is only about 900 square feet. Setback requirements from the road and from the blufftop edge

[10] 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.

would render the blufftop portion of the project site essentially undevelopable. Thus, given the extremely limited site area available, there is not adequate space to relocate the existing residence on the site without extending residential components into the adjacent public right-of-way or setback areas associated with East Cliff Drive. Even if the residence were demolished and reduced in size, there would not be adequate development area on the site to accommodate a residence. In any case, such a project would be better described as a demolition and rebuild project rather than relocation of an existing structure.[11]

Another alternative would be to limit the project to repairing and restacking the existing revetment. This is feasible, although this option is better conceptualized as extending the useful life of the existing revetment somewhat, but this option would not address issues associated with migration of riprap onto lower portions of the beach and it would engender most of the same coastal resource issues as would the proposed project. Also, this limited option would continue to cover significant beach area and would not provide for the visual enhancements of the proposed project with respect to contouring and surfacing the face of the seawall to 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, relocation of structures inland, abandonment of structures, etc.). However, such options appear not to be feasible at this location at this time.[12]

The proposed seawall would extend about 35 feet seaward of the existing house and would cover a portion of beach area. This seaward extension of the proposed seawall is necessary because the existing residence is located on the bluff face (instead of the blufftop) and is thus located in a very hazardous location and is subject to intense storm/wave attack somewhat differently than blufftop development typically is. The Commission's senior engineer has concluded that the proposed seawall requires this proposed depth and mass, including its seaward extension, to effectively protect the endangered existing structure at this location, and that lesser armoring alternatives (e.g., pulled closer inland, etc.), would not protect the residence. That said, the proposed retention of riprap at the downcoast end of the seawall is not needed to protect the existing residence. The seawall would effectively be keyed back into the bluff,

---

[11] The Applicant also owns the undeveloped property located inland of the residence and across East Cliff Drive from the subject site (see property identified as "refueling and material storage area" on page 5 of Exhibit B). Conceivably, such a rebuild alternative could conceptually be extended to this undeveloped property as well. However, in addition to this option constituting a demo/rebuild, it would also be akin to abandoning the subject site.

[12] Of course, if, in the future, the State or even local governments embrace planned retreat as a strategy, the removal of a hard armoring structure at the project location would be a small part of that program inasmuch as many miles of hard armoring would need to be removed and other shore-fronting development retired to allow for the strategy to work comprehensively.

and the riprap would not serve to protect the residence so much as armor a small section of the adjacent undeveloped property. As such, it is not appropriate to keep this riprap, or any riprap,[13] in addition to the proposed seawall (see Special Condition 1).[14]

Given all the above, the proposed project (absent the additional riprap) is "required" to protect the existing endangered 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 that formed when land and sea levels differed from current conditions. Since the marine terraces were once beaches, much of the material in the terraces is often beach-quality sand or cobble, and is a valuable contribution to the littoral system when it is added to the beach. While beaches can become marine terraces over geologic time, the normal exchange of material between beaches and bluffs is for bluff erosion to provide beach material. Bluff retreat and erosion is a natural process resulting from many different factors such as erosion by wave action causing cave formation, enlargement and eventual collapse of caves, saturation of the bluff soil from groundwater causing the bluff to slough off, and natural bluff deterioration. When the back-beach or bluff is protected by a shoreline protective device, the natural exchange of material either between the beach and dune or from the bluff to the beach will be interrupted and, if the shoreline is eroding, there will be a measurable loss of material to the beach. 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.

---

[13] Other than this area of riprap at the downcoast edge of the seawall, the proposed project already includes the removal of all other riprap from the beach area.

[14] The Applicant is in agreement regarding removal of this riprap.

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.[15] 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 site).[16] 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.[17]

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.[18]

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 cover approximately 1,550 square feet of sandy beach area (which comprises a portion of the sandy beach area presently covered by the existing riprap revetment). The loss of a square foot of beach area can be roughly converted to the volume of sand that would be required to nourish an equivalent area of beach. There is a rough rule of thumb that it takes between 1 to 1.5 cubic yards of sand to establish 1 square foot of dry beach through nourishment.[19] The Commission has not

---

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

[16] USACOE, San Francisco District, 1994.

[17] Griggs and Best, 1991.

[18] 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.

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

been able to establish an actual conversion factor for the Pleasure Point vicinity. However, if a 1.0 conversion factor is used that assumes that the active range of sand transport is at the lower limit of the expected range (i.e., the low end of the spectrum of values typically assumed by coastal engineers), a conservative estimate of the cubic yard equivalent of 1,550 square feet of beach sand per year can be calculated. Using the same conversion factor described above, the sand volume equivalent for the direct loss of beach due to encroachment by the proposed project would be 1,550 cubic yards of beach-quality sand.[20]

Fixing the back beach

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

In addition, sea level has been rising 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 4.5 to 6 feet by the year 2100[21]). Mean sea level affects shoreline erosion several ways, and an increase in the average sea level will exacerbate all these conditions. On the California coast the effect of a rise in sea level will be the landward migration of the intersection of the ocean with the shore. This, too, leads to loss of the beach as a direct result of the armor as the beach is squeezed between the landward migrating ocean and the fixed backshore.

Such passive erosion impacts can be calculated over the time the proposed armoring is expected to last. In this case, the Applicant indicates that the proposed seawall will have a 100-year lifetime over which time such impacts will be in effect. However, it has been the Commission's experience that the actual expected lifespan of shoreline armoring projects is often substantially less than 100 years due to the need

---

rebuild one square foot of beach; if the range of reversible sediment transport is larger than 40 feet, it will take more than 1.5 cubic yards of sand to rebuild one square-foot of beach.

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

[21] The California Climate Action Team has evaluated possible sea level rise for the California coast and, based on several of the Intergovernmental Panel on Climate Change (IPCC) scenarios, projected sea level rise up to 1.4 meters (4.5 feet) by 2100. These projections are in line with 2007 projections by Stefan Rahmstorf ("A Semi-Empirical Approach to Projecting Future Sea-Level Rise", *Science*; Vol 315, 368 – 370. Research by Pfeffer et al. ("Kinematic Constraints on Glacier Contributions to 21st-Century Sea-Level Rise", *Science*, Vol, 321, 1340 – 1343) projects up to 2 meters of sea level rise by 2100.

for major maintenance or modifications, or entire redevelopment of an armoring structure within a much shorter timeframe. In this case, the proposed seawall can be expected to be subject to heavy wave action on a fairly regular basis. This wave action can only be expect to be exacerbated by sea level rise over time, with resultant impacts to the strength and integrity of the seawall. And, in this case, the entire residence is located seaward of the bluff edge and thus the proposed seawall will need to be located relatively further seaward than most armoring structures in order to provide adequate protection for the existing residence (see page 4 of Exhibit B), and thus all of these impacts will be intensified. In other words, despite the Applicant's 100-year projection, it has been Commission's experience that shoreline armoring, particularly in such a significantly high-hazard area as this project, tends to be augmented, replaced, and/or substantially changed within about twenty years.

The other factor that is appropriate to consider when identifying a particular horizon for a seawall in an approval is the changing and somewhat uncertain nature of the context affecting coastal development decisions regarding armoring (including due to legislative change, judicial determinations, etc.). A twenty-year period better responds to such potential changes and uncertainties, including to allow for an appropriate reassessment of continued armoring and its effects at that time in light of what may be differing circumstances than are present today, including with respect to its physical condition after twenty years of hard service. Of course it is possible that local and/or statewide policies and priorities regarding shoreline armoring are significantly unchanged from today, but it is perhaps more likely that the baseline context for considering armoring will be different – much as the Commission's direction on armoring has changed over the past twenty years as more information and better understanding has been gained regarding such projects, including their affect on the California coastline.

For these reasons, the Commission uses a design life of 20 years for the proposed seawall in these findings, and implements the 20-year period through conditions (see Special Condition 4).

The Commission has established a methodology for calculating passive erosion, or the long-term loss of beach due to fixing the back beach. This impact is equivalent to the footprint of the bluff area that would have become beach due to erosion and is equal to the long-term average annual erosion rate multiplied by the width of property that has been fixed by a resistant shoreline protective device.[22] In this case, the proposed seawall will extend out over Purisima siltstone bedrock that projects seaward at the base of the parcel and upon which the residence sits. The proposed seawall will also cover some areas of sandy beach and for purposes of determining the impacts from fixing the back beach, it is assumed that new beach area would result from landward retreat of the bluff. The shoreline is irregular and indurated, but the area affected by passive erosion can be approximated as a 130-foot-long curvilinear bluff. The Applicant's geotechnical consultant estimated the average bluff recession for this site at 10 inches per year, which is within the regional range of 8 to 12 inches per year. Therefore the average impacts from fixing the back beach will be the annual loss of 108.3 square feet of beach. Over the 20-year permit horizon, this would result in a loss of 2,166 square feet of beach that would have been created if the back

[22] 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: $Aw = R \times L \times W$. The annual loss of beach area can be expressed as $Aw' = R \times W$.

beach had not been fixed by the proposed seawall. Using the beach-area to beach-sand conversion discussed above, this would be equivalent to an annual loss of 108.3 cubic yards of beach quality sand, and a loss over twenty years of 2,166 cubic yards of beach quality sand, that can be attributed to fixing of the back beach.

Retention of Potential Beach Material

If natural erosion were allowed to continue (absent the existing revetment 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 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 that 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.[23] The Applicant indicates (and the Commission's senior engineer concurs) that this impact is roughly 59 cubic yards of sand per year for the proposed seawall project. Over the course of the identified 20-year horizon, this equates to a retention impact of 1,180 cubic yards of beach quality sand.

Beach and Sand Supply Impacts Conclusion

The proposed project would result in quantifiable shoreline sand supply impacts. There would be beach sand loss due to: 1) placement of revetment rock onto approximately 1,550 square feet of sandy beach that otherwise would be available for public use (equating to 1,550 cubic yards when converted for volume); 2) fixing of the back beach location, resulting in the loss of 2,166 square feet of sandy beach that would have been created over the 20-year horizon (108.3 square feet of loss annually, equating to 108.3 cubic yards annually and 2,166 cubic yards over 20 years when converted for volume); and; 3) retention of 1,180 cubic yards of sandy material over the 20-year horizon (59 cubic yards of sand per year). If these impacts were to be mitigated through a beach nourishment effort, the impacts would be

[23] 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).

comparable to the deposition of 1,550 cubic yards of beach quality sand at the start of the project (or roughly 155 large truck loads), and about 170 cubic yards (or roughly 17 large truck loads) of beach-quality sand yearly. Over twenty years, these impacts would equate to a total of nearly 5,000 cubic yards of sand.[24]

It has proven difficult over the years to identify appropriate mitigation for such impacts. Partly this is because creating an offsetting beach area is not an easy task, and finding appropriate properties that could be set aside to become beach area over time (through natural processes, including erosion) is difficult both due to a lack of such readily available properties and the cost of such coastal real estate more broadly. As a proxy, other types of mitigation typically required by the Commission for such direct sand supply impacts have been in-lieu fees and/or beach nourishment, and in some cases compensatory beach access improvements. With regards to beach nourishment, a formal sand replenishment strategy can introduce an equivalent amount of sandy material back into the system over time to mitigate the loss of sand that would be caused by a protective device over its lifetime. Obviously, such an introduction of sand, if properly planned, can feed into the Santa Cruz Littoral Cell sand system to mitigate the impact of the project. However, as opposed to other areas with established programs (e.g., SANDAG in San Diego) there are not currently any existing beach nourishment programs directed at this beach area. Absent a comprehensive program that provides a means to coordinate and maximize the benefits of mitigation efforts in the area now and in the future, the success of piecemeal mitigation efforts, such as an Applicant-only project to drop equivalent amounts of sand over time at this location, is questionable.

As an alternative mitigation mechanism, the Commission oftentimes uses an in-lieu fee when in-kind mitigation of impacts is not available.[25] In situations where ongoing sand replenishment or other appropriate mitigation programs are not yet in place, the in-lieu mitigation fee is deposited into an account until such time as an appropriate program is developed, and the fees can then be used to offset the designated impacts. When mitigation funds are pooled in this way for multiple projects in a certain area, the cumulative impacts can also be better addressed inasmuch as the pooled resources can sometimes provide for a greater mitigation impact than a series of smaller mitigations based on individual impacts and fees. Based on an estimated range of costs for beach quality sand ranging from $25 to $50 per cubic yard delivered (or possibly more), an in-lieu fee in this case would range from about $125,000 to $250,000 or more.[26]

With respect to using beach access improvements to offset impacts, such mitigation is typically applied by the Commission to public agencies that are in the beach management business when they have

---

[24] That is, 1,550 cubic yards from encroachment, 2,166 cubic yards from passive erosion, and 1,180 cubic yards from retention of materials.

[25] See, for example, CDP A-3-SCO-06-006 (Willmott), CDP A-3-SLO-01-040 (Brett), CDP 3-98-102 (Panattoni) and CDP 3-97-065 (Motroni-Bardwell).

[26] Based on 4,896 cubic yards of such sand purchased today for $25 per cubic yard ($122,400) or $50 per cubic yard ($244,800).

applied for armoring projects.[27] It is more difficult to put the burden for a public project on a private applicant and thus such mitigation is atypical.[28]

The project's shoreline sand supply impacts translate directly into degradation of public access to and along the beach, and to the surf area offshore.[29] As such, shoreline sand supply mitigations targeted toward these access impacts is appropriate in this case. And fortunately, this case offers appropriate mitigation alternatives both at the seawall itself and directly adjacent to the seawall location (and under the control of the Applicant) that can effectively address these impacts. In terms of the former, the Applicant has proposed mitigation in the form of a two-foot-wide public access path that would be integrally constructed within the lower platform of the proposed seawall, above the mean high tide line, in order to provide access from the upcoast beach over and across the rocky outcropping on the Applicant's property to the downcoast beach and associated rocky platform. This type of mitigation is particularly appropriate at this location because it responds to a critical problem created by construction of the seawall; namely the fact that it will block lateral access along the beach at higher tides.[30] In addition, the seawall presents a potential obstacle to entering and exiting the surf during similar conditions; particularly important when a world class surf break like Pleasure Point is offshore and heavily used by the public. The proposed path will help offset these impacts by providing a means to get across and along the shoreline at the seawall location, including with respect to surfing ingress/egress, and particularly during times of higher tides and heavy surf when surfers may not be able to navigate to formal access points to exit the surf. This type of integral trail is similar to that built into another seawall recently approved by the Commission near the Hook,[31] and is similar in concept to the "goat trails" and areas of high relief also built into the adjacent Pleasure Point seawall for similar reasons. Although the Applicant's integral trail proposal is clearly a good start, there is a concern that over time this path will be less useful in providing access across the seawall as sea level rises. Fortunately, this issue is easily addressed by condition to ensure that the path be maintained and available for access connecting across the seawall and to/from the beach and adjacent areas of high relief for as long as the seawall is present, even if that means modifying the path in light of sea level rise over time (e.g., raising the pathway elevation while still camouflaging it as faux bluff).

With respect to the adjacent property, this undeveloped property is approximately 30,000 square feet (or about two-thirds of an acre), and it extends along the shoreline downcoast of the Applicant's residence and between East Cliff Drive and the ocean (given the undulating shoreline, extending some 100 to 150 feet, roughly, between the right-of-way and the ocean) (see Exhibits B and D). This adjacent property has long been used for informal public recreational access (foot trails, benches, beach and surfing access,

---

[27] For example, as recently required with respect to recreational access improvements along the Pleasure Point shoreline area of Santa Cruz County as part of the Commission's approval of a seawall fronting East Cliff Drive (CDPs A-3-SCO-07-015 and 3-07-019, approved December 13, 2007).

[28] Although the Commission has applied such a requirement for this type of impact before (see, for example, CDP 3-02-107, Podesto).

[29] See also Public Access finding below for further discussion.

[30] And even at lower tides as sea level rises.

[31] CDP 3-08-019 (Sea Breeze, LLC), approved December 11, 2009, which included a two-foot-wide public pathway at the base of the seawall to provide a connection from the upcoast beach around the rocky shelf to the downcoast coastal stair accessway at the Hook.

etc.), and it has long been a central gathering point for the Pleasure Point community. This property is ideally situated along the Pleasure Point shoreline for such pursuits, and it represents that last major piece of real estate seaward of East Cliff Drive in this area. These attributes make the property attractive as a mitigation site inasmuch as continuation of its current status for such pursuits has not been legally established,[32] and, perhaps just as important, it represents what is usually the elusive 'target property' that can be left alone and allowed to erode naturally and thus allow the natural shoreline and beach equilibrium process to continue to allow new beach area to form here. Such properties are exceedingly rare, and rarer still in an urban area such as this. In addition, the Applicant owns this property, and has indicated that he is willing to ensure that the property is allowed to be used as it currently is. The Applicant's interest in preserving the land in this way, and his willingness to consider such property a mitigation site, forms a firm foundation for resolving the aforementioned impacts. Thus, conditions are included to deed restrict the adjacent property (depicted on Exhibit D as the "new combined parcel # 032-251-12) against development other than public access, recreation, and open space uses and development as part of this approval, and to affirmatively embrace such public use and activity on this property going forth into the future (see Special Condition 5). The Applicant has indicated that he is in agreement with this condition. Taken together, the new access path across the seawall and the use of the adjacent undeveloped parcel for public access, recreation, and open space purposes exclusively will adequately mitigate for the sand supply impacts of the project (see also Public Access finding below for further discussion).

Thus, as conditioned, 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 or the offshore surfing area. 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 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 Applicant and the Commission are aware of any damage to or weathering

[32] As previously indicated, the Applicant is in negotiations with the County regarding the inland side of this property (nearest East Cliff Drive) as a portion of the County's recreational trail extends onto the portion of this property nearest the road.

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 require s monitoring and reporting programs. Such programs 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, and Special Condition 1 requires submission of revised project plans that show the current property lines on the project site and the upcoast undeveloped parcel as approved pursuant to County Coastal Permit Exclusion 09-0290.

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 property involved in the application (see Special Condition 11). This deed restriction will record the conditions of this permit as covenants, conditions and restrictions on the use and enjoyment of the property.

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, even with the 20-year horizon applied to this project, 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 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 and nearing completion. 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 are probably best 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 with associated impacts to public recreational access. The proposed project's impact to sand supply, and ultimately to public access, would result from the placement of the seawall onto approximately 1,550 square-feet of beach area that otherwise would be available for public use, by bluff retention of 59 cubic yards of sand per year for the lifetime of the proposed project, and by fixing of the back beach location, resulting in the annual loss of 108.3 square feet of sandy beach. All such impacts would be located at the site of a regionally significant public recreational access destination, Pleasure Point, thus only increasing the magnitude of the degradation to access that would result.

In addition, Pleasure Point is an extremely popular recreational surfing destination that is well known around the world. It is not uncommon to see more than 100 surfers in the water, even more when prime surfing conditions are present, and to see small groups of people lining East Cliff Drive both enjoying the shoreline view and watching the surfing below. Seawalls can affect waves, and thus surfing activities, due to changes in the interaction between waves and the bluffs (i.e., seawalls can change the reflection location of the wave, or change the amount of energy that is reflected). Reflection of wave energy can change the offshore wave patterns and diminish the quality of surfing waves. Often referred to as "backwash," reflected wave energy causes waves to break in unpredictable ways, and disrupts the clean line and peel of waves that make Pleasure Point a particularly high quality surf break. In addition, the passive erosion phenomenon described in the previous finding also effects surfing breaks inasmuch as a seawall stops shoreline retreat, and thus eliminates the potential areas within which a surf break might reestablish itself as sea level rises (i.e., makes it so that new 'tripping features' don't move inland, eventually leading to the loss of breaking waves).

In terms of potential offshore surfing impacts specifically, it appears that this project will have a negligible effect, including because the majority of this shoreline fronting the Pleasure Point surf area is

armored, and because the proposed seawall will replace existing armoring that is currently located in roughly the same location. According to recent USGS data, over time and based on the undersea bathymetry, the wave break at Pleasure Point is not expected to move landward much at all, perhaps a few meters, in the next 100 years – with or without seawalls in this location.[33] In other words, although seawalls have other detrimental effects, their effect on the main surfing break over time does not appear to be significant. Clearly, at times of very high tides (and particularly with smaller waves), there will be some additional reflection associated with the seawall that muddies the break, but this shouldn't be much more than current conditions, if at all. The removal of the riprap will also serve to amplify the reflection effect somewhat (and diminish the muddying effect), but this difference (and any reflection) shouldn't adversely effect the surfing break at Pleasure Point which is generally much further outside of the realm of such impact. Moreover, although the seawall will result in the loss of some sand that would be supplied to the system (as described above) that provides unknown sand bar formation and reef-filling (and that also causes waves to break), the effect of this singular impact on surfing is difficult to model and its effect is equally difficult to isolate and quantify. In short, the potential surfing impact due to this seawall appears to be negligible.

That said, the project will have an impact more generally on public recreational access (as described above), and specifically on surfing access with respect to ingress/egress, primarily. Fortunately, this case offers appropriate mitigation alternatives both at the seawall itself and directly adjacent to the seawall location (and under the control of the Applicant) that can effectively address such impacts (including potential surfing impacts otherwise). First, the proposed project includes incorporation of a new two-foot-wide public access pathway along the lower platform of the proposed seawall at an elevation about 4 feet above the mean high tide line. This pathway, which should not be understood as a wide promenade so much as a "goat trail" of sorts, would provide a connection from the upcoast pocket beach, over the seawall, to the downcoast pocket beach (see page 4 of Exhibit B). To ensure its continued usability in terms of upcoast and downcoast connections and in terms of high tide access over time, especially with respect to ongoing sea level rise (i.e., when the seawall would otherwise block and/or make such lateral access most difficult), this approval is conditioned (Special Conditions 1, 8, and 9) to ensure a seamless connection to the upcoast and downcoast pocket beaches and/or the high relief areas of the Pleasure Point seawall upcoast and the unarmored property downcoast. These conditions also require modification to the path (e.g., increase in elevation) over time if necessary to ensure that it always continues to be useable, including in light of sea level rise. In this sense, to be useable at higher tides, the path elevation would generally need to remain above mean higher high water (MHHW).

Furthermore, as discussed in the preceding finding, the Applicant has agreed to Special Condition 5, which prohibits development on the adjacent downcoast property (depicted on Exhibit D as "new combined parcel # 032-251-12"; also owned by the Applicant) except for public access, recreation, and open space development and uses, and affirmatively embraces such public use and activity on this

[33] Storlazzi, Curt D., Barnard, Patrick L., Collins, Brian D., Finlayson, David P., Golden, Nadine E., Hatcher, Gerry A., Kayen, Robert E., and Ruggiero, Peter, 2007, High-resolution topographic, bathymetric, and oceanographic data for the Pleasure Point area, Santa Cruz County, California; 2005-2007: U.S. Geological Survey Open-File Report 2007-1270, 23 p. [http://pubs.usgs.gov/of/2007/1270/].

property going forth into the future. This condition will ensure that this property continues to be used as it has historically been used by the public, including primarily by the Pleasure Point community, and also ensures that it is allowed to continue to erode such that new beach area can also be created, offsetting the loss of beach associated with the seawall itself. In addition, by removing the riprap from the downcoast edge of the seawall (see Special Condition 1), not only is more beach area freed up for public recreational access pursuits, but additional natural landforms are exposed and allowed to erode naturally in that location as well.

In addition, as detailed in the preceding finding, this approval is valid for 20-years, and this time frame ensures that the public access context, including potential changes and uncertainties associated with it over time, can be appropriately reassessed at that time (see Special Condition 4).

Finally, with respect to construction impacts, this project will: require the movement of large equipment, workers, materials, and supplies on the adjacent undeveloped public access property, as well as in and around East Cliff Drive and the beach area; include large equipment operations in these areas; result in the loss of recreational beach and other public access use areas to a construction zone (at the immediate project area); encroach on State Lands and Sanctuary waters; and generally intrude and negatively impact the aesthetics, ambiance, serenity, and safety of the recreational experience at this location. These public recreational use impacts have been (through the Applicant's proposed BMPs, which are extensive) and can be (by condition to implement the Applicant's BMPs and include those typically applied by the Commission in the manner the Commission typically applies them to cases like this one) contained through construction parameters that limit the area of construction, limit the times when work can take place (to avoid both weekends and peak summer use months when recreational use is highest), clearly fence off the minimum construction area necessary, keep equipment out of coastal waters, require off-beach equipment and material storage during non-construction times, clearly delineate and avoid to the maximum extent feasible public use areas, and restore all affected public access areas at the conclusion of construction. A construction plan is required for this purpose (see Special Condition 2). In addition, to provide maximum information to the beach-going public during all construction, the Applicant must maintain copies of the CDP and approved plans available for public review at the construction site, as well as provide a construction coordinator whose contact information is posted at the site to respond to any problems and/or inquiries that might arise (see Special Condition 3). Although the required construction conditions can minimize the impacts of this project on the public, the conditions cannot completely compensate for the unavoidable degradation of the usual public recreational experience available at this location, including the overall diminution of aesthetics and ambiance, due to the proposed project. Mitigation is necessary to offset these impacts to public recreational uses. Fortunately, the mitigation package described above can adequately address these remaining temporary construction impacts as well.

In conclusion, provided the pathway is maintained in a usable good condition for as long as the seawall and/or residence are present, the downcoast riprap is removed from the beach, the adjacent downcoast undeveloped property is maintained for public access, recreation, and open space development and uses in perpetuity (including being allowed to continue to erode such that new beach area can also be

created), and the approval includes a twenty-year horizon, these mitigations can appropriately offset the public recreational access impacts associated with the proposed project. As conditioned, the project is consistent with the Coastal Act access and recreation policies sited above.

C. Public Views

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 located directly adjacent to and at 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.*

2. Analysis

Much of the bluff along this portion of East Cliff Drive has been armored at its base, primarily by vertical concrete seawalls, some of which have been camouflaged to replicate the look of a natural bluff face. Upcoast of the project site, 1,100 feet of bluff has been covered with the recently approved Pleasure Point seawall, which was designed to mimic bluff landforms. The downcoast property adjacent to the project site is unarmored but more armoring is found about 500 feet downcoast of this property.

The existing public viewshed and landform at the project site are currently degraded and aesthetically cluttered. The piles of riprap at the base of the residence on the beach contribute in this respect, but it is really the anomaly of a residential development hugging the bluffs and extending down toward the ocean on the seaward side of East Cliff Drive that primarily affects the public view in this regard (see photographs of the area in Exhibit C). It is within this context that the project must be understood.

Although the seawall would introduce new massing into the viewshed as compared to the existing riprap, it would encapsulate the new massing in a faux bluff design that is expected to approximate the look of natural bluffs in the vicinity. Provided the camouflaging treatment appropriately works, the project should result in a modest enhancement of the public view (see page 3 of Exhibit B for

photographic simulations of the proposed project). The Applicant proposes to sculpt, color, and texture the concrete facing of the proposed seawall to approximate natural bluffs. If done correctly, such sculpting can help to camouflage large slabs of concrete, although even then, there may be a significant change to the current natural aesthetic; when done poorly, however, it just reinforces the unnatural element present in the back beach area. This approval is conditioned to ensure that the seawall is made to mimic natural undulating bluff landforms in the vicinity in terms of integral mottled color, texture, and undulation to the maximum extent feasible (see Special Condition 1).

The seawall includes an atypical upper bench area within which large cobble/small boulder-sized rocks would be exposed in the view from above (i.e., from recreational areas associated with East Cliff Drive). This results in a negative public viewshed impact, including because such exposure makes it more obvious that the seawall is a concrete structure and not a bluff, thus reducing the effectiveness of its faux bluff finish in terms of camouflaging the seawall altogether. As previously indicated, this rock bench area is intended to absorb wave run-up and to facilitate drainage (from wave overtopping) back to the ocean. The Applicant's engineer indicates that such a drainage apparatus is critical given the location of the residence down the slope below the blufftop and the corresponding required orientation and design of the seawall in relation to expected wave overtopping. Alternative designs that would hide the drainage areas (e.g., a continuation of the faux bluff concrete work) have been deemed infeasible by the Applicant's engineer, and the Commission's senior engineer concurs. Given the orientation of the drainage areas and the seawall, there is not an area within which landscaping or other camouflaging elements could be included to help soften this view impact significantly, including because any such screens would effectively block other views down the slope from above as well. Accordingly, and given the identified engineering need, this approval is conditioned to at least ensure that the drainage rock located at the top bench of the seawall is similar in color to the surrounding natural bluffs and the concrete surface of the seawall, and to ensure that the seaward edges of the seawall holding the rock are contoured in a non-linear manner (as opposed to a straight-line that would appear to describe a box-like and unnatural shape). This mitigation will help offset the view impact, and the required removal of all extra riprap will also help to address this impact as well (see Special Condition 1).

Finally, the Commission typically requires landscaping designed to cascade over the top of armoring projects to partially screen the top of such projects from public view and to provide a more natural edge to the top of the wall as seen from above and below. In this case, however, most of the proposed seawall components are close to and flush with the existing residence, and thus there is no available area between the residence and the seawall in which to provide for landscaping. Also, given that the entire residence is located seaward of the bluff, most areas of the proposed seawall will be subject to wave inundation at times, especially during the winter months, and cascading landscaping would probably not be able to survive the saltwater intrusion at these lower elevations. A landscaping plan (see page 16 of Exhibit B) consisting of a mixture of native and nonnative non-invasive plants is provided for areas on the parcel located on the bluff above the upcoast and downcoast corners of the seawall and extending laterally along the property adjacent to East Cliff Drive and the adjacent public access path. Provided such landscaping consists only of native non-invasive blufftop plant species that are adapted to seaside locations and salt air, and provided all such landscaping is maintained in good growing conditions in

such a way as to not block views from East Cliff Drive and the East Cliff Drive recreational trail looking toward the ocean (see Special Condition 1), such landscaping should help offset visual impacts and help improve and soften views of the project site as seen from the beach below and from the East Cliff Drive corridor above.

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.*

Construction will take place on the beach at low tides to ensure that equipment and construction activities do not enter the waters of the Monterey Bay. Two beach-level work areas are designated. These areas will occupy about 4,000 square feet below the mean high tide line. Existing riprap would be temporarily relocated seaward of the proposed seawall key and used to create a temporary berm and protected work area. The key will be excavated into the bedrock, backfilled with existing riprap, and grouted to form a solid seawall structure. Upon completion of the downcoast keyway, a working platform will be constructed at an elevation of about +6.0 NGVD on top of the key and in front of the residence to provide equipment access to the upcoast portion of the wall. Construction of the upcoast portion of the seawall key will follow the sequence described above. Upon completion of the upcoast portion of the key, work on the above-grade portion of the seawall will begin. The stockpiled riprap used to create temporary berms will be removed from the beach and stacked and grouted. If needed, new riprap will be imported after the stockpiles of the existing riprap on the site have been used. The stacking and the grouting of the riprap will proceed until the final top-of-seawall grade is achieved. Upon completion of the grouted core of the seawall, structural and exterior architectural concrete surfaces will be constructed.

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 construction methods and details). Special Condition 2 includes these construction requirements. All heavy equipment used for concrete pouring will be stationed at least 25 feet landward of the bluff top and will use flexible hoses or articulated booms to deliver concrete to the project site. To prevent impacts to the marine habitat, no wet cement shall be allowed to adversely impact the beach or enter tidal waters. To further protect marine resources and offshore habitat, Special Condition 3 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. The project is also conditioned to require review and approval from the Monterey Bay National Marine Sanctuary and the State Lands Commission (Special Condition 6). 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. **Revised Final Plans.** PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the Permittee shall submit two full-size sets of Revised Final Plans to the Executive Director for review

and approval. The Revised Final Plans shall be substantially in conformance with the plans submitted with the application (titled "Conceptual Plans for O'Neill Seawall, Pleasure Point, Santa Cruz" by Mesiti-Miller Engineering, Inc. dated revised February 16, 2010 and dated received in the Commission's Central Coast office on February 17, 2010 (see Exhibit B)), except that they shall be revised and supplemented to comply with the following requirements:

(a) **Property Lines.** All current property lines as approved pursuant to Santa Cruz County Coastal Permit Exclusion 09-0290 shall be clearly identified.

(b) **Riprap Removed.** All riprap not incorporated into the interior of the approved seawall shall be removed from the site, including all riprap identified on the submitted plans along the downcoast edge of the seawall.

(c) **Public Access Path.** The public access path shall be modified as necessary to ensure that it connects across the seawall and to/from the beach and to/from adjacent areas of high relief associated with the County's seawall upcoast and the unarmored bluff downcoast.

(d) **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 upcoast and the unarmored bluff downcoast. 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 CONCRETE SURFACING, the Permittee shall submit to the Executive Director for review and approval the qualifications of the contractor who will perform the concrete work, including photos of similar completed projects. Concrete work shall not commence until the Executive Director has approved of the finish concrete contractor.

(e) **Drainage Bench Parameters.** The seaward edge of the drainage areas at the top of the seawall shall be shaped in a curvilinear and non-linear manner designed to avoid a straight-line appearance, to conceal the drain rock as much as possible as seen from above, and to evoke natural bluff undulations as much as possible. All drain rock used in the drainage area shall be similar in color to the surrounding natural bluff landforms and the concrete surface of the seawall.

(f) **Landscaping.** All non-native invasive plants (e.g., iceplant) currently present in the blufftop area surrounding the residence (not the East Cliff Drive frontage) shall be removed and no such species shall be allowed to persist in these areas; all new plants shall be native plant species that are tolerant of salt air and salt spray; and all new plants shall be maintained in good growing conditions, and any such plants shall be maintained at a height that ensures that views from a 6-foot height along the East Cliff Drive recreational trail are not blocked or otherwise adversely

impacted. Regular monitoring and provisions for remedial action (such as replanting as necessary) shall be provided for to ensure landscaping success.

All requirements above and all requirements of the approved Revised Final Plans shall be enforceable components of this coastal development permit. The Permittee shall undertake development in accordance with the approved Revised Final Plans.

2. **Construction Plan.** PRIOR TO COMMENCEMENT OF CONSTRUCTION the Permittee shall submit two sets of a Construction Plan to the Executive Director for review and approval. The Construction Plan shall, at a minimum, include the following:

   (a) Construction Areas. The Construction Plan shall identify the specific location of all construction areas, all staging areas, all storage areas, all construction access corridors (to the construction site and staging areas), and all public pedestrian access corridors. All such areas within which construction activities and/or staging are to take place shall be minimized to the maximum extent feasible in order to minimize construction encroachment on the beach, East Cliff Drive, and all beach access points, and to have the least impact on public access.

   (b) Construction Methods and Timing. The Construction Plan shall specify the construction methods to be used, including all methods to be used to keep the construction areas separated from public recreational use areas (including using the space available on the blufftop portions of the Permittee's properties for staging, storage, and construction activities to the maximum extent feasible, and including using unobtrusive fencing (or equivalent measures) to delineate construction areas). All erosion control/water quality best management practices to be implemented during construction and their location shall be noted.

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

   (d) Construction Requirements. The Construction Plan shall include the following construction requirements specified by written notes on the Construction Plan. Minor adjustments to the following construction requirements may be allowed by the Executive Director if such adjustments: (1) are deemed reasonable and necessary; and (2) do not adversely impact coastal resources.

   - All work shall take place during daylight hours and lighting of the beach area is prohibited.
   - Construction work or equipment operations shall not be conducted below the mean high tide line unless tidal waters have receded from the authorized work areas.
   - Grading of intertidal areas is prohibited.
   - Only rubber-tired construction vehicles are allowed on the beach, except track vehicles may

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

- 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 other exceptions shall be for erosion and sediment controls and/or construction area boundary fencing where such controls and/or fencing are placed as close to the toe of the seawall/bluff as possible, and are minimized in their extent.

- Construction (including but not limited to construction activities, and materials and/or equipment storage) is prohibited outside of the defined construction, staging, and storage areas.

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

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

- The construction site shall maintain good construction site housekeeping controls and procedures (e.g., clean up all leaks, drips, and other spills immediately; keep materials covered and out of the rain, including covering exposed piles of soil and wastes; dispose of all wastes properly, place trash receptacles on site for that purpose, and cover open trash receptacles during wet weather; remove all construction debris from the beach; etc.).

- 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 Ocean.

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

- The Permittee shall notify planning staff of the Coastal Commission's Central Coast District Office at least three working days in advance of commencement of construction or maintenance activities, and immediately upon completion of construction or maintenance

activities.

All requirements above and all requirements of the approved Construction Plan shall be enforceable components of this coastal development permit. The Permittees shall undertake development in accordance with the approved Construction Plan.

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

   (a) **Construction Site Documents.** Copies of the signed coastal development permit and the approved Construction Plan shall be maintained in a conspicuous location at the construction job site at all times, and such copies shall be available for public review on request. All persons involved with the construction shall be briefed on the content and meaning of the coastal development permit and the approved Construction Plan, 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.

4. **Twenty-Year Approval.** This coastal development permit authorizes the seawall for twenty years from the date of approval (i.e., until August 11, 2030). If the Permittee intends to keep the seawall in place after August 11, 2030, then the Permittee shall apply for a new coastal permit authorization to allow the seawall (including, as applicable, any potential modifications to it desired by the Permittee). Provided the application is received before the twenty-year permit expiration, the expiration date shall be automatically extended until the time the Commission acts on the application.

5. **Public Recreational Access/Open Space Restrictions on Downcoast Parcel Depicted as "New Combined Parcel #032-251-12" on Exhibit D.**

   (a) **Development and Use Restriction.** No development, as defined in Section 30106 of the Coastal Act, shall occur on the parcel depicted in Exhibit D as "new combined parcel #032-251-12" (i.e., the parcel directly adjacent and downcoast of the residential parcel proposed for seawall development that is the subject of this coastal development permit) except for: (a) development necessary to allow low-intensity public access, recreation, and open space uses, and; (b) native

landscaping. This parcel shall be used and made available exclusively for public access, recreation, and open space uses in perpetuity.

(b) **CDP Amendment Requirement** Any future development on the parcel depicted in Exhibit D as "new combined parcel #032-251-12" shall only be allowed through an amendment to this coastal development permit.

(c) **Deed Restriction.** PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the landowner shall execute and record document(s) in a form and content acceptable to the Executive Director, restricting use and enjoyment of the parcel depicted in Exhibit D as "new combined parcel #032-251-12." The recorded document(s) described above shall reflect the restrictions identified in subsections (a) and (b) of this condition. The deed restriction shall include a legal description of the entire parcel restricted by this condition. The restriction shall be recorded free of prior liens and encumbrances that the Executive Director determines may affect the enforceability of the restriction. The deed restriction shall run with the land, binding all successors and assigns. This deed restriction shall not be removed or changed without a Commission amendment to this coastal development permit.

6. **Monterey Bay National Marine Sanctuary/State Lands Commission 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) and State Lands Commission (State Lands) authorizations for the approved project, or evidence that no Sanctuary/State Lands authorizations are necessary. Any changes to the approved project required by the Sanctuary or State Lands 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.

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 plans 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 representative viewpoints from the beaches located directly upcoast, downcoast, and seaward of the project site; and from the public access path upcoast and downcoast along East Cliff Drive and from Pleasure Point Park. 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 project 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 or other damage requiring repair to maintain in a structurally sound manner and its approved state: (a) the as-built seawall; and (b) the public access path, including in such a way as to ensure that the path always connects across the seawall and to/from the beach and to/from adjacent areas of high relief (associated with the County's seawall upcoast and the unarmored bluff downcoast) for as long as the seawall is present, even if that means modifying the path in light of sea level rise over time (e.g., raising the pathway elevation while still camouflaging the path consistent with the approved concrete surfacing parameters) to ensure that the path remains useable at higher tides (generally keeping the path elevation above mean higher high water (MHHW)). 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, 2016, and subsequent reports due May 1, 2021, May 1, 2026, 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 access path, and 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 (Special Condition 7) with the date and time of the photographs and the location of each photographic viewpoint noted on a site plan. Actions necessary to maintain the approved project in a structurally sound manner and its approved state shall be implemented within 30 days of Executive Director approval, unless a different time frame for implementation is identified by the Executive Director.

9. **Future 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 seawall in its approved state; (2) to maintain the required public access path in its approved state (see also Special Conditions 1 and 8).

   (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 approved construction plan described in Special Condition 2; identification of a construction coordinator and his/her contact information (i.e., address, phone numbers, etc.) as described in Special Condition 3; 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 3 above ("Construction Site Documents & Construction Coordinator") shall apply to any maintenance event.

(f) Restoration. The Permittee shall restore all blufftop, 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, 2020. Maintenance can be carried out beyond December 31, 2020 if the Permittee requests an extension prior to December 31, 2020 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 up to the expiration of the permit (see Special Condition 4) 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 himself 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. 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 property governed by this permit (i.e., the parcel depicted as APN 032-251-09 on Exhibit D) 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

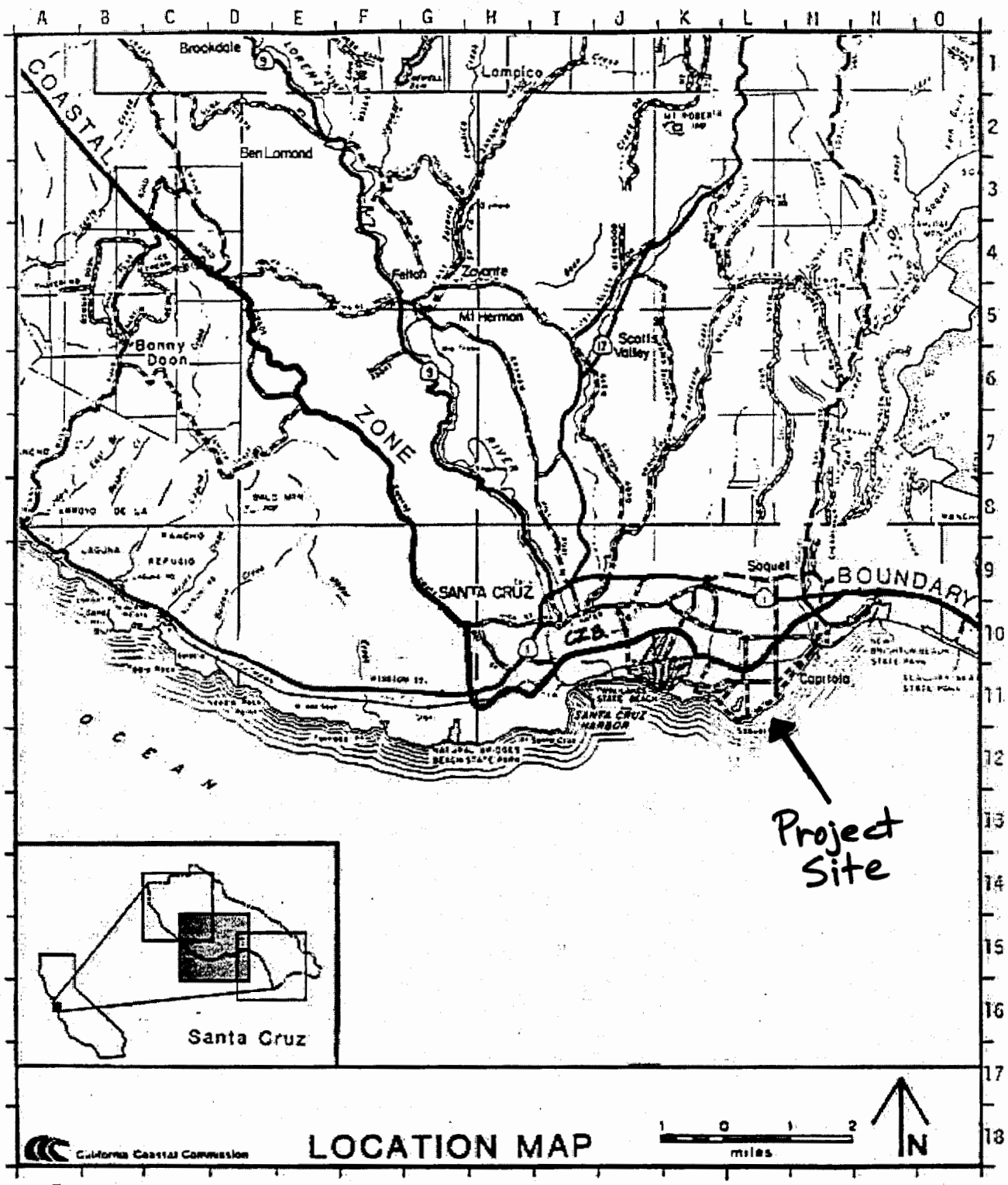
conditions that restrict the use and enjoyment of that property; and (2) imposing the special conditions of this permit as covenants, conditions and restrictions on the use and enjoyment of the property. The deed restriction shall include a legal description and graphic description of the parcels governed 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.

Santa Cruz County, acting as lead agency, found that the project was exempt from CEQA requirements. 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).

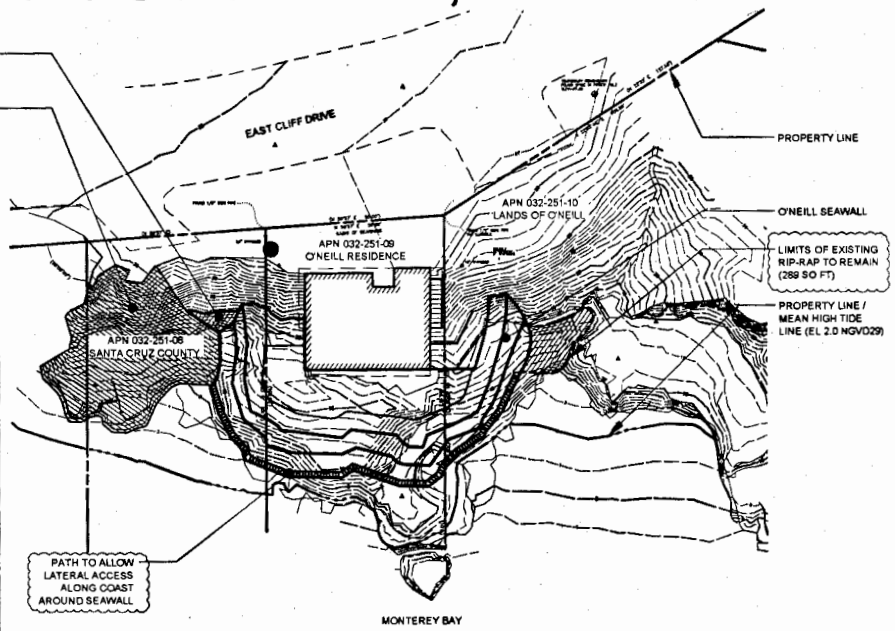


County of Santa Cruz

Sheet 2 of 3

CCC Exhibit A
(page 1 of 1 pages)

CONCEPTUAL PLANS FOR O'NEILL SEAWALL PLEASURE POINT, SANTA CRUZ



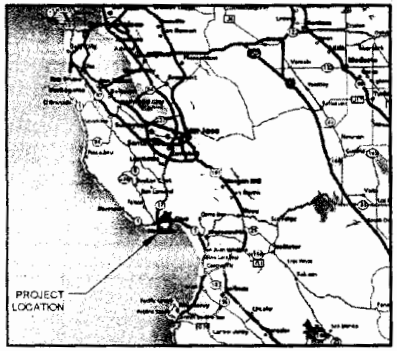
SITE MAP

SCALE: NTS

PROJECT DESIGN TEAM

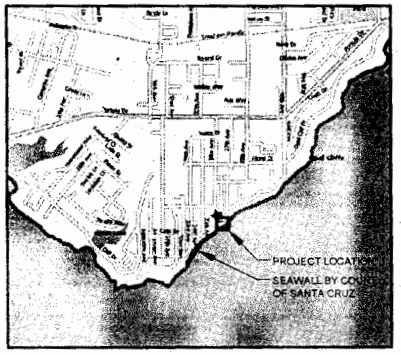
CIVIL / STRUCTURAL ENGINEERING
MARK MESITI-MILLER
MESITI-MILLER ENGINEERING, INC.
224 WALNUT AVENUE, SANTA CRUZ
PHONE (831) 426-3186 EXTENSION 101

GEOTECHNICAL/COASTAL ENGINEERING
JOHN KASUNICH
HARO, KASUNICH AND ASSOCIATES, INC.
116 EAST LAKE AVENUE, WATSONVILLE
PHONE (831) 722-4175 EXTENSION 215



VICINITY MAP

SCALE: NTS



LOCATION MAP

SCALE: NTS

LEGEND

- STORM DRAIN
- COASTLINE (PACIFIC OCEAN)
- EXISTING FENCE
- PROPERTY / RIGHT-OF-WAY LINE
- SURVEY CONTROL LINE W/ STATIONING
- TREE DRIPLINE
- EXISTING TOPOGRAPHIC CONTOUR
- EXISTING EOP
- (E) UTILITY POLE
- (E) PH
- (E) JOINT POLE
- (E) VALVE
- (E) SURVEY CONTROL POINT
- WATER METER

SHEET INDEX

CCC Exhibit B (page 1 of 17 pages)

PROJECT DEVELOPMENT DATA

Surroundings and Purpose

The project site is located in the unincorporated area of Santa Cruz County known as Pleasure Point. The property encompasses the area between the mean high tide line and East Cliff Drive. The project site is immediately adjacent and partially extends onto lands owned by the County of Santa Cruz.

The County of Santa Cruz Redevelopment Agency is currently removing rip-rap and constructing a full bluff seawall up coast from the project site, between 32nd Avenue and 36th Avenue. The full bluff seawall will be terminated on the County owned lands adjacent to the project site. The improvements proposed by the Santa Cruz County Redevelopment Agency will result in greater reflective wave energy directly impacting the O'Neill residence and thus poses a clear and present danger to the O'Neill residence. The proposed O'Neill seawall will mitigate the adverse effects of the Redevelopment Agency's seawall and will possess a useful service life in excess of 100 years. The proposed seawall will incorporate a transition feature which will protect the terminal end of the County seawall from outflanking .

The O'Neill residence is currently protected by a rip-rap seawall consisting of large 4 to 6 ton stones. The proposed seawall will consist of a grouted rip-rap core encased with an 8 to 12 inch layer of reinforced concrete and surfaced with an architectural shotcrete facade. The rip-rap will not be visible except for large cobble/small boulder sized rocks which will be exposed on a bench at the top of the structure to absorb wave runup and overtopping. The exterior architectural surface will be sculpted to match the textures and colors of the surrounding bedrock formations and the County seawall.

The proposed seawall will fit within the permitted and existing seawall configuration. 874 square feet of beach will be reclaimed by construction of this project. All existing rip-rap which has settled into the beach seaward of the mean high tide line will be removed. Removal of existing rip-rap will reduce the footprint of the existing seawall and also improve lateral access along the public beach. The seawall will include a two-foot wide walkway at the base of the seawall to provide lateral coastal access around the seawall. The proposed two-foot wide walkway is as a mitigation measure designed to improve access and thus offset other impacts associated with the proposed improvements. During construction, Construction Site Best Management Practices (BMP's) will be strictly followed to ensure seawall construction activities do not negatively impact ocean water quality.

GENERAL INFORMATION				
LOCATION		NO SITE ADDRESS	2-3610 EAST CLIFF DRIVE	NO SITE ADDRESS
PROPERTY OWNER		SANTA CRUZ COUNTY	JACK O'NEILL	JACK O'NEILL
APN		032-251-08	032-251-09	032-251-10
ZONING		PR	PR	PR-D
LOT SIZE		8,281 SQ FT	8,572 SQ FT	37,428 SQ FT
TOTAL NUMBER OF DWELLING UNITS		VACANT LAND	1	VACANT LAND
TOTAL PARKING SPACES		N/A	2	N/A
FLOOD ZONE		V	V	V
LOT COVERAGE				
BUILDING	EXISTING AREA	0 SQ-FT	1,344 SQ-FT	0 SQ FT
	PROPOSED CHANGE	NO CHANGE	NO CHANGE	NO CHANGE
	FINAL AREA	0 SQ FT	1,344 SQ-FT	0 SQ FT
SEAWALL	EXISTING AREA	844 SQ FT	2,117 SQ FT	1,449 SQ FT
	PROPOSED CHANGE	- 55 SQ FT	+ 279 SQ FT	- 305 SQ FT
	FINAL AREA	789 SQ FT	2,396 SQ FT	1,144 SQ FT
PAVED	EXISTING AREA	57 SQ FT	435 SQ FT	0 SQ FT
	PROPOSED CHANGE	NO CHANGE	NO CHANGE	NO CHANGE
	FINAL AREA	57 SQ FT	435 SQ FT	0 SQ FT
LANDSCAPED	EXISTING AREA	0 SQ FT	625 SQ FT	0 SQ FT
	PROPOSED CHANGE	NO CHANGE	NO CHANGE	+2,300 SQ FT
	FINAL AREA	0 SQ FT	625 SQ FT	2,300 SQ FT
UNIMPROVED	EXISTING AREA	5,380 SQ FT	2,051 SQ FT	35,879 SQ FT
	PROPOSED CHANGE	+ 55 SQ FT	-279 SQ FT	-1,706 SQ FT
	FINAL AREA	5,435 SQ FT	1,772 SQ FT	34,273 SQ FT
GRADING QUANTITIES *				
CUT (NOT INCL. RIP-RAP)		70 CU YDS	75 YDS	70 CU YDS
CUT (EXISTING RIP-RAP)		186 CU YDS	470 CU YDS	322 CU YDS
FILL (IMPORTED RIP-RAP)**		356 CU YDS	954 CU YDS	576 CU YDS
SUBTOTAL		168 CU YDS FILL	484 CU YDS FILL	254 CU YDS FILL
GRAND TOTAL		98 CU YDS FILL	409 CU YDS FILL	184 CU YDS FILL
SUPPLEMENTAL INFORMATION				
RECLAIMED SANDY BEACH		223 SQ FT	292 SQ FT	359 SQ FT
COVERED BEACH***		265 SQ FT	920 SQ FT	765 SQ FT

* GRADING COMPUTATION NOTES:
a. GRADING ESTIMATES WERE NOT FACTORED FOR EXPANSION OR COMPACTION.
b. EXISTING AND PROPOSED RIP-RAP VOLUMES SHOULD BE MULTIPLIED BY 0.33 TO DETERMINE THE VOID VOLUME.
c. CUT AND FILL WERE MEASURED FROM THE EXISTING GRADE TO THE BOTTOM OF GROUTED RIP-RAP STRUCTURE.

** FILL NOTES:
a. FILL QUANTITIES ARE SOLID VOLUMES. THE TABULATED SOLID VOLUME IS COMPOSED OF APPROXIMATELY 66% IMPORTED RIP-RAP AND 33% CONCRETE GROUT.
b. ACTUAL QUANTITIES SHALL BE VERIFIED BY CONTRACTOR PRIOR TO ORDERING RIP-RAP

*** COVERED BEACH NOTES:
a. COVERED BEACH AREA INCLUDES SANDY BEACH AND PORTIONS OF THE SANDSTONE BEDROCK FLAT ENOUGH TO BE USED BY THE PUBLIC IF THE SEAWALL DID NOT EXIST.

REV	DESCRIPTION	BY	DATE
1	RELEASED FOR PRELIMINARY GRADING REVIEW SUBMITTAL	MJ	3/2009
2	RESPONSE TO PRELIMINARY GRADING REVIEW COMMENTS	MJ	7/1/09
3	RESPONSE TO COASTAL COMMISSION PLAN REVIEW COMMENTS	MJ	11/2009
4	UPDATE COVER SHT LOT COVERAGE TABLE & ADD LATERAL ACCESS PATH	MJ	02/1910

Mesiti-Miller Engineering, Inc.

REGISTERED PROFESSIONAL ENGINEER MARK MESITI-MILLER No. 42945 Exp. 12/31/11 CIVIL STATE OF CALIFORNIA

O'NEILL RESIDENCE SEAWALL
PREPARED AT THE REQUEST OF JACK O'NEILL

MAPS
SHEET INDEX
DEVELOPMENT DATA
LEGEND

DRAWN BY:
CHECKED BY:
JOB NUMBER: 901

SHEET
CVR

GENERAL NOTES & TECHNICAL SPECIFICATIONS

GENERAL

The Contractor shall examine carefully the site of work contemplated, the Plans and Specifications therefore. The submission of a bid shall be conclusive evidence that the contractor has investigated and is satisfied as to the conditions to be encountered, as to the character, quality, and scope of work to be performed, the quantities of materials to be furnished and as to the requirements of the Plans and these Specifications.

The job site shall be maintained in a clean, orderly condition free of debris and litter, shall not be unreasonably encumbered with any materials or equipment and shall be cleaned at the end of each working day.

Construction and materials shall be as specified and as required by the latest edition of the California Building Code (CBC), the California Building Code Standards, locally enforced codes and authorities. All articles, materials and equipment shall be installed, applied and connected as directed by the manufacturer's latest written specifications except where otherwise noted. Material notes on the drawings shall take precedence over these Specifications.

In the event certain features of the construction are not fully shown, their construction shall be as shown for similar features. All dimensions shall take precedence over scale shown on the Plans.

It shall be the Contractor's sole responsibility to design and provide adequate shoring, bracing, formwork, etc., as required for the protection of life and property during construction.

The Contractor shall examine and check all existing conditions, dimensions, levels and materials and notify the Engineer of any discrepancies before proceeding with the work. Should a discrepancy appear in the Specifications or Drawings, or in the work done by others from the contract documents that affect any work, notify the Engineer at once for instruction on how to proceed. If the Contractor proceeds with the work affected without instructions from the Engineer, the Contractor shall make good any resulting damage or defect to the satisfaction of the Engineer. Should a conflict occur in or between Drawings and Specifications, or where detail references on Contract Drawings have been omitted, the Contractor is deemed to have estimated the most expensive materials and construction method involved, unless a written decision of the Engineer has been obtained which describes an alternate method and/or materials.

Materials stored on the site shall be properly stacked and protected to prevent damage and deterioration until use. Failure to protect materials may be cause for rejection of work.

The Contractor shall do all cutting, fitting, or patching of his work that may be required to make its several parts fit together properly and shall not endanger any other work by cutting, or otherwise altering the total work or any part of it. Contractor shall exercise care to protect any existing construction so that integrity and finish are not impaired. All patching, repairing and replacing of materials and surfaces, cut or damaged in execution of work, shall be done with appropriate materials so the surfaces replaced will, upon completion match surrounding similar surfaces.

SUBMITTALS

Shop drawings shall be submitted to the Engineer for review in the following areas of work:

1. Contractor Means and Methods - including but limited to: shoring for seawall installation.
2. Concrete mix designs, stamped by an engineer licensed in the State of California;
3. Reinforcement steel placement;
4. Concrete pumping/tremie system;
5. Concrete curing method;
6. Trench Backfill Material
7. For all substitutions.

Shop drawings for fabrication of components shall not be based on copies of the Engineer's drawings.

All submittals shall be reviewed and checked by the Contractor prior to submittal to Engineer for review. Contractor shall stamp and sign each submittal indicating they have reviewed, checked and approved the submittal for compliance with all the requirements of the plans and specifications.

OBSERVATION BY THE ENGINEER

Structural observation is required at the following construction milestones:

Excavation for seawall prior to placing quarry stone.
Reinforcing steel placement prior to placing concrete.
SD prior to backfilling.

OBSERVATION BY THE GEOTECHNICAL ENGINEER

Observation is required at the following construction milestones:

Excavation for seawall prior to placing quarry stone.
As required by the geotechnical investigation.

EARTHWORK

Earthwork shall be in strict accordance with the recommendations of the Coastal Geotechnical Investigation for :

Mr. Jack O'Neill

Haro, Kasunich and Associates, Inc.
Dated: December 2008
Project No. SC9531

Contractor shall carefully excavate all materials necessary, of whatever nature, for construction of the work. Any material of an unsuitable or deleterious nature discovered below the bottoms of the foundations shall be brought to the attention of the geotechnical engineer before proceeding with the work.

Backfill shall not be placed behind retaining walls until 21 days after placing concrete or until the concrete has developed a compressive strength of not less than 2,000 psi, whichever occurs first. Permeable materials placed behind retaining walls shall be of the type specified on the plans. Backfill placed under paved areas shall be compacted to a relative density of 95%.

All other earthwork shall conform to the requirements of the current CBC Chapter 33, "Safeguards During Construction" and the recommendations contained within the aforementioned report by the Geotechnical Engineer.

The Geotechnical Investigation Report shall be part of the construction documents and shall be kept at the job site at all times.

Prior to any disturbance on either property, the owner shall convene a pre-construction meeting on the site w/ the applicant, the grading contractor supervisor, construction supervisor, project geologist, project geotechnical engineer, Santa Cruz County grading inspector, and any other environmental planning staff involved in the project.

Erosion shall be controlled at all times. Erosion Control Measures shall be monitored, maintained, and replaced as needed. No turbid runoff shall be allowed to leave the immediate construction site.

Dust suppression techniques shall be included as part of the construction plans and implemented during construction.

All earthwork and seawall construction shall be supervised by the Project Soils Engineer and shall conform to the Geotechnical report recommendations

Pursuant to sections 16.40.040 and 16.42.100 of the county code, if at anytime during site preparation, excavation, or other ground disturbance associated with this development. Any artifact or other evidence of a historic archaeological resource or a Native American culture site is discovered, the responsible persons shall immediately cease and resist from all further site excavation and notify the Sheriff-Coroner if the discovery contains human remains, or the Planning Director if the discovery contains no human remains.

REINFORCEMENT

Reinforcing bars shall be epoxy coated deformed billet-steel bars for concrete reinforcement conforming to the specifications of ASTM Designation A775. Bars shall be grade 40 for bar sizes up to and including No. 4 bar. Bar sizes No. 5 and greater shall be grade 60.

Lap splices and tolerances shall be in accordance with ACI 318 unless noted otherwise in the plans. Relative splice locations shall be staggered unless noted otherwise.

Care shall be used to protect the epoxy coating during handling and placing. Areas of damaged epoxy coating shall be treated with a brush applied epoxy coating repair solution conforming with ASTM A775 and done in accordance with the material manufacturer's recommendations. No uncoated steel shall be embedded in the concrete. Bars shall be tied with plastic, epoxy, or nylon coated tie wire, or other approved materials.

Reinforcing bars shall be accurately placed as shown on the plans and shall be firmly and securely held in position by wiring at intersections and splices and by using precast mortar blocks or other devices approved by the Engineer.

Support reinforcing bars at bottom of footings on mortar blocks. Maintain a minimum of 3 inches clearance between reinforcing bars and earth for all surfaces poured against earth and 1-1/2 inches minimum clearance elsewhere unless noted otherwise in the plans.

All reinforcing bars, anchor bolts, metal inserts, waterstops and other embedments shall be secured in place and inspected prior to placing any concrete or grout. All reinforcing bars to be welded shall be welded in accordance with A.W.S. D1.4 "Welding Reinforcing Steel, Metal Inserts and Connections in Reinforced Concrete Construction".

All reinforcing bars, anchor bolts, metal inserts and other embedded items shall be secured in place and inspected prior to placing any concrete or grout.

Work done under this section shall conform with the applicable portions of ACI 318, or Section 52, "Reinforcement" of the Caltrans Standard Specifications .

CONCRETE

Work done under this section shall conform with the applicable portions of ACI 318, latest edition.

Poured in place concrete work shall be constructed of normal weight, Portland Cement Concrete, having a minimum 28-day compressive strength of 4000 psi. Portland cement concrete shall conform to the requirements of ACI 318, "Building Code Requirements for Reinforced Concrete", latest edition. The concrete shall be placed with a maximum of 312 pounds of water per cubic yard. Maximum slump shall be 4 inches. DCI corrosion inhibitor shall be added to concrete mix with minimum proportion of (2) gal/cy. The use of any additional admixture in the concrete must be approved by the Engineer.

Aggregates: Coarse aggregates shall conform to ASTM C33 size 57 or 67. Pea gravel aggregates shall not be used.

Newly placed concrete shall be cured in accordance with the provisions in ACI 308, "Standard Practice for Curing Concrete," latest edition. Method of curing shall be at the option of the Contractor with approval of the Owner and Engineer.

Metal anchorage devices, anchor bolts, etc. shall be secured in place and inspected prior to placing concrete. Wet setting embeded devices is not acceptable.

EPOXY GROUT

Grout for placement of epoxy-set anchors such as bolts and rebar dowels shall be made of a two part epoxy adhesive product that conforms to the requirements of Simpson SET High Strength Epoxy by Simpson Strong Tie or equal product with prior written approval of the engineer.

Holes may be cut by either percussive or rotary drilling and shall be cleaned with a nylon brush and blown out using oil free compressed air or vacuumed to remove residue. The optimum hole size is typically 1/8" larger than the bolt/bar diameter; the maximum hole size should be confirmed with the manufacturer. Caution must be exercised to prevent spalling of concrete around or near the hole. Installation shall be in strict conformance with manufacturer's recommendations.

Anchors must be dry and free from contaminants such as rust, dirt oil, grease, protective coatings and galvanizing. Rust should be removed by sandblasting, abrasive wheel or wire brush. Protective coatings and galvanizing must be removed by an appropriate technique such as sandblasting, acid-etching, chemical stripping or with degreasing solvents.

Enough epoxy adhesive must be used to ensure the hole, after installation of the anchor, is completely full to the concrete surface. Care must be taken to ensure the epoxy does not leak out of the hole.

STORM DRAINAGE

Storm Drain Pipe shall be PVC in accordance with ASTM D3034 Type DSM, PVC with Elastomeric Gasket Joints per ASTM F477.

Temporary SD inlet shall be NEENAH FOUNDRY COMPANY R-7512-A1 Cast Iron Pipe Screen.

All Catch Basins & Manholes shall be per ASTM C-478 & H-20 load rated

SCULPTED CONCRETE

The exterior architectural facing of the concreted rip-rap seawall shall be sculpted textured and stained to replicate the character and color variation of the surrounding native materials.

Furnish labor, material, tools and equipment necessary to place texture and acid stain field fabricated sculptured concrete including steel framework and portland cement concrete. It is intended that the finished products of work in this section mimic natural undulating bluff landforms in the vicinity in terms of integral mottled color, texture, and undulation.

The Contractor shall submit photographic proof and references of his experience and ability to construct sculptured concrete as indicated on the Drawings and these Specifications. These materials shall be used to evaluate the Contractor's ability and experience to perform this work.

Rock or Earth Back Forming: Remove loose material, compact and trim to line and grade before placing shotcrete. Dampen surfaces to receive shotcrete.

Structural Base Layer: Provide Natural "Gun" Finish on structural layers which do not receive texture coat.

Texture coat: Finished surface of the texture coat shall simulate the natural characteristics of the native purisima bedrock formation in texture, form and color. The Contractor shall provide experienced experts to perform texturing, shaping and coloring of the texture coat.

Texture Coat Integeral Color: The outer 6 inches of shotcrete shall be colored using Davis Integral Color or equivalent using the amounts of powdered color dye per sack of cement recommended by the manufacturer. Various integral colors shall be used to closely approximate the proposed color of the finished artificial rock surfaces to minimize the need for surface stains.

Surface will be colored by staining or etching after final texturing except as noted otherwise.

Paint (stain) shall be flat finish, of composition approved by the Engineer.

Colored acid mixes and application processes shall be approved by the Engineer prior to application to any work.

The integral and surface colors shall closely approximate the natural color of the adjacent or nearby natural purisima bedrock outcrops.

CONCRETED STACKED STONE SEAWALL

The new seawall will be founded on bedrock approximately seven feet below the existing beach grade. Open cut and/or shoring may be used to get to this depth. A keyway will be cut into the bedrock three feet deep as detailed in the plans. Ground water will be present at this depth as indicated in the geotechnical borings. Quarried stone and reclaimed materials will be used to construct the seawall and keyway. Seawall construction will involve placing a layer of stone followed by pumping concrete to fill voids and repeating.

The extent of concreted stacked stone seawall, as shown on the plans, includes, but is not limited to, the following: Shoring and protection of O'Neill residence and beach bluff during construction of seawall; Demolition and removal of existing concrete debris; Excavation of portions of existing rip rap revetment and scattered quarry stone, concrete rip rap, sandstone bedrock and loose beach sand, pebbles and cobbles, to areas directly exposed to the ocean; Construction of new seawall to the lines, grades and cross section shown on the plans, using reclaimed materials, new quarry stone, concrete, and reinforcing steel; Reconstruction of the existing rip rap revetment; Replacement of beach sand to the original grades prior construction; Some of the work will be restricted to low tide periods.

All stacked stone and rip rap rock shall be subject to testing and approval or rejection at the job site regardless of prior quarry acceptance testing or approval.

Stacked stone and rip rap rock shall meet the following requirements: Apparent specific gravity 2.6 minimum per Cal 206; Absorption 2% maximum per Cal 206; Loss in soundness 10% maximum per Cal 214; Durability index 52 minimum per Cal 229; Abrasion 60 maximum per ASTM C131.

New stacked stone, hereafter referred to as stone, shall be approved material that is hard, durable, sound, free of lamination, cleavage planes and be of such type that will not break during handling, or disintegrate in salt air or salt water.

Stone shall be angular quarried granite, sandstone, or other approved rock materials, free from building debris, soil, metal, refuse, organic material and coatings.

Individual pieces of stone shall have the least dimension larger than one-third the greater dimension.

Size: Stone shall be within the following gradation limits by weight. The nominal size shown is for information only and is based on a spherical rock.

1. Grouted Armor Rock (4,000 - 6,000 lbs.)
   3.6 ft. to 4.1 ft. (nominal dimension)
   No more than 25% smaller than 4,000 lbs. (min. wt. = 2,500 lbs.) will be permitted.
   No more than 10% greater than 6,000 lbs. (max. wt. 7,500 lbs.) will be permitted.

Reclaimed on-site rock and concrete rubble should be salvaged from the existing revetment and sanitary sewerage manhole protection and used in the seawall construction.

The excavation shall not undermine adjacent structure or site improvements.

The Contractor will be responsible for preventing damage to adjacent structures and site improvements. If any improvements are damaged by Contractor error or negligence, the Contractor shall repair them at no cost to the owner.

Materials which consist of rock or concrete rubble, which do not conform to the specifications for stone, shall be excavated, segregated disposed of off-site.

All deleterious material, construction debris and organic materials shall be disposed of off-site. It shall not be buried or spread seaward of the seawall.

All material which is predominately beach sand shall remain on site and shall be used as fill.

Temporary shoring as required to protect adjacent property, improvements and structures, and where necessary to maintain open excavations below water, shall be reviewed and approved by the County of Santa Cruz Department of Public Works and reviewed by the Engineer of Record prior to start of construction. The Contractor shall provide suitable temporary excavation support by means of earth or rock berms, shoring, or other methods, and dewatering facilities, all of which shall be safe, sufficient and adequate for the execution of the work.

End dumping will not be permitted, nor shall stones be dropped from a height greater than three (3) feet.

Stone placed adjacent to the Santa Cruz county seawall shall be placed so as not to damage them. Any damage shall be repaired by the Contractor to the satisfaction of the Santa Cruz County Department of Public Works and the Engineer.

Stone shall be placed individually so as to create two overlapping courses to constitute the required layer thickness.

Stones shall be placed with their longitudinal axis at right angles to the slope face with attitude horizontal or dipped slightly inward.

Each stone shall have a three-point, or more, bearing on the underlying stones of the same nominal size and interlock with adjacent stones. Bearing on smaller stones used to chink voids is not acceptable.

Concrete shall be pumped into all voids in the stacked stone seawall structure.

Concrete should be placed so that stones are embedded a minimum of 50% to a maximum of 75% between vertical lifts.

Concrete must not be allowed to flow out of the structure and onto the beach or into the seawater.

Pumping of seawater from the keyway and excavation will be required to minimize concrete contact with seawater/groundwater.

Concrete shall be placed with a pump or tremie tube.

ABBREVIATIONS

AB	Anchor Bolt
AC	Asphalt Concrete
ACI	American Concrete Institute
AGG BASE	Aggregate Base
AISC	American Institute of Steel Construction
AITC	American Institute of Timber Construction
APA	American Plywood Association
APPROX	Approximately
ARCH	Architect
ASTM	American Society for Testing & Materials
ATC	Acoustic tile ceiling
AVG	Average
BC	Begin curve
BG	Below grade
BLDG	Building
BLKG	Block(ing)
BM	Bench Mark
BN	Boundary nailing
BOT	Bottom
BOW	Back of Wall
BP	Beginning Point
BRC	Brace
BRG	Bearing
BSMT	Basement
BTWN	Between
BVC	Begin vertical curve
BVL	Bevel
C	Channel / Compact
CANT	Cantilever
CB	Catch Basin, Carriage Bolt
CC	Center to Center
CF	Cubic feet
CFM	Cubic feet per minute
CG&S	Curb, Gutter, & Sidewalk
CI(P)	Cast Iron (Pipe)
CJ	Construction joint or Contraction joint
CL	Center Line
CLG	Ceiling
CLR	Clear, Clearance
CMP	Corrugated metal pipe
CMU	Concrete Masonry Unit
CNTRL	Control
CO	Cleanout
COL	Column
COLL	Collector
COMP PEN	Complete penetration
CONC	Concrete
CONN	Connection
CONT	Continuous
CSK	Countersink
CTR	Center
CVR	Cover
CY	Cubic yard
DBL	Double
DD	Deck Drain
DEG	Degree
DET	Detail
DF	Douglas Fir
DI	Drop Inlet or Drainage Inlet
DIA	Diameter
DIAG	Diagonal
DIM	Dimension
DIP	Ductile Iron Pipe
DL	Dead load
DN	Down
D/W	Driveway
DWG	Drawing
EX	Existing
EA	Each
EB	Expansion bolt
EC	End curve
EF	Each face
EG	Existing Grade
EJ	Expansion joint
ELECT	Electric, Electrical
ELEV or EL	Elevation
EN	Edge nailing
ENGR	Engineer
EOR	Engineer of Record
EOP	Edge of pavement
EP	Ending Point
ES	Each side
ESMT	Easement
EVC	End vertical curve
EW	Each way
EX	Existing
EXP	Expansion
EXT	Exterior
FB	Flat bar
FG	Finish grade
FIN	Finish
FLD	Field
FLG	Flange
FLR	Floor
FN	Field nailing
FND	Foundation
FOC	Face of concrete or curb
FOS	Face of steel or stud
FRMG	Framing
FT	Foot or Feet
FTG	Footing
G	Gas
GA	Gauge
GALV	Galvanized
GLB	Glulam beam
GR	Grade Elevation
H/C	Handicapped
HD	Holdown
HDR	Header
HORIZ	Horizontal
HP	High point
HT	Height
ID	Inside Diameter
INT	Interior
INV	Invert elevation
IP	Iron pipe
IR	Inside radius
JB	Junction box
JP	Joint pole
JST(S)	Joist(s)
JT	Joint
L	Angle
LA	Landscape Architect(ure)
LB or #	Pound
LD	Load
LGT	Lighting
LL	Live load
LS	Lag screw
LT	Left
LTWT	Light weight
MANUF	Manufacturer's
MAX	Maximum
MB	Machine Bolt
MECH	Mechanical
MISC	Miscellaneous
MH	Manhole
MIN	Minimum
MP	Midpoint
MTL	Metal
NG	Natural Grade
NTS	Not to Scale
OC	On center
OCBW	On center both ways
OD	Outside Diameter
OH	Other hand
OPP	Opposite
(P)	Proposed
PART	Partition
PC	Point of curvature
PCC	Portland Cement Conc
PCR	Point of curb return
PI	Point of intersection
PIP	Poured in place
PL	Property Line, Plate
PLY	Plywood
PMP	Perforated metal pipe
PNL	Panel
PPVC	Perforated Polyvinyl Chloride Pipe
PRCST	Precast
PREFAB	Prefabricated
PSF	Pounds per Square Foot
PSI	Pounds per Square Inch
PT	Point of tangency or Point
PTDF	Pressure Treated Douglas Fir
PVC	Polyvinyl Chloride Pipe
PVMT	Pavement
R	Radius, Riser
RC	Relative Compaction
RCP	Reinforced concrete pipe
REINF	Reinforcement
REM	Removal
REPL	Replace
REQD	Required
RET	Retaining
RF(G)	Roofing
RGH or RS	Rough or Rough sawn
RM	Room
RT	Right
R/W or ROW	Right of way
RWALL	Retaining Wall
RWD	Redwood
S	Slope
SAD	See Architectural Drawings
SB	Solid backing
SCH	Schedule
SD	Storm drain
SDMH	Storm Drain Manhole
SECT	Section
SEL	Select
SF	Square feet
SHRWL	Shear wall
SHT	Sheet
SHTG	Sheathing
SIM	Similar
SK	Sack
SLV	Sleeve
SM	Sheet metal
SP	Steel Pipe
SPEC	Specifications
SQR	Square
SS	Sanitary or Sanitary Sewer
SSMH	Sanitary Sewer Manhole
SSP	Stainless steel pipe
STA	Station
STD	Standard
STL	Steel
STRUCT	Structural
SWK	Sidewalk
SWR	Sewer
SY	Square yard
T	Ton, Tee Section
T&B	Top and Bottom
TBM	Temporary bench mark
TC	Top of curb
TEL	Telephone
TEN	Typical edge nailing
TG	Top grate
T&G	Tongue and groove
TOC	Top of concrete
TOS	Top of steel
TOW	Top of wall
TP	Top of pavement
TR	Tread
TS	Top slab, structural steel tube
TV	Television cable
TYP	Typical, UNO
UG	Underground
UBC	Uniform Building Code
UNO	Unless noted otherwise
VC	Vertical curve
VERT	Vertical
VIF	Verify in field
W	Water
W/	With
WC	Wheelchair
W/O	Without
WP	Weatherproof, work point
WWF	Welded Wire Fabric
XFMR	Transformer
XS	Extra Strong
XXS	Double Extra Strong
YD	Yard

EROSION CONTROL NOTES

RESPONSIBILITY

1. It is the responsibility of the owner and contractor to regularly inspect the erosion control measures and determine that they are functioning as designed and that proper maintenance is being performed. deficiencies shall be immediately corrected.

2. It is the contractor's and property owner's responsibility to see that additional measures, necessary to control site erosion and prevent sediment transport off-site are implemented.

3. Erosion shall be controlled at all times. erosion control measures shall be monitored, maintained, and replaced as needed. no turbid runoff shall be allowed to leave the immediate construction site.

4. The contractor shall be responsible for the removal and disposal of all sedimentation onsite or off-site that is generated by grading and related activities of the project.

PROTECTION OF DISTURBED AREAS:

1. Erosion control measures shall be implemented as soon as practicable so that sufficient growth will be established prior to inclement weather conditions and continually maintained to minimize surface erosion.

2. All disturbed areas shall be hydroseeded and mulched so that the disturbed areas are protected by mature grass prior to October 15. in the event that it is not possible to establish mature grass by October 15th, all disturbed areas shall be hydroseeded, mulched, and protected by erosion control blankets installed in accordance with the manufacturers instructions. erosion control blankets shall be sc150 double net - straw/coco nut blanket by North American Green or equal.

3. Between October 15 and April 15, exposed soil shall be protected from erosion at all times. during construction, all disturbed slopes not actively used for construction will be seeded, mulched, and blanketed. hay bales, filter berms, silt fence(s) shall be employed to trap sediment before it leaves the site .

4. A straw bale stockpile shall remain on the job site between October 15 and April 15, during the course of construction. contractor shall use straw bales for check dams and for erosion control protection during the rainy season as necessary.

5. Before completion of the project, any exposed soil on disturbed slopes shall be permanently protected from erosion.

RUNOFF:

1. No turbid runoff shall be allowed to leave the site.

2. Runoff must be prevented from flowing over unprotected slopes.

3. Keep runoff away from disturbed areas during grading and related activities.

4. Silt deposits shall be removed as necessary to prevent more than 12 inches of accumulation.

SPOILS:

1. Spoils must be removed promptly and stockpiling of fill materials must be avoided when rain is forecast. If rain threatens, stockpiled soils and other materials shall be covered with a tarp or other waterproof material.

2. Excavated material shall be removed to an approved disposal site or disposed of on-site in a matter that will not cause erosion.

SEEDING PROCEDURE:

1. Temporary seed mix shall be barley (hordeum), buckwheat (fagopyron esculentum), rye (secale cereale), and wheat (triticum aestivum) applied at rate of 140 pounds per acre.

2. Protection of existing trees and vegetation - contractor shall have the owner identify and mark all existing vegetation to be protected contiguous with the disturbed area.

Note: no heavy machinery shall be operated on slope.

3. Before seeding, remove wood ships, rocks, and debris from the disturbed area. rake out scarp to provide a smooth transition for erosion control blankets.

4. Seeding - apply seed and fertilizer by hydroseeding.

5. Mulching - after fertilizing the seed, apply mulch as noted.

6. Install straw rolls.

7. Irrigation - shall be used so that effective plant growth is established as soon as possible. the soil should be kept continually moist until the seed germinates (2-3 weeks) and the grass is three inches (3") high. then continue to water about once a week or as required until the rainy season begins. irrigation should be monitored closely so that it will not cause an erosion problem.

8. Maintenance - the contractor shall commence watering the covered areas within one week after seeding. the watering will continue until the ground cover is fully developed and as required. the owner shall monitor, maintain, and repair all erosion control measures as required.

CCC Exhibit B
(page 2 of 17 pages)

PRELIMINARY NOT FOR CONSTRUCTION

REV.	DESCRIPTION	BY
△	RELEASED FOR PRELIMINARY GRADING REVIEW SUBMITTAL	MG
△	RESPONSE TO PRELIMINARY GRADING REVIEW COMMENTS	MG
△	RESPONSE TO COASTAL COMMISSION PLAN REVIEW COMMENTS	MG
△	UPDATE COVER SHT LOT COVERAGE TABLE & ADD LATERAL ACCESS PATH	MG
△		

REGISTERED PROFESSIONAL ENGINEER MARK MESITI-MILLER No. 40945 Exp. 3/31/11 CIVIL STATE OF CALIFORNIA

Mesiti-Miller Engineering, Inc.
Civil and Structural Engineering
224 Walnut Avenue, Suite B · Santa Cruz, CA 95060
Phone 831-426-3186 · Fax 831-426-6607

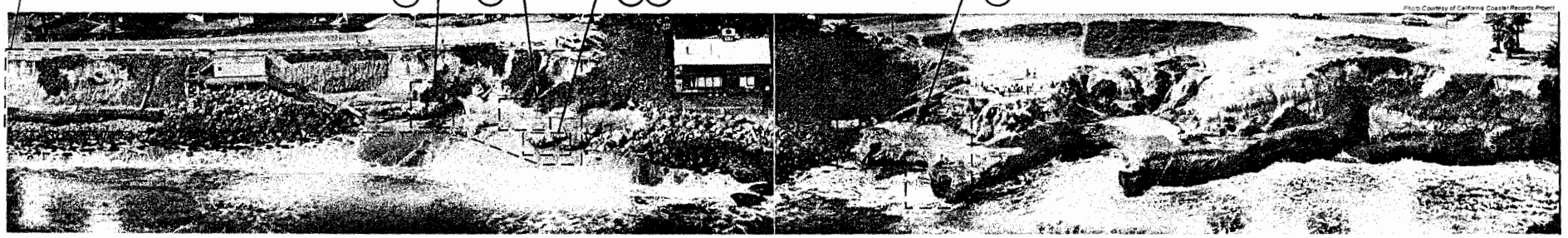
O'NEILL RESIDENCE SEAWALL

PREPARED AT THE REQUEST OF

JACK O'NEILL
2-3610 EAST CLIFF DRIVE
SANTA CRUZ, CA 95062

GENERAL NOTES & TECH SPECS

DRAWN BY:	PD
CHECKED BY:	MG
JOB NUMBER:	99148-8
SHEET	C0.0



AERIAL PHOTO OF PROJECT SITE AND EXISTING CONDITIONS

CCC Exhibit B (page 2 of 17 pages)

Figure 5 - Purisma Bedrock

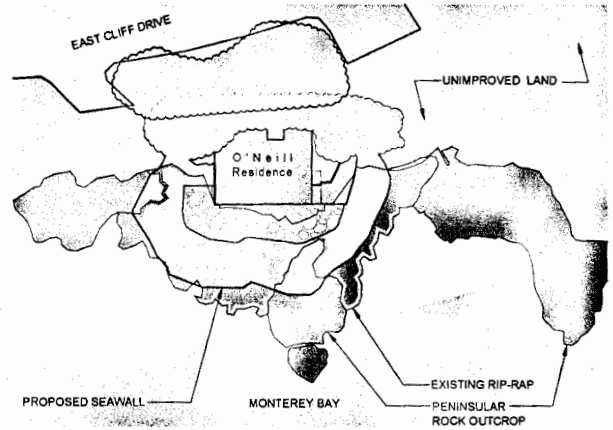
The photo illustrates the general texture and color qualities which will be incorporated into the carved and stained architectural facing of the proposed seawall. Purisma bedrock is sandy in color, roughly faced to smooth in texture. The photo also illustrates the wave undercut feature prevalent in the vicinity of the O'Neill property.

Figure 6 - Stepped Terrace Ending with Recurve

In many locations, the purisima bedrock formation consists of a series of broad terraced steps ending with an abrupt drop to the beach and often accompanied by a recurve formation on the ocean facing side. The proposed seawall profile will consist of a series of terraced steps with a naturally shaped recurve as depicted here.

Figure 6 - Oblique View of Peninsular Outcrop

The dominant geologic feature in the vicinity of the O'Neill property is a broad purisima bedrock terrace with a meandering, inclined and wave cut face which projects seaward. The proposed seawall will also feature inclined faces and an undulating and irregular alignment.



SITE PLAN

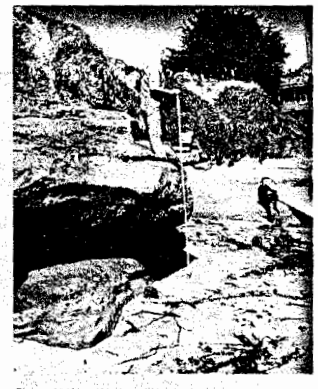


Figure 4 - Wave Undercut Notch

The purisima bedrock formation is undercut by wave erosion in numerous locations adjacent to the upcoast and downcoast sides of the O'Neill property. Short roughened recurves resembling the wave undercuts are a key feature of the proposed seawall. The recurve projects wave runup vertically and seaward.

Figure 1 - Existing Conditions

The O'Neill residence is protected by a rip-rap revetment at the base of the bluff adjecent to and below the residence. The existing rip-rap has migrated and settled into the beach and is now stacked at a 3:1 gradient. The footprint of the existing rip-rap revetment extends past the mean high tide line.

Figure 2 - Visual Simulation of Proposed Seawall Modifications

The visual simulation shows the finished appearance of the proposed seawall. The exterior of the seawall will be designed and constructed to replicate the character and color variation of the surrounding native materials and will match key geologic features in the area adjacent to the project site. The toe of the seawall will be moved landward of the mean high tide line, thus improving lateral access along the beach.

Figure 3 - Peninsular Outcrop

The photo illustrates a peninsular outcrop of purisma sandstone upcoast of the project site. Large scale peninsular outcrops occur on either side of the subject property. The proposed seawall will resemble a peninsular outcrop and is designed to possess an undulating geometry and recurve features similar to those depicted here.

PRELIMINARY NOT FOR CONSTRUCTION

REV	DESCRIPTION	BY	DATE
1	RELEASED FOR PRELIMINARY GRADING REVIEW SUBMITTAL	MS	2/2009
2	RESPONSE TO PRELIMINARY GRADING REVIEW COMMENTS	MS	7/2009
3	RESPONSE TO COASTAL COMMISSION PLAN REVIEW COMMENTS	MS	11/2009
4	UPDATE COVER SHT, LOT COVERAGE TABLE & ADD LATERAL ACCESS PATH	MS	6/2010

Mesiti-Miller Engineering, Inc.
Civil and Structural Engineering

No. 62843 Exp. 6/30/11 CIVIL

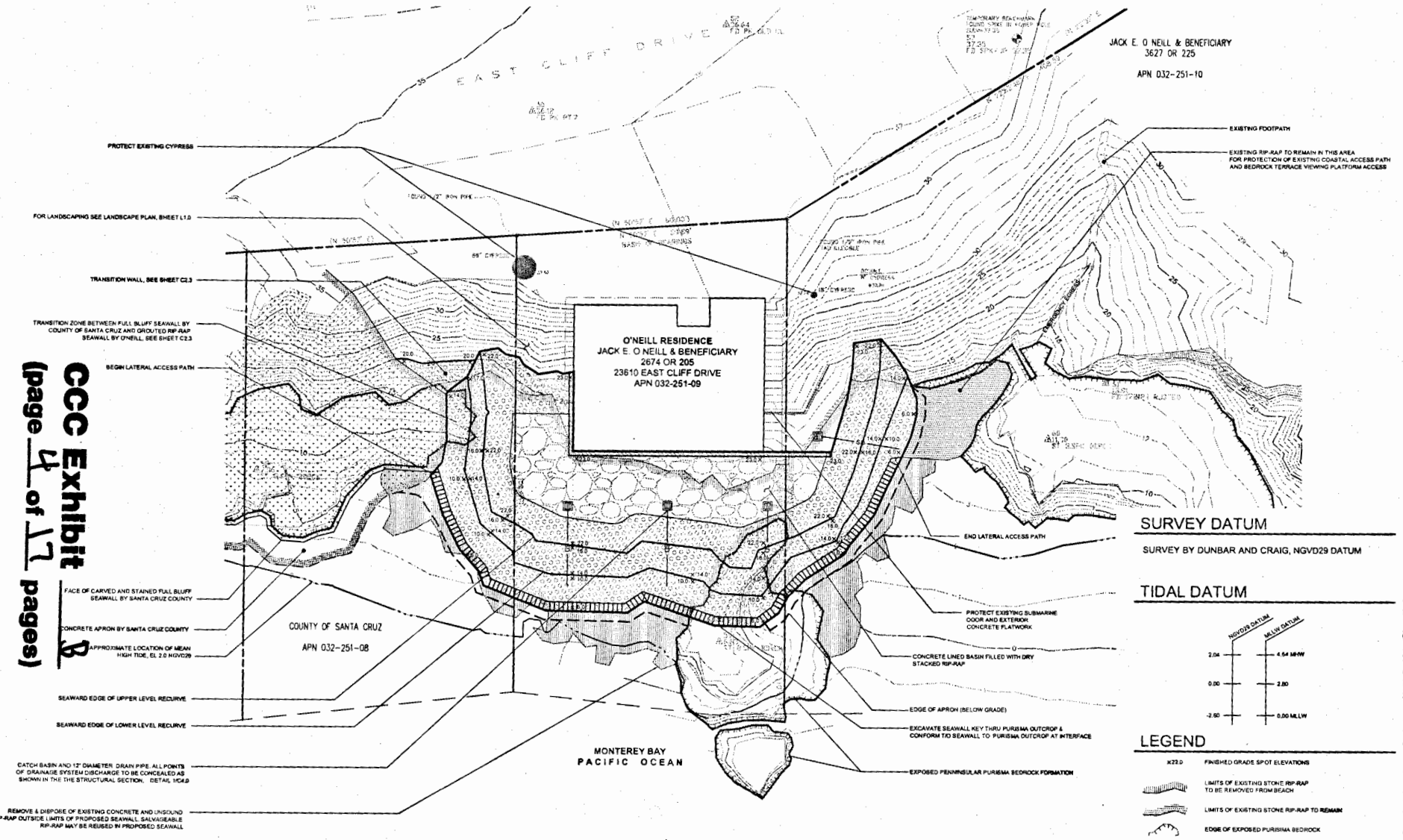
O'NEILL RESIDENCE SEAWALL

PREPARED AT THE REQUEST OF
JACK O'NEILL
2-3818 EAST CLIFF DRIVE

VISUAL SIMULATION
PHOTOS OF KEY GEOLOGIC FEATURES

DRAWN BY
CHECKED BY
JOB NUMBER 801

SHEET C0.1



CCC Exhibit B (page 4 of 17 pages)

DRAFT

SITE PLAN

SCALE: 1" = 10'

SURVEY DATUM

SURVEY BY DUNBAR AND CRAIG, NGVD29 DATUM

TIDAL DATUM

LEGEND

- x23.0 — FINISHED GRADE SPOT ELEVATIONS
- LIMITS OF EXISTING STONE RIP-RAP TO BE REMOVED FROM BEACH
- LIMITS OF EXISTING STONE RIP-RAP TO REMAIN
- EDGE OF EXPOSED PURISIMA BEDROCK
- 15 — PROPOSED FINISHED GRADE CONTOURS
- FULL BLUFF SEAWALL BY COUNTY OF SANTA CRUZ, CURRENTLY UNDER CONSTRUCTION
- GROUTED RIP-RAP SEAWALL
- CONCRETE LINED BASIN FILLED W/ DRY STACKED RIP-RAP FOR ABSORPTION OF WAVE RUNUP & OVERTOPPING VOLUME

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

PRELIMINARY NOT FOR CONSTRUCTION

O'NEILL RESIDENCE SEAWALL

PREPARED AT THE REQUEST OF

PRELIMINARY SITE PLAN

DRAWN BY:

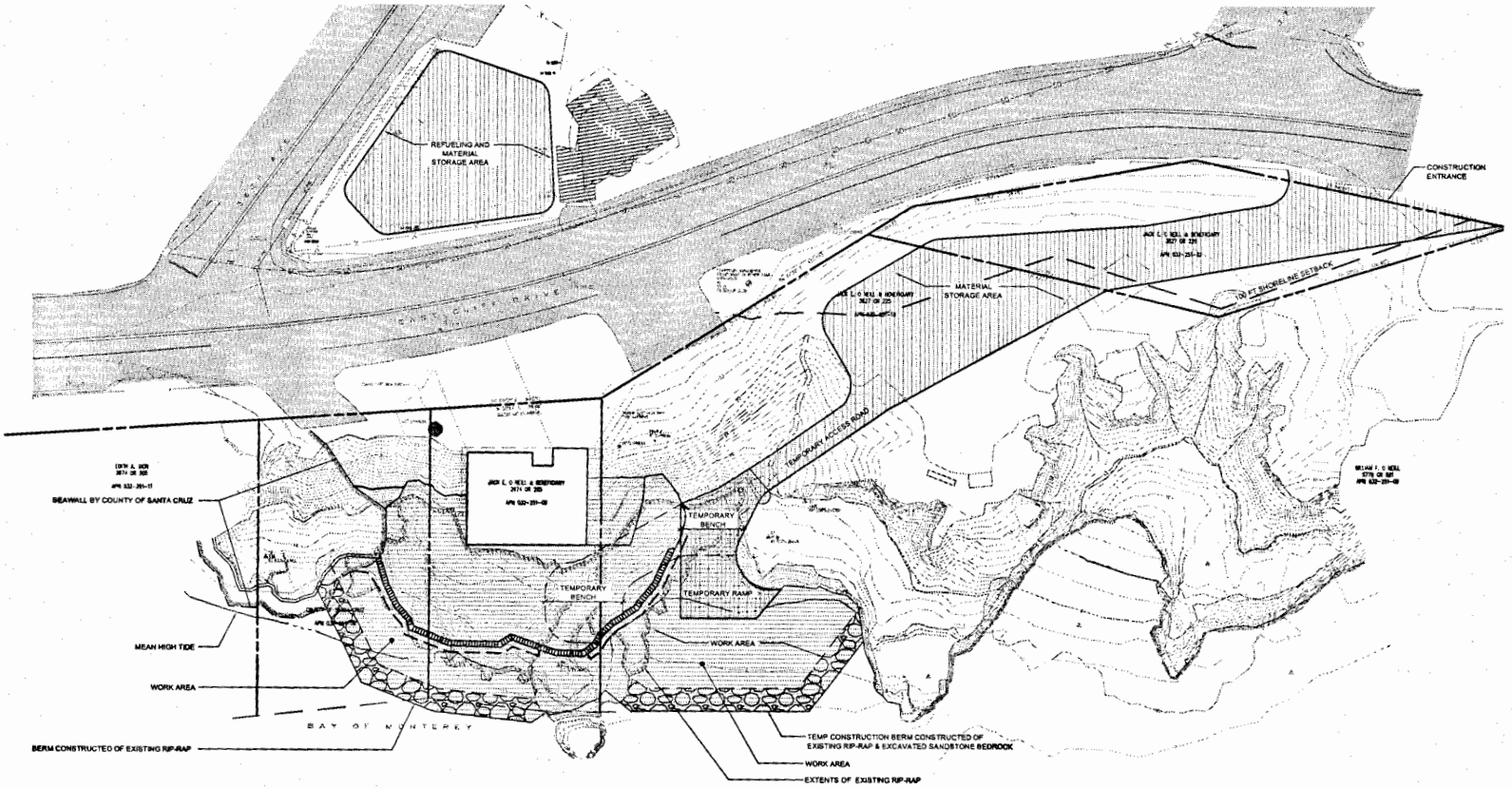
CHECKED BY:

JOB NUMBER:

C1

Mesiti-Miller Engineering, Inc.

REV.	DESCRIPTION	BY	DATE
1	PLANNING STAFF PRELIMINARY DRAWING REVIEW SUBMITTAL	MS	2/20/09
2	RESPONSE TO 2 PRELIMINARY DRAWING REVIEW COMMENTS	MS	7/13/09
3	RESPONSE TO COASTAL COMMISSION PLAN REVIEW COMMENTS	MS	11/06/09
4	UPDATE COVER PHT, LOT COVERAGE TABLE & ADDITIONAL ACCESS PATH	MS	10/27/10



CONCEPTUAL CONSTRUCTION PLAN

SCALE: 1" = 20'

CONSTRUCTION SITE BMP'S

- The Construction Management Plan at a Deferred Submittal. The Construction Management Plan shall be approved by the Engineer and California Coastal Commission. Prior to construction, the Owner's Contractor shall prepare and submit a Construction Management Plan which provides the details of proposed construction equipment, construction methodologies, sequences and procedures to be employed for each significant activity, safety procedures, etc. All activities shall be in accordance with the approved Construction Management Plan and these Construction Site Best Management Practices (BMPs).
- The Permittees shall notify planning staff of the Coastal Commission's Central Coast District Office at least three working days in advance of commencement of construction or maintenance activities, and immediately upon completion of construction or maintenance activities.
- The Contractor (and Permittee) shall monitor weather forecasts and move all construction equipment and materials off of beach in advance of storm or extreme tidal events.
- All work shall take place during daylight hours and lighting of the beach area is prohibited unless, due to extenuating circumstances, the Executive Director of the California Coastal Commission authorizes non-daylight work and/or beach area lighting.
- Construction work or equipment operations shall not be conducted seaward of the mean high water line unless tidal waters have receded from the authorized work areas.
- All construction equipment shall remain as far landward as possible, and avoid contact with ocean waters and intertidal areas.
- 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 other exceptions shall be for erosion and sediment controls and/or construction area boundary fencing where such controls and/or fencing are placed as close to the toe of the seawall/revetment as possible, and are minimized in their extent.
- Construction (including but not limited to construction activities, and materials and/or equipment storage) is prohibited outside of the defined construction, staging, and storage areas shown hereon.
- No work shall occur on the beach during weekends or holidays unless due to extenuating circumstances (such as tidal issues or other environmental concerns), and the Executive Director of the California Coastal Commission authorizes such work.
- Equipment washing shall not take place on the beach; refueling and/or servicing of equipment shall be allowed only at a designated location as noted on the Plan. Appropriate best management practices shall be used to ensure that no spills of petroleum products or other chemicals take place during these activities.
- 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, 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 work day. 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 Ocean. Fencing may be used on the beach for erosion and sediment controls (e.g. a silt fence at the base of the bluff) as necessary to contain rock and/or sediment at the project site.
- All heavy equipment used for concrete pouring located on the coastal terrace shall be set at least 25 feet landward of the bluff top and shall use flexible hoses or articulated booms to deliver concrete to the project site. Other heavy equipment may be used periodically atop the coastal bluff, but shall be removed from the bluff-top when not in use. All heavy equipment and project construction materials shall be stored in the construction staging areas shown.
- Equipment washing, refueling, and/or servicing shall not take place on the beach, or within 100 feet of the shoreline. The 100 foot setback from shoreline is shown on plan.
- Petroleum products and other hazardous materials will be kept a distance of at least 100 feet from the shoreline and shall be stored off site.
- Upon completion of construction of the seawall, the access route and staging area shall be restored to their original condition or better.
- All beach areas and all beach access points impacted by construction activities shall be restored to their pre-construction condition or better within three days of completion of construction. Any beach sand impacted shall be filtered as necessary to remove all construction debris from the beach.
- At all times during project construction activities, copies of each of the following shall be maintained in a conspicuous location at the construction job site (where such copies shall be available for public review) and all persons involved with the construction shall be briefed on the content and meaning of each prior to commencement of construction: (a) the signed coastal development permit; (b) the approved final plans; and (c) the approved Construction Management Plan.
- To prevent any impacts upon the marine habitat, no overburden or vital element may be allowed to adversely impact the beach or enter the tidal zone. Under no circumstances shall use of equipment be allowed seaward of the mean high tide line. Any areas of loose or unstable soil must be stabilized immediately after other portions of the project are finished. Any heavy equipment operation must be conducted with care near the edge of the bluff to prevent the destabilization of the substrate and additional erosion. Care must be taken so the coastal bluffs outside the work area are not damaged during construction.

CONCEPTUAL CONSTRUCTION SEQUENCE

1. Construction of the seawall key will begin at the easterly edge of the existing rip-rap revetment and proceed from the east towards the west.
2. A construction access and staging area will be located on the vacant parcel east of the O'Neill residence.
3. A temporary access road to the base of the bluff will be constructed as shown on the plan. The temporary access road will be built on grade and may be constructed of gravel or cobbles. The temporary access road will be removed upon completion of construction.
4. Existing rip-rap shall be temporarily relocated seaward of the proposed key and used to create a temporary berm and protected work area. A ramp will be constructed to the protected work area using rip rap and clean gravel.
5. Upon completion of the temporary berm and ramp, construction of the keyway may commence.
6. Construction of seawall key must occur during low tide.
7. The key will be excavated into bedrock, backfilled with existing rip-rap, and grouted solid. The key will be constructed incrementally, to coincide with low tide working hours.
8. Upon completion of the eastern keyway, a working platform will be constructed on top of the key and in front of the O'Neill residence to provide access for equipment to the western portion of the wall. The working platform will be built at approximately elevation 8.0.
9. Construction of the western portion of the key will follow the sequence described for the eastern key: relocate rip-rap seaward of the keyway, excavate keyway, backfill with rip-rap and grout.
10. Upon completion of the western portion of the key, work on the shown grade portion of the seawall may begin. Stockpiled rip-rap used to create temporary berms will be gradually removed from the beach, stacked and grouted solid in courses.
11. New rip-rap will be imported after the stockpiles of existing rip-rap have been depleted.
12. The stacking and grouting of rip-rap will proceed sequentially course by course until the final top of wall grades is achieved. Existing rip-rap which is too large may be broken into a manageable size where permitted by the Geotechnical Engineer and Structural Engineer.
13. Upon completion of the grouted core of the seawall, structural and exterior architectural concrete surfaces will be constructed.

CCC Exhibit B (page 5 of 17 pages)

PRELIMINARY NOT FOR CONSTRUCTION

O'NEILL RESIDENCE SEAWALL

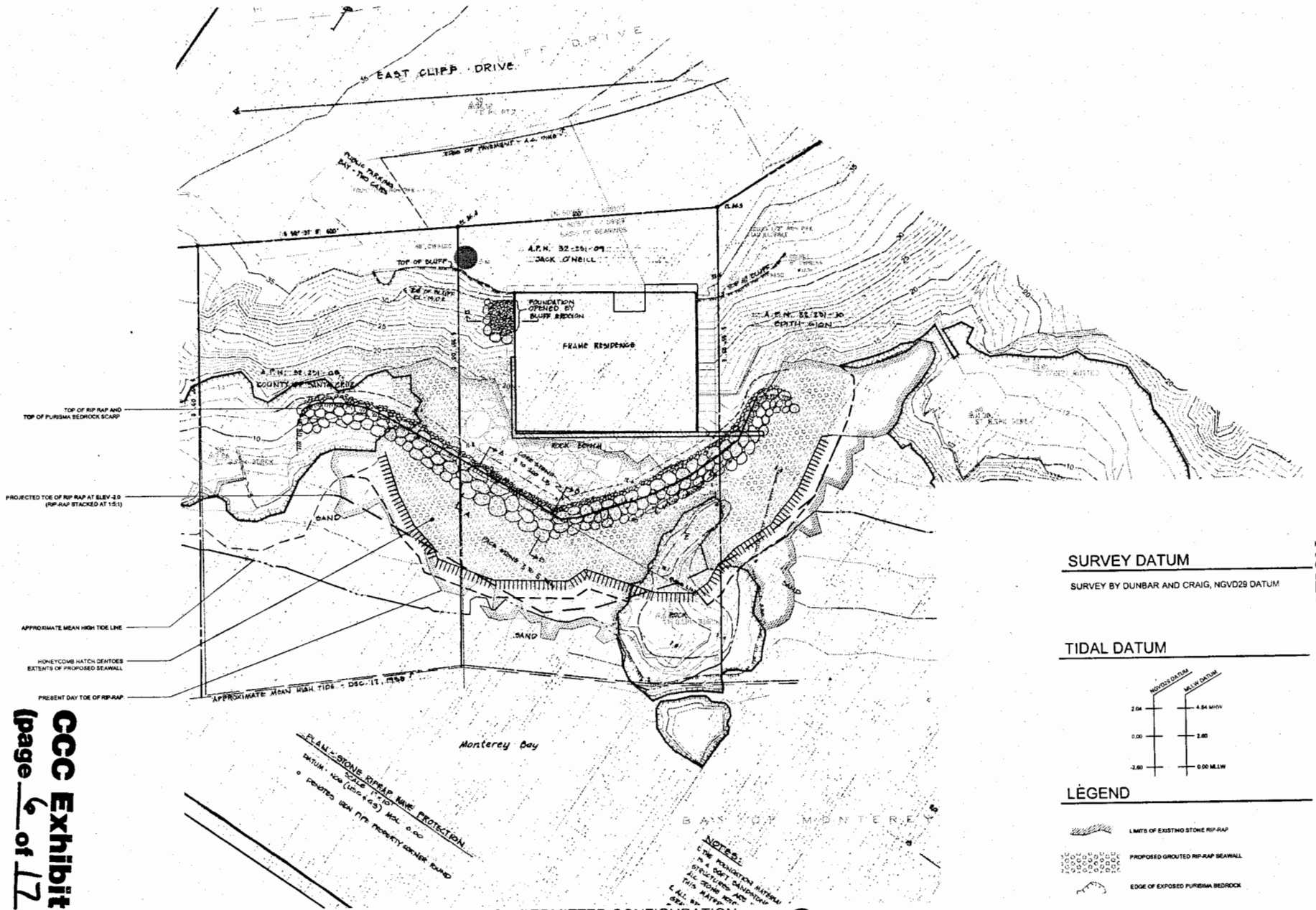
CONCEPTUAL CONSTRUCTION PLAN
CONSTRUCTION SITE BMP'S

DRAWN: MM
CHECKED:
JOB NO.: 0

REV	DESCRIPTION	BY	DATE
1	RELEASED FOR PRELIMINARY GRADING REVIEW SUBMITTAL	MM	3/2009
2	RESPONSE TO PRELIMINARY GRADING REVIEW COMMENTS	MM	7/2009
3	RESPONSE TO COASTAL COMMISSION PLAN REVIEW COMMENTS	MM	11/2009

PROFESSIONAL ENGINEER — MARK A. MESITI-MILLER — No. 40945

GREGORY LYNE ARCHITECTURE



1978 SITE PLAN AND BASIS FOR PERMITTED CONFIGURATION

SCALE: 1" = 10'

RIP-RAP CONFIGURATION DEPICTED HEREIN IS FROM THE SITE PLAN BY BOWMAN AND WILLIAMS ENTITLED, "PLAN - STONE RIPRAP WAVE PROTECTION", PREPARED FOR JACK O'NEILL, OCTOBER 1978

SURVEY DATUM

SURVEY BY DUNBAR AND CRAIG, NGVD29 DATUM

TIDAL DATUM

LEGEND

- LIMITS OF EXISTING STONE RIP-RAP
- PROPOSED GROUTED RIP-RAP SEAWALL
- EDGE OF EXPOSED PURISIMA BEDROCK

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

CCC Exhibit 13 (page 6 of 17 pages)

PRELIMINARY NOT FOR CONSTRUCTION

REV	DESCRIPTION	BY	DATE
1	RELEASED FOR PRELIMINARY GRADING REVIEW SUBMITTAL	MS	3/30/09
2	RESPONSE TO PRELIMINARY GRADING REVIEW COMMENTS	MS	7/1/09
3	RESPONSE TO COASTAL COMMISSION PLAN REVIEW COMMENTS	MS	11/30/09
4	UPDATE EDGE PAT. ICE COVERAGE, TABLE & ADD LATERAL ACCESS PATH	MS	03/18/10

Mesiti-Miller Engineering, Inc.
Civil and Structural Engineering
Santa Cruz, CA 95060

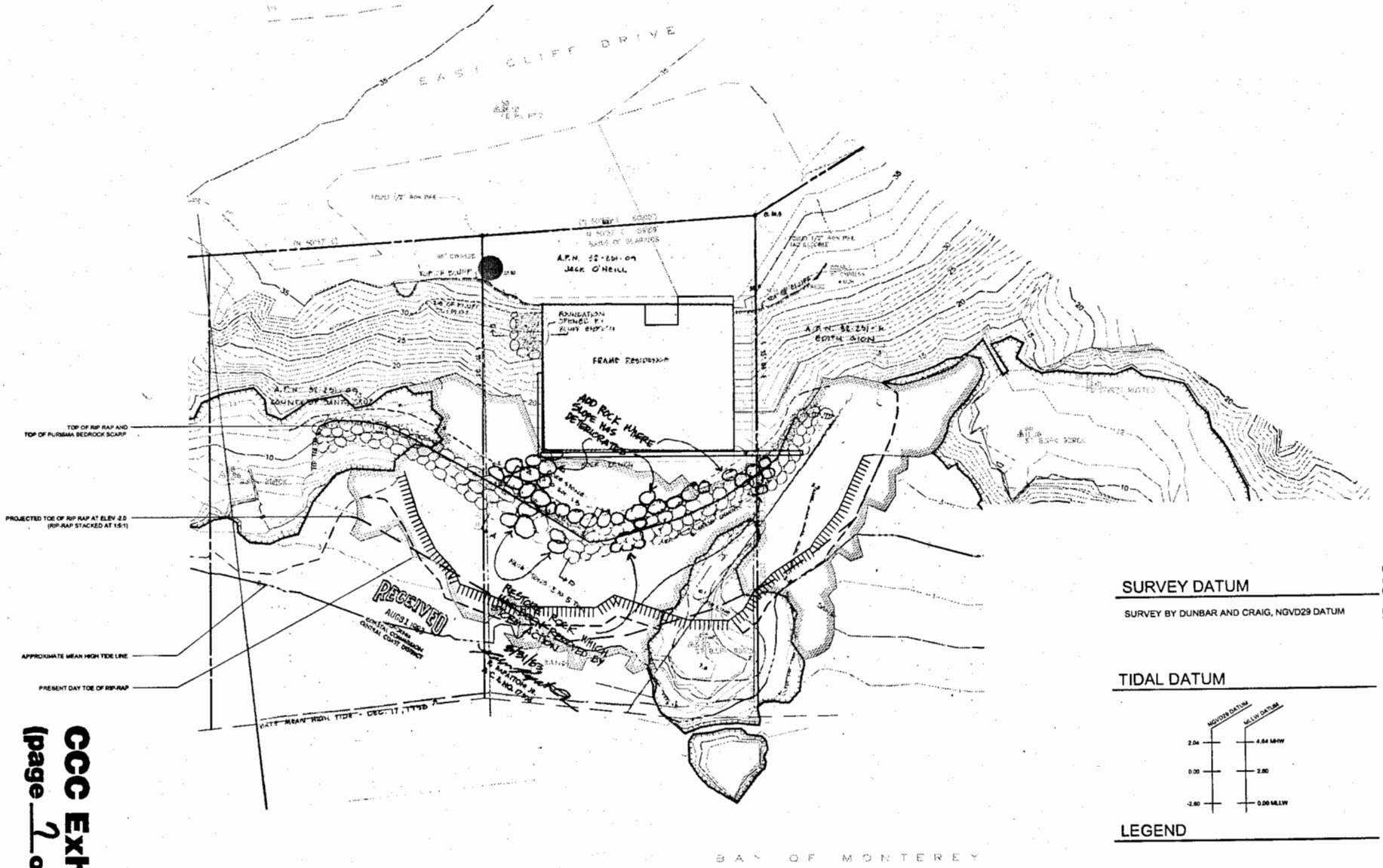
No. 60945 Exp. 3/31/11 CIVIL STATE OF CALIFORNIA

O'NEILL RESIDENCE SEAWALL

PREPARED AT THE REQUEST OF
JACK O'NEILL
2361 EAST CLIFF DRIVE
SANTA CRUZ, CA 95062

1978 SITE PLAN

DRAWN BY: NS & PD
CHECKED BY: MS
JOB NUMBER: 9014-4
SHEET
C1.2



SURVEY DATUM

SURVEY BY DUNBAR AND CRAIG, NGVD29 DATUM

TIDAL DATUM

LEGEND

LIMITS OF EXISTING STONE RIP-RAP

EDGE OF EXPOSED PURISIMA BEDROCK

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

1983 SITE PLAN AND BASIS FOR PERMITTED AUGMENTATION

SCALE: 1" = 10'

RIP-RAP CONFIGURATION DEPICTED HEREIN IS FROM THE SITE PLAN BY RALPH RAPATTONI JR. PREPARED FOR JACK O'NEILL, AUGUST 1983

CCC Exhibit B
(page 2 of 17 pages)

REV	DESCRIPTION	BY	DATE
1	RELEASED FOR PRELIMINARY GRADING REVIEW SUBMITTAL	MS	7/30/08
2	RESPONSE TO PRELIMINARY GRADING REVIEW COMMENTS	MS	2/1/09
3	RESPONSE TO COASTAL COMMISSION PLAN REVIEW COMMENTS	MS	11/30/09
4	UPDATE DENCK SHY LOT COVERAGE TABLE & ADD LATERAL ACCESS PATH	MS	02/19/10

Mesiti-Miller Engineering, Inc.
Civil and Structural Engineering
224 Walnut Avenue, Suite J, Santa Cruz, CA 95060
831.459.9992

REGISTERED PROFESSIONAL ENGINEER
No. 50641
Exp. 3/31/11
Civil
STATE OF CALIFORNIA

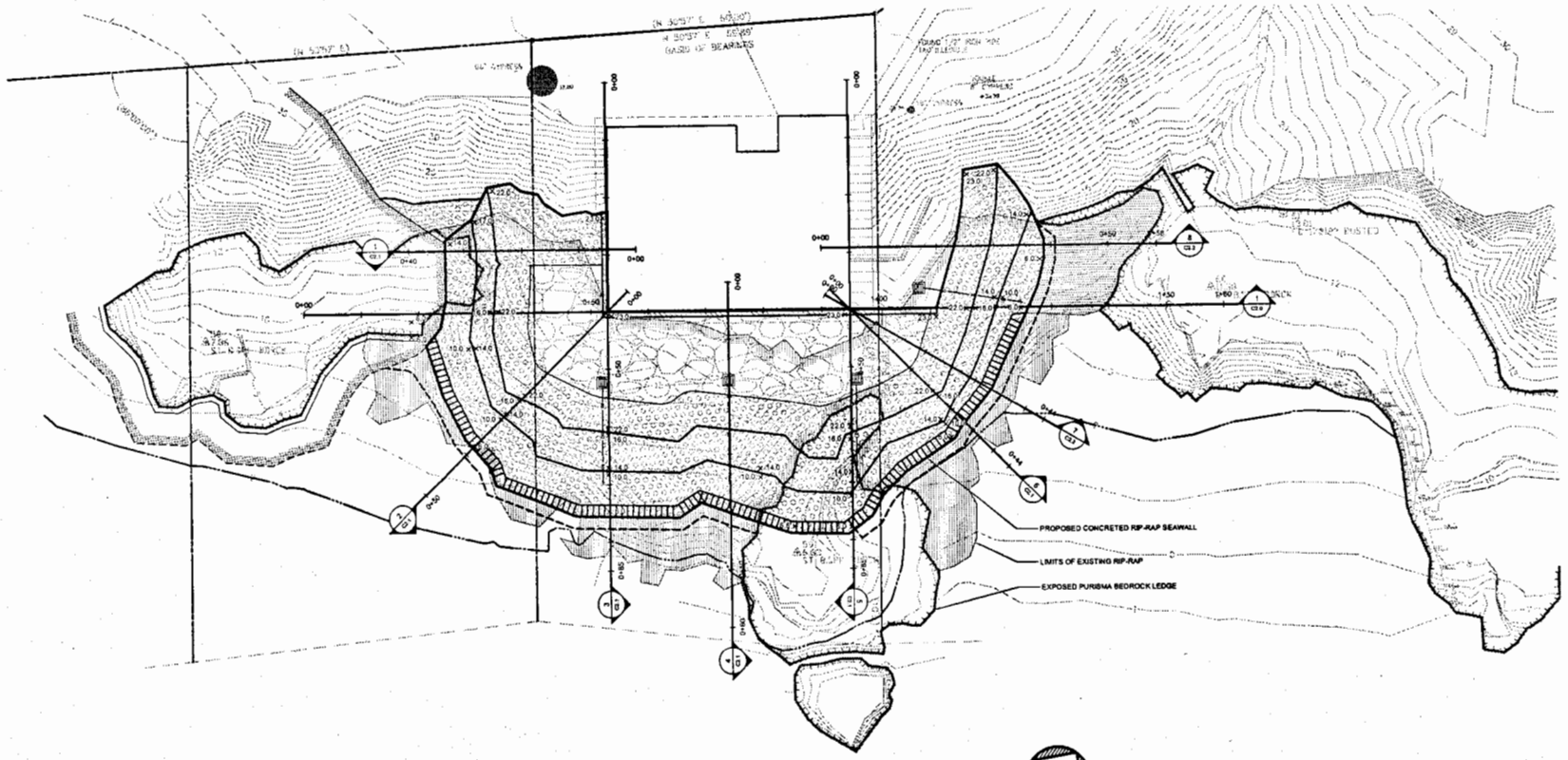
PRELIMINARY NOT FOR CONSTRUCTION

O'NEILL RESIDENCE SEAWALL

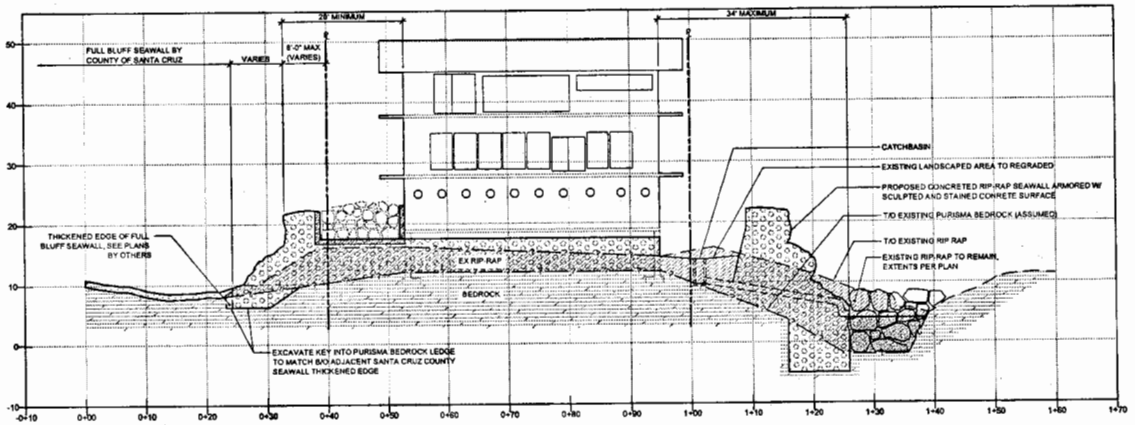
PREPARED AT THE REQUEST OF
JACK O'NEILL
2-3610 EAST CLIFF DRIVE
SANTA CRUZ, CA 95062

1983 SITE PLAN

DRAWN BY: MS & PC
CHECKED BY: MM
JOB NUMBER: 90145
SHEET
C1.3



SITE SECTIONS
SCALE: 1" = 10'



TRANSVERSE SECTION (1)
SCALE: 1"=10'

CCC Exhibit 8
(page 8 of 17 pages)

PRELIMINARY NOT FOR CONSTRUCTION

NO.	DESCRIPTION	BY	DATE
1	RELEASED FOR PRELIMINARY GRADING REVIEW SUBMITTAL	MS	3/29/11
2	RESPONSE TO PRELIMINARY GRADING REVIEW COMMENTS	MS	7/1/11
3	RESPONSE TO COASTAL COMMISSION PLAN REVIEW COMMENTS	MS	11/16/11
4	UPDATE COVER SHT LOT COVERAGE, LADLE & KICK LATERAL ACCESS PATH	MS	03/19/12

Mesiti-Miller Engineering, Inc.
Civil and Structural Engineering
1111 Fair Oaks Avenue, Suite 204, Santa Cruz, CA 95062
Phone 831-426-3560 Fax 831-426-9927

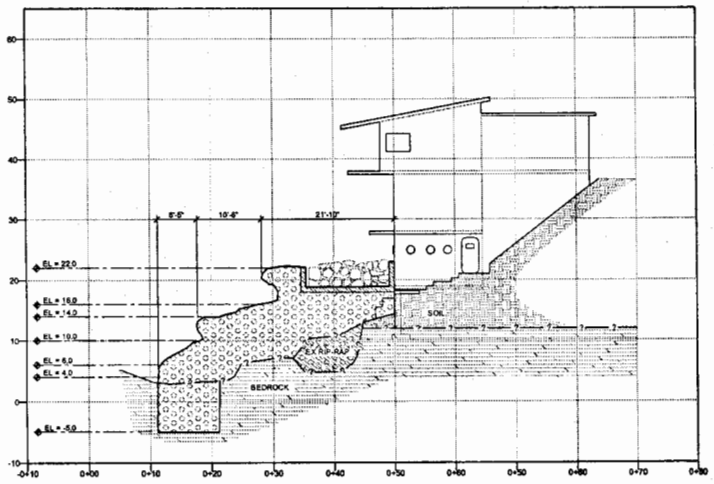
REGISTERED PROFESSIONAL ENGINEER — MARK A. MESITI-MILLER — No. 42845 (exp 3/31/11) — CIVIL — STATE OF CALIFORNIA

O'NEILL RESIDENCE SEAWALL

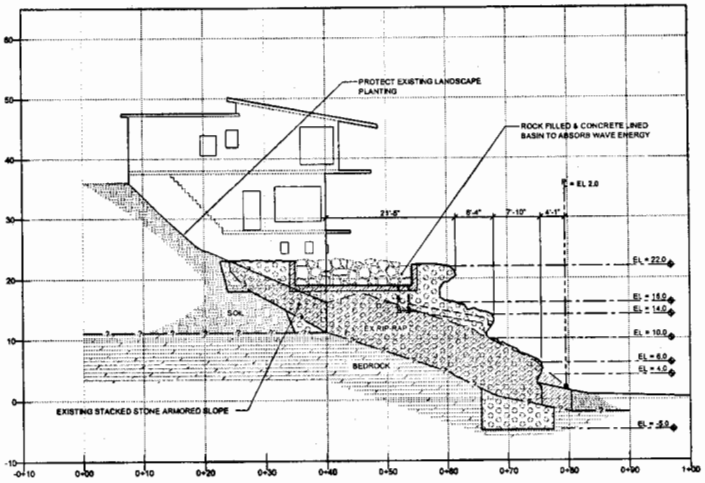
PREPARED AT THE REQUEST OF
JACK O'NEILL
2340 E. CLIFF DRIVE
SANTA CRUZ, CA 95062

SITE PLAN W/ KEYED SECTIONS
TRANSVERSE SECTION

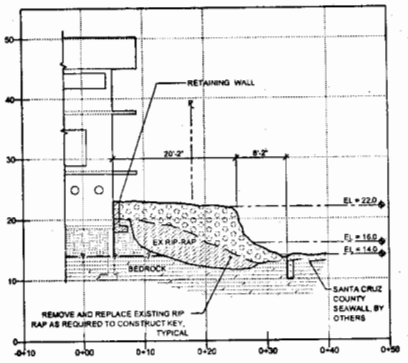
DRAWN BY: TC & PD
CHECKED BY: MS
JOB NUMBER: 90149-8
SHEET
C2.0



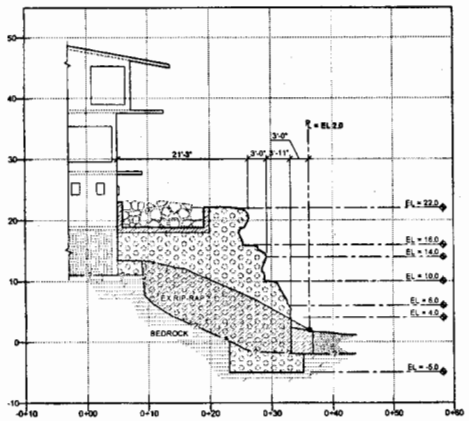
SECTION 5
SCALE: 1"=10'
5



SECTION 3
SCALE: 1"=10'
3

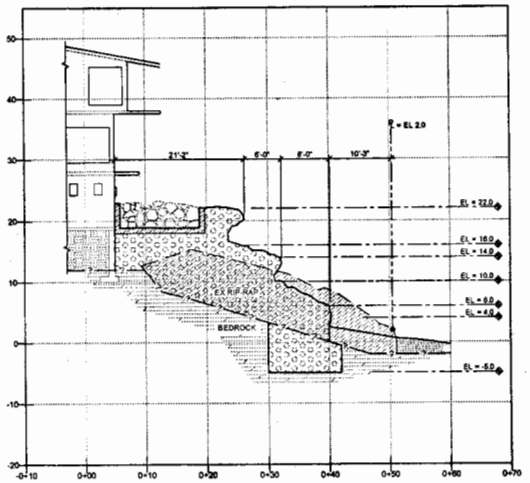


SECTION 1
SCALE: 1"=10'
1

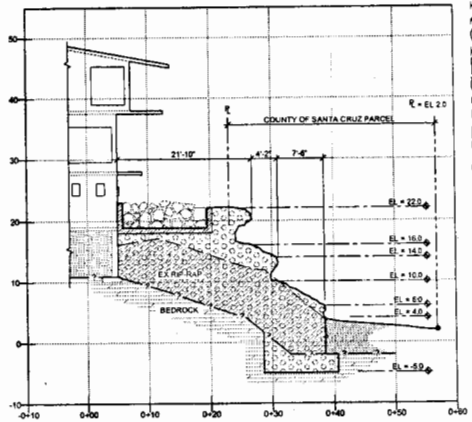


SECTION 6
SCALE: 1"=10'
6

CCC Exhibit B
(page 9 of 17 pages)



SECTION 4
SCALE: 1"=10'
4



SECTION 2
SCALE: 1"=10'
2

PRELIMINARY NOT FOR CONSTRUCTION

REV	DESCRIPTION	BY	DATE
1	RELEASED FOR PRELIMINARY GRADING REVIEW/SUBMITTAL	MG	2/7/09
2	RESPONSE TO PRELIMINARY GRADING REVIEW COMMENTS	MG	7/1/09
3	RESPONSE TO COASTAL CONSISTENCY PLAN REVIEW COMMENTS	MG	11/20/09
4	UPDATE GRADING PLAN FOR CONSTRUCTION, TABLE & ADD LATERAL ACCESS PATH	MG	03/19/10

Mesiti-Miller Engineering, Inc.
Civil and Structural Engineering
304 Ingalls Street, Suite 7, Santa Cruz, CA 95060
Phone: 831.459.9992 Fax: 831.459.0933

REGISTERED PROFESSIONAL ENGINEER — MARK A. MESITI-MILLER — No. 42845 — Exp. 3/31/11 — CIVIL — STATE OF CALIFORNIA

O'NEILL RESIDENCE SEAWALL

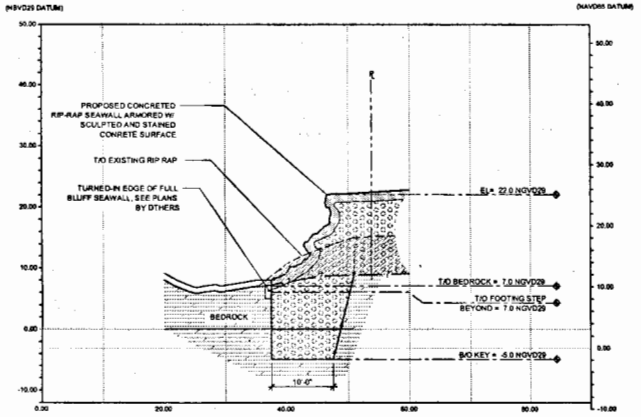
PREPARED AT THE REQUEST OF
JACK O'NEILL
2-3410 EAST CLIFF DRIVE
SANTA CRUZ, CA 95062

SECTIONS

DRAWN BY: TC & PD
CHECKED BY: MG
JOB NUMBER: 90149-8
SHEET
C2.1

PRELIMINARY NOT FOR CONSTRUCTION

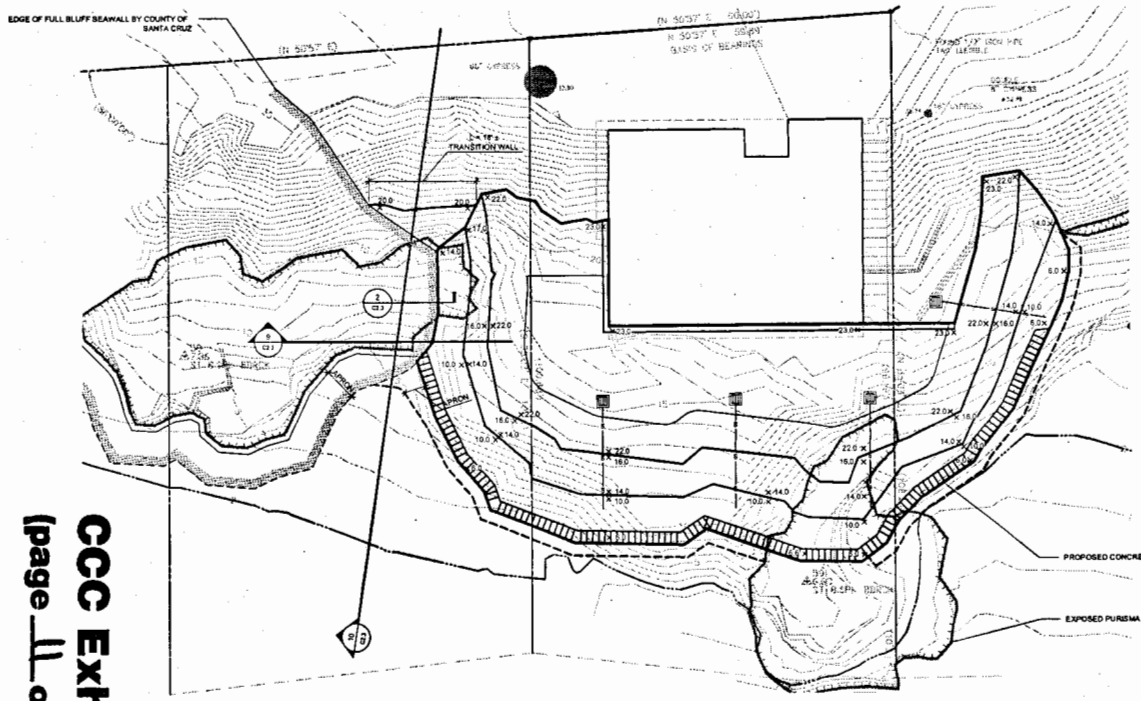
CCC Exhibit B
(page 10 of 17 pages)



SECTION 9

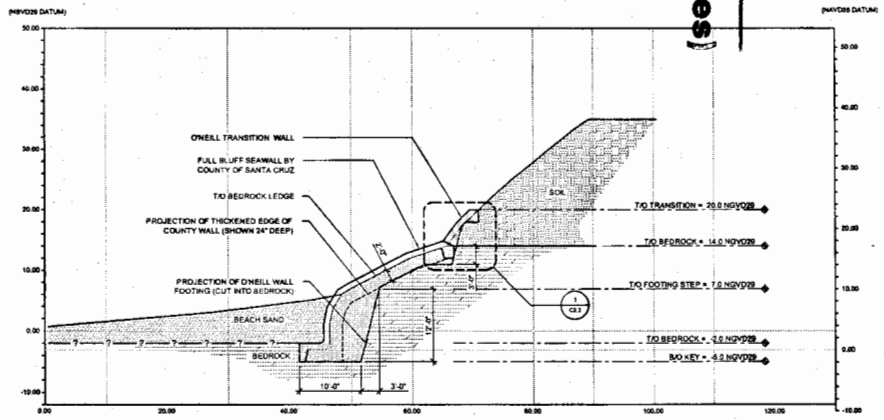
SCALE: 1"=10'

9



TRANISITION AREA SITE SECTIONS

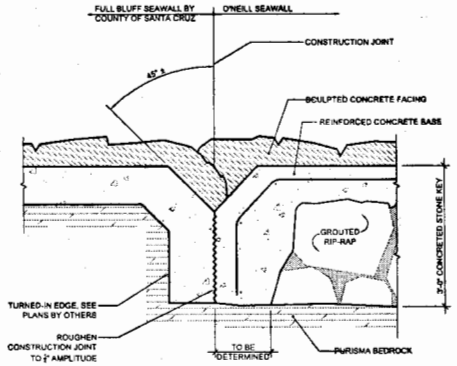
SCALE: 1" = 10'



SECTION 10

SCALE: 1"=10'

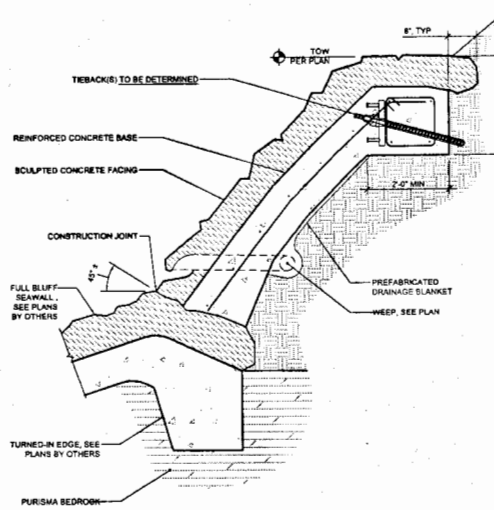
10



CONSTRUCTION JOINT INTERFACE AT SEAWALL

SCALE: 3/4" = 1'-0"

2



TRANSITION WALL

SCALE: 3/4" = 1'-0"

1

CCC Exhibit B (page 11 of 17 pages)

PRELIMINARY NOT FOR CONSTRUCTION

REV	DESCRIPTION	BY	DATE
1	PLANNING FOR PRELIMINARY GRADING REVIEW SUBMITTAL	MS	2/2009
2	RESPONSE TO PRELIMINARY GRADING REVIEW COMMENTS	MS	7/09
3	RESPONSE TO COASTAL COMMISSION PLAN REVIEW COMMENTS	MS	11/2009
4	UPDATE CONCEPT, LOT COVERAGE TABLE & ADD LATERAL ACCESS PATH	MS	12/29/10

Mesiti-Miller Engineering, Inc.
Civil and Structural Engineering
1360 41st Avenue, Suite 101, Capitola, CA 95010
Phone 831-426-3141 Fax 831-426-3087

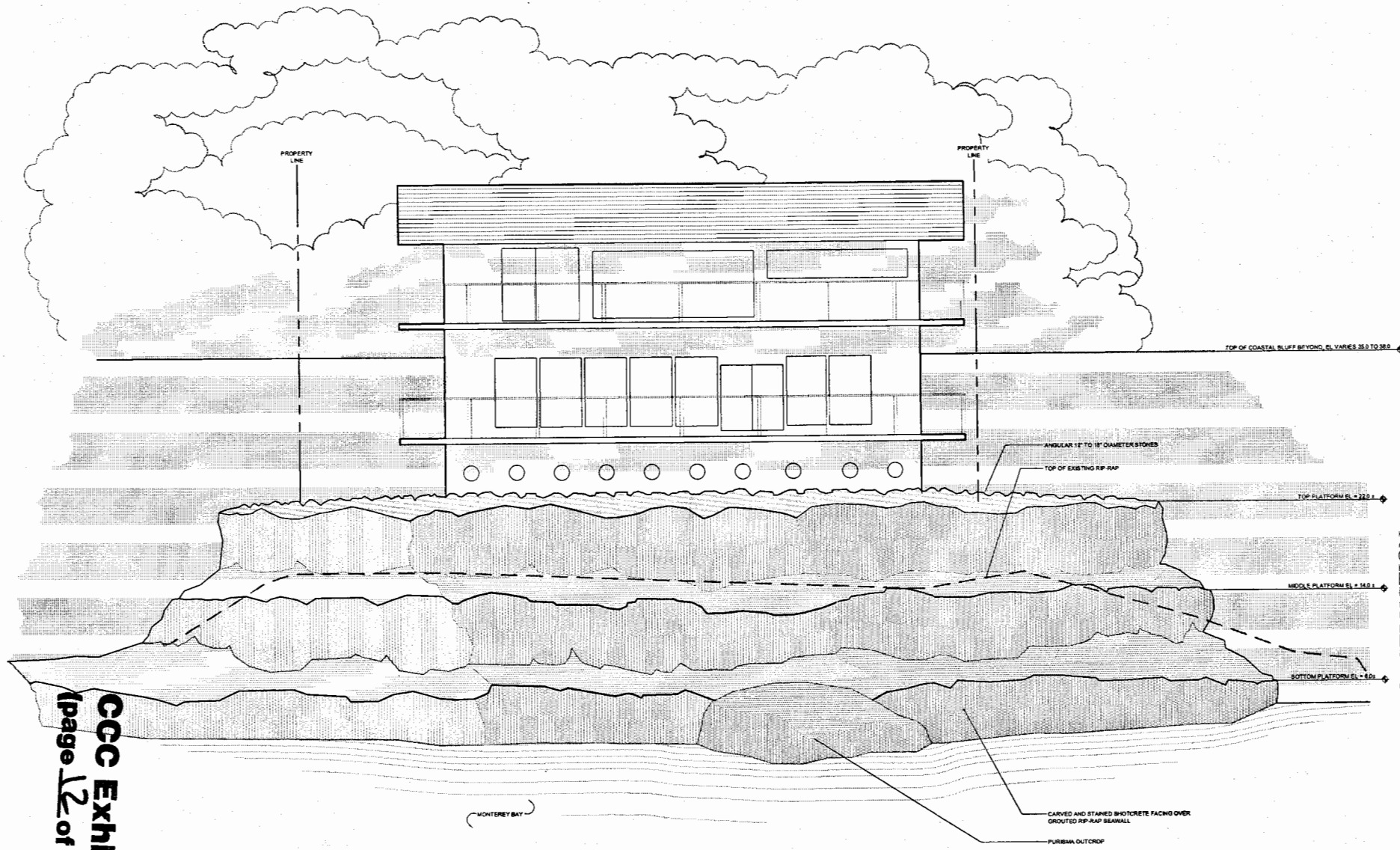
No. 40945
Exp. 3/31/11
CIVIL
STATE OF CALIFORNIA

O'NEILL RESIDENCE SEAWALL

PREPARED AT THE REQUEST OF
JACK O'NEILL
2365 EAST CLIFF DRIVE
SANTA CRUZ, CA 95062

TRANSITION AREA SECTIONS

DRAWN BY: TC & PD
CHECKED BY: MS
JOB NUMBER: 9014R-E
SHEET
C2.3



SOUTH ELEVATION

SCALE: 1/4" = 1'-0"

CCC Exhibit B (page 12 of 17 pages)

PRELIMINARY NOT FOR CONSTRUCTION

O'NEILL RESIDENCE SEAWALL

PREPARED AT THE REQUEST OF
JACK O'NEILL
2 3610 EAST CLIFF DRIVE
SANTA CRUZ, CA 95062

REV	DESCRIPTION	BY	DATE
1	RELEASED FOR PRELIMINARY GRADING REVIEW SUBMITTAL	MD	3/30/10
2	RESPONSE TO PRELIMINARY GRADING REVIEW COMMENTS	MD	7/1/10
3	RESPONSE TO COASTAL COMMISSION PLAN REVIEW COMMENTS	MD	11/29/10
4	UPDATE COVER SHEET CUT COVERAGE TABLE & ADD LATERAL ACCESS PATH	MD	3/31/11

Mesiti-Miller Engineering, Inc.
Civil and Structural Engineering
204 Walnut Avenue, Suite F Santa Cruz, CA 95060
Phone 831-459-9992 Fax 831-459-9993

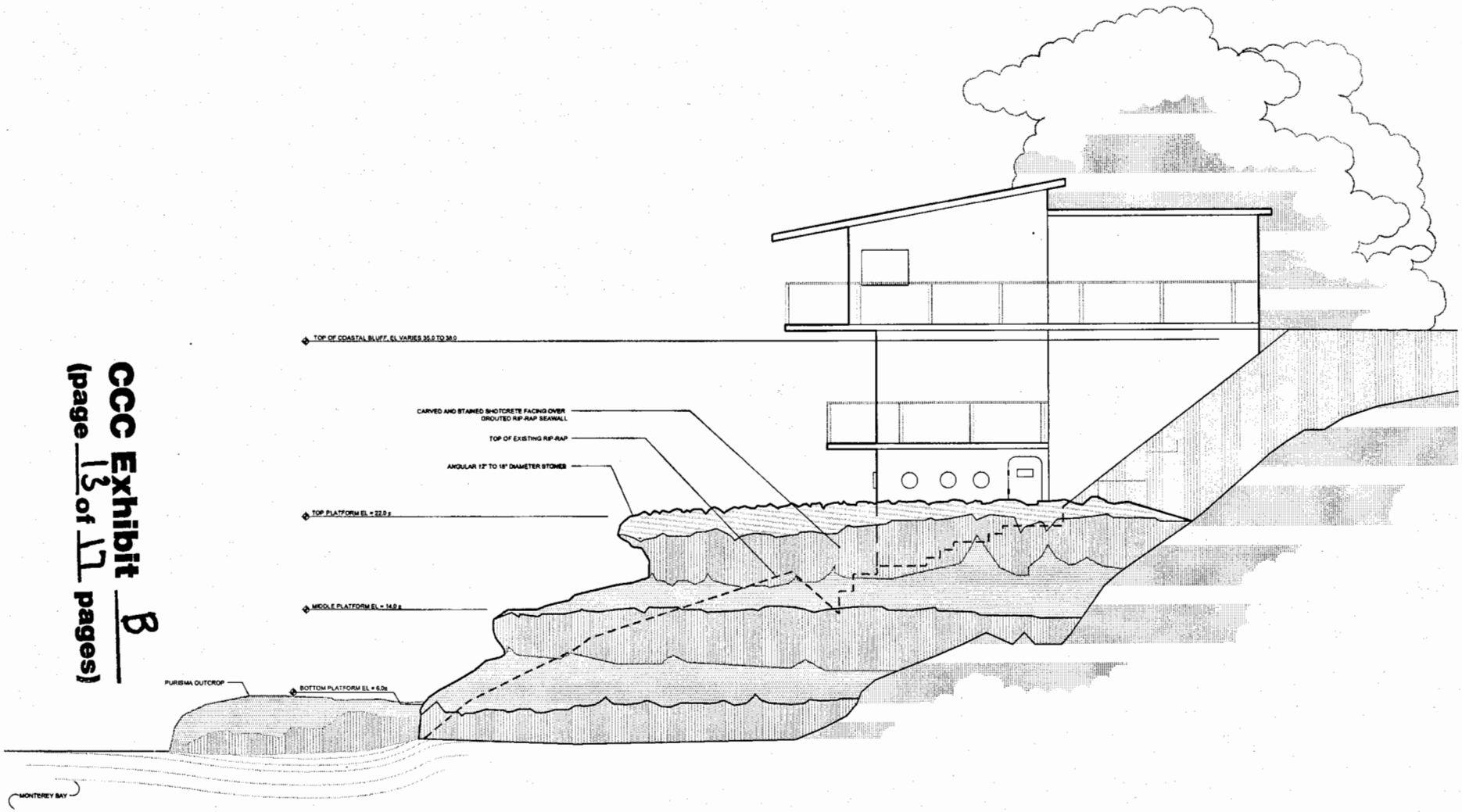
No. 40915
Exp. 12/31/11
CIVIL
STATE OF CALIFORNIA

SEAWALL SOUTH ELEVATION

DRAWN BY: PD
CHECKED BY: MD
JOB NUMBER: 091408

SHEET
C3.0

CCC Exhibit 8
(page 13 of 17 pages)



EAST ELEVATION
SCALE: 1/4" = 1'-0"

PRELIMINARY NOT FOR CONSTRUCTION

REV	DESCRIPTION	BY	DATE
1	RELEASED FOR PRELIMINARY GRADING REVIEW SUBMITTAL	MJ	3/30/09
2	RESPONSE TO PRELIMINARY GRADING REVIEW COMMENTS	MJ	7/1/09
3	RESPONSE TO COASTAL COMMISSION'S INCOMPLETE COMMENTS	MJ	11/20/09
4	UPDATE CONCEPT SHT LOT COVERAGE TABLE & ADD LATERAL ACCELERATION	MJ	12/30/10

Mesiti-Miller Engineering, Inc.
Civil and Structural Engineering
Phone 831.426.3560 Fax 831.426.3560

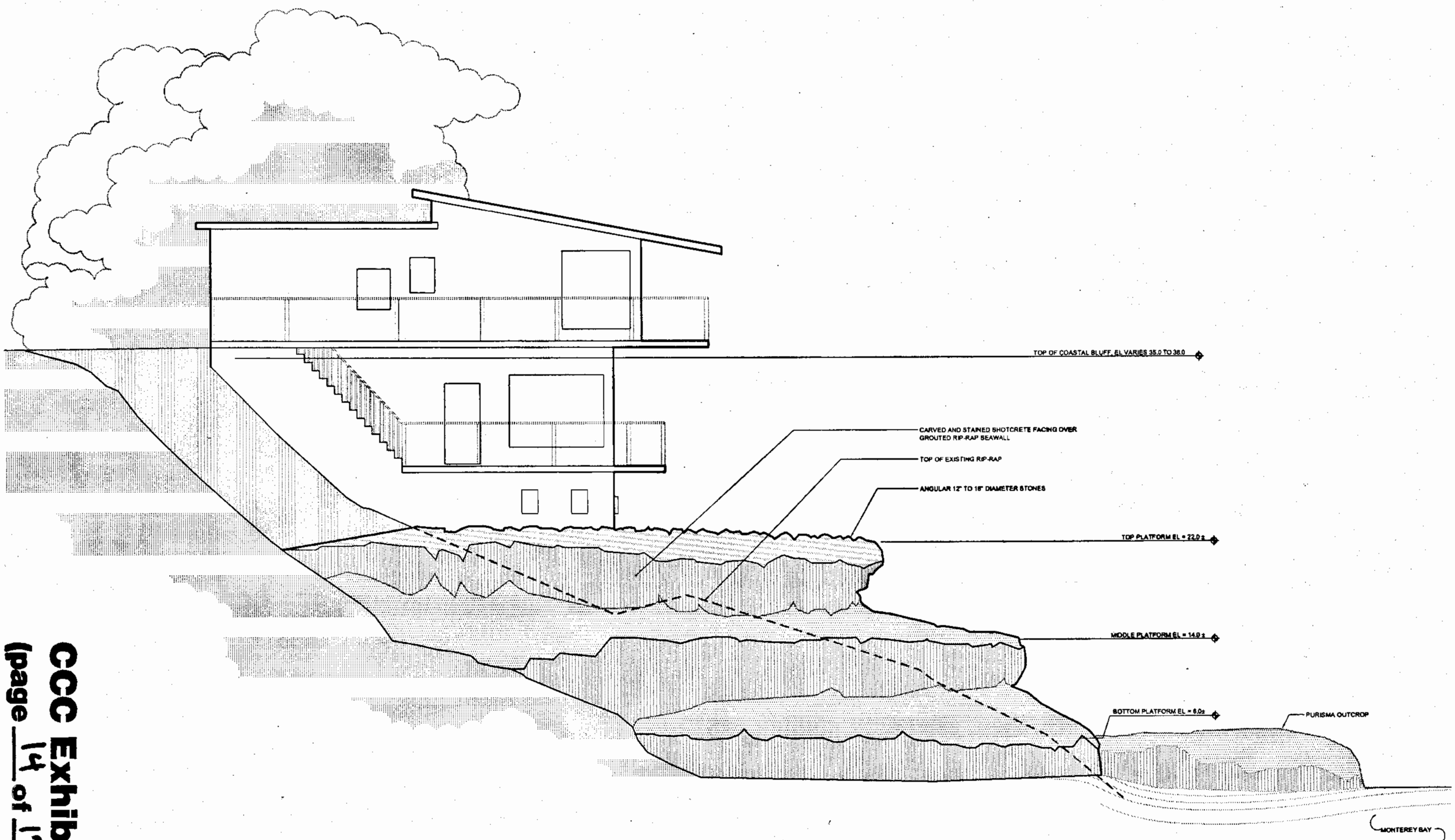
O'NEILL RESIDENCE SEAWALL

PREPARED AT THE REQUEST OF
JACK O'NEILL
2386 EAST CLIFF DRIVE
SANTA CRUZ, CA 95062

SEAWALL EAST ELEVATION

DRAWN BY: PD
CHECKED BY: MJ
JOB NUMBER: 90145-8

SHEET
C3.1



WEST ELEVATION

SCALE: 1/4" = 1'-0"

REV.	DESCRIPTION	BY	DATE
0	RELEASED FOR PRELIMINARY GRADING REVIEW SUBMITTAL	MG	3/20/09
1	RESPONSE TO PRELIMINARY GRADING REVIEW COMMENTS	MG	7/1/09
2	RESPONSE TO COASTAL COMMISSION PLAN REVIEW COMMENTS	MG	11/30/09
3	UPDATE COVER SHT LOT COVERAGE TABLE & ADD LATERAL ACCESS PATH	MG	02/18/10
4			

Mesiti-Miller Engineering, Inc.
Civil and Structural Engineering
224 Walnut Avenue, Suite B · Santa Cruz, CA 95060
Phone 831-426-3186 · Fax 831-426-6807

REGISTERED PROFESSIONAL ENGINEER MARK MESITI-MILLER No. 40945 Exp. 3/31/11 CIVIL STATE OF CALIFORNIA

O'NEILL RESIDENCE SEAWALL

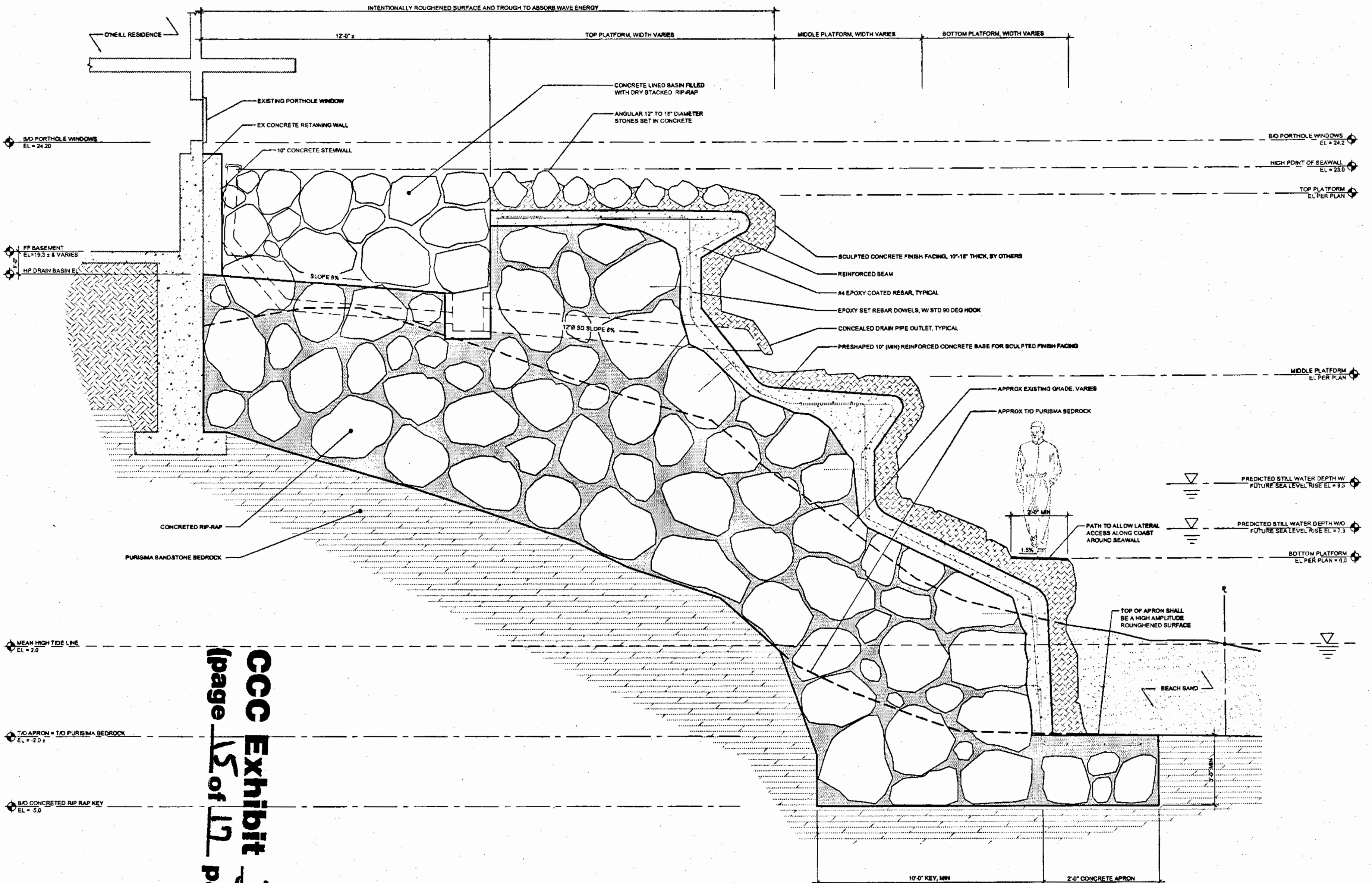
PREPARED AT THE REQUEST OF
JACK O'NEILL
2-3610 EAST CLIFF DRIVE
SANTA CRUZ, CA 95062

SEAWALL WEST ELEVATION

DRAWN BY: PD
CHECKED BY: MG
JOB NUMBER: 90148.8
SHEET
C3.2

PRELIMINARY NOT FOR CONSTRUCTION

CCC Exhibit B
(page 14 of 17 pages)



CCC Exhibit B
(page 15 of 17 pages)

CONCRETED RIP-RAP SEAWALL STRUCTURAL SECTION (1)
SCALE: 1/2" = 1'-0"

GRAPHIC SCALE
2'-0" 0 1'-0" 2'-0" 4'-0" 8'-0"
1/2" = 1'-0"

REV	DESCRIPTION	BY	DATE
1	RELEASED FOR PRELIMINARY GRADING REVIEW SUBMITTAL	MJ	3/26/09
2	RESPONSE TO PRELIMINARY GRADING REVIEW COMMENTS	MJ	7/1/09
3	RESPONSE TO COASTAL COMMISSION PLAN REVIEW COMMENTS	MJ	11/30/09
4	UPDATE COVER SHT LOT COVERAGE TABLE & ADD LATERAL ACCESS PATH	MJ	6/21/10

Mesiti-Miller Engineering, Inc.
Civil and Structural Engineering

REGISTERED PROFESSIONAL ENGINEER MARK MESITI-MILLER No. 40945 Exp. 3/31/11 CIVIL STATE OF CALIFORNIA

O'NEILL RESIDENCE SEAWALL

PREPARED AT THE REQUEST OF
JACK O'NEILL
2-3610 EAST CLIFF DRIVE
SANTA CRUZ, CA 95062

SEAWALL STRUCTURAL SECTION

PRELIMINARY NOT FOR CONSTRUCTION

DRAWN BY:	NT
CHECKED BY:	M
JOB NUMBER:	901484
SHEET	C4.0

CAD Drafting by:
SUSAN DEE CUMMINS
Residential Design/CAD Drafting
2-3625 E. Cliff Dr. #4, Santa Cruz, CA 95062
(831) 476-8051

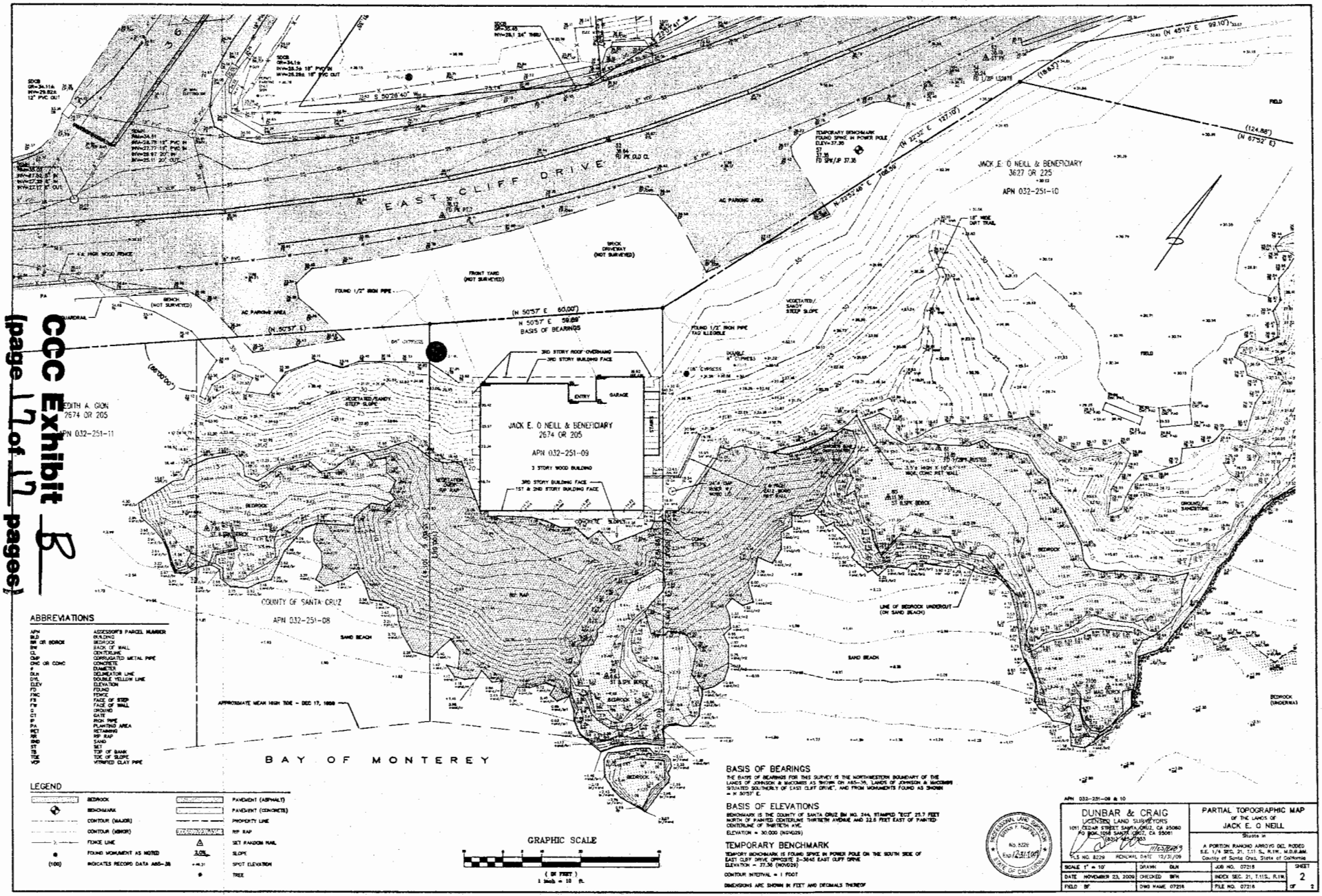
Alegre Landscaping and Design
Designer Lupe Peru
Ph: 831-227-3226

Planting Plan

O'Neill Residence Seawall
2-3610 East Cliff Dr.
Santa Cruz, CA 95062

REV. DATE: 11-30-09

L1.0



CCC Exhibit B (page 1 of 17 pages)

ABBREVIATIONS

APN	ASSESSOR'S PARCEL NUMBER
BLDG	BUILDING
BR OR BDRCK	BEDROCK
BOW	BACK OF WALL
C/L	CENTERLINE
CMP	CORRUGATED METAL PIPE
CONC OR CONC	CONCRETE
DIA	DIAMETER
DLN	DELINEATOR LINE
DYL	DOUBLE YELLOW LINE
ELEV	ELEVATION
FD	FOUND
FNC	FENCE
FOS	FACE OF STEP
FOW	FACE OF WALL
GND	GROUND
GT	GATE
IP	IRON PIPE
PA	PLANTING AREA
RET	RETAINING
RR	RR RAP
SND	SAND
MT	MET
TOB	TOP OF BANK
TOE	TOE OF SLOPE
VCP	VITRIFIED CLAY PIPE

LEGEND

BEDROCK
BENCHMARK
CONTOUR (MAJOR)
CONTOUR (MINOR)
FENCE LINE
FOUND MONUMENT AS NOTED
(100) INDICATES RECORD DATA ARS-38
PAVEMENT (ASPHALT)
PAVEMENT (CONCRETE)
PROPERTY LINE
RIP RAP
SET RANDOM NAIL
3.0% SLOPE
+44.31 SPOT ELEVATION
TREE

GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.

BASIS OF BEARINGS

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE NORTHWESTERN BOUNDARY OF THE LANDS OF JOHNSON & MACOMBS AS SHOWN ON ARS-38, LANDS OF JOHNSON & MACOMBS SITUATED SOUTHERLY OF EAST CLIFF DRIVE", AND FROM MONUMENTS FOUND AS SHOWN = N 50°57' E.

BASIS OF ELEVATIONS

BENCHMARK IS THE COUNTY OF SANTA CRUZ BM NO. 244, STAMPED "ECD" 25.7 FEET NORTH OF PAINTED CENTERLINE THIRTEETH AVENUE AND 22.6 FEET EAST OF PAINTED CENTERLINE OF THIRTEETH AVE.
ELEVATION = 30.000 (NGVD29)

TEMPORARY BENCHMARK

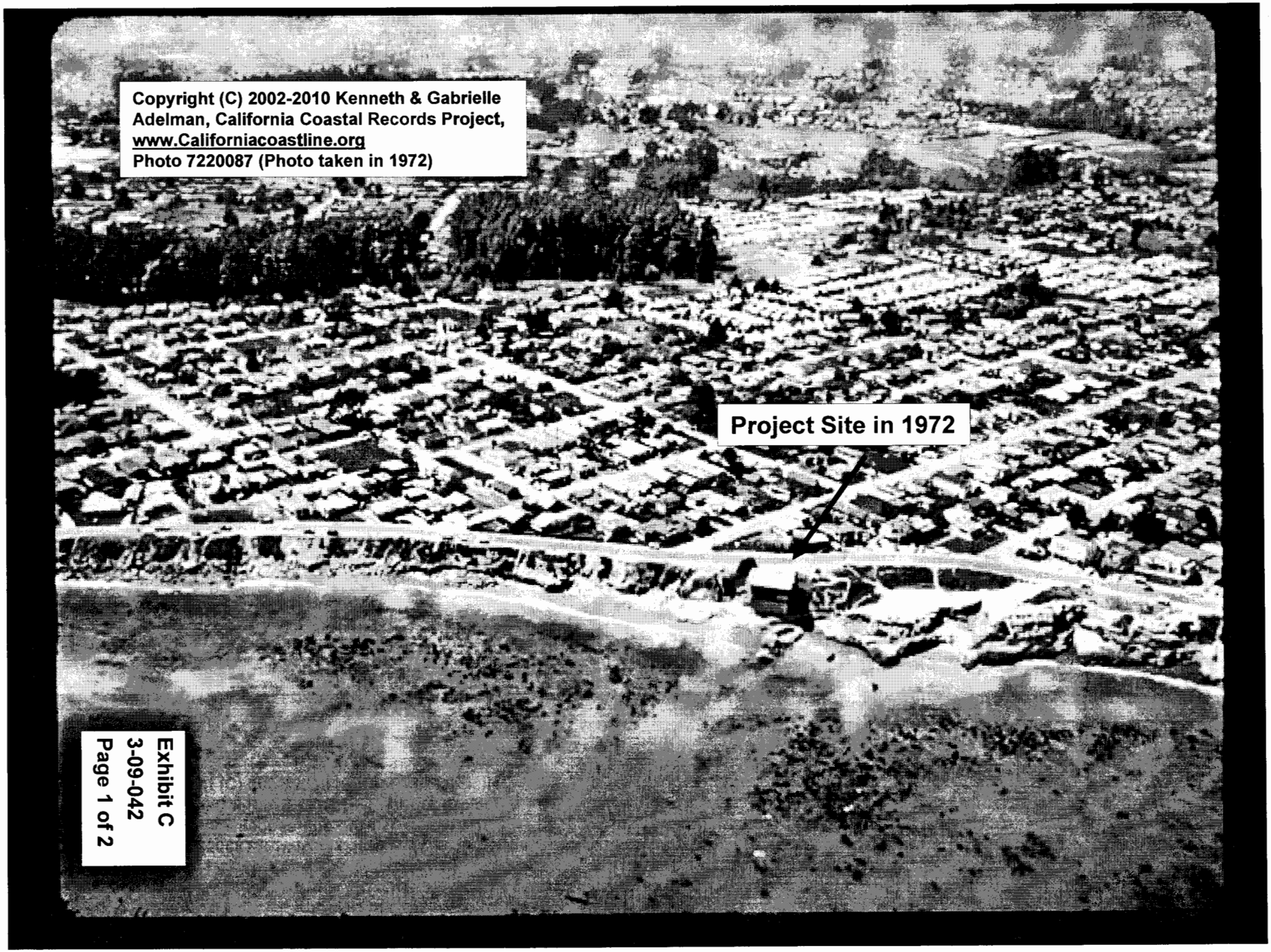
TEMPORY BENCHMARK IS FOUND SPIKE IN POWER POLE ON THE SOUTH SIDE OF EAST CLIFF DRIVE, OPPOSITE 2-3646 EAST CLIFF DRIVE
ELEVATION = 37.35' (NGVD29)

CONTOUR INTERVAL = 1 FOOT

DIMENSIONS ARE SHOWN IN FEET AND DECIMALS THEREOF

PROFESSIONAL LAND SURVEYOR — BRENT P. HARRIS — No. 8229 — Exp 12/31/09 — STATE OF CALIFORNIA

DUNBAR & CRAIG LICENSED LAND SURVEYORS 1011 CEDAR STREET SANTA CRUZ, CA 95060 PO BOX 1098 SANTA CRUZ, CA 95061 (831) 465-9303	PARTIAL TOPOGRAPHIC MAP OF THE LANDS OF JACK E. O NEILL Situate in A PORTION RANCHO ARROYO DEL RODEO S.E. 1/4 SEC. 21, T.11 S., R.1W., M.D.B.&M. County of Santa Cruz, State of California
P.L.S. NO. 8229 RENEWAL DATE 12/31/09	
SCALE 1" = 10' DRAWN DLH JOB NO. 07218 SHEET	
DATE NOVEMBER 23, 2009 CHECKED BPH INDEX SEC. 21, T.11S., R.1W.	2
FIELD BP DWG NAME 07218 FILE NO. 07218	OF 2


Copyright (C) 2002-2010 Kenneth & Gabrielle Adelman, California Coastal Records Project, www.Californiacoastline.org
Photo 7220087 (Photo taken in 1972)
Project Site in 1972
Exhibit C
3-09-042
Page 1 of 2

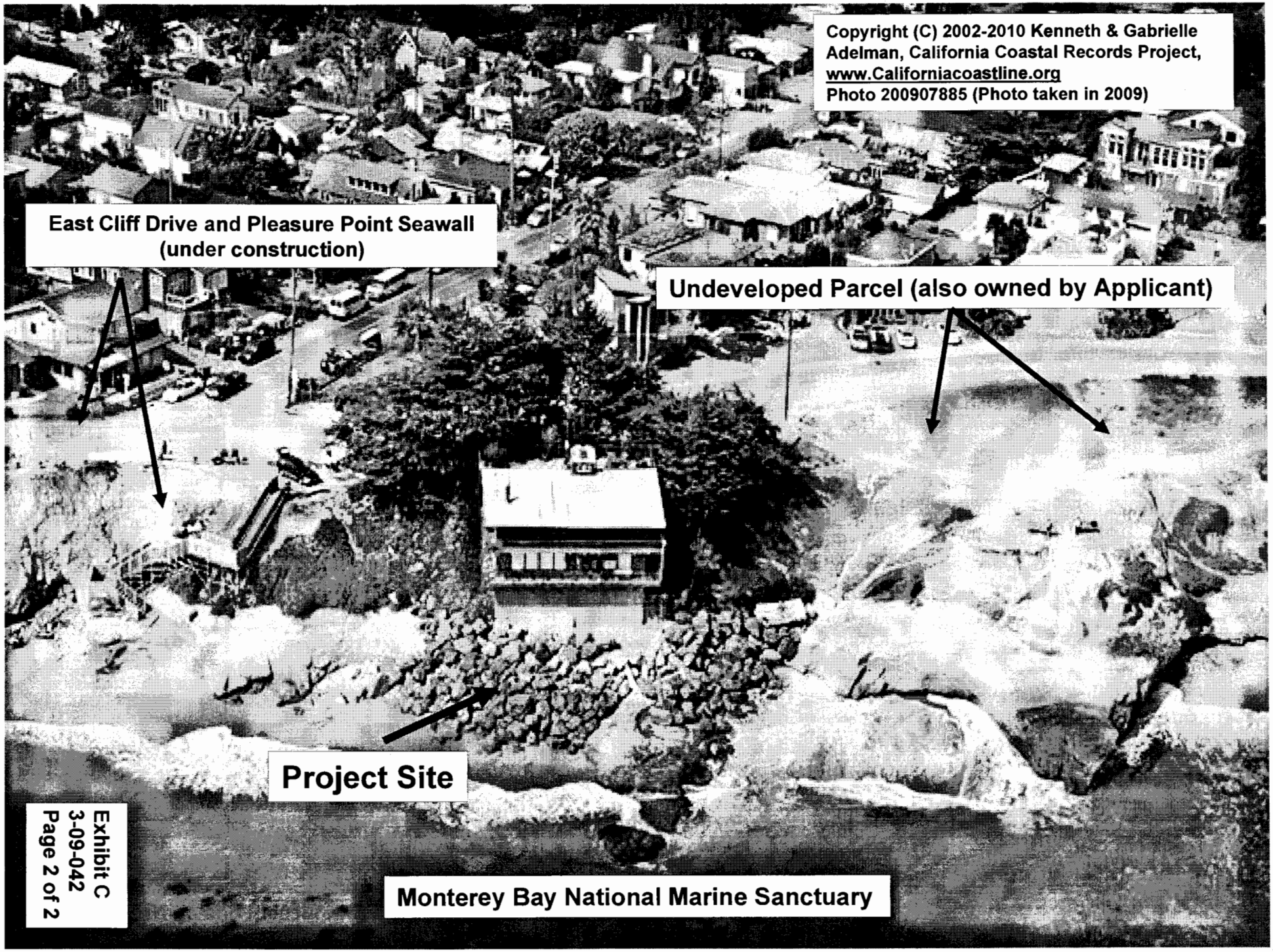
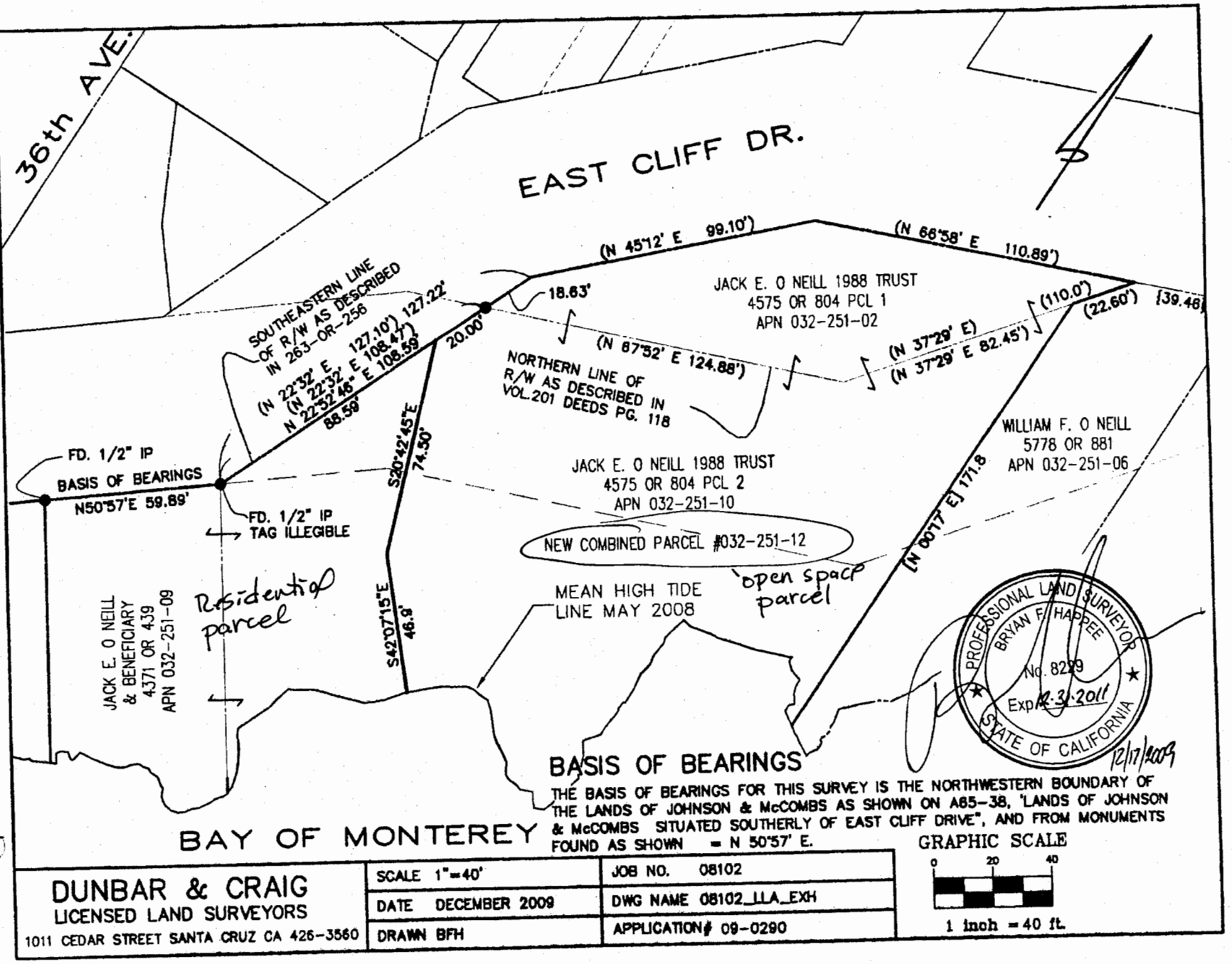


Exhibit C
3-09-042
Page 2 of 2

CCC Exhibit 4 (page 1 of 1 pages)



BASIS OF BEARINGS

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE NORTHWESTERN BOUNDARY OF THE LANDS OF JOHNSON & McCOMBS AS SHOWN ON A65-38, 'LANDS OF JOHNSON & McCOMBS SITUATED SOUTHERLY OF EAST CLIFF DRIVE", AND FROM MONUMENTS FOUND AS SHOWN = N 50°57' E.

GRAPHIC SCALE

0 20 40

1 inch = 40 ft.

DUNBAR & CRAIG LICENSED LAND SURVEYORS 1011 CEDAR STREET SANTA CRUZ CA 426-3560	SCALE 1"=40'	JOB NO. 08102
	DATE DECEMBER 2009	DWG NAME 08102_LLA_EXH
	DRAWN BFH	APPLICATION# 09-0290

FORM FOR DISCLOSURE OF EX PARTE COMMUNICATIONS

Name or description of project, LCP, etc.:	O'Neill Seawall
Date and time of receipt of communication:	3/9/10, 11:00 am
Location of communication:	Jack O'Neill's House, Santa Cruz, California
Type of communication:	In person meeting at the site
Person(s) initiating communication:	Jack O'Neill Pat O'Neill Mark Massara
Person(s) receiving communication:	Mark Stone

Detailed substantive description of content of communication:
(Attach a copy of the complete text of any written material received.)

I met with Mr. O'Neill and his representatives. They showed me the work that is being done by the County on the Pleasure Point Seawall and how it effects Mr. O'Neill's property. They showed me their plans for the seawall that will join in with the County's seawall and how they hope that their project can move forward so that it can be done in conjunction with the County's work.

Date: 3/9/10 Signature of Commissioner: Mark Stone

If the communication was provided at the same time to staff as it was provided to a Commissioner, the communication is not ex parte and this form does not need to be filled out.

If communication occurred within seven or more days in advance of the Commission hearing on the item that was the subject of the communication, complete this form and transmit it to the Executive Director within seven days of the communication. If it is reasonable to believe that the completed form will not arrive by U.S. mail at the Commission's main office prior to the commencement of the meting, other means of delivery should be used; such as facsimile, overnight mail, or personal delivery by the Commissioner to the Executive Director at the meeting prior to the time that the hearing on the matter commences.

If communication occurred within seven days of the hearing, complete this form, provide the information orally on the record of the proceeding and provide the Executive Director with a copy of any written material that was part of the communication.

CCC Exhibit E
(page 1 of 1 pages)